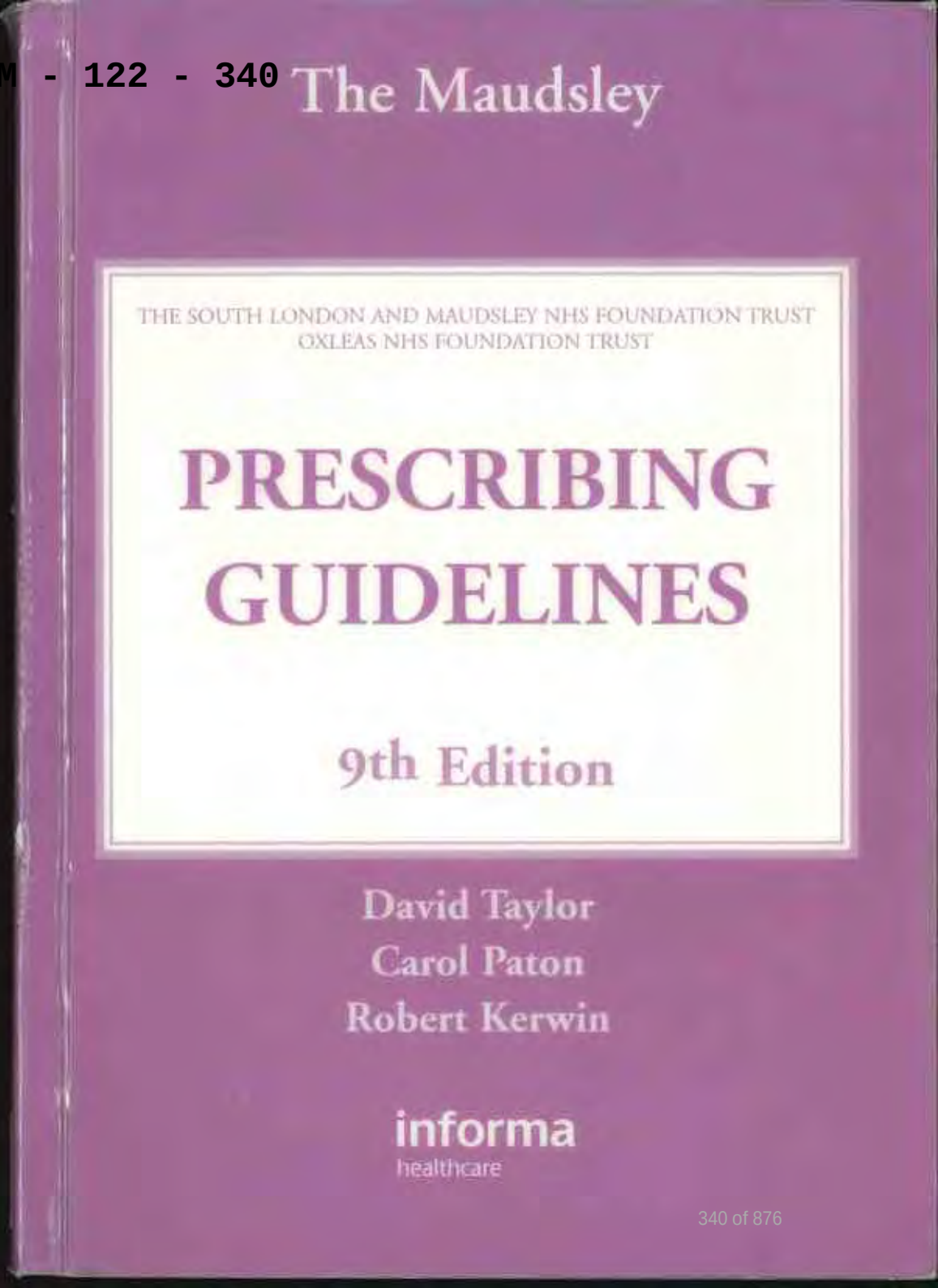
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Acutely disturbed or violent behaviour

Acute behavioural disturbance may occur in the context of psychiatric illness, physical illness, substance abuse or personality disorder. Psychotic symptoms are common and the patient may be aggressive towards others secondary to persecutory delusions or auditory, visual or tactile hallucinations.

The clinical practice of rapid tranquillisation (RT) is used when appropriate psychological and behavioural approaches have failed to de-escalate acutely disturbed behaviour. It is, essentially, a treatment of last resort. RT is not underpinned by a strong evidence base. Patients who require RT are often too disturbed to give informed consent and therefore cannot participate in randomised controlled trials (RCTs). Recommendations are therefore based partly on research data, partly on theoretical considerations and partly on clinical experience.

Several studies supporting the efficacy of oral risperidone[1–4] and one observational study, each supporting the efficacy of quetiapine[5] and olanzapine orodispersible tablets[6] have been published. The level of behavioural disturbance exhibited by the patients in these studies was moderate at most, and all subjects accepted oral treatment (this degree of compliance would be unusual in clinical practice).

Larger, placebo-controlled RCTs support the efficacy of IM olanzapine[7,8], ziprasidone[9] and aripiprazole[10]. Again, the level of behavioural disturbance in these studies was moderate at most. One small open study supports the effectiveness of IM ziprasidone in clinical emergencies (where disturbance was severe)[11].

Two large RCTs (the TREC studies[12,13]) have investigated the efficacy of a benzodiazepine versus an antipsychotic/sedative combination (all administered IM) in 'real-life' acutely disturbed patients. TREC 1[12] found midazolam 7.5–15 mg to be more rapidly sedating than a combination of haloperidol 5–10 mg and promethazine 50 mg. TREC 2[13] found haloperidol 10 mg combined with promethazine 25–50 mg to be more rapidly sedating than lorazepam 4 mg. Although these studies are undoubtedly the best available to date, UK psychiatrists rarely prescribe IM midazolam or promethazine, and have been increasingly reluctant to prescribe IM haloperidol due to its ability to cause EPSEs. Acute EPSEs may adversely affect longer-term compliance[14]. The SPC requirement for ECG with haloperidol also limits its use. Lorazepam IM is an established treatment and TREC 2[13] supports its efficacy.

Plans for the management of individual patients should ideally be made in advance. The aim is to prevent disturbed behaviour and reduce risk of violence. Nursing interventions (de-escalation, time out), increased nursing levels, transfer of the patient to a psychiatric intensive care unit (PICU) and pharmacological management are options that may be employed. Care should be taken to avoid combinations and high cumulative doses of antipsychotic drugs. The monitoring of routine physical observations after RT is essential. Note that RT is often viewed as punitive by patients.

The aims of RT are threefold:

1. To reduce suffering for the patient: psychological or physical (through self-harm or accidents).
2. To reduce risk of harm to others by maintaining a safe environment.
3. To do no harm (by prescribing safe regimens and monitoring physical health).

Note: *Despite the need for rapid and effective treatment, concomitant use of two or more antipsychotics (antipsychotic polypharmacy) should be avoided on the basis of risk associated with QT prolongation (common to almost all antipsychotics) (see page 115). This is a particularly important consideration in RT where the patient's physical state predisposes to cardiac arrhythmia.*

In an emergency situation (*NB: read attached notes carefully*)

Step	*Intervention*		
1	De-escalation, time out, placement, etc., as appropriate		
2[a,b]	Offer **oral** treatment	**Haloperidol** 5 mg or **Olanzapine**[g] 10 mg or **Risperidone**[1–4] 1–2 mg	with or without lorazepam 1–2 mg. Repeat every 45–60 min. Go to step 3 if three doses fail or sooner if the patient is placing themselves or others at significant risk.
		Monotherapy with buccal midazolam, 10–20 mg may offer a useful alternative. Note that this preparation is unlicensed	
3[c–f]	Consider **IM treatment**	**Lorazepam** 1–2 mg[13,g] or **Midazolam** 7.5–15 mg[12] or **Haloperidol** 5 mg[12,14] or **Olanzapine** 5–10 mg[8,h] or **Ziprasidone** 10–20 mg[9,17,i] or **Aripiprazole** 10 mg[10]	IM olanzapine should not be combined with an IM benzodiazepine[15,16]. The safety of other SGAs combined with benzodiazepines is unknown
		Repeat up to two times at 30–60 min intervals, if insufficient effect. **Promethazine**[j] 50 mg IM is an alternative in benzodiazepine-tolerant patients	
4	Consider **IV treatment**	**Diazepam**[k–m] 10 mg over at least 5 min. Repeat after 5–10 min if insufficient effect (up to three times)	
5	**Seek expert advice.**	Amylobarbital[n] 250 mg IM or paraldehyde[o] 5–10 ml IM are options. Very, very few episodes of RT should reach this point	

Note on the table above

a. Choice depends on current treatment. If the patient is established on antipsychotics, lorazepam may be used alone. If the patient uses street drugs or is already receiving benzodiazepines regularly, an antipsychotic may be used alone. For the majority of patients, the best response will be obtained with a combination of an antipsychotic and lorazepam.
b. Ensure that parenteral anticholinergics are available. Procyclidine 5–10 mg IM or benzatropine 1–2 mg IM may be required to reverse acute dystonic reactions (most likely with haloperidol).
c. Either an antipsychotic or benzodiazepine can be used alone as in (a), but for the majority of patients the best response will be obtained with a combination of an antipsychotic and lorazepam.
d. Have flumazenil available to reverse the effects of lorazepam or midazolam. (Monitor respiratory rate – give flumazenil if rate falls below 10/min.)
e. From this point onwards, review the patient's legal status. The requirement for enforced IM medication in informal patients should prompt the use of the Mental Health Act.
f. From this point onwards, consider consulting a senior colleague.
g. Mix lorazepam 1:1 with water for injections before injecting. Some centres use 2–4 mg.
h. Recommended by NICE only for moderate behavioural disturbance.
i. Ziprasidone is unlikely to be licensed in the UK, but is available in the USA and other countries.
j. Promethazine has a slow onset of action but is often an effective sedative. Dilution is not required before IM injection. May be repeated up to a maximum of 100 mg/day. Wait 1–2 hours after injection to assess response. Note that promethazine alone has been reported to cause NMS[18] although it is an extremely weak dopamine antagonist.
k. Use Diazemuls to avoid injection site reactions. IV therapy may be used instead of IM when a very rapid effect is required. IV therapy also ensures near immediate delivery of the drug to its site of action and effectively avoids the danger of inadvertent accumulation of slowly absorbed IM doses. Note also that IV doses can be repeated after only 5–10 min if no effect is observed.
l. Have flumazenil available to reverse the effects of diazepam. (Monitor respiratory rate – give flumazenil if rate falls below 10/min.)
m. Caution in the very young and elderly and those with pre-existing brain damage or impulse control problems, as disinhibition reactions are more likely[19].
n. Amylobarbital is a powerful respiratory depressant with no pharmacological antagonist. Have facilities for mechanical ventilation available.
o. Paraldehyde is now used extremely rarely and is difficult to obtain. It should only be used when all else has failed. In many cases, ECT may be more appropriate. Note that paraldehyde is associated with a high incidence of tachycardia and tachypnea[20]. IV diazepam may be more effective and is certainly better tolerated[20].

Rapid tranquillisation – physical monitoring

After any parenteral drug administration, monitor as follows:

Temperature

Pulse

Blood pressure

Respiratory rate

Every 5–10 min for 1 hour, and then half-hourly until patient is ambulatory. Patients who refuse to have their vital signs monitored should be observed for signs/symptoms of pyrexia, hypotension, oversedation and general physical well-being.

If the patient is asleep or **unconscious**, the use of pulse oximetry to measure oxygen saturation continuously is desirable. A nurse should remain with the patient until the patient is ambulatory again.

ECG and haematological monitoring are also strongly recommended when parenteral antipsychotics are given, especially when higher doses are used[21,22]. Hypokalaemia, stress and agitation place the patient at risk of cardiac arrhythmia[23] (see page 115). ECG monitoring is formally recommended for all patients receiving haloperidol in any formulation[24].

Remedial measures in rapid tranquillisation

Problem	*Remedial measures*
Acute dystonia (including oculogyric crises)	Give **procyclidine** 5–10 mg IM or IV or **benzatropine** 1–2 mg IM.
Reduced respiratory rate (<10/min) or oxygen saturation (<90%)	Give oxygen, raise legs, ensure patient is not lying face down. Give **flumazenil** if benzodiazepine-induced respiratory depression suspected (see protocol). If induced by any other sedative agent: **transfer to a medical bed and ventilate mechanically**.
Irregular or slow (<50/min) **pulse**	**Refer** to specialist medical care immediately.
Fall in blood pressure (>30 mmHg orthostatic drop or <50 mmHg diastolic)	**Have patient lie flat**, tilt bed towards head. Monitor closely.
Increased temperature	**Withhold antipsychotics:** (risk of NMS and perhaps arrhythmia). Check creatinine kinase urgently.

Guidelines for the use of flumazenil

Indication for use	If, after the administration of lorazepam or diazepam, respiratory rate falls below 10/min.
Contraindications	Patients with epilepsy who have been receiving long-term benzodiazepines.
Caution	Dose should be carefully titrated in hepatic impairment.
Dose and route of administration	***Initial:*** 200 μg ***intravenously*** over 15 seconds – if required level of consciousness not achieved after 60 seconds, then, ***Subsequent dose:*** 100 μg over 10 seconds.
Time before dose can be repeated	60 seconds.
Maximum dose	1 mg in 24 hours (one initial dose and eight subsequent doses).
Side-effects	Patients may become agitated, anxious or fearful on awakening. Seizures may occur in regular benzodiazepine users.
Management	Side-effects usually subside.
Monitoring	
• **What to monitor?** • **How often?**	Respiratory rate. Continuously until respiratory rate returns to baseline level. Flumazenil has a short half-life (much shorter than diazepam) and respiratory function may recover and then deteriorate again. ***Note: If respiratory rate does not return to normal or patient is not alert after initial doses given, assume that sedation is due to some other cause.***

Guidelines for the use of Clopixol Acuphase (zuclopenthixol acetate)

Acuphase should be used only after an acutely psychotic patient has required repeated injections of short-acting antipsychotic drugs such as haloperidol or olanzapine, or sedative drugs such as lorazepam.

Acuphase should be given only when enough time has elapsed to assess the full response to previously injected drugs: allow 15 min after IV injections; 60 min after IM.

*Acuphase should **never** be administered:*

- in an attempt to 'hasten' the antipsychotic effect of other antipsychotic therapy
- for rapid tranquillisation (onset of effect is too slow)
- at the same time as other parenteral antipsychotics or benzodiazepines (may lead to oversedation which is difficult to reverse)
- as a 'test dose' for zuclopenthixol decanoate depot
- to a patient who is physically resistant (risk of intravasation and oil embolus).

*Acuphase should **never** be used for, or in, the following:*

- patients who accept oral medication
- patients who are neuroleptic naive
- patients who are sensitive to EPSE
- patients who are unconscious
- patients who are pregnant
- those with hepatic or renal impairment
- those with cardiac disease.

Onset and duration of action

Sedative effects usually begin to be seen 2 hours after injection and peak after 12 hours. The effects may last for up to 72 hours. Note: Acuphase has no place in rapid tranquillisation: *its action is not rapid*.

Dose

Acuphase should be given in a dose of 50–150 mg, up to a maximum of 400 mg over a 2-week period. This maximum duration ensures that a treatment plan is put in place. It does not indicate that there are known harmful effects from more prolonged administration, although such use should be very exceptional. There is no such thing as a 'course of Acuphase'. The patient should be assessed before each administration.

Injections should be spaced at least 24 hours apart.

Note: zuclopenthixol acetate is widely misused as a sort of 'chemical straitjacket'. In reality, it is a potentially toxic preparation with very little published information to support its use[25]. It is perhaps best reserved for those few patients who have a prior history of good response to Acuphase.

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Further reading

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Notes on using *The Maudsley Prescribing Guidelines*

The main aim of *The Guidelines* is to provide clinicians with practically useful advice on the prescribing of psychotropic agents in commonly encountered clinical situations. The advice contained in this handbook is based on a combination of literature review, clinical experience and expert contribution. We do not claim that this advice is necessarily 'correct' or that it deserves greater prominence than guidance provided by other professional bodies or special interest groups. We hope, however, to have provided guidance that helps to assure the safe, effective and economic use of medicines in mental health. We hope also to have made clear the sources of information used to inform the guidance given.

Please note that many of the recommendations provided here go beyond the licensed or labelled indications of many drugs, both in the UK and elsewhere. Note also that, while we have endeavoured to make sure all quoted doses are correct, clinicians should always consult statutory texts before prescribing. Users of *The Guidelines* should also bear in mind that the contents of this handbook are based on information available to us up to June 2009. Much of the advice contained here will become outdated as more research is conducted and published.

No liability is accepted for any injury, loss or damage, however caused.

Notes on inclusion of drugs

The Guidelines are used in many other countries outside the UK. With this in mind, we have included in this edition those drugs in widespread use throughout the western world in June 2009. Thus we have included, for example, ziprasidone and iloperidone, even though these drugs are not marketed in the UK at this time. Their inclusion gives *The Guidelines* relevance in those countries where ziprasidone and iloperidone are marketed and may also be of benefit to UK readers, as many unlicensed drugs can be obtained through formal pharmaceutical importers. We have also tried to include information on drugs likely to be introduced into practice in the next two years. Many older drugs (methotrimeprazine, pericyazine, maprotiline, etc.) are either only briefly mentioned or not included on the basis that these drugs are not in widespread use at the time of writing.

Notes on commonly used abbreviations

Throughout this text we have abbreviated *British National Formulary* to *BNF* and extrapyramidal side-effects to EPS. We have also used FGA for first generation antipsychotics and SGA for second generation antipsychotics (broadly speaking, those antipsychotics marketed in the UK since 1990). SPC refers to the UK Summary of Product Characteristics for the drug in question.

All other abbreviations are explained in the text itself.

Contents

Summary of NICE guidance in eating disorders[3]

Anorexia nervosa

- Psychological interventions are the treatments of choice and should be accompanied by monitoring of the patient's physical state
- No particular medication is recommended. A range of drugs may be used in the treatment of co-morbid conditions

Bulimia nervosa

- An evidence based self-help programme or cognitive behaviour therapy for bulimia nervosa should be the first choice of treatment
- A trial of fluoxetine may be offered as an alternative or additional first step

Binge eating disorder

- An evidence based self-help programme of cognitive behavioural therapy for binge eating disorder should be the first choice of treatment
- A trial of an SSRI can be considered as an alternative or additional first step

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Acutely disturbed or violent behaviour

Acute behavioural disturbance can occur in the context of psychiatric illness, physical illness, substance abuse, or personality disorder. Psychotic symptoms are common and the patient may be aggressive towards others secondary to persecutory delusions or auditory, visual or tactile hallucinations.

The clinical practice of rapid tranquillisation (RT) is used when appropriate psychological and behavioural approaches have failed to de-escalate acutely disturbed behaviour. It is, essentially, a treatment of last resort. RT is not underpinned by a strong evidence base. Patients who require RT are often too disturbed to give informed consent and therefore cannot participate in randomised controlled trials (RCTs). Recommendations are therefore based partly on research data, partly on theoretical considerations and partly on clinical experience.

Several studies supporting the efficacy of oral atypicals[1–9] have been published. The level of behavioural disturbance exhibited by the patients in these studies was moderate at most, and all subjects accepted oral treatment (this degree of compliance would be unusual in clinical practice). Note too that patients recruited to these studies received the atypical as antipsychotic monotherapy; the efficacy and safety of adding a second antipsychotic as 'PRN' has not been tested in formal RCTs.

Larger, placebo-controlled RCTs support the efficacy of IM olanzapine, ziprasidone, and aripiprazole[9]. When considered together these trials suggested that IM olanzapine is more effective than IM haloperidol which in turn is more effective than IM aripiprazole[1]. Again, the level of behavioural disturbance in these studies was moderate at most. Two small open studies support the effectiveness of IM ziprasidone and IM olanzapine in clinical emergencies (where disturbance was severe)[10,11].

Four large RCTs (the TREC studies[12–15]) have investigated the effectiveness of parenteral medication in 'real-life' acutely disturbed patients. Overall:

- IM midazolam 7.5–15 mg was more rapidly sedating than a combination of haloperidol 5–10 mg and promethazine 50 mg (TREC 1)[12]
- Olanzapine 10 mg was as effective as a combination of haloperidol 10 mg and promethazine 25–50 mg in the short term, but the effect did not last as long (TREC 4)[15]
- A combination of haloperidol 5–10 mg and promethazine 50 mg was more effective and better tolerated than haloperidol 5–10 mg alone (TREC 3)[14]
- A combination of haloperidol 10 mg and promethazine 25–50 mg was more effective than lorazepam 4 mg (TREC 2)[13].

Note that TREC 3[14] found IM haloperidol alone to be poorly tolerated; 6% of patients had an acute dystonic reaction. Acute EPS may adversely affect longer-term compliance[16]. In addition, the SPC for haloperidol requires a pre-treatment ECG[17,18] and recommends that concomitant antipsychotics are not prescribed. A small observational study supports the effectiveness of buccal midazolam in a PICU setting[19]. Lorazepam IM is an established treatment and TREC 2[13] supports its efficacy.

Plans for the management of individual patients should ideally be made in advance. The aim is to prevent disturbed behaviour and reduce risk of violence. Nursing interventions (de-escalation, time out), increased nursing levels, transfer of the patient to a psychiatric intensive care unit (PICU) and pharmacological management are options that may be employed. Care should be taken to avoid combinations and high cumulative doses of antipsychotic drugs. The monitoring of routine physical observations after RT is essential. Note that RT is often viewed as punitive by patients.

The aims of RT are threefold:

1. To reduce suffering for the patient: psychological or physical (through self-harm or accidents)
2. To reduce risk of harm to others by maintaining a safe environment
3. To do no harm (by prescribing safe regimes and monitoring physical health).

Note: Despite the need for rapid and effective treatment, concomitant use of two or more antipsychotics (antipsychotic polypharmacy) should be avoided on the basis of risk associated with QT prolongation (common to almost all antipsychotics). This is a particularly important consideration in RT where the patient's physical state predisposes to cardiac arrhythmia.

In an emergency situation

Step	*Intervention*
1	De-escalation, time out, placement, etc., as appropriate
2	Offer **oral** treatment **If the patient is prescribed a regular antipsychotic, lorazepam 1–2 mg** or **promethazine 25–50 mg** avoids the risks associated with combining antipsychotics Repeat after 45–60 min Monotherapy with **buccal midazolam, 10 – 20 mg may avoid the need for IM treatment.** Note that this preparation is unlicensed Go to step 3 if two doses fail or sooner if the patient is placing themselves or others at significant risk An oral antipsychotic is an option in patients not already taking a regular oral or depot antipsychotic - olanzapine 10 mg or - quetiapine 100–200 mg or - risperidone 1–2 mg or - haloperidol 5 mg Note that the SPC for **haloperidol** recommends: - **avoid concomitant antipsychotics** - **a pre-treatment ECG**
3	Consider **IM treatment** From this point on: Consider • The patient's legal status • Consulting a senior colleague Lorazepam 1–2 mg[a,b] — Have flumazenil to hand in case of benzodiazepine-induced respiratory depression. or Promethazine 50 mg[c] — IM promethazine is a useful option in a benzodiazepine-tolerant patient or Olanzapine 10 mg[d] — IM olanzapine should NOT be combined with an IM benzodiazepine or Aripiprazole 9.75 mg — Less hypotension than olanzapine but possibly less effective[f] or Haloperidol 5 mg — **Haloperidol should be the last drug considered** • The incidence of acute dystonia is high: ensure IM procyclidine is available • The SPC recommends a pre-treatment ECG Repeat after 30–60 min if insufficient effect
4	Consider **IV treatment** Diazepam 10 mg over at least 5 minutes[e] Repeat after 5–10 minutes if insufficient effect (up to 3 times) Have flumazenil to hand
5	**Seek expert advice** from the consultant or senior clinical pharmacist on-call[f]

Notes

a. Mix lorazepam 1:1 with water for injections before injecting. Some centres use 2–4 mg.
b. Caution in the very young and elderly and those with pre-existing brain damage or impulse control problems, as disinhibition reactions are more likely[20].
c. Promethazine has a slow onset of action but is often an effective sedative. Dilution is not required before IM injection. May be repeated up to a maximum of 100 mg/day. Wait 1–2 hours after injection to assess response. Note that promethazine alone has been reported to cause NMS[21] although it is an extremely weak dopamine antagonist.
d. Recommended by NICE only for moderate behavioural disturbance.
e. Use Diazemuls to avoid injection site reactions. IV therapy may be used instead of IM when a very rapid effect is required. IV therapy also ensures near immediate delivery of the drug to its site of action and effectively avoids the danger of inadvertent accumulation of slowly absorbed IM doses. Note also that IV doses can be repeated after only 5–10 min if no effect is observed.
f. Options at this point are limited. IM amylobarbitone and paraldehyde have been used in the past but are used now only extremely rarely. ECT is probably a better option.

Rapid tranquillisation – physical monitoring

After any parenteral drug administration, monitor as follows:

Temperature

Pulse

Blood pressure

Respiratory rate

Every 5–10 min for 1 hour, and then half-hourly until patient is ambulatory. Patients who refuse to have their vital signs monitored or who remain too behaviourally disturbed to be approached should be observed for signs/symptoms of pyrexia, hypotension, oversedation, and general physical wellbeing.

If the patient is asleep or **unconscious**, the continuous use of pulse oximetry to measure oxygen saturation is desirable. A nurse should remain with the patient until ambulatory.

ECG and haematological monitoring are also strongly recommended when parenteral antipsychotics are given, especially when higher doses are used[22,23]. Hypokalaemia, stress and agitation place the patient at risk of cardiac arrhythmia[24] (see section on 'QT prolongation'). ECG monitoring is formally recommended for all patients who receive haloperidol.

Remedial measures in rapid tranquillisation

Problem	*Remedial measures*
Acute dystonia (including oculogyric crises)	Give **procyclidine** 5–10 mg IM or IV or **benzatropine** 1–2 mg IM
Reduced respiratory rate (<10/min) or oxygen saturation (<90%)	Give oxygen, raise legs, ensure patient is not lying face down Give **flumazenil** if benzodiazepine-induced respiratory depression suspected (see protocol) If induced by any other sedative agent: **transfer to a medical bed and ventilate mechanically**
Irregular or slow (<50/min) **pulse**	**Refer** to specialist medical care immediately
Fall in blood pressure (>30 mmHg orthostatic drop or <50 mmHg diastolic)	**Have patient lie flat**, tilt bed towards head. Monitor closely
Increased temperature	Check creatinine kinase urgently (risk of NMS and perhaps arrhythmia)

Guidelines for the use of flumazenil

Indication for use	**If, after the administration of lorazepam or diazepam, respiratory rate falls below 10/min**
Contra-indications	Patients with epilepsy who have been receiving long-term benzodiazepines
Caution	Dose should be carefully titrated in hepatic impairment
Dose and route of administration	***Initial:*** 200 µg ***intravenously*** over 15 seconds – if required level of consciousness not achieved after 60 seconds, then, ***Subsequent dose:*** 100 µg over 10 seconds
Time before dose can be repeated	60 seconds
Maximum dose	1 mg in 24 hours (one initial dose and eight subsequent doses)
Side-effects	Patients may become agitated, anxious or fearful on awakening Seizures may occur in regular benzodiazepine users
Management	Side-effects usually subside
Monitoring • **What to monitor?** • **How often?**	Respiratory rate Continuously until respiratory rate returns to baseline level Flumazenil has a short half-life (much shorter than diazepam) and respiratory function may recover and then deteriorate again ***Note: If respiratory rate does not return to normal or patient is not alert after initial doses given, assume that* sedation is due to some other cause**

Guidelines for the use of Clopixol Acuphase (zuclopenthixol acetate)

Acuphase should be used only after an acutely psychotic patient has required *repeated* injections of short-acting antipsychotic drugs such as haloperidol or olanzapine, or sedative drugs such as lorazepam.

Acuphase should be given only when enough time has elapsed to assess the full response to previously injected drugs: allow 15 min after IV injections; 60 min after IM.

Acuphase is sometimes appropriately used in patients known to respond to it or in physically violent patients for whom repeated attempts at injection would be dangerous for all parties.

*Acuphase should **never** be administered:*
- in an attempt to 'hasten' the antipsychotic effect of other antipsychotic therapy
- for rapid tranquillisation (onset of effect is too slow)
- at the same time as other parenteral antipsychotics or benzodiazepines (may lead to oversedation which is difficult to reverse)
- as a 'test dose' for zuclopenthixol decanoate depot
- to a patient who is physically resistant (risk of intravasation and oil embolus).

*Acuphase should **never** be used for, or in, the following:*
- patients who accept oral medication
- patients who are neuroleptic naïve
- patients who are sensitive to EPS
- patients who are unconscious
- patients who are pregnant
- those with hepatic or renal impairment
- those with cardiac disease.

Onset and duration of action
Sedative effects usually begin to be seen 2 hours after injection and peak after 12 hours. The effects may last for up to 72 hours. Note: Acuphase has no place in rapid tranquillisation; *its action is not rapid.*

Dose
Acuphase should be given in a dose of 50–150 mg, up to a maximum of 400 mg over a 2-week period. This maximum duration ensures that a treatment plan is put in place. It does not indicate that there are known harmful effects from more prolonged administration, although such use should be very exceptional. There is no such thing as a 'course of Acuphase'. The patient should be assessed before each administration.

Injections should be spaced at least 24 hours apart.

Note: zuclopenthixol acetate is widely misused as a sort of 'chemical straitjacket'. In reality, it is a potentially toxic preparation with very little published information to support its use[25]. It is perhaps best reserved for those few patients who have a prior history of good response to Acuphase.

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Chronic behavioural disturbance (challenging behaviour) in learning disability (LD)

Behavioural disturbance is common in those with a learning disability; 16–50% exhibit aggression or a related challenging behaviour[1]. Those who are aggressive are more likely to be young, male, and have more severe cognitive impairment[2]. Up to a third of adults with LD who do not have a comorbid mental illness are prescribed psychotropic medication, mostly for the management of challenging behaviour[3].

It is often very difficult to determine the aetiology of behavioural disturbance. For example, stereotypical behaviour and irritability could be manifestations of a psychiatric illness or epilepsy (which is common in this patient group[4]). Some anticonvulsant drugs have marked behavioural side effects, most notably topiramate[5]. Stopping drugs such as benzodiazepines and SSRIs can also lead to problems (see Chapter 4).

The following may be useful prompts:

- Is there or could there be an underlying physical illness? (look for and treat)
- Could the behaviour be ictal in origin or a side effect of anticonvulsant drugs? (consider altering)
- Could environmental factors be contributing either as precipitants or reinforcants? (consider and alter if possible)
- Is there an underlying psychiatric illness? (consider and treat if applicable)

Antipsychotic drugs are frequently used to manage persistent aggression towards self or others; it is hoped that they will reduce arousal and treat any underlying psychotic symptoms. The NACHBID study[6] demonstrated that antipsychotics are probably no more effective than placebo for this indication (in patients who do not have a comorbid psychiatric illness); antipsychotics should therefore not be used routinely as a first-line treatment for the management of persistent aggression alone.

Also consider:

- Does the patient have a history of mood disturbance? (consider a trial of an antidepressant/mood-stabiliser)
- Is the disturbance cyclical? (consider a trial of a mood-stabiliser)
- Is the patient aggressive? (consider a trial of carbamazepine or a ß-blocker)
- Are there any signs of adrenergic overactivity such as tachycardia or tremor? (consider a trial of a ß-blocker)
- Is the patient impulsive? (consider a trial of an SSRI)
- Is the patient self-injurious? (consider a trial of an antipsychotic, SSRI or naltrexone)
- Could the behaviour be driven by psychosis? (consider a trial of an antipsychotic)

If medication is prescribed it should be as part of a co-ordinated multidisciplinary care plan. Efficacy against target symptoms should be monitored and particular attention paid to screening for side effects. Try, if possible, to avoid drugs with anticholinergic effects and the use of antipsychotics on a PRN basis.

Table Use of antibiotics in psychiatry

Infection/ condition	*First-line treatment*	*Second-line treatment*
Ears – e.g. otitis externa, otitis media	Consult microbiologist if otitis media suspected Chloramphenicol 0.5% drops, four times daily	Neomycin or polymyxin drops
Fungal infections	**Mouth/pharynx** - Nystatin suspension (100 000 iu/ml), 1 ml four times daily **Skin** – Clotrimazole 1% cream three times daily **Systemic or resistant skin infection** – fluconazole 50 mg daily for 7–14 days **Nail** – terbinafine 250mg daily (see BNF for duration)	Fluconazole Fluconazole Consult microbiology Consult microbiology
Gastro-enteritis	Not usually indicated – consult microbiology	
Pelvic inflammatory disease	Collect high vaginal swab; if *Neisseria gonococcus* excluded: Metronidazole 400 mg three times daily for seven days plus doxycycline 100 mg twice daily for 2 weeks. Give after food	Consult microbiology
Respiratory tract infections	Amoxycillin 250 mg three times daily or Erythromycin 500 mg three times daily	Co-amoxiclav 375 mg three times daily or Clarithromycin 250 mg twice daily
Throat infection	Usually has viral cause. Consult microbiology; if *Streptococcus* confirmed: Phenoxymethylpenicillin 250 mg four times daily or cefadroxil 500 mg twice daily or erythromycin 500 mg three times daily	Consult microbiology
Tuberculosis	Consult microbiology	
Urinary tract infections	Trimethoprim 200 mg twice daily or amoxycillin 250 mg three times daily	Nalidixic acid 1 g four times daily or co-amoxiclav 375 mg three times daily or ciprofloxacin 250 mg twice daily
Vaginal candidiosis	Oral fluconazole 150 mg as a single dose or clotrimazole 500 mg vaginal pessary	Consult microbiology
Wounds, ulcers, pressure sores	Do not use topical agents If cellulitis present – consult microbiology	

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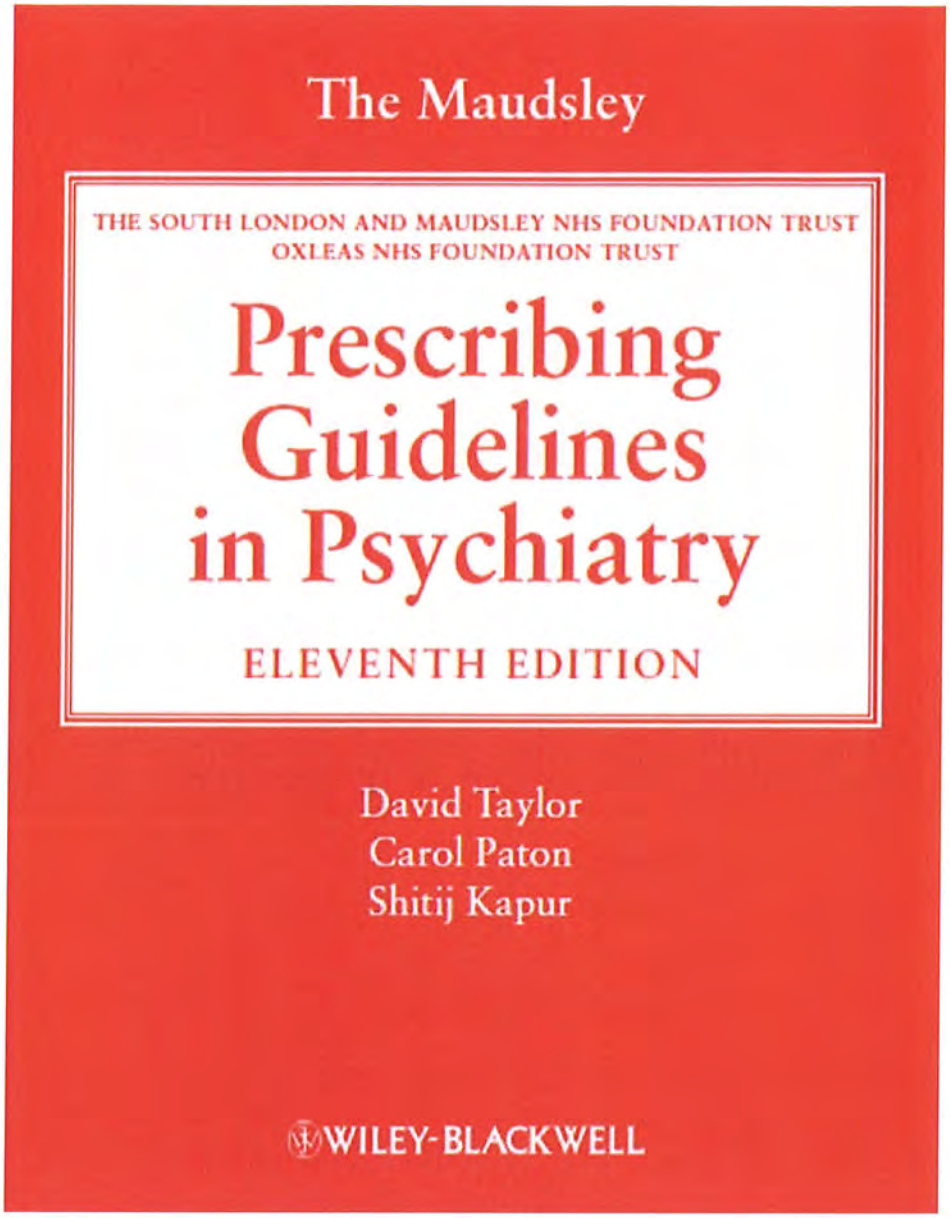

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The clinical practice of rapid tranquillisation is used when appropriate psychological and behavioural approaches have failed to de-escalate acutely disturbed behaviour. It is, essentially, a treatment of last resort. Rapid tranquillisation is not underpinned by a strong evidence base. Patients who require this treatment are often too disturbed to give informed consent and therefore cannot participate in RCTs. Recommendations are therefore based partly on research data, partly on theoretical considerations and partly on clinical experience.

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Larger, placebo-controlled RCTs support the efficacy of intramuscular (IM) olanzapine, ziprasidone and aripiprazole. When considered together, these trials suggested that IM olanzapine is more effective than IM haloperidol which in turn is more effective than IM

aripiprazole.[5] Again, the level of behavioural disturbance in these studies was moderate at most. Two small open studies support the effectiveness of IM ziprasidone and IM olanzapine in clinical emergencies (where disturbance was severe).[6,7]

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- IM midazolam 7.5–15 mg was more rapidly sedating than a combination of haloperidol 5–10 mg and promethazine 50 mg (TREC 1)[8]
- olanzapine 10 mg was as effective as a combination of haloperidol 10 mg and promethazine 25–50 mg in the short term, but the effect did not last as long (TREC 4)[11]
- a combination of haloperidol 5–10 mg and promethazine 50 mg was more effective and better tolerated than haloperidol 5–10 mg alone (TREC 3)[10]
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Note that TREC 3[10] found IM haloperidol alone to be poorly tolerated; 6% of patients had an acute dystonic reaction. In a meta-analysis that examined the tolerability of IM antipsychotics when used for the treatment of agitation, the incidence of acute dystonia with haloperidol was reported to be 5%, with SGAs faring considerably better.[12] Acute EPS may adversely affect longer-term compliance.[13] In addition, the SPC for haloperidol requires a pretreatment ECG[14,15] and recommends that concomitant antipsychotics are not prescribed. The mean increase in QTc after 10 mg IM haloperidol has been administered has been reported to be 15 ms but the range is wide.[16]

A small observational study supports the effectiveness of buccal midazolam in the setting of a psychiatric intensive care unit setting.[17] Parenteral administration of midazolam, particularly in higher doses, may cause oversedation accompanied by respiratory depression.[18] Lorazepam IM is an established treatment and TREC 2[9] supports its efficacy, although combining all results from the TREC studies suggests that midazolam 7.5–15 mg is probably more effective.

Plans for the management of individual patients should ideally be made in advance. The aim is to prevent disturbed behaviour and reduce risk of violence. Nursing interventions (de-escalation, time out), increased nursing levels, transfer of the patient to a psychiatric intensive care unit and pharmacological management are options that may be employed. Care should be taken to avoid combinations and high cumulative doses of antipsychotic drugs. The monitoring of routine physical observations after rapid tranquillisation is essential (see Box 7.10). Note that rapid tranquillisation is often viewed as punitive by patients. There is little research into the patient experience of rapid tranquillisation.

The aims of rapid tranquillisation are threefold.

- To reduce suffering for the patient: psychological or physical (through self-harm or accidents).
- To reduce risk of harm to others by maintaining a safe environment.

- To do no harm (by prescribing safe regimens and monitoring physical health).

NB: Despite the need for rapid and effective treatment, concomitant use of two or more antipsychotics should be avoided on the basis of risk associated with QT prolongation (common to almost all antipsychotics). This is a particularly important consideration in rapid tranquillisation where the patient's physical state predisposes to cardiac arrhythmia.

Table 7.26 outlines the interventions to use in an emergency situation. Remedial measures are shown in Table 7.27. Box 7.10 describes physical monitoring requirements; Box 7.11 the use of flumazenil; and Box 7.12 shows guidelines for the use of zuclopenthixol acetate.

Table 7.26 Recommended interventions for patients showing acutely disturbed or violent behaviour

Step	Intervention	Comment
1	De-escalation, time out, placement, etc., as appropriate	
2	Offer **oral** treatment	
	If the patient is prescribed a regular antipsychotic, lorazepam 1-2 mg alone avoids the risks associated with combining antipsychotics Repeat after 45–60 min Monotherapy with **buccal midazolam, 10-20 mg may avoid the need for IM treatment**	An oral antipsychotic is an option in patients not already taking a regular oral or depot antipsychotic • Olanzapine 10 mg or • Risperidone 1–2 mg or • Haloperidol 5 mg (best with promethazine 25 mg)
	Go to Step 3 if two doses fail or sooner if the patient is placing themselves or others at significant risk	Note that the SPC for **haloperidol** recommends: **Avoiding concomitant antipsychotics** **A pretreatment ECG**
3	Consider **IM** treatment	
	lorazepam 1-2 mg[a,b]	Have flumazenil to hand in case of benzodiazepine-induced respiratory depression
	promethazine 50 mg[c]	IM promethazine is a useful option in a benzodiazepine-tolerant patient
	olanzapine 10 mg[d]	IM olanzapine should NOT be combined with an IM benzodiazepine
	aripiprazole 9.75 mg	Less hypotension than olanzapine, but possibly less effective[3,5,19]
	haloperidol 5 mg Repeat after 30–60 min if insufficient effect	**Haloperidol should be the last drug considered. Note:** The incidence of acute dystonia is high; combine with IM promethazine and ensure IM procyclidine is available The SPC recommends a pretreatment ECG
4	Consider **IV** treatment	
	Diazepam 10 mg over at least 5 min[b,e] Repeat after 5–10 min if insufficient effect (up to 3 times) Have flumazenil to hand	
5	**Seek expert advice** from the consultant or senior clinical pharmacist on call[f]	

ECG, electrocardiogram; IM, intramuscular; IV, intravenous; SPC, Summary of Product Characteristics.
[a]Mix lorazepam 1:1 with water for injections before injecting. Some centres use 2–4 mg. An alternative is midazolam 7.5–15 mg, but this is more sedative.
[b]Caution in the very young and elderly and those with pre-existing brain damage or impulse control problems, as disinhibition reactions are more likely.[20]
[c]Promethazine has a slow onset of action but is often an effective sedative. Dilution is not required before IM injection. May be repeated up to a maximum of 100 mg/day. Wait 1–2 h after injection to assess response. Note that promethazine alone has been reported, albeit very rarely, to cause neuroleptic malignant syndrome[21] although it is an extremely weak dopamine antagonist.
[d]Recommended by NICE only for moderate behavioural disturbance.
[e]Use Diazemuls to avoid injection site reactions. IV therapy may be used instead of IM when a very rapid effect is required. IV therapy also ensures near immediate delivery of the drug to its site of action and effectively avoids the danger of inadvertent accumulation of slowly absorbed IM doses. Note also that IV doses can be repeated after only 5–10 min, if no effect is observed.
[f]Options at this point are limited. IM amylobarbitone and paraldehyde have been used in the past but are used now only extremely rarely. ECT is probably a better option.

Table 7.27 Rapid tranquillisation: remedial measures

Problem	Remedial measures
Acute dystonia (including oculogyric crises)	Give procyclidine 5–10 mg IM or IV
Reduced respiratory rate (<10/min) or oxygen saturation <90%	Give oxygen, raise legs, ensure patient is not lying face down
	Give **flumazenil** if benzodiazepine-induced respiratory depression suspected (see Table 7.11)
	If induced by any other sedative agent: **transfer to a medical bed and ventilate mechanically**
Irregular or slow (<50/min) **pulse**	**Refer** to specialist medical care immediately
Fall in blood pressure (>30 mmHg orthostatic drop or <50 mmHg diastolic)	**Have patient lie flat**, tilt bed towards head. Monitor closely
Increased temperature	**Withold antipsychotics** (risk of NMS and perhaps arrhythmia). Check creatinine kinase urgently
IM, intramuscular; IV, intravenous; NMS, neuroleptic malignant syndrome.	

Box 7.10 Rapid tranquillisation: physical monitoring

After any parenteral drug administration, monitor as follows.

- Temperature
- Pulse
- Blood pressure
- Respiratory rate

Every 5–10 min for 1 h, then half-hourly until patient is ambulatory. Patients who refuse to have their vital signs monitored or who remain too behaviourally disturbed to be approached should be observed for signs/symptoms of pyrexia, hypotension, oversedation and general physical well-being.

If the patient is asleep or **unconscious**, the continuous use of pulse oximetry to measure oxygen saturation is desirable. A nurse should remain with the patient until ambulatory.

Electrocardiogram and haematological monitoring are also strongly recommended when parenteral antipsychotics are given, especially when higher doses are used.[22,23] Hypokalaemia, stress and agitation place the patient at risk of cardiac arrhythmia[24] (see section on 'QT prolongation' in Chapter). ECG monitoring is formally recommended for all patients who receive haloperidol.

Box 7.11 Guidelines for the use of flumazenil

Indication for use	If, after the administration of lorazepam, midazolam or diazepam, respiratory rate falls below 10/min.
Contraindications	Patients with epilepsy who have been receiving long-term benzodiazepines.
Caution	Dose should be carefully titrated in hepatic impairment.
Dose and route of administration	***Initial:*** 200 μg ***intravenously*** over 15 sec. If required level of consciousness not achieved after 60 sec, then, ***Subsequent dose:*** 100 μg over 10 sec.
Time before dose can be repeated	60 sec.
Maximum dose	1 mg in 24 h (one initial dose and eight subsequent doses).
Side-effects	Patients may become agitated, anxious or fearful on awakening.
	Seizures may occur in regular benzodiazepine users.
Management	Side-effects usually subside.

Monitoring

What to monitor?	Respiratory rate.
How often?	Continuously until respiratory rate returns to baseline level.
	Flumazenil has a short half-life (much shorter than diazepam) and respiratory function may recover and then deteriorate again.

NB: If respiratory rate does not return to normal or patient is not alert after initial doses given, assume that sedation is due to some other cause.

Box 7.12 Guidelines for the use of Clopixol Acuphase (zuclopenthixol acetate)

Acuphase should be used only after an acutely psychotic patient has required *repeated* injections of short-acting antipsychotic drugs, such as haloperidol or olanzapine, or sedative drugs such as lorazepam. It is perhaps best reserved for those few patients who have a prior history of good response to Acuphase.

Acuphase should be given only when enough time has elapsed to assess the full response to previously injected drugs: allow 15 min after IV injections, 60 min after IM.

*Acuphase should **never** be administered:*

- in an attempt to 'hasten' the antipsychotic effect of other antipsychotic therapy
- for rapid tranquillisation (onset of effect is too slow)
- at the same time as other parenteral antipsychotics or benzodiazepines (may lead to oversedation which is difficult to reverse)
- as a 'test dose' for zuclopenthixol decanoate depot
- to a patient who is physically resistant (risk of intravasation and oil embolus).

*Acuphase should **never** be used for, or in, the following:*

- patients who accept oral medication
- patients who are neuroleptic naïve
- patients who are sensitive to EPS
- patients who are unconscious
- patients who are pregnant
- those with hepatic or renal impairment
- those with cardiac disease.

Onset and duration of action

Sedative effects usually begin to be seen 2 h after injection and peak after 12 h. The effects may last for up to 72 h. Note: Acuphase has no place in rapid tranquillisation: *its action is not rapid.*

Dose

Acuphase should be given in a dose of 50–150 mg, up to a maximum of 400 mg over a 2-week period. This maximum duration ensures that a treatment plan is put in place. It does not indicate that there are known harmful effects from more prolonged administration, although such use should be very exceptional. There is no such thing as a 'course of Acuphase'. The patient should be assessed before each administration. Injections should be spaced at least 24 h apart.

EPS, extrapyramidal side-effects; IM, intramuscular; IV, intravenous.

NB: zuclopenthixol acetate was formerly widely misused as a sort of 'chemical straitjacket'. In reality, it is a potentially toxic preparation with very little published information to support its use.[25]

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Prescribing Guidelines in Psychiatry

12TH EDITION

David Taylor
Carol Paton
Shitij Kapur

WILEY Blackwell

The Maudsley Prescribing Guidelines in Psychiatry

12th Edition

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Contents

Acutely disturbed or violent behaviour

Acute behavioural disturbance can occur in the context of psychiatric illness, physical illness, substance abuse or personality disorder. Psychotic symptoms are common and the patient may be aggressive towards others secondary to persecutory delusions or auditory, visual or tactile hallucinations.

The clinical practice of rapid tranquillisation (RT) is used when appropriate psychological and behavioural approaches have failed to de-escalate acutely disturbed behaviour. It is, essentially, a treatment of last resort. Patients who require RT are often too disturbed to give informed consent and therefore participate in RCTs, but, with the use of a number of creative methodologies, the evidence base with respect to the efficacy and tolerability of pharmacological strategies is growing. Recommendations, however, remain based partly on research data, partly on theoretical considerations and partly on clinical experience.

Several studies supporting the efficacy of oral SGAs have been published.[1–4] The level of behavioural disturbance exhibited by the patients in these studies was moderate at most, and all subjects accepted oral treatment (this degree of compliance would be unusual in clinical practice). Note too that patients recruited to these studies received the SGA as antipsychotic monotherapy. The efficacy and safety of adding a second antipsychotic as 'prn' has not been explicitly tested in formal RCTs.

The efficacy of inhaled loxapine (in behavioural disturbance that is moderate in severity) is also supported by RCTs;[5,6] note that use of this preparation requires the co-operation of the patient, and that bronchospasm is an established side-effect.

Larger, placebo-controlled RCTs support the efficacy of IM preparations of olanzapine, ziprasidone and aripiprazole. When considered together these trials suggested that IM olanzapine is more effective than IM haloperidol which in turn is more effective than IM aripiprazole.[7] Again, the level of behavioural disturbance in these studies was moderate at most.

Five large RCTs have investigated the effectiveness of parenteral medication in 'real-life' acutely disturbed patients.

- Compared with IV midazolam alone, a combination of IV olanzapine or IV droperidol with IV midazolam was more rapidly effective and resulted in fewer subsequent doses of medication being required.[8]
- IM midazolam 7.5–15 mg was more rapidly sedating than a combination of haloperidol 5–10 mg and promethazine 50 mg (TREC 1).[9]
- Olanzapine 10 mg was as effective as a combination of haloperidol 10 mg and promethazine 25–50 mg in the short term, but the effect did not last as long (TREC 4).[10]
- A combination of haloperidol 5–10 mg and promethazine 50 mg was more effective and better tolerated than haloperidol 5–10 mg alone (TREC 3).[11]
- A combination of haloperidol 10 mg and promethazine 25–50 mg was more effective than lorazepam 4 mg (TREC 2).[12]

Note that TREC 3[11] found IM haloperidol alone to be poorly tolerated; 6% of patients had an acute dystonic reaction. Cochrane concludes that haloperidol alone is effective in the management of acute behavioural disturbance but poorly tolerated, and that co-administration of promethazine but not lorazepam improves tolerability.[13] However

NICE considers the evidence relating to the use of promethazine for this purpose to be inconclusive.[14]

In a meta-analysis that examined the tolerability of IM antipsychotics when used for the treatment of agitation, the incidence of acute dystonia with haloperidol was reported to be 5%, with SGAs faring considerably better.[15] Acute extrapyramidal symptoms may adversely affect longer-term compliance.[16] In addition, the SPC for haloperidol requires a pre-treatment ECG[17,18] and recommends that concomitant antipsychotics are not prescribed. The mean increase in QTc after 10 mg IM haloperidol has been administered has been reported to be 15 ms but the range is wide.[19] Note that promethazine may inhibit the metabolism of haloperidol;[20] a pharmacokinetic interaction that is potentially clinically significant given the potential of haloperidol to prolong QTc. While this is unlikely to be problematic if a single dose is administered, repeat dosing may confer risk.

A large observational study supports the efficacy and tolerability of IM olanzapine in clinical emergencies (where disturbance was severe).[21]

In an acute psychiatric setting, high dose sedation (defined as a dose of more than 10 mg of haloperidol, droperidol or midazolam in routine clinical practice) was not more effective than lower doses but was associated with more adverse effects (hypotension and oxygen desaturation).[22] Consistent with this, a small RCT supports the efficacy of low dose haloperidol, although both efficacy and tolerability were superior when midazolam was co-prescribed.[23] These data support the use of standard doses in clinical emergencies.

A small observational study supports the effectiveness of buccal midazolam in a psychiatric intensive care unit (PICU) setting.[24] Parenteral administration of midazolam, particularly in higher doses, may cause over-sedation accompanied by respiratory depression.[25] Lorazepam IM is an established treatment and TREC 2[12] supports its efficacy, although combining all results from the TREC studies suggests midazolam 7.5–15 mg is probably more effective. Cochrane supports the efficacy of benzodiazepines when used alone and concludes that there is no advantage of benzodiazepine-antipsychotic combinations over benzodiazepines alone.[26]

With respect to those who are behaviourally disturbed secondary to acute intoxication with alcohol or illicit drugs, there are fewer data to guide practice. A large observational study of IV sedation in patients intoxicated with alcohol found that combination treatment (most commonly haloperidol 5 mg and lorazepam 2 mg) was more effective and reduced the need for subsequent sedation than either drug given alone.[27] A case series (n = 59) of patients who received modest doses of oral, IM or IV haloperidol to manage behavioural disturbance in the context of phencyclidine (PCP) consumption, reported that haloperidol was effective and well tolerated (one case each of mild hypotension and mild hypoxia).[28]

Plans for the management of individual patients should ideally be made in advance. The aim is to prevent disturbed behaviour and reduce risk of violence. Nursing interventions (de-escalation, time out, seclusion[29]), increased nursing levels, transfer of the patient to a PICU and pharmacological management are options that may be employed. Care should be taken to avoid combinations and high cumulative doses of antipsychotic drugs. The monitoring of routine physical observations after RT is essential. Note that RT is often viewed as punitive by patients. There is little research into the patient experience of RT.

The aims of RT are threefold.

- To reduce suffering for the patient: psychological or physical (through self-harm or accidents).
- To reduce risk of harm to others by maintaining a safe environment.
- To do no harm (by prescribing safe regimes and monitoring physical health).

Note: Despite the need for rapid and effective treatment, concomitant use of two or more antipsychotics (antipsychotic polypharmacy) should be avoided on the basis of risk associated with QT prolongation (common to almost all antipsychotics). This is a particularly important consideration in RT where the patient's physical state predisposes to cardiac arrhythmia.

Table 7.29 outlines the interventions to use in an emergency situation. Remedial measures are shown in Table 7.30. Box 7.12 describes physical monitoring requirements in RT; Box 7.13 the use of flumazenil; and Box 7.14 shows guidelines for the use of zuclopenthixol acetate.

Table 7.29 Recommended interventions for patients showing acutely disturbed or violent behaviour

Step	Intervention	Comment
1	De-escalation, time out, placement, etc., as appropriate	
2	Offer **oral** treatment **If the patient is prescribed a regular antipsychotic, lorazepam 1–2 mg** alone avoids the risks associated with combining antipsychotics Repeat after 45–60 minutes Monotherapy with **buccal midazolam, 10–20 mg may avoid the need for IM treatment** *Note that this preparation is unlicensed* Go to step 3 if two doses fail or sooner if the patient is placing themselves or others at significant risk	An oral antipsychotic is an option in patients not already taking a regular oral or depot antipsychotic ▪ Quetiapine 50–100 mg ▪ Olanzapine 10 mg or ▪ Risperidone 1–2 mg or ▪ Haloperidol 5 mg (best with promethazine 25 mg) Note that the SPC for **haloperidol** recommends: ▪ **Avoid concomitant antipsychotics** ▪ **A pre-treatment ECG**
3	Consider **IM** treatment **Lorazepam 2 mg**[a,b] **Promethazine 50 mg**[c] **Olanzapine 10 mg**[d] **Aripiprazole 9.75 mg** **Haloperidol 5 mg** Repeat after 30–60 minutes if insufficient effect	Have flumazenil to hand in case of benzodiazepine-induced respiratory depression IM promethazine is a useful option in a benzodiazepine-tolerant patient IM olanzapine should NOT be combined with an IM benzodiazepine, particularly if alcohol has been consumed[30] Less hypotension than olanzapine, but possibly less effective[3,7,31] **Haloperidol should be the last drug considered** ▪ The incidence of acute dystonia is high; combine with IM promethazine and ensure IM procyclidine is available ▪ The SPC recommends a pre-treatment ECG

(Continued)

Table 7.29 (*Continued*)

Step	Intervention	Comment
4	Consider **IV** treatment Diazepam 10 mg over at least 5 minutes[b,c] Repeat after 5–10 minutes if insufficient effect (up to 3 times) Have flumazenil to hand	
5	**Seek advice** from a senior psychiatrist or senior clinical pharmacist[f]	

[a] Carefully check administration instructions, which differ between manufacturers. With respect to Ativan (the most commonly used preparation), mix lorazepam 1:1 with water for injections before injecting. Some centres use 2–4 mg. An alternative is midazolam 7.5–15 mg. The risk of respiratory depression is dose-related with both but generally greater with midazolam.
[b] Caution in the very young and elderly and those with pre-existing brain damage or impulse control problems, as disinhibition reactions are more likely.[32]
[c] Promethazine has a slow onset of action but is often an effective sedative. Dilution is not required before IM injection. May be repeated up to a maximum of 100 mg/day. Wait 1–2 hours after injection to assess response. Note that promethazine alone has been reported, albeit very rarely, to cause NMS[33] although it is an extremely weak dopamine antagonist. Note the potential pharmacokinetic interaction between promethazine and haloperidol (reduced metabolism of haloperidol) which may confer risk if repeated doses of both are administered.
[d] Recommended by NICE only for moderate behavioural disturbance, but data from a large observational study also support efficacy in clinical emergencies.
[e] Use Diazemuls to avoid injection site reactions. IV therapy may be used instead of IM when a very rapid effect is required. IV therapy also ensures near immediate delivery of the drug to its site of action and effectively avoids the danger of inadvertent accumulation of slowly absorbed IM doses. Note also that IV doses can be repeated after only 5–10 minutes if no effect is observed.
[f] Options at this point are limited. IM amylobarbitone and paraldehyde have been used in the past but are used now only extremely rarely. ECT is probably a better option. Behavioural disturbance secondary to the use of illicit drugs can be very difficult to manage. Time and supportive care may be safer than administering more sedative medication.

Box 7.12 Rapid tranquillisation: physical monitoring

After any parenteral drug administration, monitor as follows:

- temperature
- pulse
- blood pressure
- respiratory rate

every 10 minutes for 1 hour, and then half-hourly until the patient is ambulatory. Patients who refuse to have their vital signs monitored, or who remain too behaviourally disturbed to be approached, should be observed for signs/symptoms of pyrexia, hypotension, over-sedation and general physical wellbeing.

If the patient is asleep or **unconscious**, the continuous use of pulse oximetry to measure oxygen saturation is desirable. A nurse should remain with the patient until ambulatory.

ECG and haematological monitoring are also strongly recommended when parenteral antipsychotics are given, especially when higher doses are used.[34,35] Hypokalaemia, stress and agitation place the patient at risk of cardiac arrhythmia[36] (see section on 'QT prolongation' in Chapter 2). ECG monitoring is formally recommended for all patients who receive haloperidol.

Table 7.30 Remedial measures in rapid tranquillisation

Problem	Remedial measures
Acute dystonia (including oculogyric crises)	Give **procyclidine** 5–10 mg IM or IV
Reduced respiratory rate (<10/min) or oxygen saturation (<90%)	Give oxygen, raise legs, ensure patient is not lying face down
	Give **flumazenil** if benzodiazepine-induced respiratory depression suspected
	If induced by any other sedative agent: **transfer to a medical bed and ventilate mechanically**
Irregular or slow (<50/min) **pulse**	**Refer** to specialist medical care immediately
Fall in blood pressure (>30 mmHg orthostatic drop or <50 mmHg diastolic)	**Have patient lie flat**, tilt bed towards head. Monitor closely
Increased temperature	**Withold antipsychotics** (risk of NMS and perhaps arrhythmia). Check creatinine kinase urgently

IM, intramuscular; IV, intravenous; NMS, neuroleptic malignant syndrome.

Box 7.13 Guidelines for the use of flumazenil

Indication for use	If, after the administration of lorazepam, midazolam or diazepam, respiratory rate falls below 10/minute.
Contraindications	Patients with epilepsy who have been receiving long-term benzodiazepines.
Caution	Dose should be carefully titrated in hepatic impairment.
Dose and route of administration	***Initial:*** 200 µg ***intravenously*** over 15 seconds – if required level of consciousness not achieved after 60 seconds, then, ***subsequent dose:*** 100 µg over 10 seconds.
Time before dose can be repeated	60 seconds.
Maximum dose	1 mg in 24 hours (one initial dose and eight subsequent doses).
Side-effects	Patients may become agitated, anxious or fearful on awakening. Seizures may occur in regular benzodiazepine users.
Management	Side-effects usually subside.
Monitoring	
What to monitor?	Respiratory rate
How often?	Continuously until respiratory rate returns to baseline level. Flumazenil has a short half-life (much shorter than diazepam) and respiratory function may recover and then deteriorate again. **Note: If respiratory rate does not return to normal or patient is not alert after initial doses given, assume that sedation is due to some other cause.**

Box 7.14 Guidelines for the use of Clopixol Acuphase (zuclopenthixol acetate)

Acuphase should be used only after an acutely psychotic patient has required *repeated* injections of short-acting antipsychotic drugs such as haloperidol or olanzapine, or sedative drugs such as lorazepam. It is perhaps best reserved for those few patients who have a prior history of good response to Acuphase.

Acuphase should be given only when enough time has elapsed to assess the full response to previously injected drugs: allow 15 minutes after IV injections; 60 minutes after IM.

Acuphase should **never** be administered:
- in an attempt to 'hasten' the antipsychotic effect of other antipsychotic therapy
- for rapid tranquillisation (onset of effect is too slow)
- at the same time as other parenteral antipsychotics or benzodiazepines (may lead to over-sedation which is difficult to reverse)
- as a 'test dose' for zuclopenthixol decanoate depot
- to a patient who is physically resistant (risk of intravasation and oil embolus).

Acuphase should **never** be used for, or in, the following:
- patients who accept oral medication
- patients who are neuroleptic-naïve
- patients who are sensitive to EPS
- patients who are unconscious
- patients who are pregnant
- those with hepatic or renal impairment
- those with cardiac disease.

Onset and duration of action
Sedative effects usually begin to be seen 2 hours after injection and peak after 12 hours. The effects may last for up to 72 hours. Note: Acuphase has no place in rapid tranquillisation: *its action is not rapid.* Cochrane concludes that Acuphase has no advantages over other options in the immediate management of an episode of behavioural disturbance but that patients who receive this preparation may need fewer subsequent injections in the medium term (7 days).[37]

Dose
Acuphase should be given in a dose of 50–150 mg (note there is no evidence to support any advantage of higher over lower doses),[37] up to a maximum of 400 mg over a 2-week period. This maximum duration ensures that a treatment plan is put in place. It does not indicate that there are known harmful effects from more prolonged administration, although such use should be very exceptional. There is no such thing as a 'course of Acuphase'. The patient should be assessed before each administration.

Injections should be spaced at least 24 hours apart.

Note: zuclopenthixol acetate was formerly widely misused as a sort of 'chemical straitjacket'. In reality it is a potentially toxic preparation with very little published information to support its use.[37]

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Further reading

National Institute for Health and Clinical Excellence. Violence – The short-term management of disturbed/violent behaviour in in-patient psychiatric settings and emergency departments. Clinical Guideline 25, 2005. www.nice.org.uk

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Prescribing Guidelines in Psychiatry

13TH EDITION

David Taylor
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The Maudsley Prescribing Guidelines in Psychiatry

13th Edition

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Acutely disturbed or violent behaviour

Acute behavioural disturbance can occur in the context of psychiatric illness, physical illness, substance abuse or personality disorder. Psychotic symptoms are common and the patient may be aggressive towards others secondary to persecutory delusions or auditory, visual or tactile hallucinations.

The clinical practice of rapid tranquillisation (RT) is used when appropriate psychological and behavioural approaches have failed to de-escalate acutely disturbed behaviour. It is, essentially, a treatment of last resort. Patients who require RT are often too disturbed to give informed consent and therefore participate in randomised controlled trials (RCTs), but with the use of a number of creative methodologies, the evidence base with respect to the efficacy and tolerability of pharmacological strategies has grown substantially in recent years. However, recommendations remain based partly on research data, partly on theoretical considerations and partly on clinical experience.

Several studies supporting the efficacy of oral SGAs have been published.[1–4] The level of behavioural disturbance exhibited by the patients in these studies was moderate at best, and all subjects accepted oral treatment (this degree of compliance would be unusual in clinical practice). Note too that patients recruited to these studies received the SGA as antipsychotic monotherapy. The efficacy and safety of adding a second antipsychotic as 'PRN' has not been explicitly tested in formal RCTs.

A single-dose RCT showed sublingual asenapine to be more effective than placebo for acute agitation.[5] The efficacy of inhaled loxapine (in behavioural disturbance that is moderate in severity) is also supported by RCTs[6–8] and case series.[9,10] Note that use of this preparation requires the co-operation of the patient, and that bronchospasm is an established but rare adverse effect.

Large, placebo-controlled RCTs support the efficacy of intramuscular (IM) preparations of olanzapine, ziprasidone and aripiprazole. When considered together, these trials suggested that IM olanzapine is more effective than IM haloperidol, which in turn is more effective than IM aripiprazole.[11] Again, the level of behavioural disturbance in these studies was moderate at most.

A large observational study supported the efficacy and tolerability of IM olanzapine in clinical emergencies (where disturbance was severe).[12] A study comparing IM haloperidol with a combination of IM midazolam and IM haloperidol found the combination more effective than haloperidol alone for controlling agitation in palliative care patients.[13]

Several RCTs have now investigated the effectiveness of parenteral medication in 'real-life' acutely disturbed patients. Overall:

- Compared with intravenous (IV) midazolam alone, a combination of IV olanzapine or IV droperidol with IV midazolam was more rapidly effective and resulted in fewer subsequent doses of medication being required.[14]
- IM midazolam 7.5–15 mg was more rapidly sedating than a combination of haloperidol 5–10 mg and promethazine 50 mg (TREC 1).[15]
- Olanzapine 10 mg was as effective as a combination of haloperidol 10 mg and promethazine 25–50 mg in the short term, but the effect did not last as long (TREC 4).[16]
- A combination of haloperidol 5–10 mg and promethazine 50 mg was more effective and better tolerated than haloperidol 5–10 mg alone (TREC 3).[17]

- A combination of haloperidol 10 mg and promethazine 25–50 mg was more effective than lorazepam 4 mg (TREC 2).[18]
- A combination of IV midazolam and IV droperidol was more rapidly sedating than either IV droperidol or IV olanzapine alone. Fewer patients in the midazolam–droperidol group required additional medication doses to achieve sedation.[19]
- IM olanzapine was more effective than IM aripiprazole in the treatment of agitation in schizophrenia in the short term (at 2 hours) but there was no significant difference between treatments at 24 hours.[20]
- In an open-label study the combination of IM haloperidol and IM lorazepam was found to be similar in efficacy to IM olanzapine.[21]
- IM droperidol and IM haloperidol were equally effective.[22]

Note that TREC 3[17] found IM haloperidol alone to be poorly tolerated; 6% of patients had an acute dystonic reaction. A Cochrane review concluded that haloperidol alone is effective in the management of acute behavioural disturbance but poorly tolerated, and that co-administration of promethazine but not lorazepam improves tolerability.[23,24] However, NICE considers the evidence relating to the use of promethazine for this purpose to be inconclusive.[25] When assessing haloperidol plus promethazine, Cochrane concluded that the combination is effective for use in patients who are aggressive due to psychosis and its use is based on good evidence. The resumption of aggression and need for further injections was more likely with olanzapine than with the haloperidol–promethazine combination. The authors also state that 'haloperidol used on its own without something to offset its frequent and serious adverse effects does seem difficult to justify'.[26] Cochrane recently concluded that available data for aripiprazole are rather poor. Available evidence suggests that aripiprazole is more effective than placebo and haloperidol, but not olanzapine. However, the authors advise caution when generalising these results to real-world practice.[27] A systematic review and meta-analysis of IM olanzapine for agitation found IM olanzapine and IM haloperidol to be equally effective, but IM olanzapine was associated with a lower incidence of EPS.[28] Cochrane suggests that droperidol is effective and may be used to control people with very disturbed and aggressive behaviours caused by psychosis.[29] Having become available again, droperidol is seeing a resurgence in use in some countries (its initial withdrawal was voluntary, so reintroduction is not prohibited).

In a meta-analysis that examined the tolerability of IM antipsychotics when used for the treatment of agitation, the incidence of acute dystonia with haloperidol was reported to be 5%, with SGAs faring considerably better.[30] Acute EPS may adversely affect longer-term compliance.[31] In addition, the SPC for haloperidol requires a pre-treatment ECG[32,33] and recommends that concomitant antipsychotics are not prescribed. The mean increase in QTc after 10 mg IM haloperidol has been administered has been reported to be 15 ms but the range is wide.[34] Note that promethazine may inhibit the metabolism of haloperidol,[35] a pharmacokinetic interaction that is potentially clinically significant given the potential of haloperidol to prolong QTc. While this is unlikely to be problematic if a single dose is administered, repeat dosing may confer risk.

Droperidol is also associated with QT changes (the reason for its withdrawal). In an observational study set in hospital emergency departments, of the 1009 patients administered parenteral droperidol only 13 patients (1.28%) had an abnormal QT recorded

after dose administration. However, in seven of these cases another contributory factor was identified. There were no cases of torsades de pointes.[22]

Intravenous treatment is now rarely used in RT but where benefits are thought to outweigh risks it may be considered as a last resort. A small study comparing high-dose IV haloperidol with IV diazepam found both drugs to be effective at 24 hours.[36] Two large observational studies have examined the safety of IV olanzapine when used in the emergency department. The indications for its use varied, agitation being the most common. In one study,[37] in the group treated for agitation (n = 265), over a third of patients required an additional sedative dose after the initial IV olanzapine dose. Hypoxia was reported in 17.7% of cases and supplemental oxygen was used in 20.4% of cases. Six patients required intubation: in two this was likely to have been due to olanzapine treatment. In the other study,[38] IV olanzapine (n = 295) was compared with IM olanzapine (n = 489). Additional doses were not required for 81% of patients in the IV group and 84% of patients in the IM group. Respiratory depression was more commonly observed in the group receiving IV olanzapine. Five patients in the IM group and two in the IV group required intubation.

In an acute psychiatric setting, high-dose sedation (defined as a dose of more than 10 mg of haloperidol, droperidol or midazolam) was not more effective than lower doses but was associated with more adverse effects (hypotension and oxygen desaturation).[39] Consistent with this, a small RCT supports the efficacy of low-dose haloperidol, although both efficacy and tolerability were superior when midazolam was co-prescribed.[40] These data support the use of standard doses in clinical emergencies.

A small observational study supports the effectiveness of buccal midazolam in a psychiatric intensive care unit (PICU) setting.[41] Parenteral administration of midazolam, particularly in higher doses, may cause over-sedation accompanied by respiratory depression.[42] Lorazepam IM is an established treatment and TREC 2[18] supports its efficacy, although combining all results from the TREC studies suggests midazolam 7.5–15 mg is probably more effective. A Cochrane review of benzodiazepines for psychosis-induced aggression and agitation concluded that most trials were too small to highlight differences in either positive or negative effects and that although adding a benzodiazepine to another drug may not be clearly advantageous it may lead to unnecessary adverse effects.[43]

With respect to those who are behaviourally disturbed secondary to acute intoxication with alcohol or illicit drugs, there are fewer data to guide practice. A large observational study of IV sedation in patients intoxicated with alcohol found that combination treatment (most commonly haloperidol 5 mg and lorazepam 2 mg) was more effective and reduced the need for subsequent sedation than either drug given alone.[44] A case series (n = 59) of patients who received modest doses of oral, IM or IV haloperidol to manage behavioural disturbance in the context of phencyclidine (PCP) consumption reported that haloperidol was effective and well tolerated (one case each of mild hypotension and mild hypoxia).[45]

Data are emerging from hospital emergency departments on the use of ketamine for agitation. IM ketamine was shown to be effective, with minimal adverse effects, in a small group of patients who failed to respond to IM droperidol.[46] A small retrospective study found ketamine to be associated with few major adverse effects. However, many

patients in the study (62%) required additional sedation.[47] An observational study comparing ketamine (IM or IV) first line with midazolam, lorazepam, haloperidol or a combination of haloperidol and benzodiazepine found that significantly more patients in the ketamine group were no longer agitated at 5, 10 and 15 minutes. Two patients receiving ketamine were intubated compared with one patient in the other group.[48] In a prospective study comparing IM ketamine with IM haloperidol, mean time to adequate sedation was significantly shorter with IM ketamine. Complications, including intubation, vomiting, hypersalivation and laryngospasm, were higher in the ketamine group.[49]

Practical measures

Plans for the management of individual patients should ideally be made in advance. The aim is to prevent disturbed behaviour and reduce risk of violence. Nursing interventions (de-escalation, time out, seclusion[50]), increased nursing levels, transfer of the patient to a PICU and pharmacological management are options that may be employed. Care should be taken to avoid combinations and high cumulative doses of antipsychotic drugs. The monitoring of routine physical observations after RT is essential. Note that RT is often viewed as punitive by patients. There is little research into the patient experience of RT.

The aims of RT are three-fold:

- to reduce suffering for the patient – psychological or physical (through self-harm or accidents)
- to reduce risk of harm to others by maintaining a safe environment
- to do no harm (by prescribing safe regimes and monitoring physical health).

Note: Despite the need for rapid and effective treatment, concomitant use of two or more antipsychotics (antipsychotic polypharmacy) should be avoided on the basis of risk associated with QT prolongation (common to almost all antipsychotics). This is a particularly important consideration in RT where the patient's physical state predisposes to cardiac arrhythmia.

Zuclopenthixol acetate

Zuclopenthixol acetate (ZA) is widely used in the UK and elsewhere and is best known by its trade name Acuphase. Zuclopenthixol itself is a thioxanthine dopamine antagonist and was first introduced in the early 1960s. Its elimination half-life is around 20 hours. IM injection of zuclopenthixol base results in rapid absorption and a duration of action of 12–24 hours. By slowing absorption after IM injection, the biological half-life (and so duration of action) becomes dependent on the rate of release from the IM reservoir. This can be achieved by esterification of the zuclopenthixol molecule, the rate of release being broadly in proportion to the length of the ester carbon chain. Thus, zuclopenthixol decanoate is slow to act but very long-acting as a result of retarded release after IM injection. ZA (with eight fewer carbon atoms) would be expected to provide relatively prompt release but with an intermediate duration of action. The intention of the

manufacturers was that the use of ZA would obviate the need for repeated IM injections in disturbed patients.

An initial pharmacokinetic study of ZA included 19 patients 'in whom calming effect by parenteral neuroleptic was considered necessary'.[51] Zuclopenthixol was detectable in the plasma after 1–2 hours but did not reach peak concentrations until around 36 hours after dosing. At 72 hours, plasma levels were around a third of those at 36 hours. The clinical effect of ZA was not rapid – 10 of 17 patients exhibited minimal or no change in psychotic symptoms at 4 hours. Sedation was evident at 4 hours but it had effectively abated by 72 hours.

A follow-up study by the same research group[52] examined more closely the clinical effects of ZA in 83 patients. The authors concluded that ZA produced 'pronounced and rapid reduction in psychotic symptoms'. In fact, psychotic symptoms were first assessed only after 24 hours and so a claim of rapid effect is not reasonably supported. Sedative effects were measured after 2 hours, when a statistically significant effect was observed – at baseline mean sedation score was 0.0 (0 = no sign of sedation) and at 2 hours 0.6 (1 = slightly sedated). Maximum sedation was observed at 8 hours (mean score 2.2; 2 = moderately sedated). At 72 hours mean score was 1.1. Dystonia and rigidity were the most commonly reported adverse effects.

Two independently conducted open studies produced similar results – a slow onset of effect peaking at 24 hours and still being evident at 72 hours.[53,54] The first UK study was reported in 1990.[55] In the trial, a significant reduction in psychosis score was first evident at 8 hours and scores continued to fall until the last measurement at 72 hours. Of 25 patients assessed, only 4 showed signs of tranquillisation at 1 hour (19 at 2 hours and 22 at 24 hours).

A comparative trial of ZA[56] examined its effects and those of IM/oral haloperidol and IM/oral zuclopenthixol base (in multiple doses over 6 days). The two non-ester, IM/oral preparations produced a greater degree of sedation at 2 hours than did ZA but the effect of ZA and zuclopenthixol was more sustained than with haloperidol over 144 hours (although patients received more zuclopenthixol doses). No clear differences between treatments were detected with the exception of the slow onset of effect of ZA. The number of doses given varied substantially: ZA 1–4, haloperidol 1–26 and zuclopenthixol 1–22. This is the key (and perhaps unique) advantage of ZA – it reduces the need for repeat doses in acute psychosis. Indeed, this was the principal finding of the first double-blind study of ZA.[57] Participants were given either ZA or haloperidol IM and assessed over 3 days. Changes in Brief Psychiatric Rating Scale (BPRS) and Clinical Global Impression (CGI) scores were near identical on each daily assessment. However, only 1 of 23 ZA patients required a second injection whereas 7 of 21 haloperidol patients required a repeat dose. Speed of onset was not examined. Similar findings were reported by Thai researchers comparing the same treatments[58] and in three other studies of moderate size (n = 44,[59] n = 40,[60] n = 50[61]). In each study, the timing of assessments was such that time to onset of effect could not be determined.

A Cochrane review[62] included all of the above comparative studies as well as three further studies[63–65] for which the authors were unable to obtain full details. The Cochrane authors concluded that all studies were methodologically flawed and poorly reported and that ZA did not appear to have a 'rapid onset of action'. They noted that

Box 1.1 Guidelines for the use of zuclopenthixol acetate (Acuphase)

Zuclopenthixol acetate (ZA) is not a rapidly tranquillising agent. It should be used only after an acutely psychotic patient has required **repeated** injections of short-acting antipsychotic drugs such as haloperidol or olanzapine, or sedative drugs such as lorazepam. It is perhaps best reserved for those few patients who have a prior history of good response to Acuphase.

ZA should be given only when enough time has elapsed to assess the full response to previously injected drugs: allow 15 minutes after IV injections, 60 minutes after IM.

ZA should **never** be administered:

- in an attempt to 'hasten' the antipsychotic effect of other antipsychotic therapy
- for rapid tranquillisation (onset of effect is too slow)
- at the same time as other parenteral antipsychotics or benzodiazepines (may lead to over-sedation which is difficult to reverse)
- as a 'test dose' for zuclopenthixol decanoate depot
- to a patient who is physically resistant (risk of intravasation and oil embolus).

ZA should **never** be used for, or in, the following:

- patients who accept oral medication
- patients who are neuroleptic-naïve
- patients who are sensitive to EPS
- patients who are unconscious
- patients who are pregnant
- those with hepatic or renal impairment
- those with cardiac disease.

ZA was probably no less effective than other treatments and that its use might 'result in less numerous coercive injections'.

Overall, the utility of ZA in RT is limited by a somewhat delayed onset of both sedative and antipsychotic actions. Sedation may be apparent in a minority of patients after 2–4 hours, but antipsychotic action is evident only after 8 hours. If ZA is given to a restrained patient, their behaviour on release from restraint is likely to be unchanged and will remain as such for several hours. ZA has a role in reducing the number of restraints for IM injection but it has no role in RT.

Guidelines for the use of ZA are summarised in Box 1.1.

Summary – rapid tranquillisation

A summary of rapid tranquillisation is provided in Box 1.2.

Rapid tranquillisation – physical monitoring

A summary of physical monitoring in RT is provided in Box 1.3.

Remedial measures in rapid tranquillisation

Remedial measures in RT are summarised in Table 1.9 and the use of flumazenil in Box 1.4.

Box 1.2 Rapid tranquillisation – summary

In an emergency situation

Assess to see if there may be a medical cause.[66] Optimise regular prescription. The aim of pharmacological treatment is to calm the patient but not to oversedate. Note: lower doses should be used for children, adolescents and older adults. Patients' levels of consciousness and physical health should be monitored after administration of parenteral medication (see Box 1.3).

Step intervention

1. **De-escalation**, time out, placement, etc., as appropriate.

2. **Offer oral treatment**

If patient is prescribed a regular antipsychotic:	If patient is not already taking a regular oral or depot antipsychotic:
Lorazepam 1–2 mg **Promethazine** 25–50 mg. Monotherapy with **buccal midazolam** may avoid the need for IM treatment. Dose: 10 mg. *Note that this preparation is unlicensed.*	▪ **Olanzapine** 10 mg, or ▪ **Risperidone** 1–2 mg, or ▪ **Quetiapine** 50–100 mg, or ▪ **Haloperidol** 5 mg (best with promethazine 25 mg). Note that the SPC for haloperidol recommends a pre-treatment ECG and to avoid concomitant antipsychotics. ▪ **Inhaled loxapine** 10 mg. Note that use of this preparation requires the co-operation of the patient, and that bronchospasm is a rare adverse effect (have a salbutamol inhaler to hand).

Repeat after 45–60 minutes, if necessary. Consider combining sedative and antipsychotic treatment. Go to step 3 if two doses fail or sooner if the patient is placing themselves or others at significant risk.

3. **Consider IM treatment**

Lorazepam 2 mg[a,b]	Have flumazenil to hand in case of benzodiazepine-induced respiratory depression.
Promethazine 50 mg[c]	IM promethazine is a useful option in a benzodiazepine-tolerant patient.
Olanzapine 10 mg[d]	IM olanzapine should **not** be combined with an IM benzodiazepine, particularly if alcohol has been consumed.[67]
Aripiprazole 9.75 mg	Less hypotension than olanzapine, but possibly less effective.[3,11,68]
Haloperidol 5 mg	**Haloperidol should be the last drug considered** ▪ The incidence of acute dystonia is high; combine with IM promethazine and ensure IM procyclidine is available. ▪ The SPC recommends a pre-treatment ECG. ▪ Recommended by NICE.

Repeat after 30–60 minutes if insufficient effect. Combinations of haloperidol and lorazepam or haloperidol and promethazine may be considered if single-drug treatment fails. Drugs must not be mixed in the same syringe. IM olanzapine must never be combined with IM benzodiazepine.

4. **Consider IV treatment**

- Diazepam 10 mg over at least 2 minutes.[b,e]
- Repeat after 5–10 minutes if insufficient effect (up to 3 times).
- Have flumazenil to hand.

5. **Seek expert advice** from the consultant or senior clinical pharmacist on call.[f]

[a] Carefully check administration instructions, which differ between manufacturers. With respect to Ativan (the most commonly used preparation), mix lorazepam 1:1 with water for injections before injecting. Some centres use 2–4 mg. An alternative is midazolam 7.5–15 mg. The risk of respiratory depression is dose-related with both but generally greater with midazolam.

Box 1.2 *(Continued)*

[b] Caution in the very young and elderly and those with pre-existing brain damage or impulse control problems, as disinhibition reactions are more likely.[69]

[c] Promethazine has a slow onset of action but is often an effective sedative. Dilution is not required before IM injection. May be repeated up to a maximum of 100 mg/day. Wait 1–2 hours after injection to assess response. Note that promethazine alone has been reported, albeit very rarely, to cause neuroleptic malignant syndrome[70] although it is an extremely weak dopamine antagonist. Note the potential pharmacokinetic interaction between promethazine and haloperidol (reduced metabolism of haloperidol) which may confer risk if repeated doses of both are administered.

[d] Recommended by NICE only for moderate behavioural disturbance, but data from a large observational study also support efficacy in clinical emergencies.

[e] Use Diazemuls to avoid injection site reactions. IV therapy may be used instead of IM when a very rapid effect is required. IV therapy also ensures near immediate delivery of the drug to its site of action and effectively avoids the danger of inadvertent accumulation of slowly absorbed IM doses. Note also that IV doses can be repeated after only 5–10 minutes if no effect is observed.

[f] Options at this point are limited. IM amylobarbitone and paraldehyde have been used in the past but are used now only extremely rarely and are generally not readily available. IV olanzapine, IV/IM droperidol and IV haloperidol are possible but serious adverse effects are fairly common. Ketamine is an option in medical units. Electroconvulsive therapy (ECT) is probably a better option. Behavioural disturbance secondary to the use of illicit drugs can be very difficult to manage. Time and supportive care may be safer than administering more sedative medication.

Box 1.3 Physical monitoring in rapid tranquillisation – summary

After any parenteral drug administration, monitor as follows:

- **Temperature**
- **Pulse**
- **Blood pressure**
- **Respiratory rate.**

Every 15 minutes for 1 hour, and then hourly until the patient is ambulatory. Patients who refuse to have their vital signs monitored or who remain too behaviourally disturbed to be approached should be observed for signs/symptoms of pyrexia, hypoxia, hypotension, oversedation and general physical well-being.

If the patient is asleep or **unconscious**, the continuous use of pulse oximetry to measure oxygen saturation is desirable. A nurse should remain with the patient until ambulatory.

ECG and haematological monitoring are also strongly recommended when parenteral antipsychotics are given, especially when higher doses are used.[71,72] Hypokalaemia, stress and agitation place the patient at risk of cardiac arrhythmia[73] (see section on 'QT prolongation' in this chapter). ECG monitoring is formally recommended for all patients who receive haloperidol.

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Acute behavioural disturbance can occur in the context of psychiatric illness, physical illness, substance abuse or personality disorder. Psychotic symptoms are common and the patient may be aggressive towards others secondary to persecutory delusions or auditory, visual or tactile hallucinations. This section deals with behavioural disturbance in the context of severe mental illness. Excited/agitated delirium caused by illicit substance misuse is dealt with in Chapter 9.

The clinical practice of rapid tranquillisation (RT) is used when appropriate psychological and behavioural approaches have failed to de-escalate acutely disturbed behaviour. It is, essentially, a treatment of last resort. Patients who require RT are often too disturbed to give informed consent and therefore participate in randomised controlled trials (RCTs), but with the use of a number of creative methodologies, the evidence base with respect to the efficacy and tolerability of pharmacological strategies has grown substantially in recent years. A comprehensive and up-to-date consensus guideline has been published[1] and, more recently, a systematic review and meta-analysis.[2]

Oral/inhaled treatment

Several studies supporting the efficacy of oral SGAs have been conducted.[3–6] The level of behavioural disturbance exhibited by the patients in these studies was moderate at most, and all subjects accepted oral treatment (this degree of compliance would be unusual in clinical practice). Patients recruited to these studies received the SGA as antipsychotic monotherapy. The efficacy and safety of adding a second antipsychotic as a 'when necessary' treatment has not been explicitly tested in formal RCTs.

A single-dose RCT showed sublingual asenapine to be more effective than placebo for acute agitation.[7] The efficacy of inhaled loxapine in behavioural disturbance that is moderate in severity is also supported by RCTs[8–10] and case series.[11,12] The use of this preparation requires the co-operation of the patient, and bronchospasm is an established but rare side effect.

Parenteral treatment

Large, placebo-controlled RCTs support the efficacy of IM preparations of olanzapine, ziprasidone and aripiprazole. When considered together, these trials suggested that IM olanzapine is more effective than IM haloperidol which in turn is more effective than IM aripiprazole, which itself is more effective than ziprasidone.[2,13] The level of behavioural disturbance in these studies was moderate at most and differences between treatments small.

A large observational study supports the efficacy and tolerability of IM olanzapine in clinical emergencies (where disturbance was severe).[14] A study comparing IM haloperidol with a combination of IM midazolam and IM haloperidol found the combination more effective than haloperidol alone for controlling agitation in palliative care patients.[15]

Several RCTs have investigated the effectiveness of parenteral medication in 'real-life' acutely disturbed patients. Overall:

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- Olanzapine 10mg was as effective as a combination of haloperidol 10mg and promethazine 25–50mg in the short term, but the effect did not last as long (TREC 4).[18]
- A combination of haloperidol 5–10mg and promethazine 50mg was more effective and better tolerated than haloperidol 5–10mg alone (6% of patients had an acute dystonic reaction) (TREC 3).[19]
- A combination of haloperidol 10mg and promethazine 25–50mg was more effective than lorazepam 4mg (TREC 2).[20]
- A combination of IM chlorpromazine 100mg, haloperidol 5mg and promethazine 25mg was no better than IM haloperidol 5mg plus promethazine 25mg (TREC Lebanon).[21]
- A combination of IV midazolam and IV droperidol was more rapidly sedating than either IV droperidol or IV olanzapine alone. Fewer patients in the midazolam-droperidol group required additional medication doses to achieve sedation.[22]
- IM olanzapine was more effective than IM aripiprazole in the treatment of agitation in schizophrenia in the short term (at 2 hours), but there was no significant difference between treatments at 24 hours.[23]
- IM midazolam 5mg was faster acting and more effective than olanzapine 10mg, ziprasidone 20mg and both 5 and 10mg haloperidol in a large (n = 737) Emergency Room study.[24]
- In an open-label study, the combination of IM haloperidol and IM lorazepam was found to be similar in efficacy to IM olanzapine.[25]
- IM droperidol and IM haloperidol were equally effective.[26]

Cochrane concluded that haloperidol alone is effective in the management of acute behavioural disturbance but poorly tolerated, and that co-administration of promethazine (but not lorazepam) improves tolerability.[27,28] However, NICE considers the evidence relating to the use of promethazine for this purpose to be inconclusive.[29] When assessing haloperidol plus promethazine, Cochrane concluded that the combination is effective for use in patients who are aggressive due to psychosis, and its use is based on good evidence. The resumption of aggression and need for further injections was more likely with olanzapine than with the haloperidol–promethazine combination. The authors also stated that 'haloperidol used on its own without something to offset its frequent and serious adverse effects does seem difficult to justify'.[30] Cochrane concluded that available data for aripiprazole are rather poor. This evidence suggests that aripiprazole is more effective than placebo and haloperidol alone, but not olanzapine. However, caution is advised when generalising these results to real-world practice.[31]

A systematic review and meta-analysis of IM olanzapine for agitation found IM olanzapine and IM haloperidol to be equally effective, but IM olanzapine was associated with a lower incidence of EPSEs.[32] Cochrane suggests that droperidol is effective and may be used to control people with very disturbed and aggressive behaviours caused by psychosis.[33] Droperidol is seeing a resurgence in use in some countries having

become available again (its initial withdrawal was voluntary, so reintroduction is not prohibited).

In a meta-analysis that examined the tolerability of IM antipsychotics when used for the treatment of agitation, the incidence of acute dystonia with haloperidol was reported to be 5%, with SGAs performing considerably better.[34] Acute EPS may adversely affect longer-term compliance.[35] In addition, the formal prescribing information in most countries for haloperidol calls for a pre-treatment ECG[36,37] and recommends that concomitant antipsychotics are not prescribed. The mean increase in QTc after 10mg IM haloperidol can be up to 15ms, but the range is wide.[38]

Note that promethazine may inhibit the metabolism of haloperidol;[39] a pharmacokinetic interaction that is potentially clinically significant given the potential of haloperidol to prolong QTc. While this is unlikely to be problematic if a single dose is administered, repeat dosing may confer risk.

Droperidol is also associated with QT changes (the reason for its past withdrawal). In an observational study set in hospital emergency departments, of the 1009 patients administered parenteral droperidol only 13 patients (1.28%) had an abnormal QT recorded after dose administration. In 7 of these cases another contributory factor was identified. There were no cases of torsades de pointes.[26] In all RT studies of IM droperidol, the overall rate of QT > 500ms was less than 2%.[2]

Intravenous treatment is now rarely used in RT but where benefits are thought to outweigh risks it may be considered as a last resort. A small study comparing high dose IV haloperidol with IV diazepam found both drugs to be effective at 24 hours.[40] Two large observational studies have examined the safety of IV olanzapine when used in the emergency department. The indications for its use varied: agitation being the most common. In one study,[41] in the group treated for agitation (n = 265), over a third of patients required an additional sedative dose after the initial IV olanzapine dose. Hypoxia was reported in 17.7% of cases and supplemental oxygen was used in 20.4% cases. Six patients required intubation (two of these because of olanzapine treatment). In the other study,[42] IV olanzapine (n = 295) was compared with IM olanzapine (n = 489). Additional doses were not required for 81% of patients in the IV group and 84% of patients in the IM group. Respiratory depression was more commonly observed in the group receiving IV olanzapine. Five patients in the IM group and two in the IV group required intubation.

In an acute psychiatric setting, high dose sedation (defined as a dose of more than 10mg of haloperidol, droperidol or midazolam) was not more effective than lower doses but was associated with more adverse effects (hypotension and oxygen desaturation).[43] Consistent with this, a small RCT supports the efficacy of low dose haloperidol, although both efficacy and tolerability were superior when midazolam was co-prescribed.[44] These data broadly support the use of standard doses in clinical emergencies, but the need for further physical restraint after lower doses needs to be considered.

A small observational study supports the effectiveness of buccal midazolam in a PICU setting.[45] Parenteral administration of midazolam, particularly in higher doses, may cause over-sedation accompanied by respiratory depression.[46] Lorazepam IM is an established treatment and TREC 2[20] supports its efficacy, although combining all results from the TREC studies suggests midazolam 7.5–15mg is probably more effective. A Cochrane review of benzodiazepines for psychosis-induced aggression and agitation

concluded that most trials were too small to highlight differences in either positive or negative effects and whilst adding a benzodiazepine to another drug may not be clearly advantageous it may lead to unnecessary side effects.[47]

With respect to those who are behaviourally disturbed secondary to acute intoxication with alcohol or illicit drugs, there are fewer data to guide practice. A large observational study of IV sedation in patients intoxicated with alcohol found that combination treatment (most commonly haloperidol 5mg and lorazepam 2mg) was more effective and reduced the need for subsequent sedation than either drug given alone.[48] A case series (N = 59) of patients who received modest doses of oral, IM or IV haloperidol to manage behavioural disturbance in the context of PCP consumption, reported that haloperidol was effective and well tolerated (one case each of mild hypotension and mild hypoxia).[49] A section on the treatment of agitated delirium is included in Chapter 9.

Ketamine is widely used for agitation from hospital emergency departments. In a systematic review of 18 studies of ketamine,[50] a mean dose of 315mg IM ketamine achieved adequate sedation in an average of 7.2 minutes. Over 30% of 650 patients were eventually intubated and more than 1% experienced laryngospasm. Ketamine is probably not an option for RT where facilities for intubation are not available.

Overall the current broad consensus is that midazolam and droperidol are the fastest-acting single drug, intramuscular treatments[51] and that haloperidol alone should be avoided and perhaps abandoned completely even in combination.[52] Second-line treatments are combinations of benzodiazepines and antipsychotics and third line would probably now be intravenous benzodiazepines and then ketamine (2–5mg/kg IM), assuming intubation facilities are available.

Practical measures

Plans for the management of individual patients should ideally be made in advance. The aim is to prevent disturbed behaviour and reduce risk of violence. Nursing interventions (de-escalation, time out, seclusion[53]), increased nursing levels, transfer of the patient to a psychiatric intensive care unit (PICU) and pharmacological management are options that may be employed. Care should be taken to avoid combinations and high cumulative doses of antipsychotic drugs. The monitoring of routine physical observations after RT is essential. Note that RT is often viewed as punitive by patients. There is little research into the patient experience of RT.

The aims of RT are threefold:

- To reduce suffering for the patient: psychological or physical (through self-harm or accidents).
- To reduce risk of harm to others by maintaining a safe environment.
- To do no harm (by prescribing safe regimes and monitoring physical health).

Note: Despite the need for rapid and effective treatment, concomitant use of two or more antipsychotics (antipsychotic polypharmacy) should be avoided on the basis of risk associated with QT prolongation (common to almost all antipsychotics). This is a particularly important consideration in RT where the patient's physical state predisposes to cardiac arrhythmia.

Zuclopenthixol acetate

Zuclopenthixol acetate (ZA) is widely used in the UK and elsewhere in Europe and is best known by its trade name Acuphase. Zuclopenthixol itself is a thioxanthene dopamine antagonist first introduced in the early 1960s. ZA is not a rapidly tranquillising agent. Its elimination half-life is around 20 hours. Intramuscular injection of zuclopenthixol base results in rapid absorption and a duration of action of 12–24 hours. By slowing absorption after IM injection, the biological half-life (and so duration of action) becomes dependent on the rate of release from the IM reservoir. This can be achieved by esterification of the zuclopenthixol molecule; the rate of release being broadly proportion to the length of the ester carbon chain. Thus, zuclopenthixol decanoate is slow to act but very long-acting as a result of retarded release after IM injection. Zuclopenthixol acetate (with eight carbon atoms fewer) would be expected to provide relatively prompt release but with an intermediate duration of action. The intention of the manufacturers was that the use of ZA would obviate the need for repeated IM injections in disturbed patients.

An initial pharmacokinetic study of ZA included 19 patients 'in whom calming effect by parenteral neuroleptic was considered necessary'.[54] Zuclopenthixol was detectable in the plasma after 1–2 hours but did not reach peak concentrations until around 36 hours after dosing. At 72 hours, plasma levels were around a third of those at 36 hours. The clinical effect of ZA was not rapid – 10 of 17 patients exhibited minimal or no change in psychotic symptoms at 4 hours. Sedation was evident at 4 hours, but it had effectively abated by 72 hours.

A follow-up study by the same research group[55] examined more closely the clinical effects of ZA in 83 patients. The authors concluded that ZA produced 'pronounced and rapid reduction in psychotic symptoms'. In fact, psychotic symptoms were first assessed only after 24 hours and so a claim of rapid effect is not reasonably supported. Sedative effects were measured after two hours when a statistically significant effect was observed – at baseline mean sedation score was 0.0 (0 = no sign of sedation) and at 2 hours 0.6 (1 = slightly sedated). Maximum sedation was observed at 8 hours (mean score 2.2; 2 = moderately sedated). At 72 hours mean score was 1.1. Dystonia and rigidity were the most commonly reported adverse effects.

Two independently conducted open studies, produced similar results – a slow onset of effect peaking at 24 hours and still being evident at 72 hours.[56,57] The first UK study was reported in 1990.[58] In the trial, a significant reduction in psychosis score was first evident at 8 hours and scores continued to fall until the last measurement at 72 hours. Of 25 patients assessed only 4 showed signs of tranquillisation at 1 hour (19 at 2 hours and 22 at 24 hours).

A comparative trial of ZA[59] examined its effects and those of IM/oral haloperidol and IM/oral zuclopenthixol base (in multiple doses over 6 days). The two non-ester, IM/oral preparations produced a greater degree of sedation at 2 hours than did ZA, but the effect of ZA and zuclopenthixol was more sustained than with haloperidol over 144 hours (although patients received more zuclopenthixol doses). No clear differences between treatments were detected, with the exception of the slow onset of effect of ZA. The number of doses given varied substantially: ZA 1–4; haloperidol 1–26 and zuclopenthixol 1–22. This is the key (and perhaps unique) advantage of ZA – it reduces the

need for repeat doses in acute psychosis. Indeed this was the principal finding of the first double-blind study of ZA.[60] Participants were given either ZA or haloperidol IM and assessed over three days. Changes in BPRS and CGI scores were near identical on each daily assessment. However, only 1 of 23 ZA patients required a second injection, whereas 7 of 21 required a repeat dose of haloperidol. Speed of onset was not examined. Similar findings were reported by Thai researchers comparing the same treatments,[61] and in three other studies of moderate size (n = 44,[62] n = 40,[63] n = 50).[64] In each study, the timing of assessments was such that time to onset of effect could not be determined.

A Cochrane review[65] included all of the above comparative studies as well as three further studies[66–68] for which we were unable to obtain full details. The Cochrane authors concluded that all studies were methodically flawed and poorly reported and that ZA did not appear to have a 'rapid onset of action'. They noted that ZA was probably no less effective than other treatments and that its use might 'result in less numerous coercive injections'.

Overall, the utility of ZA in rapid tranquillisation is limited by a somewhat delayed onset of both sedative and antipsychotic actions. Sedation may be apparent in a minority of patients after 2–4 hours, but antipsychotic action is evident only after 8 hours. If ZA is given to a restrained patient, their behaviour on release from restraint is likely to be unchanged and will remain as such for several hours. ZA has a role in reducing the number of restraints for IM injection, but it has no role in rapid tranquillisation.

Guidelines for the use of zuclopenthixol acetate (Acuphase)

Zuclopenthixol acetate (ZA) is not a rapidly tranquillising agent. It should be used only after an acutely psychotic patient has required *repeated* injections of short-acting antipsychotic drugs such as haloperidol or olanzapine, or sedative drugs such as lorazepam. It is perhaps best reserved for those few patients who have a prior history of good response to Acuphase.

ZA should be given only when enough time has elapsed to assess the full response to previously injected drugs: allow 15 minutes after IV injections; 60 minutes after IM.

ZA should never be administered for rapid tranquillisation (onset of effect is too slow) or to a patient who is physically resistant (risk of intravasation and oil embolus) or to neuroleptic-naïve patients (risk of prolonged EPSE).

Rapid tranquillisation summary

In an emergency situation – *Assess if there may be a medical cause.*[69] *Optimise regular prescription. The aim of pharmacological treatment is to calm the patient but not to oversedate. Note: lower doses should be used for children, adolescents and older adults. Patients' levels of consciousness and physical health should be monitored after administration of parenteral medication (see protocol)*

Step Intervention

1 De-escalation, time out, placement, etc., as appropriate

2 Offer oral treatment

If patient is prescribed a regular antipsychotic:
Lorazepam 1–2mg

Promethazine 25–50mg

Monotherapy with **buccal midazolam** may avoid the need for IM treatment. Dose: 10mg
Note that this preparation is unlicensed

If patient is not already taking a regular oral or depot antipsychotic:

- **Olanzapine** 10mg or
- **Risperidone** 1–2mg or
- **Quetiapine** 50–100mg or
- **Haloperidol** 5mg (best with promethazine 25mg). Note that the EU SPC for haloperidol recommends: A pre-treatment ECG and to avoid concomitant antipsychotics
- **Inhaled loxapine** 10mg Note that use of this preparation requires the co-operation of the patient, and that bronchospasm is a rare side effect (have a salbutamol inhaler to hand).

Repeat after 45–60 minutes, if necessary. Consider combining sedative and antipsychotic treatment.
Go to step 3 if two doses fail or sooner if the patient is placing themselves or others at significant risk.

3 Consider IM treatment

Lorazepam 2mg[ab]	Have flumazenil to hand in case of benzodiazepine-induced respiratory depression.
Promethazine 50mg[c]	IM promethazine is a useful option in a benzodiazepine-tolerant patient.
Olanzapine 10mg[d]	IM olanzapine should NOT be combined with an IM benzodiazepine, particularly if alcohol has been consumed.[70]
Aripiprazole 9.75mg	Less hypotension than olanzapine, but less effective[5,13,71]
Haloperidol 5mg	**Haloperidol should be the last drug considered** ■ The incidence of acute dystonia is high; combine with IM promethazine and ensure IM procyclidine is available ■ Pre-treatment ECG required

Repeat after 30–60 minutes if insufficient effect. Combinations of haloperidol and lorazepam or haloperidol and promethazine may be considered if single drug treatment fails. Drugs must not be mixed in the same syringe. IM olanzapine must never be combined with IM benzodiazepine.

4 Consider **IV treatment**

- **Diazepam** 10mg over at least 2 minutes[be]
- Repeat after 5–10 minutes if insufficient effect (up to 3 times)
- Have flumazenil to hand

5 Seek expert advice[f]
Consider transfer to medical unit for administration of **IM ketamine**

Notes
a. Carefully check administration and dilution instructions, which differ between manufacturers. Many centres use 4mg. An alternative is IM midazolam 5–15mg. 5mg is usually sufficient. The risk of respiratory depression is dose-related with both drugs but generally greater with midazolam.
b. Caution in the very young and elderly and those with pre-existing brain damage or impulse control problems, as disinhibition reactions are more likely.[72]

(*Continued*)

Rapid tranquillisation summary (*Continued*)

c. Promethazine has a slow onset of action but is often an effective sedative. Dilution is not required before IM injection. May be repeated up to a maximum of 100mg/day. Wait 1–2 hours after injection to assess response. Note that promethazine alone has been reported, albeit very rarely, to cause NMS,[73] although it is an extremely weak dopamine antagonist. Note also the potential pharmacokinetic interaction between promethazine and haloperidol (reduced metabolism of haloperidol), which may confer risk if repeated doses of both are administered.

d. Recommended by NICE only for moderate behavioural disturbance, but data from a large observational study also supports efficacy in clinical emergencies.

e. Use Diazemuls to avoid injection site reactions. Lorazepam can also be given IV. IV therapy may be used instead of IM when a very rapid effect is required. IV therapy also ensures near-immediate delivery of the drug to its site of action and effectively avoids the danger of inadvertent accumulation of slowly absorbed IM doses. IV doses can be repeated after only 5–10 minutes if no effect is observed. Midazolam can also be used IV, but respiratory depression is common.[1]

f. Options at this point are limited, although the wider use of IM ketamine has improved the range of options available. IM amylobarbitone and IM paraldehyde have been used in the past but are used now only extremely rarely and are generally not easy to obtain. IV olanzapine, IV droperidol and IV haloperidol are possible but adverse effects are fairly common. ECT is also an option.

Rapid tranquillisation – physical monitoring

After any parenteral drug administration, monitor as follows:

- **Temperature**
- **Pulse**
- **Blood pressure**
- **Respiratory rate**

Every 15 minutes for 1 hour, and then hourly until the patient is ambulatory. Patients who refuse to have their vital signs monitored or who remain too behaviourally disturbed to be approached should be observed for signs/symptoms of pyrexia, hypoxia, hypotension, over-sedation and general physical well-being.

If the patient is asleep or **unconscious**, the continuous use of pulse oximetry to measure oxygen saturation is desirable. A nurse should remain with the patient until ambulatory.

ECG and haematological monitoring are also strongly recommended when parenteral antipsychotics are given, especially when higher doses are used.[74,75] Hypokalaemia, stress and agitation place the patient at risk of cardiac arrhythmia[76] (see the section on 'QT prolongation'). ECG monitoring is formally recommended for all patients who receive haloperidol.

Remedial measures in rapid tranquillisation

Problem	*Remedial measures*
Acute dystonia (including oculogyric crises)	Give **procyclidine** 5–10mg IM or IV
Reduced respiratory rate (<10/min) or oxygen saturation (<90%)	Give oxygen, raise legs, ensure patient is not lying face down. Give **flumazenil** if benzodiazepine-induced respiratory depression suspected (see protocol) If induced by any other sedative agent: **transfer to a medical bed and ventilate mechanically.**

(*Continued*)

Remedial measures in rapid tranquillisation (*Continued*)	
Irregular or slow (<50/min) **pulse**	**Refer** to specialist medical care immediately.
Fall in blood pressure (>30mmHg orthostatic drop or < 50mmHg diastolic)	**Have patient lie flat**, tilt bed towards head. Monitor closely.
Increased temperature	(risk of NMS and perhaps arrhythmia). Check creatine kinase urgently.

Guidelines for the use of flumazenil	
Indication for use	If, after the administration of lorazepam, midazolam or diazepam, respiratory rate falls below 10/min.
Contraindications	Patients with epilepsy who have been receiving long-term benzodiazepines.
Caution	Dose should be carefully titrated in hepatic impairment.
Dose and route of administration	***Initial*:** 200µg ***intravenously*** over 15 seconds – if required level of consciousness not achieved after 60 seconds, then, ***Subsequent dose:*** 100µg over 15 seconds.
Time before dose can be repeated	60 seconds.
Maximum dose	1mg in 24 hours (one initial dose and eight subsequent doses).
Side-effects	Patients may become agitated, anxious or fearful on awakening. Seizures may occur in regular benzodiazepine users.
Management	Side-effects usually subside.
Monitoring	
■ **What to monitor?**	Respiratory rate
■ **How often?**	Continuously until respiratory rate returns tobaseline level. Flumazenil has a short half-life (much shorter than diazepam) and respiratory function may recover and then deteriorate again.

***Note: If respiratory rate does not return to normal or patient is not alert after initial doses given, assume that* sedation is due to some other cause.**

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Joint BAP NAPICU evidence-based consensus guidelines for the clinical management of acute disturbance: De-escalation and rapid tranquillisation

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Abstract

The British Association for Psychopharmacology and the National Association of Psychiatric Intensive Care and Low Secure Units developed this joint evidence-based consensus guideline for the clinical management of acute disturbance. It includes recommendations for clinical practice and an algorithm to guide treatment by healthcare professionals with various options outlined according to their route of administration and category of evidence. Fundamental overarching principles are included and highlight the importance of treating the underlying disorder. There is a focus on three key interventions: de-escalation, pharmacological interventions pre-rapid tranquillisation and rapid tranquillisation (intramuscular and intravenous). Most of the evidence reviewed relates to emergency psychiatric care or acute psychiatric adult inpatient care, although we also sought evidence relevant to other common clinical settings including the general acute hospital and forensic psychiatry. We conclude that the variety of options available for the management of acute disturbance goes beyond the standard choices of lorazepam, haloperidol and promethazine and includes

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oral-inhaled loxapine, buccal midazolam, as well as a number of oral antipsychotics in addition to parenteral options of intramuscular aripiprazole, intramuscular droperidol and intramuscular olanzapine. Intravenous options, for settings where resuscitation equipment and trained staff are available to manage medical emergencies, are also included.

Keywords
Acute disturbance, violence, aggression, rapid tranquillisation, de-escalation, antipsychotics, benzodiazepines, psychiatric illness

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Introduction

Acute disturbance

This guideline covers the clinical management of 'acute disturbance', which we use here as a composite term to include the concepts of 'agitation', 'aggression' and 'violence' in the context of an acute mental state associated with an underlying mental and/or physical disorder. No commonly accepted definitions exist for any of these concepts.

Definitions of agitation from the scientific literature regularly cited in guidance documents have tended to be restricted to the field of dementia. One of the most commonly used definitions was proposed by Cohen-Mansfield (1986) who defined agitation in those with cognitive impairment or dementia as 'inappropriate verbal, vocal or motor activity that is not explained by needs or confusion per se' (NICE, 2015a; Seitz et al., 2011). The Agitation Definition Working Group of the International Psychogeriatric Association described agitation in the context of dementia as 'exhibiting behaviour consistent with emotional distress … manifesting excessive motor activity, verbal aggression, or physical aggression, and … evidencing behaviours that cause excess disability and are not solely attributable to another disorder' (Cummings et al., 2015). National Institute for Health and Care Excellence (NICE) guidelines on conditions other than dementia have not used published definitions of agitation, although NG10 does identify agitation as one of the 'symptoms or feelings that may lead to violence and aggression' (NICE, 2015b). It recognises agitation as part of an 'escalating behaviour pattern, starting with restlessness, moving through agitation and irritability, through verbal aggression … and culminating in an assault'.

The terms aggression and violence are often used interchangeably and NICE Guideline NG10 does not clearly differentiate between the two terms, stating that 'violence and aggression refer to a range of behaviours or actions that can result in harm, hurt or injury to another person, regardless of whether the violence and aggression is behaviourally or verbally expressed, physical harm is sustained or the intention is clear' (NICE, 2015b). Alternatively, a widely accepted definition of violence by the World Health Organization (2014) is the 'intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation'. The World Health Organization definition excludes damage to property and also requires intent, which might be problematic in the context of acutely mentally unwell individuals and therefore does not seem entirely appropriate for the purposes of this guideline. Some use the term aggression to denote a state that is less severe than violence, whereas others use it to describe behaviours such as damage to property rather than against the person (Yudofsky et al., 1986).

Thus, we define 'acute disturbance' as an acute mental state associated with an underlying mental and/or physical disorder in the form of: (i) agitation and distress, which is excessive verbal or motor activity that may or may not lead to aggression or violence; or (ii) actual aggression or violence entailing harm, hurt or injury to another person, or damage to property regardless of whether it is verbally or behaviourally expressed, physical harm is sustained, or the intention is clear.

De-escalation and rapid tranquillisation

In this guideline, we define 'de-escalation' as an explicitly collaborative process involving a range of verbal and non-verbal interventions that aim to reduce agitation and distress, with the purpose of averting aggression or violence. This differs slightly from the definition of de-escalation given by the NICE Guideline NG10 (NICE, 2015b), in that our definition explicitly focuses on non-verbal, as well as verbal interventions.

Defining rapid tranquillisation (RT) has been the subject of debate. The goal of RT is to achieve a state of calmness without sedation, sleep or unconsciousness, thereby reducing the risk to self and/or others while maintaining the ability of the patient to respond to communication (NICE, 2005). However, for acute disturbance, sedation may also be considered to be an appropriate interim strategy. Guidelines have also varied, with the key difference being whether only parenteral formulations of medication are considered to constitute RT or if oral formulations are also included. NICE (2015b) concentrates solely on the parenteral route and the aim of achieving sedation, and so defines RT as 'the use of medication by the parenteral route (usually intramuscular or, exceptionally intravenous) if oral medication is not possible or appropriate and urgent sedation with medication is required'. This differs from the earlier definition in the NICE (2005) guideline, which explicitly included oral formulations too. For clarity, the definition of RT in our guideline will be parenteral pharmacological intervention, in keeping with the NICE (2015b) guideline.

If oral medication is administered, this may be the only pharmacological intervention, although in some cases RT will be administered subsequently, and so we will refer to this time period as 'pre-RT'. The aim of offering oral medication to agitated patients is to pre-emptively address acute disturbance and to avoid escalation and the need for parenteral medication and physical restraint. Oral medication administered in the context of the clinical management of acute disturbance will often be an 'as required' or pro re nata (PRN) prescription, given at the discretion of nursing staff, when deemed necessary. Arguably, this can lead to patients receiving unnecessary medication (Curtis and Capp, 2003). However, it is common practice for PRN medication to be administered to patients admitted to acute psychiatric wards for acute disturbance. This practice is based on clinical experience rather than evidence as there are no published randomised controlled trials (RCTs) comparing the efficacy of PRN medication with regular medication for the treatment of psychotic symptoms or acute disturbance (Douglas-Hall and Whicher, 2015). It should also be highlighted that the prescribing of antipsychotics PRN can lead to polypharmacy and high cumulative doses of antipsychotics, for which there is also no evidence of increased effectiveness over standard doses for the management of acute disturbance (Paton et al., 2008; Royal College of Psychiatrists, 2014). This practice also carries an enhanced burden of adverse effects and associated monitoring requirements. The same is true for benzodiazepines. Nonetheless, PRN medication can also play an important part of the clinical management of acute disturbance to reduce the risk of incidents.

Formulation and route of administration are also of particular importance for pre-RT and RT medication. Some medications are available in more than one formulation and not all of them are individually examined in the available literature. The pharmacokinetics of different formulations of the same drug can vary markedly; this critically includes time to peak plasma concentration (Tmax), which is a useful but crude gauge for time to onset of action of effect (usually some level of sedation). There is a complex interplay between absorption, Tmax, time to onset of action of effect, duration of desired effect, half-life and risk of acute side effects (NPSA, 2007). In general, oral tablets, capsules and liquids are absorbed via the gastrointestinal tract and have the longest Tmax. All orally administered medicines are absorbed into the bloodstream and pass through the liver before entering the systemic circulation. Where that medicine is metabolised by the liver, this 'first-pass' effect results in a lower proportion of an oral formulation being available in the systemic circulation than if the same medication is administered by the intramuscular (IM) or intravenous (IV) route. The magnitude of any first-pass effect is medication specific but for some medications this will mean that lower parenteral doses than oral doses are effective. When a medicine is administered by the IM route, Tmax is generally reached more rapidly compared with oral administration; this can be helpful when time to onset of action is important. Adherence to medication can be enhanced by using oro-dispersible tablets designed to dissolve on contact with saliva or water. Buccal, sublingual and oral-inhaled absorption have similar or shorter Tmax when compared with IM formulations. The fastest time to peak plasma levels, and hence the shortest time to Tmax, is for IV medications. Thus, IV administration leads to a more immediate onset of action than for IM and is more predictable and easier to titrate.

Restraint and restrictive practices

In clinical practice, RT tends to be associated with the use of restraint and restriction. Manual restraint is defined by NICE (2015b) as 'a skilled, hands-on method of physical restraint used by trained healthcare professionals to prevent patients from harming themselves, endangering others or compromising the therapeutic environment. Its purpose is to safely immobilise the patients'. In our guideline, we will use the term physical restraint instead of manual restraint; the former being the more commonly used term in the United Kingdom (UK). Physical restraint can occur without the use of RT and vice versa. A patient, once physically restrained, may agree to take oral medication. In general, however, for a patient to receive RT safely, some degree of physical restraint is required.

Physical restraint should be distinguished from mechanical restraint, the latter being very rarely used in the UK. Mechanical restraint is defined as 'a form of restrictive intervention that refers to the use of a device (e.g. belt or cuff) to prevent, restrict or subdue movement of a person's body, or part of the body, for the primary purpose of behavioural control' (Department of Health, 2015). It is used in response to behaviour, that poses significant risk to the individual or others of serious long-term harm or immediate injury, and involves the use of some sort of equipment. The Care Quality Commission (2014) recognised that the use of mechanical restraint may be considered as the least restrictive intervention in some rare and specific cases and may present less risk to the individual than the alternative of prolonged physical restraint or transfer to a more restrictive setting.

Seclusion is defined in the Mental Health Act Code of Practice as 'the supervised confinement and isolation of a patient, away from other patients, in an area from which the patient is prevented from leaving, where it is of immediate necessity for the purpose of the containment of severe behavioural disturbance which is likely to cause harm to others' (Department of Health, 2015). Seclusion is different from voluntary temporary segregation (sometimes mistakenly referred to as 'time out'), when a patient agrees to spend time in an area away from others, with no restrictions on returning to contact with other patients (Department of Health, 2015). Some mental health services have a designated 'extra care area', which may be an alternative to seclusion; a closely supervised space where a patient may be nursed away from other patients (NAPICU, 2016). Seclusion should only be used when other measures for managing violence have failed. RT may be required at the same time. This can be especially challenging when considering safe monitoring following RT.

There is a drive internationally to reduce restrictive practices. In the UK, there is a government directive to reduce all forms of restrictive practices, with an objective of ending the use of prone (face-down) restraint; restrictive practices should only be used as a last resort in emergency situations (Department of Health, 2014). There is also a focus on corporate responsibility; each Trust Board should be fully informed of the position of their Trust on restrictive practices and the management plan to reduce their use, should identify an executive director to lead on recovery approaches and reducing restrictive practices, and should publish an annual report on its use of restrictive interventions (Mental Health Network, 2014).

Low-level evidence regarding interventions to reduce seclusion includes the following: increased monitoring and regulation, leadership changes, staff training and changes, improved staff to patient ratios, treatment plan improvements and even aromatherapy (Gaskin et al., 2007). Recently, one study found that the introduction of body cameras for staff has led to a reduction in untoward incidents (Hardy et al., 2017).

Training is important when trying to reduce restrictive practices. Recognising the early signs of agitation is crucial, with the aim of reducing further restrictive interventions, and staff should be trained in the use of techniques aimed at defusing anger. NICE (2015b) recommends that all staff receive training in de-escalation, although we note that a systematic review of 38 observational studies concluded that overall the quality of evidence was low and the findings were inconsistent, so the positive effects from training staff in de-escalation techniques could not be confirmed (Price et al., 2015). A large number of companies also offer prevention and management of violence and aggression (PMVA) training programmes (Bowers et al., 2006) as well as 'breakaway' training sessions to help staff to escape when they are being physically attacked. As yet, there are no nationally agreed recommendations regarding how and when such techniques should be used, and the effectiveness of the training approaches currently offered is largely unsupported by evidence (McKenna and Paterson, 2006).

Rapid tranquillisation practice in the UK

In 2016, the Prescribing Observatory for Mental Health (POMH-UK; Barnes and Paton, 2011) initiated a quality improvement programme in mental health services addressing RT in the context of the pharmacological management of acute disturbance (POMH-UK, 2017). A total of 58 specialist mental health Trusts or healthcare organisations participated in the baseline clinical audit and submitted data on 2172 episodes of acute disturbance in patients on acute adult (n = 1455), psychiatric intensive care (n = 444) or low, medium or high secure wards (n = 273) (POMH-UK, 2017). Being the largest audit of such practice, the data provide a useful insight into the clinical management of acute disturbance in mental health services in the UK. In the vast majority of episodes (n = 2061; 95%), one or more non-pharmacological interventions were employed. Predominantly, these were de-escalation strategies (verbal de-escalation and/or distraction and/or removal of precipitating factors), control and restraint, or observation. Control and restraint was approximately three times more likely to be used in association with parenteral medication, as compared with oral medication (POMH-UK, 2017).

For these episodes of acute disturbance, oral medication only was administered in half (n = 1091; 50%). Parenteral (IM and/or IV) medication only was given in 43% of episodes (n = 936); this was almost all administered IM, the use of IV medication being limited to only two instances of IV haloperidol usage. A combination of oral and IM/IV medication was given in 145 (7%) of episodes. In over four-fifths of episodes (n = 1756; 81%), the patient was already prescribed regular antipsychotic medication and for 5% this was high dose. The administration of additional antipsychotic medication for acute disturbance tipped the total daily dosage over the high-dose threshold for patients in a further 13% of episodes (POMH-UK, 2017).

Of the episodes of acute disturbance for which an oral medication was used, this was most commonly an oral benzodiazepine alone (n = 726; 59%). An oral benzodiazepine was also used in combination with oral antipsychotic medication in 15% of episodes and with oral promethazine in a further 5%. The choice of oral benzodiazepine was lorazepam in over 90% of cases, with a median dose of 1 mg. In addition to its use in combination with an oral benzodiazepine, oral antipsychotic medication was used on its own in 12% of such episodes and with oral promethazine in 2%. Haloperidol was by far the most commonly used oral antipsychotic medication, in nearly three-quarters (72%) of cases, with a median dose of 5 mg (POMH-UK, 2017).

An IM benzodiazepine was administered in two-thirds (67%) of episodes where parenteral medication was used and in over a third of instances (39%) was the only IM medication. Lorazepam was almost invariably the IM benzodiazepine used (99% of instances), with a median dose of 2 mg. An IM antipsychotic medication was used in half (50%) of such episodes and for around a fifth of episodes (18%) was the only IM medication used. IM haloperidol was the antipsychotic most commonly prescribed (67%), with a median dose of 5 mg. Other IM antipsychotics used were IM aripiprazole (14%), IM olanzapine (9%), IM promazine (1%) and IM levomepromazine (1%). IM promethazine alone was administered in 74 (7%) of episodes (POMH-UK, 2017).

Combinations of IM medications were used in 381 episodes, including 295 cases with IM benzodiazepine plus IM antipsychotic. The most common combination was IM lorazepam plus IM haloperidol. The combination of IM promethazine plus IM antipsychotic (n = 44; 4%) was used relatively infrequently, despite being the recommended combination in the NICE Guideline NG10 (NICE, 2015b). The combination of IM benzodiazepine plus IM promethazine (n = 42; 4%) was used almost as frequently as IM promethazine plus IM antipsychotic. It also suggests that around one quarter of patients did not respond to RT (POMH-UK, 2017).

Nationally, there is evidence of poor adherence to physical health monitoring recommendations. The POMH-UK audit found that there was no documented physical health monitoring in the hour after RT in 42% (n = 450) of episodes and in 45% (n = 201) of these episodes no line-of-sight psychiatric observations were recorded either. Thus, in almost 20% of the episodes recorded nationally there was no documented monitoring (physical health or psychiatric) in the hour following RT (POMH-UK, 2017).

National guidelines

In the UK, the most prominent current clinical guideline on RT is entitled *Violence and aggression: Short-term management in mental health, health and community settings* (NG10, NICE, 2015b). This was an update of a previous guideline (CG25) published in 2005 (NICE, 2005). NICE also published an additional guideline (NG11) on prevention and intervention for challenging behaviour presented by people with learning disabilities (NICE, 2015c). RT is mentioned in current NICE guidelines for psychosis and schizophrenia (NICE, 2014a), bipolar disorder (NICE, 2014b) and dementia (NICE, 2006), all of which point to CG25 for detailed recommendations, as they were published prior to NG10. NICE antenatal and postnatal mental health guidelines provide additional specific recommendations for RT in pregnancy (NICE, 2014c). In addition to these guidelines, which provide comprehensive clinical recommendations, NICE has also reviewed specific medications used in RT including IM promethazine (NICE, 2014d) and inhaled loxapine (NICE, 2013). This information is subsumed within NG10.

NG10 refers to the use of pharmacotherapy in three specific situations: (i) in an individualised management package to decrease the risk of violence or aggression; (ii) as required (PRN) medication as part of a strategy to de-escalate or prevent situations that may lead to violence and aggression; and (iii) in the context of RT. This is a useful basic framework when drawing up treatment plans. NICE recommendations also include developing a multidisciplinary strategy targeting specific symptoms as soon as a patient at risk of violence or aggression is admitted to an inpatient unit, which should then be reviewed at least weekly. If RT is being used, it is recommended that a senior doctor reviews the medication regimen at least daily. There should be clarity about the rationale and circumstances for PRN medication with maximum daily doses specified that should ordinarily not exceed British National Formulary (BNF) (Joint Formulary Committee, 2017) limits except under the direction of a senior doctor.

In terms of drug choice for RT, NICE recommends either IM lorazepam alone or IM haloperidol plus IM promethazine for RT in adults, taking the following factors into account: the patient's preferences or advance statements and decisions; pre-existing physical health problems or pregnancy; possible intoxication; previous response to these medications, including adverse effects; potential for interactions with other medications; and the total daily dose of medications prescribed and administered. IM lorazepam is preferred if there is limited clinical information available, if the patient has not been prescribed antipsychotic medication before, if there is evidence of cardiovascular disease including a prolonged corrected QT interval (QTc), or if no electrocardiogram (ECG) has been carried out (NICE, 2015b). If there is a partial response to IM lorazepam, a further dose is recommended. However, if there is no response, IM haloperidol plus IM promethazine is recommended for consideration. Similarly, if there is a partial response to IM haloperidol plus IM promethazine a further dose is suggested, but if there is no response, IM lorazepam is recommended if it has not already been used. If it has, then a review and possible second opinion is suggested.

In the UK, NICE guidelines are complemented by those produced by the British Association for Psychopharmacology (BAP). Those relating to, for example, schizophrenia (Barnes et al., 2011) and bipolar disorder (Goodwin et al., 2016) provide additional recommendations regarding the generic treatment of these conditions, which will contribute to an overall decrease in risk of acute disturbance. However, with the exception of the BAP perinatal guidelines (McAllister-Williams et al., 2017) there are no specific recommendations made with regards to RT.

Other documents that are relevant to prescribers managing acute disturbance include the Royal College of Psychiatrists consensus statement on the use of high-dose antipsychotic medication (Royal College of Psychiatrists, 2014), recommendations on the use of licensed medication in unlicensed situations (Royal College of Psychiatrists Psychopharmacology Committee, 2017), and prescribing guidance for unlicensed medicines by the General Medical Council (GMC, 2013).

International perspectives

The most recent comprehensive review of the evidence base for the management of acute disturbance is a consensus document produced by the World Federation of Societies for Biological Psychiatry (WFSBP) (Garriga et al., 2016). The guideline was developed after a systematic review, and a consensus exercise of 24 international experts from different countries based on the Delphi method.

Their recommendations emphasised that proper assessment of acute disturbance includes ruling out any possible medical cause as a first step. The differential diagnosis process should include not only a review of the medical and psychiatric history, but also a timely reconstruction of the episode of acute disturbance, physical, neurological and mental examination as well as a minimum set of complementary explorations (vital signs, capillary glucose, oxygen saturation and urine toxicology test). Verbal de-escalation is recommended before pharmacological intervention together with environmental modifications and a focus on strategies to enhance engagement with the patient during all aspects of the clinical management process. Physical restraint should be considered a last-resort strategy. For pharmacological treatment, the WFSBP guidelines suggest the patient should be involved as much as possible in the selection of the medication.

Pharmacological treatments should match the underlying condition and, if no specific diagnosis is achieved, acute disturbance should be considered to emerge from a medical cause. In acute disturbance due to a medical condition or alcohol intoxication, the WFSBP guidelines suggest that antipsychotics should be preferred over benzodiazepines. If acute disturbance is due to alcohol withdrawal, then the use of benzodiazepines over antipsychotics is advised. If a psychiatric disorder is causing the acute disturbance, antipsychotic medication is recommended for psychotic agitation whereas benzodiazepines should be considered for non-psychotic agitation. The route of medication administration will depend on the severity of the scenario and the degree of patient cooperation, prioritising non-invasive formulations (oral or inhaled) over IM/IV routes. It advises attempts to achieve monotherapy, avoiding medication combinations where possible. Medication adjustment for renal and/or hepatic impairment as well as in the elderly has to be considered (Garriga et al., 2016).

Guidelines highlight a need to increase critical discussion on effective interventions in the management of acute disturbance and in recent years the literature has expanded. This includes the early consensus work of Allen et al. (2001, 2005) as well as relevant reports by: the American Association for Emergency Psychiatry (Holloman and Zeller, 2012) with Project BETA; the American College of Emergency Physicians (Lukens et al., 2006); and the Joint Commission on Accreditation of Healthcare Organisations and the Centres for Medicare and Medicaid (The Joint Commission, 2000). The current WFSBP guidelines (Garriga et al., 2016) were preceded by agitation guidance sections in other documents related to the management of schizophrenia and mania (Grunze et al., 2010; Hasan et al., 2012). Other European societies have also created guidelines, including the Austrian Society for Neuropsychopharmacology and Biological Psychiatry (Kasper et al., 2013; Frey et al., 2015).

A patient's perspective

The following excerpt was provided by a member of the consensus group who has lived experience of acute inpatient clinical settings and is the patient representative on the Executive Committee of the National Association of Psychiatric Intensive Care Units.

Patients so acutely disturbed to be considered for RT are extremely fearful of almost anything they cannot easily understand. All comparisons are likely iniquitous; trust in almost everything is virtually impossible. Worse still, if such fragility of trust is dashed, this can lead to aggression, or even violence. This emphasises the importance that RT should only be used when severe disturbance, aggression or violence is deemed to be imminent. Within this context, we consider how we might most effectively bring about a calmer state avoiding further harm to the patient, others or objects.

To be rapid, the efficacy of tranquillisation is fostered by the route of least ambiguity, measured by the willingness of both the patient and clinician to engage. Deviation from a clear simple approach may have the effect of loading years to the process of recovery. Consequently, listening and careful observation of the patient and environment are advised as this may yield clues to what triggered the heightened anxiety. Recent change of people

or objects may be exacerbating factors and addressing these may help calm the patient. Extreme care in introducing no more anomalies is advised. Ideally, changes should be explained by whoever is considered most trusted and a single communicator will reduce confusion. However stressful the situation becomes, clinicians should be easily identifiable, well trained and presenting positively and confidently in their actions as lack of confidence will exacerbate the anxiety of the patient.

Further, only medicines and routes of administration that clinicians are confident and sure of should be used. Lack of confidence can reduce effectiveness. Communication with the patient as soon as is sensible is key and should include an explanation of the procedure they have been through and why, with great care given to instil feelings of hope. Carefully tailored reward for patient participation towards manageable and sustainable goals can be considered. Post-treatment sharing of both patient and clinician experience is essential to evolve improved specific and general protocols. Clinicians from all disciplines across all health services should share common practices (Allen et al., 2003; NICE, 2012) as this will result in fewer patient presentations through greater understanding.

Guideline scope

The BAP has published a series of evidence-based guidelines for the use of drugs in patients with psychiatric disorders with an emphasis on producing comprehensive, concise and useable guidance based on a review of the relevant evidence (see https://www.bap.org.uk). The National Association of Psychiatric Intensive Care and Low Secure Units (NAPICU) has a long history of promoting best multidisciplinary practice in clinical services that manage acute disturbance and challenging behaviour in mental disorders (see http://www.napicu.org.uk). The goal of this joint BAP–NAPICU guideline is to provide recommendations for healthcare professionals in the use of de-escalation methods and psychotropic medication for the clinical management of acute disturbance. Most of the evidence reviewed here relates to emergency psychiatric care or acute psychiatric inpatient care, although we also sought evidence relevant to other common clinical settings including the general acute hospital and forensic psychiatry. These guidelines are designed to be complementary to previous guidelines and reports. For example, the most recent NICE guidelines reviewed RCT evidence for the use of medications for acute disturbance, although they placed relatively less emphasis on the use of oral formulations of medication (NICE, 2015b).

At the outset it was decided that we would not attempt to carry out a comprehensive review of evidence for the management of acute disturbance relating to children and young people, those with a learning disability or traumatic brain injury, or older adults with or without dementia. Although these are important topics, the paucity of good evidence relating to these groups would make it impossible to write similarly evidence-based recommendations. Further, we have not reviewed the numerous clinical rating scales for measuring the degree or frequency of acute disturbance and the outcomes of management approaches (for a recent review see Garriga et al., 2016). Staffing, cultural influences and judicial settings are also not considered. The use of seclusion as an intervention, as well as physical and mechanical restraint measures and techniques are briefly described above, but we have not reviewed them extensively and make no recommendations.

Method

A group of experts was invited to an initial meeting in June 2017 organised jointly by the BAP and NAPICU. Expert participants were asked to review key areas and highlight recent data from systematic reviews, RCTs or observational studies. After each brief presentation, a discussion of the important issues identified areas of agreement or uncertainty. A literature review was then conducted to compile the evidence for the key areas on which the consensus points had been based. This review, together with proposed recommendations and their evidence grading, was circulated to members of the consensus group and discussed in January 2018 at a second smaller meeting of the experts. Their feedback was, as far as possible, incorporated into the final version of these guidelines.

The guideline recommendations are linked to relevant evidence through the literature review. However, our methodology and available funding did not allow for a systematic review of all possible data from primary sources. Existing systematic reviews, RCTs and observational studies were identified from PubMed, Medline and EMBASE and from the Cochrane Database. Published NICE guidelines on RT (CG25, NICE, 2005; NG10, NICE, 2015b; and Quality Standard QS154, NICE, 2017) were also considered.

The categories of evidence applied to the literature reviewed and the strength of the recommendations made are described in Table 1, which is derived from work by Shekelle et al. (1999) on the development of clinical guidelines. RCTs must have an appropriate control treatment arm. For primary efficacy this should include a placebo condition, although for psychological interventions this may not be feasible. ‘Strength of recommendation’ is rated A to D according to category of evidence. A lower rating implies a less extensive or robust body of evidence but not necessarily lesser clinical importance. The S category represents a standard of care, which describes a consensus based on good practice standards rather than evidence. In the guideline, the recommendations are grouped altogether (see Recommendations for interventions), rather than at the end of each section of evidence reviewed to enable the reader to see the foundations, upon which the algorithm is based, all in one place.

There are a number of factors that should be considered when deriving recommendations for practice from the existing evidence base:

- For RCTs of RT, trials vary in design and most have a relatively small sample size. Further it is challenging to design trials to demonstrate whether pre-emptive use of oral medication pre-RT leads to reduced need for parenteral RT.
- Primary outcome measures are multiple, diverse and measured at different pre-set time points. Further, they commonly include achieving sedation or the state of falling asleep or time to desirable state. The proportions of participants who become calm are not consistently reported.
- With respect to ‘onset of action’, the populations treated in clinical trials are very different. Onset of sedation and tranquillisation is often reported in trials but how that relates to treatment of acute disturbance is not defined.

Table 1. Categories of evidence and strength of recommendations.

Categories of evidence for causal relationships and treatment
Ia: Evidence from meta-analysis of randomised controlled trials
Ib: Evidence from at least one randomised controlled trial
IIa: Evidence from at least one controlled study without randomisation
IIb: Evidence from at least one other type of quasi-experimental study
III: Evidence from non-experimental descriptive studies, such as comparative studies, correlation studies and case-control studies
IV: Evidence from expert committee reports or opinions and/or clinical experience of respected authorities
Strength of recommendation
A: Directly based on category I evidence from meta-analysis of randomised controlled trials, at least one large, good quality, randomised controlled trial or replicated, smaller, randomised controlled trials
B: Directly based on category II evidence from meta-analysis of randomised controlled trials, at least one large, good quality, randomised controlled trial or replicated, smaller, randomised controlled trials, or extrapolated a recommendation from category I evidence
C: Directly based on category III evidence from non-experimental descriptive studies, such as uncontrolled, comparative, correlation and case-control studies, or extrapolated recommendation from category I or II evidence
D: Directly based on category IV evidence from expert committee reports or opinions and/or clinical experience of respected authorities, or extrapolated[a] recommendation from category I, II or III evidence
S: Standard of good practice

[a]Extrapolation may be necessary because of evidence that is only indirectly related, covers only a part or the area of practice under consideration, has methodological problems or is contradictory.

- RCTs of RT conducted in other countries with different healthcare systems or in different healthcare settings may or may not be generalisable to the UK setting. Similarly, RCTs conducted in acute hospital settings are not necessarily generalisable to psychiatric settings as in the former there is ready access to both anaesthetists and the equipment required to deal with medical emergencies caused by over-sedation.
- Ethical considerations, particularly the requirement that participants in research studies give informed consent, make it difficult to conduct RCTs of RT; this is particularly true in UK settings.
- Patients who are able and willing to give informed consent to participate in such RCTs are less behaviourally disturbed than those who receive RT in routine clinical practice. Thus, the findings of such studies may not be directly extrapolated to more severely disturbed patients for whom clinicians are likely to use tried and tested methods to defuse high-risk situations.
- Trials evaluating the use of an antipsychotic in RT, as compared with placebo, recruit participants who are not already receiving regular antipsychotic medication. Consequently, treatment with a single antipsychotic is confirmed as reducing acute disturbance more effectively than placebo, but the common clinical practice of adding a second PRN antipsychotic to manage acute disturbance, for a patient already prescribed one antipsychotic regularly, is untested in clinical trials.
- In clinical practice, the initial attempt at RT fails to achieve sedation or a state of calmness in a significant minority of participants. In such cases, there is very limited evidence on which to base recommendations for further interventions.

De-escalation

De-escalation is commonly practised in many mental health settings. One study of English acute inpatient services showed that over half (53%) of the patients were subject to de-escalation in the first two weeks of their admission (Lavelle et al., 2016). De-escalation is described as potentially useful in averting the need for physical restraint and it is suggested that de-escalation should generally precede and accompany the use of RT or seclusion (NICE, 2015b). De-escalation can also involve the use of purpose-designed de-escalation rooms or temporary separation from other patients (Royal College of Nursing, 2016).

De-escalation can be considered as a process with discrete phases and identifiable components. Various articles have described theoretical models of de-escalation as involving a series of stages either as a linear process (Bowers, 2014; Paterson et al., 1997) or a circular process (Dix and Page, 2008). The linear model of Bowers (2014) comprised delimiting (establishing safety), clarifying (identification of the patient perspective or need) and resolving (negotiation) to reach a mutual solution. This has some parallels with research in a Danish mental health setting based on staff interviews, where the first phase was described as involving creating a ‘safe place’ including managing physical distance and environment, and the second phase was establishing mutual relations with empathy, which then underpins the phase of collaborative problem solving (Berring et al., 2016).

Gaynes et al. (2016) conducted a systematic review of the literature examining strategies for preventing aggressive behaviour. Broad criteria allowed inclusion of studies of non-pharmacological interventions and articles included: risk assessment, multimodal programmes, environmental or group psychotherapeutic interventions and medication protocols. From 1983 papers of initial interest, 17 RCTs met their inclusion criteria; of these, only one RCT incorporated de-escalation but was not described in detail. This RCT evaluated the introduction of ‘six core strategies’ in a multimodal intervention in a Finnish high-security service for men. Patient-days with seclusion, restraint or room observation reduced from 30% to 15% for intervention wards versus from 25% to 19% for control wards conducting treatment as usual ($p < 0.001$). Recorded violent incidents reduced from 1.1% to 0.4% for the intervention wards and from 0.1% to 0% for control wards (Putkonen et al., 2013).

In the UK, the Safewards Model was evaluated in a cluster RCT of 31 adult acute wards. This model highlighted aspects of working in wards that are considered to identify potential 'flashpoints' and described 10 interventions, each of which were designed to contribute to a decrease in conflict or improve management such that the need for containment is reduced. The RCT reported that staff can successfully intervene to manage flashpoints to significantly reduce conflict incidents (14.6% decrease; 95% confidence interval, CI, 5.4–23.5%; $p = 0.004$) and the use of physical restraint, seclusion and RT (23.6% decrease; 95% CI 5.8–35.2%; $p = 0.001$) (Bowers et al., 2015). One of the interventions was a specific de-escalation element (Bowers 2014) but this was not evaluated individually and thus the degree of contribution to the overall results obtained is difficult to determine. A large Australian pre-/post-design study involving 18 wards failed to replicate these results; this study found no reduction in restrictive practices including seclusion ($p = 0.76$; Hamilton et al., 2016).

In a non-systematic review of the qualitative literature on de-escalation, 11 of 94 articles were selected for inclusion from which de-escalation components were identified (Price and Baker, 2012). The need to 'behave empathically and respectfully' was highlighted and a number of key themes were identified including: staff skills and characteristics of successful de-escalators; maintaining personal control; verbal/nonverbal skills; and de-escalation context. Collaborative problem-solving and compassionate non-confrontational limit setting were also identified as options (Price and Baker, 2012). Kuivalainen et al. (2017) conducted a qualitative analysis and found that 27% of 133 incident forms for de-escalation in a forensic setting identified some method of environmental management.

Price et al. (2018) conducted semi-structured interviews with inpatient ward staff, including three psychiatric intensive care units in the UK. Their findings suggested that staff differentiated between 'non-physical control techniques' and 'support techniques', the latter representing discrete de-escalation skills and encompassing reframing, problem identification and solving, distraction, reassurance and passive intervention. They highlighted the significance of assessment but also the role of trial and error in attempting to establish which combination of techniques may work best. Similarly, a questionnaire-based survey of nursing staff ($n = 72$) investigated the nature of de-escalation in secure mental health settings and identified a series of key skills including expressing empathy, care, humour and using distraction and calmness (Hallett and Dickens, 2015). Further components included displaying self-control to present in a calm manner, managing the environment (including use of other staff and use of separation) and careful attention to ensure the dignity of the patient was not compromised (Hallet and Dickens, 2017). Providing soothing activities may facilitate emotional regulation (Champagne and Stromberg, 2004). The use of humour may seem intuitively inappropriate in a context in which aggression is imminent and distress evident, but careful and respectful usage may change the patient's emotional experience, subverting what may be the dominance of anger (Paterson and Leadbetter, 1999).

Key de-escalation components are considered in two authoritative guidelines. An American Association for Emergency Psychiatry consensus statement highlights a number of characteristics for effective de-escalation including: the establishment of verbal contact; not being provocative; being concise; listening closely to the patient; respecting their personal space; trying to agree or agree to disagree; offering choices and optimism; setting clear limits; identifying the wants or feelings of the patient; and debriefing the patient and staff (Richmond et al., 2012). In the UK, NICE Guideline NG10 highlights: establishing a working relationship; avoiding provocation; empathising and showing respect; assessing the situation; separating the patient; negotiating; distracting; non-confrontational limit-setting; self-regulatory procedures; and proactive de-escalation planning (NICE, 2015b). Table 2 summarises the interventional components of de-escalation emanating from a review of the literature and provides a brief explanation of each interventional component.

Where acute disturbance may be predictable in a known patient, it is suggested that individualised de-escalation plans should be developed in partnership with the patient, identifying their preferred responses with appropriate adaptations made where the patient has a sensory impairment (Austen, 2005; Department of Health, 2014). Where the patient is not known to staff, general components of de-escalation should be considered. A single member of staff should lead in communicating with the patient (NICE, 2015b; Richmond, et al., 2012). Consideration should be given to environmental change, but staff should remain mindful that the patient's needs for personal space may increase as arousal escalates (Turnbull et al., 1990). The exact nature of the de-escalation intervention will be informed by continual (risk) assessment, dynamic reflection and ongoing identification of the patient's needs; priorities may shift, evolve and fluctuate both during an individual incident and across time (Price et al., 2018; Richter, 2006).

Overall, there is widespread advocacy of de-escalation as an intervention (Department of Health, 2014; NICE, 2015b) with a number of theoretical conceptualisations of the process (Hallet and Dickens, 2017) and a variety of descriptions of the suggested components (Bowers, 2014; Dix and Page, 2008; Paterson and Leadbetter, 1999; Price and Baker, 2012). Nonetheless, there is a paucity of high-quality research evidence demonstrating the effectiveness of specific components of de-escalation.

Benzodiazepines

All benzodiazepines share a common mechanism of action and produce a range of similar effects including anxiolytic, hypnotic, muscle relaxant and anticonvulsant. The individual benzodiazepine medications vary in their propensity for these effects depending on their potency and pharmacokinetics and this should inform the choice of benzodiazepine used for the indication (Baldwin et al., 2013). Benzodiazepines also vary in terms of their available formulations and this will further differ between countries; this is related to availability as well as the convenience of formulations (e.g. lorazepam injection requires refrigeration).

Pharmacokinetics

When benzodiazepines are administered intramuscularly, Tmax is generally much shorter than for oral formulations (see Table 3); this can be helpful when a swift onset of action is important. However, Tmax for lorazepam is not much shorter for the IM formulation compared to the oral formulation. Further, lorazepam has a maximum licensed oral dose of 4 mg daily but despite bioequivalence between oral and IM doses, the licensed IM dose can be much higher, as it is based on the weight of the patient

Table 2. De-escalation components.

Component	Description	Highest level of evidence	Other relevant citations
Continual risk assessment	Dynamic cycles of micro-assessment are required. These entail continually monitoring the nature/degree of risk including responses to staff efforts.	Hallet and Dickens (2015): qualitative study surveying medium secure unit staff (n = 72); six core themes identified	Dix and Page (2008); Price and Baker (2012); NICE (2015b)
Self-control techniques	Exposure to aggression can have an impact on staff emotional regulation, which needs to be actively and consciously managed.	NICE (2015b): national guideline	Bowers (2014); Paterson and Leadbetter (1999); Richter (2006)
Avoidance of provocation	Understanding and seeking to avoid known triggers or otherwise behaving in a way likely to provoke aggression.	Richmond et al. (2012): consensus statement at a national level	NICE (2015b); Richter (2006)
Respect patient space	Staff should actively increase the personal space they afford the patient to decrease any perceived threat.	NICE (2015b): national guideline	Berring et al. (2016); Paterson and Leadbetter (1999); Richmond et al. (2012); Turnbull et al. (1990)
Management of environment	Moving other patients away or suggesting to the patient that the location of interaction is moved to another room or offering a choice of preferred activity that the patient finds soothing can modify the level of stimulation.	Kuivalainen et al. (2017): qualitative analysis of incident forms (n = 133) in a forensic setting; thematic analysis identified this component in 27% of incidents	Bowers (2014); Hallet and Dickens (2015); NICE (2015b); Paterson and Leadbetter (1999); Price and Baker (2012)
Passive intervention and watchful waiting	Consciously minimising the cognitive load of the patient who may be struggling to sustain emotional regulation whilst actively assessing the situation.	Price et al. (2018): qualitative interviews (n = 20) with staff from five acute services; thematic analysis identified six sub-themes, including this component	Lowry et al. (2016); NICE (2015b)
Empathy	Display empathy verbally and non-verbally. Appearing calm is helpful, but an acknowledgment of the patient's distress via mirroring can be helpful.	NICE (2015b): national guideline	Berring et al. (2016); Bowers (2014); Richter (2006); Turnbull et al. (1990)
Reassurance	Fear or shame may underlie overt aggression. Reassuring the patient that they are safe, respected, valued and that nobody will harm them, can be critical.	Hallet and Dickens (2015): qualitative study surveying medium secure unit staff (n = 72); six core themes identified; this component was a sub-theme of communication	Berring et al. (2016); Nau et al. (2009); Price et al. (2018)
Respect and avoidance of shame	Shame may trigger aggression in patients and staff. Seeking solutions that allow the patient to retain their dignity is important.	Berring et al. (2016): multiple qualitative case studies (n = 42) across a variety of clinical settings; this component was repeatedly identified	Bowers (2014); Lavelle et al. (2016); NICE (2015b); Price and Baker (2012); Richmond et al. (2012); Richter (2006)
Appropriate use of humour	Changing the emotional dynamic of a situation underpins de-escalation and the appropriate but importantly empathic use of humour may do this.	Hallet and Dickens (2015): qualitative study surveying medium secure unit staff (n = 72); six core themes identified; this component was a sub-theme of interpersonal skills	Berring et al. (2016); Paterson and Leadbetter (1999)
Identification of patient needs	Aggression should be understood as an expression of a need for the patient. Identifying and resolving that need may help avert violence.	Berring et al. (2016): multiple qualitative case studies (n = 42) across a variety of clinical settings; this component was described in multiple cases (n = 5)	Bowers (2014); Dix and Page (2008); Kuivalainen et al. (2017); Price et al. (2018); Richmond et al. (2012)
Distraction	Distracting the person by changing the focus of the interaction may reduce their distress and decrease their arousal.	Hallet and Dickens (2015): qualitative study surveying medium secure unit staff (n = 72); six core themes identified; this component was described by n = 14	NICE (2015b)
Negotiation	Identifying mutual goals and a shared consensus may consider underlying control issues as root cause of aggression.	Richmond et al. (2012): consensus statement at a national level	Dix and Page (2008); Duperouzel (2008); Mavandadi et al. (2016); NICE (2015b); Paterson and Leadbetter (1999)
Reframing events for patient	Emotions arise from an interpretation of an event that involves judgements about the motivation of others. Cautious exploration of alternative interpretations may prove helpful.	Price et al. (2018): qualitative interviews (n = 20) with staff from five acute services; thematic analysis identified this component	
Non-confrontational limit setting	Explaining the situation calmly, where possible presenting the patient with a choice and avoiding issuing ultimatums.	Hallet and Dickens (2015): qualitative study surveying medium secure unit staff (n = 72); 50% (n = 36) described this specific component	NICE (2015b); Price and Baker (2012); Richmond et al. (2012); Richter (2006)

Table 3. Benzodiazepine formulations.

Medication	Route	Formulation	Bioavailability	Time to maximum plasma concentration (Tmax)
Clonazepam	Oral	Tablets	90%	1–4 hours
		Liquid	90%	1–4 hours
	IM	Injection	93%	3 hours
Diazepam	Oral	Tablets	76%	30–90 minutes
		Liquid	76%	30–90 minutes
	IM	Injection	Erratic	Erratic
	IV	Injection (emulsion)	100%	⩽15 minutes
Lorazepam	Oral	Tablets	100%	2 hours
	IM	Injection	100%	1–1.5 hours
	IV	Injection	100%	seconds/minutes
Midazolam	Buccal	Oromucosal solution	75%	30 minutes
	IM	Injection	>90%	30 minutes
	IV	Injection	100%	seconds/minutes

IM: intramuscular; IV: intravenous.

(0.025–0.03 mg/kg every 6 hours; 1.75–2.1 mg for an average 70 kg man) (Pfizer Ltd, 2014). Oral lorazepam has a Tmax of 2 hours and there is no risk of accumulation on repeated dosing.

For midazolam injection, absorption is rapid and complete, with peak plasma concentration achieved within 30 minutes. It has a faster onset of action (5–20 minutes) than lorazepam and some antipsychotics (Baldaçara et al., 2011; Isbister et al., 2010; Martel et al., 2005; Nobay et al., 2004; TREC Collaborative Group, 2003). Unlike most other benzodiazepines, midazolam is water soluble hence it has a short half-life. In contrast, both diazepam and clonazepam have long half-lives and active metabolites, so multiple dosing is associated with a risk of accumulation and thus a risk of cumulative adverse effects.

Oral

The efficacy of buccal midazolam has only been assessed in a small service evaluation (n = 27) in which it was found to reduce agitation (measured indirectly using the Behavioural Activation Rating Scale) (Swift et al., 2002) in 70% of participants within 30 minutes (Taylor et al., 2008). Other oral benzodiazepines have also been used but data are very sparse; for example, Barbee et al. (1992) reported a single randomised double-blind trial for oral alprazolam plus oral haloperidol versus oral haloperidol alone (n = 28) but alprazolam is not commonly used in the UK. Review of the literature did not reveal any studies evaluating oral lorazepam, clonazepam or diazepam as monotherapy; despite this, other guidelines still recommend the use of oral lorazepam (NICE, 2005; Wilson et al., 2012b).

Oral versus intramuscular

A larger (n = 162) trial by Currier et al. (2004) replicated findings from an earlier study (n = 37; Foster et al., 1997) demonstrating that both oral and IM lorazepam had a similar clinically significant effect by 30 minutes after administration, with the effects of both lasting for at least 120 minutes, although this was based on combination arms of oral risperidone plus oral lorazepam versus IM haloperidol plus IM lorazepam. Therefore, there is no evidence of a clear time advantage in using IM lorazepam when a patient is willing to accept oral lorazepam. There is an absence of trial evidence comparing the oral and IM preparations of other benzodiazepines.

Intramuscular monotherapy

Zaman et al. (2017) conducted a detailed review of the evidence and practice of using benzodiazepines for acute disturbance induced by psychosis; they included 20 RCTs (total n = 695) but with no head-to-head studies. Overall, the evidence was weak and most of the trials were too small to highlight differences or to allow strong conclusions to be drawn to inform practice. The authors concluded that there was no difference in improvement in the medium term when benzodiazepines were compared to haloperidol (n = 188; five RCTs; RR 0.89; 95% CI 0.71–1.11); and when benzodiazepines were compared to haloperidol plus promethazine, there was a higher risk of lack of improvement with benzodiazepines in the medium term (n = 200; one RCT; RR 2.17; 95% CI 1.16–4.05; Zaman et al., 2017).

A Canadian review similarly concluded that the evidence for the comparative efficacy and safety of antipsychotics and benzodiazepines in RT was conflicting and inconclusive (CADTH, 2015). In essence, there are no large, well-designed trials of RT conducted in the UK; the largest RCTs used to inform the UK practice are the four Tranquilização Rápida-Ensaio Clínico (TREC) trials (Rapid Tranquillisation Clinical Trials) and only two of these included a benzodiazepine, see Box 1 and Table 4.

Lorazepam. Although relatively weak, there is more trial evidence for the use of IM lorazepam than for all other parenteral benzodiazepines (Zaman et al., 2017). IM lorazepam was evaluated in one of the TREC trials and was found to be effective but less rapidly so than the combination of IM haloperidol plus IM promethazine (see Box 1 and Table 4) (Alexander et al., 2004). In a double-blind RCT (n = 201) IM lorazepam was less effective than IM olanzapine when measured on the Excited Component (subscale) of the Positive and Negative Syndrome

There were four large RCTs, conducted in Brazil and India, that compared the effectiveness of a combination of IM haloperidol plus IM promethazine with a range of other IM strategies, namely: IM midazolam (n = 301; TREC Collaborative Group 2003), IM lorazepam (n = 200, Alexander et al., 2004), IM haloperidol (n = 316, Huf et al., 2007) and IM olanzapine (n = 300, Raveendran et al., 2007). All trials recruited from psychiatric emergency rooms and, although primary outcomes differed between studies, all reported on whether the patient was tranquil or asleep at 15–20 minutes after administration of the trial medication. These studies have been criticised for using sleep as a desirable endpoint, but they remain the most methodologically robust studies of RT conducted in psychiatric settings. See Table 4 for a summary of the primary and secondary outcomes relating to sedation as measured by the composite outcome of being 'tranquil or asleep' as well as the outcome measure of being 'asleep'. Potentially serious adverse effects are also reported.

When considered together, the TREC studies lead to the conclusions that: (1) a combination of IM haloperidol plus IM promethazine is more rapidly effective than IM lorazepam or IM haloperidol alone, and as rapidly effective and with a longer lasting sedative effect than IM olanzapine; (2) only IM midazolam was more rapidly sedating than the combination of IM haloperidol plus IM promethazine but respiratory depression was noted in one patient in the midazolam group; (3) IM haloperidol alone was associated with an unacceptably high (6.4%) incidence of acute dystonia, in comparison to the combination of IM haloperidol plus IM promethazine, and this contributed to the decision to stop the trial early after the interim analysis. Based on these trials, it can be concluded that a combination of IM haloperidol 5–10 mg plus IM promethazine 25–50 mg is an effective and safe strategy for RT (Huf et al., 2016; NICE, 2015b). The TREC Collaborative Group (2003) conducted a post-hoc analysis for diagnosis (misusing substances vs psychosis) and found no difference in response to IM midazolam versus IM haloperidol plus IM promethazine.

Box 1. Overview of TREC trials.

Scale (PANSS-EC; Kay et al., 1987; Kay and Sevy, 1990) at 30, 60, 90 and 120 minutes (Meehan et al., 2001). IM lorazepam was found to be more sedating than IM aripiprazole at 2 hours (Zimbroff, 2007) .

Midazolam. A number of trials have demonstrated the efficacy of the parenteral formulation as a sole RT agent, including one of the TREC trials (TREC Collaborative Group, 2003). IM midazolam leads to a quicker time to sedation than IM lorazepam or IM haloperidol (Nobay et al., 2004). In one RCT on RT comparing standard doses (10 mg or below) with high doses (above 10 mg) of IM droperidol, IM midazolam, IM haloperidol or IM droperidol plus IM midazolam, the median time to sedation was 20 minutes in both dose groups and it concluded that a high dose did not result in more rapid or effective sedation, but was associated with double the incidence of side effects compared with standard doses (Calver et al., 2013).

In a further RCT (n = 144) there were more participants in the IM ziprasidone group who remained acutely disturbed at 15 minutes than in the IM midazolam and IM droperidol groups respectively (p = 0.01), but there was no difference in the number of participants remaining acutely disturbed at 30 minutes (p = 0.08), and at 45 minutes more of those in the midazolam group were more acutely disturbed than in the IM droperidol and IM ziprasidone groups (p = 0.03), highlighting that action of IM midazolam was rapid but not sustained (Martel et al., 2005). Another trial similarly highlighted the problematic short half-life for IM midazolam with its clinical effects not lasting as long as IM haloperidol or IM lorazepam; times to arousal were reported as 81.9 minutes for IM midazolam, 126.5 minutes for IM haloperidol and 217.2 minutes for IM lorazepam (Nobay et al., 2004). Its short half-life was also linked to the need for repeated doses; 62% receiving IM midazolam required additional sedation as compared with IM midazolam plus IM droperidol (41%) or IM droperidol alone (33%) (Isbister et al., 2010). In an RCT conducted in Brazil, 70% of the participants receiving IM midazolam plus IM haloperidol required mechanical restraint, which was significantly higher than for the other treatment arms: IM ziprasidone (33%), IM haloperidol alone (20%), IM haloperidol plus IM promethazine (17%), IM olanzapine (3%) (Baldaçara et al., 2011).

Others. There is no relevant evidence of efficacy for IM diazepam in RT. In a very small double-blind trial (n = 16) IM clonazepam was effective but slower acting than IM haloperidol (Chouinard et al., 1993). One small study (n = 28) assessed IM flunitrazepam for RT and found it to be as effective at 30 minutes as IM haloperidol was in reducing the Overt Aggression Score (OAS; Yudofsky et al., 1986) (F = 72.42; df = 6, 156; $p < 0.001$ time effect) but its effects were short lasting and wore off by 60 minutes (Dorevitch et al., 1999).

Intramuscular benzodiazepines in combination with other medications

Benzodiazepines plus haloperidol. A recent meta-analysis included 20 RCTs (with 695 participants) testing benzodiazepines alone or in combination with other agents for acute disturbance due to psychosis (Zaman et al., 2017). The conclusion was that trials comparing IM benzodiazepines plus antipsychotics versus IM benzodiazepines alone did not yield results with clear differences; this was very low-quality evidence. In the short term (15 mins to 1 hour), IM lorazepam plus IM haloperidol was found to be more sedative than lorazepam only (n = 47; one RCT; RR 1.92; 95% CI 1.10–3.35), although there was no difference in the medium term (1–48 hours); this was low-quality evidence (Zaman et al., 2017).

In trials comparing the combination of a benzodiazepine plus an antipsychotic versus the same antipsychotic alone (the antipsychotic in all trials was IM haloperidol, which was combined with a variety of benzodiazepines), there was no difference in the improvement observed in the medium term (n = 185; four RCTs; RR 1.17; 95% CI 0.93–1.46); this was low-quality evidence. Yet sedation was more common in the participants who received the combination, in both the short term (n = 45; one RCT; RR 2.25; 95% CI 1.18–4.30) and the medium term (n = 172; three RCTs; RR 1.75; 95% CI 1.14–2.67); this was very low-quality evidence (Zaman et al., 2017).

Table 4. Summary of TREC trials.

Trial publication	Treatment arms	Primary outcome results: tranquil or asleep	Secondary outcome results: tranquil or asleep	Secondary outcome results: asleep	Reported adverse effects
TREC Collaborative Group (2003)	IM midazolam 7.5-15mg (n=151) vs IM haloperidol 5-10mg plus IM promethazine 25-50mg (n=150)	20 minutes: midazolam (M): 89% haloperidol+promethazine (HP): 67% (RR 1.32, 95% CI 1.16–1.49)	– 40 minutes M: 93%, HP: 83% 60 minutes M: 93%, HP: 87%, NS 120 minutes M: 95%, HP: 92%, NS	20 minutes M: 62%, HP: 29% 40 minutes M: 78%, HP: 46% 60 minutes M: 79%, HP: 55% 120 minutes M: 83%, HP: 63%	M: One transient respiratory depression, which was fully reversed by IV flumazenil (patient had alcohol, and possibly cocaine induced, aggression) HP: One grand mal seizure (had diagnosis of epilepsy)
Alexander et al. (2004)	IM lorazepam 4mg (n=100) vs IM haloperidol 10mg plus IM promethazine 25-50mg (n=100)	4 hours: lorazepam (L): 96% HP: 96% (RR 1.0, 95% CI 0.94–1.06, NS)	15 minutes L: 78%, HP: 89% (RR 1.1, 95% CI: 1.01–1.29) 30 minutes L: 81%, HP: 95% 60 minutes L: 90%, HP: 98% 120 minutes L: 88%, HP: 97%	15 minutes L: 5%, HP: 45% – 30 minutes L: 22%, HP: 69% 60 minutes L: 32%, HP: 67% 120 minutes L: 39%, HP: 69% 240 minutes L: 45%, HP: 76%	L: One 'moderate worsening of respiratory difficulty' in a patient with asthma and one nausea and dizziness
Huf et al. (2007)*	IM haloperidol 5-10mg (n=156) vs IM haloperidol 5-10mg plus IM promethazine 25-50mg (n=160)	20 minutes: haloperidol (H): 55% HP: 72% (RR 1.30, 95% CI 1.10–1.55)	– 40 minutes H:76%, HP: 81%, NS 60 minutes H:81%, HP: 87%, NS 120 minutes H:89%, HP: 91%, NS	20 minutes H: 8%, HP: 19% 40 minutes H:35%, HP: 36%, NS 60 minutes H:49%, HP: 48%, NS 120 minutes H:60%, HP: 61%, NS	H: Nine acute dystonia and one seizure HP: One seizure
Raveendran et al. (2007)	IM olanzapine 10mg (n=150) vs IM haloperidol 10mg plus IM promethazine 25-50mg (n=150)	15 minutes: olanzapine (O): 87% HP: 91% (RR 0.96, 95% CI 0.34–1.47, NS)	– 30 minutes O: 93%, HP: 96%, NS 60 minutes O: 94%, HP: 99% 120 minutes O: 94%, HP: 97%,NS 240 minutes O: 96%, HP: 97%, NS	15 minutes O: 43%, HP: 57% 30 minutes O: 63%, HP: 76% 60 minutes O: 66%, HP: 80% 120 minutes O: 61%, HP: 80% 240 minutes O: 59%, HP: 75%	O: Two akathisia, one nausea HP: One transient hypotension in a patient known to be dehydrated

*This trial was discontinued early on ethical grounds due to the occurrence of 11 serious adverse events.
RR: relative risk; CI: confidence interval; NS: non-significant statistical difference as 95% confidence interval for relative risk includes the value of 1

Of note, one small trial compared IM midazolam plus IM haloperidol versus IM promethazine plus IM haloperidol. Although medium-term sedation was higher in the IM midazolam plus IM haloperidol group (n = 60; one RCT; RR 12.00; 95% CI 1.66–86.59), the same group was also at a higher risk of showing no clinical improvement (global state) (n = 60; one RCT; RR 25.00; 95% CI 1.55–403.99); this was very low-quality evidence (Zaman et al., 2017).

Another meta-analysis (Ostinelli et al., 2017), with a focus on the use of haloperidol in RT, reviewed two studies that compared IM haloperidol alone versus IM haloperidol plus IM lorazepam (n = 113) and one study where the adjunct benzodiazepine was IM midazolam (n = 60). Significantly more of the participants receiving IM lorazepam plus IM haloperidol were asleep after 3 hours (n = 67; one RCT; RR 1.83; 95% CI 1.11–3.02); fewer participants in the combination group required more than one additional injection (n = 67; one RCT; RR 1.05; 95% CI 0.87–1.27); and by 30 minutes more participants showed overall improvement (n = 45; one RCT; RR 2.67; 95% CI 1.25–5.68), a difference that was not sustained; this was very low-grade evidence. For the combination of midazolam plus haloperidol, no advantage was found; this was very low-grade evidence with only one small study (n = 60) (Ostinelli et al., 2017).

Although both meta-analyses above reviewed much of the available evidence, two studies merit further mention here. Baldaçara et al. (2011) concluded that the combination of IM midazolam plus IM haloperidol showed the worst results across a range of observed parameters. Calver et al. (2013) conducted a prospective study of parenteral sedation for acute disturbance (n = 171). High-dose medication was not associated with more rapid sedation than standard dosage. Just over half of the participants (54%) were prescribed high-dose medication and, in the majority of these cases, the medication was a combination of IM midazolam plus an IM antipsychotic (droperidol or haloperidol).

Benzodiazepine plus promethazine. There is no trial evidence that we are aware of that specifically evaluated the combination of IM lorazepam plus IM promethazine.

Intravenous

Intravenous midazolam is sometimes used for RT in an emergency department setting. An RCT of 153 participants with acute disturbance found IV midazolam to be more rapidly sedating than IV droperidol, but three participants in the IV midazolam arm required active airway management (Knott et al., 2006). A subsequent study found that IV midazolam 2.5–5 mg alone was more likely to result in treatment failure, due to the need for additional sedation, than either combination of IV droperidol 5 mg plus IV midazolam 2.5–5 mg or IV olanzapine 5 mg plus IV midazolam 2.5–5 mg; there was no difference in adverse effects between the three treatment arms (n = 336; Chan et al., 2013).

IV lorazepam was compared with IV droperidol in a randomised 1 hour open-label trial (n = 202); both were effective in achieving sedation within 30 minutes although IV droperidol produced sedation more rapidly than IV lorazepam. However, fewer repeat doses of IV droperidol were required compared with IV lorazepam at 30 minutes. Participants in both arms did not require airway intervention (Richards et al., 1998).

An older study (Lerner, 1979) investigated the efficacy of IV diazepam (30–40 mg) versus IV haloperidol (20–35 mg) over a period of time and not as RT; however, these doses are high compared with current practice. The published data on IV diazepam for acute disturbance are very limited. One article describes a survey of emergency prescribing in a general hospital where medication was given intravenously for 53 out of 102 incidents (Pilowsky et al., 1992). IV diazepam alone or in combination with IV haloperidol appeared to be more predictably and rapidly effective than other medications given intramuscularly. However, if used in clinical practice, the long half-life of diazepam and associated risk of accumulation should be borne in mind. Furthermore, it is important to use the emulsified formulation of diazepam (Diazemuls®) and not the aqueous solution for IV administration as the latter carries a greater risk of adverse effects. If used, Diazemuls should be administered slowly (1.0 ml solution per minute) with the patient kept supine for at least an hour afterwards.

A retrospective study, using historic controls, evaluated the impact of a structured IM sedation protocol, which had replaced the previous practice of IV sedation (Calver et al., 2010). The median duration of acute disturbance using the IM protocol was 21 minutes (n = 58; range 5–78 mins) while the median duration using the IV approach was 30 minutes (n = 79; range 5–135 mins); this difference was statistically significant (p = 0.03). Hence IV medication did not appear to offer an advantage over IM in terms of time to effect.

Adverse effects

The adverse effects of benzodiazepines include, but are not limited to, over-sedation, drowsiness, ataxia and potentially cardiovascular collapse, hypotension with the associated risk of falls and ultimately loss of consciousness. Disinhibition can also occur with benzodiazepines although this is probably uncommon (Paton, 2002). All benzodiazepines can cause respiratory depression and this is more likely with parenteral rather than oral dosing, increasing dosage and with benzodiazepines that are more likely to accumulate on repeated administration, such as diazepam.

IM midazolam has been found to be more sedating than IM lorazepam, with an increased risk of respiratory depression (Nobay et al., 2004), and more sedating than IM antipsychotics alone or in combination with IM promethazine (Baldaçara et al., 2011; TREC Collaborative Group, 2003). In one RCT (n = 91) with three arms, participants who received IM midazolam alone had more treatment failures with additional sedation being required (Isbister et al., 2010). In the same trial 28% of participants receiving IM midazolam experienced oxygen desaturation or airway obstruction compared with 6% for those given IM droperidol and 4% for the combination of IM droperidol plus IM midazolam. Thus, a significant safety concern limits the utility of midazolam as a safe IM RT option and it is not widely recommended (NICE, 2015b). Furthermore, concerns have been raised around the risk of overdose with midazolam injection in adults when used for conscious sedation, leading to a 2008 National Patient Safety Agency Rapid Response Report recommending that stocks of flumazenil (see Box 2) be available where parenteral midazolam is used (NPSA, 2008a, b). We would extend this recommendation to include immediate access to flumazenil wherever parenteral benzodiazepines are prescribed (Joint Formulary Committee, 2018). IV

Flumazenil is a benzodiazepine antagonist (reversal agent) which is administered intravenously and should be used if the respiratory rate falls below 10 breaths/minute or oxygen saturation falls below 90%, due to use of benzodiazepines.
Dose: 200 µg intravenously over 15 seconds. If required level of consciousness is not regained, then 100 µg intravenously every 1 minute as required. Usual dose 300–600 µg; maximum 1 mg per course or in 24 hours.
Precautions: Flumazenil is contraindicated in patients with epilepsy who are receiving long-term benzodiazepines. Flumazenil has a short half-life therefore subsequent doses may be necessary; keeping in mind that benzodiazepine effects may persist for at least 24 hours. If respiratory rate does not normalise with doses of flumazenil, urgently consider other causes of sedation.

Box 2. Flumazenil.

midazolam was associated with the need for active airway management in one study (Knott et al., 2006) whereas this was not the case for IV lorazepam (Richards et al., 1998).

From evidence to practice

Recommended. Buccal midazolam has evidence from a small service evaluation that it is effective. Oral lorazepam may be effective, based on data of its use in combination with an antipsychotic, but it does not have any direct trial evidence to support its use as monotherapy. IM lorazepam alone is effective as highlighted by one of the TREC trials. The combination of IM lorazepam plus IM haloperidol has been evaluated in meta-analyses and found to be effective, although a baseline ECG is advised before haloperidol use (in any formulation) due to the risk of QTc prolongation.

Parenteral benzodiazepines have safety concerns due to the risk of respiratory depression and, as flumazenil can reverse this it must be immediately available wherever parenteral benzodiazepines are used. Due to the potential risk of both respiratory depression and cardiac adverse effects, RT IV options must only be used in settings where resuscitation equipment and trained clinicians are available to manage medical emergencies. In this setting, both IV midazolam and IV lorazepam are effective as evidenced by trial data, but the immediate availability of flumazenil must first be confirmed.

Not recommended. Oral clonazepam has no evidence of effectiveness as monotherapy and it is associated with the risk of accumulation with repeated dosing and the resultant risk of cumulative adverse effects. IM midazolam as monotherapy had good evidence of initial effectiveness but this is not sustained over time due to its short half-life and, importantly, it also carries a risk of respiratory depression. The evidence for IM clonazepam was based on only a very small study. No trial evidence was found that evaluated the combination of IM lorazepam plus IM promethazine. All formulations of diazepam carry the risk of accumulation and at best have only poor-quality evidence for use in RT.

Common antipsychotics

All antipsychotics act on dopamine receptors, usually but not always as dopamine-2 (D2) antagonists. Most also act on other receptors. Antipsychotics vary in their propensity for their various effects depending on their potency and pharmacokinetics. Antipsychotics also vary in terms of their available formulations and this will also differ between countries. When used in the treatment of acute psychotic relapse, antipsychotics are more effective than placebo in reducing psychotic symptoms overall and in reducing acute disturbance as measured using the PANSS-EC subscale (Garriga et al., 2016).

Pharmacokinetics

For general pharmacokinetic considerations see above (De-escalation and rapid tranquillisation). It is commonly believed that oro-dispersible formulations of risperidone and olanzapine are more rapidly absorbed than conventional tablets but this is not the case; Tmax for both oral and oro-dispersible risperidone is 1–2 hours (Janssen-Cilag, 2017), whereas Tmax for both formulations of olanzapine is 5–8 hours (Eli Lilly, 2017a). However, oro-dispersible preparations dissolve very quickly in saliva rendering covert non-adherence more difficult.

For oral haloperidol Tmax is 2–6 hours but for IM haloperidol Tmax is 20 minutes. The IM dose required to give the same plasma concentration as any given oral dose is approximately 30% lower and this is due to the difference in the magnitude of first pass liver metabolism. Tmax for IM aripiprazole is 1 hour and for IM olanzapine 15–45 minutes (see Table 5). Values for other drugs not listed in the table can be obtained from the Summary of Product Characteristics (SmPC) for the individual drug, available at https://www.medicines.org.uk. Note that these data are mostly derived from phase I and II clinical trials and are applicable to working-age adults with normal muscle mass and levels of activity, who have normal liver function and are not prescribed any interacting medicines. In clinical practice, patients who receive RT may vary considerably in terms of age, level of activity and use of substances and alcohol.

All antipsychotic medications used in RT (or their active metabolites) have elimination half-lives of 20 hours or more. Multiple administrations will lead to accumulation that places the patient at risk of adverse effects.

Oral

Garriga et al. (2016) reviewed 26 trials for oral antipsychotics in the treatment of acute disturbance including: one assessing oral first-generation antipsychotics (FGAs), four comparing FGAs with second-generation antipsychotics (SGAs) and 21 assessing SGAs. They concluded that there was no real difference in the efficacy for SGAs as compared to FGAs, either when used alone or in combination with lorazepam. However, most of these trials were not carried out in the acute treatment of agitation and endpoint measurements were at weeks or months rather than hours or days. A subsequent scoping review concluded there is a surprisingly small amount of evidence regarding oral antipsychotics for acute disturbance (Mullinax et al., 2017). Only two studies assessed the efficacy and tolerability of oral olanzapine in the treatment of psychotic acute disturbance. In the first study (n = 87), oro-dispersible tablets were compared to risperidone oral

Table 5. Antipsychotic formulations.

Medication	Route	Formulation	Bioavailability	Time to maximum plasma concentration (Tmax)
Aripiprazole	Oral	Tablet	87%	3–5 hours
	Oral	Oro-dispersible	87%	3–5 hours
	Oral	Liquid	87%	3–5 hours
	IM	Injection	100%	1 hour
Droperidol	Oral	Tablet	75%	1–2 hours
	IM	Injection	100%	⩽30 minutes
	IV	Injection	100%	seconds/minutes
Haloperidol	Oral	Tablet	60–70%	2–6 hours
	Oral	Liquid	60–70%	2–6 hours
	IM	Injection	100%	20–40 minutes
	IV	Injection	100%	seconds/minutes
Olanzapine	Oral	Tablet	Undetermined	5–8 hours
	Oral	Oro-dispersible	Undetermined	5–8 hours
	IM	Injection	Undetermined	15–45 minutes
	IV	Injection	100%	seconds/minutes
Quetiapine	Oral	Tablet	Unknown	1.5 hours
Risperidone	Oral	Tablet	67%	1–2 hours
	Oral	Oro-dispersible	67%	1–2 hours
	Oral	Liquid	70%	1–2 hours

IM: intramuscular; IV: intravenous.

solution (Hatta et al., 2008) and both drugs were equally effective in reducing PANSS-EC scores with no difference in requiring additional injections due to worsening. The second study was a randomised, double-blind trial over five days (n = 604), which evaluated oral olanzapine versus oral aripiprazole and reported significant improvements in PANSS-EC scores but no difference in the treatment groups; however, a greater proportion of participants receiving aripiprazole also required adjunct lorazepam (Kinon et al., 2008).

There is some literature supporting the use of oral risperidone in the management of acute disturbance. In an RCT (n = 162) of a single dose of oral risperidone plus oral lorazepam compared to IM haloperidol plus IM lorazepam, the mean PANSS-EC scores at 30, 60 and 120 minutes after dosing were statistically significantly improved at each time point compared to baseline ($p < 0.0001$) in both groups with no difference between the groups (Currier et al., 2004). A study (n = 226) focusing on acute disturbance in psychosis compared the use of oral risperidone plus oral lorazepam versus IM FGAs with or without adjunct IM lorazepam and found that not only was oral risperidone plus oral lorazepam more successful at two hours but also the incidence of extrapyramidal symptoms (EPS) was lower than with the IM medications (Lejeune et al., 2004). Wilhelm et al. (2008) reported that oral risperidone was associated with improvement in PANSS-EC scores over a 5-day period but that oral risperidone use was usually (72%) associated with concomitant benzodiazepine use. Another study compared oro-dispersible risperidone versus IM haloperidol in a randomised open prospective study found the PANSS-EC score significantly decreased over time in both treatment groups without any significant group difference (Lim et al., 2010). In a small RCT (n = 42) with four treatment arms, Hsu et al. (2010) also found that scores for PANSS-EC and Agitation–Calmness Evaluation Scale (ACES; Meehan et al., 2002) improved over 24 hours for participants receiving an oral solution of risperidone 3 mg.

There is some evidence supporting the use of oral quetiapine to reduce agitation, but these studies are over 6 weeks (Chengappa et al., 2003) or a year (Volavka et al., 2011). One small study (n = 36) conducted over 5 days (Ganesan et al., 2005) suggested effectiveness of quetiapine in acute disturbance as mean scores reduced on the OAS.

Very little evidence has been published regarding oral haloperidol. Trials in which it has been evaluated were over 8 weeks in duration (Higashima et al., 2004) or in combination with IM lorazepam (Veser et al., 2006). One prospective, rater-blinded study (n = 101) over 72 hours compared oral SGAs (risperidone, olanzapine and quetiapine) versus oral haloperidol and reported effectiveness for all four treatments with decreases in scores of the hostility-suspiciousness factor derived from the Brief Psychiatric Rating Scale (BPRS; Overall and Gorham, 1962) and Modified Overt Aggression Scale (Kay et al., 1988), with no significant differences between the groups. However, EPS were more common in the haloperidol group (21.4%) than in the risperidone (7.4%), olanzapine (0%) or quetiapine (0%) groups (Villari et al., 2008).

Oral versus intramuscular

A number of small studies have explored the relative effectiveness of oral and IM antipsychotic medications in the management of psychotic agitation and found little difference between them. For example, the relative effectiveness of oral risperidone plus oral lorazepam and IM haloperidol plus IM lorazepam was reviewed by Currier and Medori (2006), who concluded that these strategies were equally effective.

A small study (n = 42) found that participants who received IM olanzapine or oral disintegrating olanzapine tablets showed significantly greater improvements in PANSS-EC scores when compared with those administered IM haloperidol (Hsu et al., 2010). A naturalistic study that tracked clinical practice after orodispersible olanzapine was made available for general use (Simpson et al., 2006) found that this did not result in any change in the prevalence of use of restrictive interventions (IM medication, seclusion or restraint).

A recent review by Mullinax et al. (2017) of trials evaluating oral antipsychotics for participants with acute disturbance found only six small studies (n = 464; range 20–162), five of which compared oral SGAs to either IM FGAs or IM SGAs. In general, the studies found that oral SGAs were effective for reducing acute disturbance and had side-effect profiles that were comparable to those of FGAs (Mullinax et al., 2017).

Intramuscular monotherapy

A review of RCTs (most of which were placebo-controlled licensing studies) of parenteral formulations of SGAs for psychotic acute disturbance concluded that, for 'response at 2 hours' the numbers needed to treat were three for IM olanzapine and five for IM aripiprazole (Citrome, 2007).

Haloperidol. The efficacy and safety of haloperidol, by any route, for psychosis-induced acute disturbance has been considered in a Cochrane review (Ostinelli et al., 2017). Many comparisons are reported on and the main results highlight that haloperidol, as compared with placebo, does cause sedation in that more participants are asleep at 2 hours. Compared with those participants receiving IM aripiprazole, those given IM haloperidol required fewer injections (n = 473; two RCTs; RR 0.78; 95% CI 0.62–0.99; low-quality evidence). When compared to those given IM lorazepam there was no difference in the proportion asleep at 1 hour (one RCT; n = 60; RR 1.05; 95% CI 0.76–1.44; very low-quality evidence). There were clear concerns raised in a number of studies regarding the propensity of haloperidol to cause acute dystonia, and the authors concluded that where additional drugs are available, sole use of haloperidol for extreme emergency could be considered unethical. Adjunct promethazine for haloperidol has higher-quality evidence from RCTs as outlined below (see Intramuscular antipsychotics in combination with other medications).

Olanzapine. One RCT (n = 150) compared IM olanzapine, IM ziprasidone, IM haloperidol, IM haloperidol plus IM promethazine, and IM haloperidol plus IM midazolam and found no large differences between these treatment arms with respect to efficacy (Baldaçara et al., 2011). A systematic review and meta-analysis of the efficacy and safety of IM olanzapine for the management of acute disturbance, including RT, concluded that IM olanzapine and IM haloperidol were equally effective but the former was better tolerated with respect to EPS and was associated with marginally less QT prolongation (Kishi et al., 2015). A Cochrane review, which addressed psychosis-induced acute disturbance, concluded that IM olanzapine is rapidly effective but more likely to result in subsequent injections being required than the combination of IM haloperidol plus IM promethazine recommended by NICE (Huf et al., 2016; NICE, 2015b). A large prospective observational study of the use of parenteral olanzapine in an acute hospital setting reported that 1% (5 of 489) of participants who received olanzapine IM required intubation (Cole et al., 2017).

Droperidol. Droperidol is a butyrophenone antipsychotic with a similar pharmacology to haloperidol, although it is more sedative. Droperidol, both orally and parenterally, was commonly used for the management of acute disturbance in psychiatric settings in the UK until it was withdrawn from use in 2001 due to an association with QTc prolongation (Meyer, 2003; Reilly et al., 2000). Continuing interest in the use of droperidol for RT, particularly in Australia, has prompted a number of recent RCTs.

In a blinded trial, 91 acutely disturbed participants who were seen in general hospital medical emergency departments in Australia were randomised to receive IM droperidol (10 mg), IM midazolam (10 mg) or a combination of IM droperidol (5 mg) plus IM midazolam (5mg) (Isbister et al., 2010). The primary outcome was the duration of acute disturbance and this did not differ across treatment arms, although it was noted that IM midazolam alone required additional sedation more often than the other two treatment arms. Having determined that IM droperidol alone was as effective as and safer than IM midazolam in this small RCT, safety was further explored in a large prospective observational study, again in general hospital emergency departments. Of 1009 participants who received parenteral (IM or IV) droperidol 10 mg and where a post-administration ECG was possible, just 13 participants (1.3%) had evidence of QTc prolongation, and in half of these cases other prescribed medicines are likely to have contributed. There were no cases of torsades de pointes (Calver et al., 2015b).

A further blinded RCT conducted in a psychiatric intensive care unit (PICU) in Australia compared IM droperidol 10 mg (n = 118) with IM haloperidol 10 mg (n = 110) and the median time to sedation was 20 minutes for IM haloperidol and 25 minutes for IM droperidol (not statistically significant, Calver et al., 2015a). More additional sedation was required in those randomised to the IM haloperidol arm and more adverse effects, mainly hypotension, were seen in the IM droperidol arm. A Cochrane review, which did not differentiate between IM and IV routes, concluded that droperidol is effective and can be used to manage acute disturbance caused by psychosis (Khokhar and Rathbone, 2016).

Aripiprazole. A recent Cochrane review evaluated three poor-quality studies (n = 885) that compared IM aripiprazole versus placebo or IM haloperidol or IM olanzapine (Ostinelli et al., 2018). When aripiprazole was compared with placebo, fewer injections were required (RR 0.69; 95% CI 0.56–0.85) and clinically important improvement in acute disturbance favoured the IM aripiprazole group at 2 hours (RR 1.50; 95% CI 1.17–1.92) with more participants experiencing adverse effects in the IM aripiprazole group (RR 1.51; 95% CI 0.93–2.46). When IM aripiprazole was compared with IM haloperidol, more injections were required (n = 477; two RCTs; RR 1.28; 95% CI 1.00–1.63) with no significant difference in agitation (RR 0.94; 95% CI 0.80–1.11). When compared with IM olanzapine, IM aripiprazole was less effective in reducing agitation at 2 hours (RR 0.77; 95% CI 0.60–0.99) and there was no difference in adverse effects apart from participants allocated to IM aripiprazole experiencing less

somnolence (RR 0.25; 95% CI 0.08–0.82). Another double-blind, placebo-controlled trial (n = 357) evaluated IM aripiprazole and IM haloperidol, and both groups showed significant changes in PANSS-EC and ACES compared with placebo, although IM aripiprazole showed significant changes earlier (Tran-Johnson et al., 2007). In a further double-blind RCT for 301 acutely agitated inpatients, sedation during the first 2 hours was greater with IM lorazepam compared with IM aripiprazole but improvement in PANSS-EC scores was similar at 2 hours (Zimbroff et al., 2007).

Intramuscular antipsychotics in combination with other medications

Haloperidol plus promethazine. The evidence for IM haloperidol plus IM promethazine comes from the methodologically robust TREC trials on RT (see Box 1 and Table 4). When the TREC trials are considered together, it can be concluded that a combination of IM haloperidol plus IM promethazine is more rapidly effective than IM lorazepam or IM haloperidol alone, as rapidly effective as IM olanzapine, with IM haloperidol plus IM promethazine having a longer-lasting sedative effect and IM olanzapine requiring more additional drugs. Adding two further trials (Baldaçara et al., 2011; Mantovani et al., 2013) to the evidence of the TREC trials, a Cochrane review (Huf et al., 2016) concluded that IM haloperidol and IM promethazine was effective and safe, and its use was based on good evidence. For IM haloperidol plus IM promethazine versus IM haloperidol alone, the combination was clearly more effective (n = 316; one RCT; RR 0.65; 95% CI 0.49–0.87).

A recent meta-analysis (Ostinelli et al., 2017), which focused on the use of haloperidol in RT, described two studies comparing IM haloperidol versus IM haloperidol plus IM promethazine (n = 376). Significantly more participants in the combination group were tranquil or asleep by 20 minutes (n = 316; RR 1.60; 95% CI 1.18–2.16). The relative risks were still in favour of the combination at 40, 60 and 120 minutes, but these were not statistically significant. The combination needed less repeat RT at 2 hours (n = 376; two RCTs; RR 0.78; 95% CI 0.43–1.41). Of note, the authors of this meta-analysis also commented on the propensity of haloperidol alone to cause adverse effects. The adverse effect of dystonia caused by haloperidol was not offset by the addition of lorazepam (n = 67; one RCT; RR 8.25; 95% CI 0.46–147.45; very low quality of evidence). However, based on the study by Huf et al. (2007), which had a high relative risk for acute dystonia in the IM haloperidol group (n = 316; RR 19.48; 95% CI 1.14–331.92), there is an indication of a protective effect of IM promethazine when given in combination with IM haloperidol (Ostinelli et al., 2017).

Haloperidol plus lorazepam. Two recent meta-analyses have reviewed the combination of haloperidol plus lorazepam. Zaman et al. (2017) reviewed RCTs of benzodiazepines alone or in combination with other agents for acute disturbance due to psychosis, which included 20 trials with 695 participants. The review concluded there were no clear differences between IM benzodiazepines plus antipsychotics versus IM benzodiazepines alone; this was very low-quality evidence. Ostinelli et al. (2017) focused on the use of haloperidol in RT and described two studies that provided very low-grade evidence in favour of IM haloperidol plus IM lorazepam versus IM haloperidol (n = 113), and one study where the adjunct benzodiazepine was IM midazolam (see IM benzodiazepines in combination with other medications, above).

Intravenous

As the skills and equipment required to administer sedative medication IV are unlikely to be available in psychiatric settings, the routine use of IV medication in such settings cannot be recommended. Use in exceptional circumstances should be restricted to settings where resuscitation facilities are available and staff are trained to manage medical emergencies, such as in an emergency department.

Droperidol. A Cochrane review, which did not differentiate between IM and IV routes but did include three trials on IV droperidol, concluded that droperidol is effective and can be used to manage acute disturbance caused by psychosis (Khokhar and Rathbone, 2016).

Three large Australian RCTs conducted in emergency departments have examined the relative efficacy and safety of a number of IV strategies, and the first two were included in the Cochrane review. The first RCT found IV midazolam 5 mg to be more rapidly sedating than IV droperidol 5 mg, with three participants in the IV droperidol arm developing dystonia (n = 153; Knott et al., 2006). The second RCT reported that IV midazolam 2.5–5 mg alone was more likely to result in treatment failure (i.e. a need for additional sedation) than either of the two comparator combinations of IV midazolam plus IV droperidol 5 mg or IV midazolam plus IV olanzapine 5 mg; no differences in adverse effects were seen for the three treatment arms (n = 336; Chan et al., 2013). The third RCT reported that the combination of IV midazolam 5 mg plus IV droperidol 5 mg resulted in more rapid sedation but also in more cases of respiratory events than either IV droperidol 10 mg alone or IV olanzapine 10 mg; there were seven reported cases of QTc prolongation across all three treatment arms (n = 349; Taylor et al., 2017). Subsequent subgroup analysis of the third trial focusing on management of methamphetamine-induced agitation found similar results (Yap et al., 2017). In an older randomised study (n = 202), IV droperidol was associated with more rapid sedation, also requiring less repeat dosing than IV lorazepam (Richards et al., 1998).

Olanzapine. IV olanzapine was the focus of two studies conducted in emergency departments. One was a retrospective cohort study of 713 patients receiving IV olanzapine in the emergency department, including 177/265 (68.8%) of patients for whom adequate sedation was achieved with a single dose of IV olanzapine. However, 10% of the total sample of patients developed hypoxia with oxygen saturation < 92% and seven patients (1%) required intubation (Martel et al., 2016). The other was a prospective observational study of acutely disturbed patients and respiratory depression occurred in 3.7% of those receiving IV olanzapine (n = 295) with two requiring intubation, and in 2.0% for IM olanzapine (n = 489) with five requiring intubation (Cole et al., 2017).

Haloperidol. Only one study has been found for haloperidol (n = 136), which included participants receiving IV administration (n = 19) for acute disturbance; however, this study did not report

its findings separately for the different routes other than to comment that the IV route required repeated dosing more often than IM or oral routes (Clinton et al., 1987). No RCTs of IV haloperidol have been published. Haloperidol carries a risk for QT prolongation, but the assertion that IV haloperidol is more likely to cause adverse cardiovascular effects may be confounded by its primary use in medically ill populations (Beach et al., 2017) and therefore an ECG is recommended before its use. In cases where IV administration is judged to be clinically necessary, this should be done only under continuous ECG monitoring for the detection of QT prolongation and severe cardiac arrhythmias.

Adverse effects

Adverse effects are frequently dose related with higher doses and combinations having higher risks. One prospective observational study (Calver et al., 2013) compared a high dose (above 10 mg) with a standard dose (10 mg and below) of IM haloperidol, IM droperidol or IM midazolam and reported that high-dose sedation did not result in more rapid or effective sedation but was associated with double the incidence of side effects of standard doses, specifically hypotension and oxygen desaturation. Symptomatic hypotension has been reported with the co-administration of IM olanzapine and IM benzodiazepines (Zacher and Roche-Desilets, 2005). The manufacturer of olanzapine has cautioned against combining IM olanzapine with IM benzodiazepines (http://www.palliativedrugs.org/download/SafetyLetterzyprexa.pdf). However, a retrospective case series reported IM olanzapine was safe when given in combination with a benzodiazepine in patients who had not ingested alcohol; where alcohol had been consumed the combination of IM olanzapine and an IM benzodiazepine was associated with oxygen desaturation (Wilson et al., 2012a).

Antipsychotics can also cause EPS (Barnes et al., 2011). Some develop over time with repeated doses, but others can develop acutely, including oculogyric crises and acute dystonic reactions. Restlessness associated with akathisia can resemble agitation and therefore may lead to further doses being administered. IM haloperidol, when administered alone, has a greater propensity to cause acute EPS (Satterthwaite et al., 2008) and therefore its use as a single agent is not recommended (Ostinelli et al., 2017) but, if it is, an anticholinergic such as IM procyclidine can be prescribed for the treatment of acute dystonia (Taylor et al., 2015.)

Some antipsychotics, particularly parental haloperidol and droperidol, are known to increase the QTc on the ECG, even at therapeutic doses. A QTc of greater than 500 ms is associated with an increased risk of torsades de pointes (Glassman and Bigger, 2001; Haddad and Anderson, 2002; Taylor, 2003). It is therefore advised, as the licence for haloperidol recommends, that a baseline ECG should available before administering IM haloperidol (Concordia International, 2017). Consequently, as it is often not possible in the scenario of acute disturbance to carry out an ECG, and if one has not been done recently, haloperidol alone should be avoided.

Neuroleptic malignant syndrome (NMS) is a potentially fatal symptom complex associated with all antipsychotics. In clinical trials, rare cases of NMS were reported during treatment with all antipsychotics (see SmPC on https://www.medicines.org.uk). If a patient develops signs and symptoms indicative of NMS or presents with unexplained high fever without additional clinical manifestations of NMS, all antipsychotic active substances must be discontinued and supportive measures ensured (Su et al., 2014; Taylor et al., 2015).

From evidence to practice

Recommended. Oral formulations of aripiprazole, olanzapine and risperidone all have trial evidence supporting their effectiveness. Oral haloperidol and oral quetiapine both have some evidence of effectiveness. IM antipsychotic monotherapy options include IM aripiprazole and IM droperidol as both have good trial evidence supporting their use. IM olanzapine also has good evidence of efficacy as confirmed by one of the TREC trials, but it should only be administered by itself and not concurrently with IM benzodiazepines due to risk of hypotension; thus, there should be an interval of at least 1 hour between the two. The combination of IM haloperidol plus IM promethazine has been evaluated in meta-analyses, which included the TREC trials, and this combination has been found to be effective. Similarly, meta-analyses have also confirmed the efficacy of the combination of IM lorazepam plus IM haloperidol.

Due to the potential risk of both respiratory depression and adverse cardiac effects, RT IV options must only be used in settings where resuscitation equipment and trained clinicians are available to manage medical emergencies. In this setting, IV droperidol is effective as supported by trial evidence. IV olanzapine also has evidence of effectiveness but caution is advised due to the risk of respiratory depression and the lack of reversing agent. A baseline ECG is advised before use of haloperidol and droperidol in any formulation, as both are associated with a risk of QTc prolongation.

Not recommended. Although IM haloperidol monotherapy has evidence of effectiveness, measures are required to offset its adverse effects; this is especially true for its risk of acute dystonia, which can be somewhat ameliorated by the use of adjunct IM promethazine. IV haloperidol has a lack of evidence for its use in RT.

Other interventions

Promethazine

Promethazine is a sedating antihistamine with anticholinergic effects. It is from the phenothiazine family and differs structurally from antipsychotic phenothiazines by the presence of a branched side chain and no ring substitution (Babe and Serafin, 1996). In the UK, oral promethazine is available over the counter without prescription and is licensed for symptomatic treatment of allergic conditions and anaphylaxis, sedation and treatment of insomnia (Joint Formulary Committee, 2017). Promethazine acts as a strong antagonist at histamine H1 receptors, as a moderate antagonist at muscarinic receptors and weak/moderate antagonist at serotonin (5HT2A and 5HT2C), D2 and adrenergic α-1 receptors (NLM Toxnet, 2018). Its onset of sedative effect ranges from 20–30 minutes (oral and IM), Tmax is 2–3 hours (oral/IM). Its effects last 4–6 hours but may persist for as long as 12 hours following oral dosing.

The British National Formulary recommended dose for short-term sedation is 25–50 mg orally or 25–50 mg IM, not exceeding 100 mg per IM dose when used for treatment of allergic reactions; there is no recommended maximum daily dose for sedation (Joint Formulary Committee, 2017). Total doses of up to 150 mg

daily are sometimes used in acute psychiatric settings; there is evidence from toxicology studies suggesting that the lethal dose of promethazine in adults far exceeds these limits (NLM Toxnet, 2018).

In spite of its sedative properties, no studies have evaluated the use of oral or IM promethazine as monotherapy in RT. That being said, IM promethazine 50 mg has been described as a useful sedative option in benzodiazepine-tolerant patients, recommending that response should be assessed 1–2 hours after injection (Taylor et al., 2015). IM promethazine plus IM haloperidol is considered as an option for RT (NICE, 2015b) following evidence from a Cochrane review (Huf et al., 2009) of the four TREC trials, all of which included IM promethazine 25–50 mg plus IM haloperidol 5–10 mg (see Box 1 and Table 4). A more recent Cochrane review (Huf et al., 2016), included two further RCTs and concluded that IM haloperidol plus IM promethazine is effective and safe (see Intramuscular antipsychotics in combination with other medications, above).

Promethazine has no absolute contra-indication in adults (Joint Formulary Committee, 2017). Its adverse effects include drowsiness, agitation, confusion, dizziness, hypotension, central nervous system depression and lowering of seizure threshold (Burst, 1996: 99–125). It can also cause anticholinergic effects, EPS including tardive dyskinesia, and rarely also NMS (Chan-Tack, 1999), blood dyscrasias and allergic reactions (Sanofi, 2016). In a case series (n = 199) with 237 presentations of promethazine poisonings, the median dose ingested was 625 mg (350–1250 mg), with delirium (44%) and tachycardia (56%) the most common effects, with 10 cases admitted to the intensive care unit (Page et al., 2009). Of the 354 cases of promethazine abuse or intentional misuse reported to United States (US) Poison Centers between 2002 and 2012, the most common clinical effects were drowsiness (43.2%), agitation (13.7%), confusion (13.7%) and tachycardia (7.4%) and less than 20% required hospital admission (Tsay et al., 2015). There is no reversing agent.

Loxapine

Loxapine is a dibenzoxazepine tricyclic antipsychotic with some structural similarities to clozapine (Popovic et al., 2015). The pharmacodynamic properties include receptor binding particularly at D2 and 5HT2A receptor, and a high 5HT/D2 ratio (Buckley, 1999; Glazer, 1999; Stahl, 1999). Regarding affinity for other receptors, loxapine also binds to D4, 5HT6 and 5HT7 receptors (Chakrabarti et al., 2007; Roth et al., 1995; Stahl, 2013) and has antagonistic properties at noradrenergic, histaminergic H1 and muscarinic M1 receptors (Popovic et al., 2015). This FGA has oral and short-acting IM formulations as well as a more recent inhalatory formulation but, in the UK, only the latter is available (Galen Ltd, 2018).

The oral formulation was primarily used in schizophrenia (Chakrabarti et al., 2007) and was available in the UK in the 1990s but its use was uncommon. Since the 1970s, loxapine has been evaluated for the treatment of acute disturbance. Five small-scale, randomised, double-blind trials demonstrated comparable effects on acute disturbance for oral loxapine in comparison with oral trifluoperazine (Moyano, 1975) and oral haloperidol (Selman et al., 1976) and for IM loxapine versus IM haloperidol (Fruensgaard et al., 1977; Paprocki and Versiani, 1977; Tuason, 1986).

In 2012, the US Food and Drug Administration approved an inhalatory formulation of loxapine for adults with acute disturbance associated with schizophrenia or bipolar I disorder. In the UK, the inhalatory loxapine dose is 9.1 mg. Oral inhaled loxapine has high bioavailability and Tmax is 2 minutes. In a phase II trial, Allen et al. (2011) evaluated inhaled loxapine in 129 acutely disturbed participants with schizophrenia or schizoaffective disorder, who were randomised to 5 or 10 mg of inhaled loxapine compared with placebo. Inhaled loxapine 10 mg showed a rapid onset of action with improvement after 20 minutes compared with placebo ($p < 0.05$; secondary outcome); statistically significant differences were also found for the 10 mg dose with respect to the PANSS-EC score compared with placebo after 120 minutes ($p < 0.01$; primary outcome). In the first phase III trial, Lesem et al. (2011) found that 5 mg and 10 mg doses of inhaled loxapine were effective in reducing acute disturbance as measured by PANSS-EC in schizophrenia when compared with placebo during a 2-hour observation timeframe (both $p < 0.001$; primary outcome, n = 344). The inhaled loxapine doses of 5mg and 10mg were rapidly effective in reducing PANSS-EC scores even after 10 minutes (both $p < 0.001$), the earliest assessment time in this trial. In the subsequent phase III trial, inhaled loxapine (5 mg and 10 mg) significantly reduced PANNS-EC scores in agitated participants with bipolar disorder compared with placebo after 10 minutes (secondary outcome; $p < 0.0001$ for both doses), and after 120 minutes (primary outcome; $p < 0.0001$ for both doses; n = 314) (Kwentus et al., 2012). The use of inhaled loxapine presumes a degree of patient collaboration. This may be true for most cases of mild-to-moderate agitation, but perhaps not for more severe acute disturbance (de Berardis et al., 2017).

Concerns have been raised due to respiratory effects after loxapine inhalation and its use is contraindicated in patients with acute respiratory distress or with active airways disease such as asthma or chronic obstructive pulmonary disease (Nordstrom and Allen, 2013; Popovic et al., 2015). A brief respiratory assessment and close-proximity availability of short-acting ß-agonist bronchodilator is recommended (de Berardis et al., 2017; Gross et al., 2014). The most common adverse effects in the three trials were dysgeusia (metallic taste), throat irritation and sedation (Allen et al., 2011; Kwentus et al., 2012; Lesem et al., 2011) and the reported severe adverse effects included two acute dystonic reactions (Allen et al., 2011; Lesem et al., 2011), two episodes of severe sedation (Kwentus et al., 2012; Lesem et al., 2011) and one episode of moderate akathisia (Kwentus et al., 2012).

Levomepromazine

Levomepromazine, also known as methotrimeprazine, is an antipsychotic with pharmacology similar to the phenothiazine chlorpromazine and its antihistamine derivative promethazine. Levomepromazine is more sedating than chlorpromazine and, additionally, it has antiemetic, antihistamine and anti-adrenaline activity. It is available as oral tablets and as a solution for IM and IV injection and subcutaneous infusion (Sanofi, 2017; Wockhardt UK Ltd, 2017). Tmax is 1–3 hours for the oral route (bioavailability 50–60%) and 30–90 minutes for the IM route. Its common side-effects include QT prolongation and hypotension (Wockhardt UK Ltd, 2017).

The oral formulation is licensed as an alternative to chlorpromazine in the treatment of schizophrenia (Sanofi, 2017), although a Cochrane review, which included four RCTs, was not able to confidently comment on the effectiveness of levomepromazine for schizophrenia (Sivaraman et al., 2010). However, it is commonly used parenterally in the management of terminal illness for its profound sedative and antiemetic properties; it is frequently administered in combination with other central nervous system agents or analgesics (e.g. opiates) via a syringe driver.

Published studies for its use in the management of acute disturbance are sparse, with no published evidence for the efficacy of oral levomepromazine monotherapy in the management of acute disturbance pre-RT. A small randomised open trial (n = 19) comparing oral haloperidol versus oral haloperidol plus oral levomepromazine found no clear difference between groups (Higashima et al., 2004). Bucci and Saunders (1964) studied the effect of IM levomepromazine (dose range 25–100 mg) in 35 female patients over timeframes that are not relevant to RT (days or weeks). Of concern, 14 of the 35 patients demonstrated apathy and psychomotor depression further into the study.

More recently, a Japanese open-label, flexible-dose, naturalistic observational study (Suzuki et al., 2014) for the treatment of acute disturbance in inpatients (n = 122) with schizophrenia, compared the efficacy and safety of IM olanzapine, IM haloperidol and IM levomepromazine (n = 37). Notably, the participants in this study were receiving concomitant additional antipsychotic treatment. Clinical symptoms and safety were assessed using standard scales at 1 hour after IM medication. The results display a varied picture in that mean changes from baseline for PANSS-EC, ACES, Barnes Akathisia Rating Scale (BARS; Barnes, 1989), Abnormal Involuntary Movement Scale (Guy, 1976a), and Drug-Induced Extrapyramidal Symptoms Scale (DIEPSS; Inada, 1996) were significantly better for IM levomepromazine and IM olanzapine, as compared with IM haloperidol. Within these, the mean changes from baseline for BARS and DIEPSS were significantly better for IM olanzapine versus IM levomepromazine. Furthermore, the mean change from baseline for the PANSS positive subscale was much better for IM olanzapine and IM haloperidol, as compared with IM levomepromazine. They concluded that the effects of IM olanzapine and IM levomepromazine on acute disturbance are more rapid than those of IM haloperidol, but also suggest that compared with IM levomepromazine, IM olanzapine is safer and affords greater improvement in symptoms.

Although the published evidence is lacking, the potential safety concerns referred to by these two studies (Higashima et al., 2004, Suzuki et al., 2014) are also highlighted in the recent Cochrane review on levomepromazine, which was for the different clinical setting of palliative care. This review commented that the higher doses used to achieve antipsychotic activity are more likely than lower doses to cause significant sedation or postural hypotension (Cox et al., 2015).

Zuclopenthixol acetate

Zuclopenthixol acetate (ZA) is an FGA and is best known by its trade name Clopixol Acuphase®. Zuclopenthixol is a thioxanthine dopamine antagonist first introduced in the early 1960s. Its elimination half-life is around 20 hours. IM injection of zuclopenthixol base results in rapid absorption and a duration of action of 12–24 hours. By slow absorption after IM injection, the effective half-life (and so duration of action) becomes dependent on the rate of release from the IM reservoir. This can be achieved by esterification of the zuclopenthixol molecule; the rate of release being broadly proportion to the length of the ester carbon chain. Thus, zuclopenthixol decanoate is slow to act but very long-acting as a result of retarded release after IM injection. Alternatively, ZA is administered intramuscularly and it provides relatively prompt release but with an intermediate duration of action.

The initial pharmacokinetic study of ZA included 19 participants 'in whom calming effect by parenteral neuroleptic was considered necessary' (Amdisen et al., 1986). Zuclopenthixol was detectable in the plasma after 1–2 hours but did not reach peak concentrations until around 36 hours after dosing. At 72 hours, plasma concentrations were around a third of those at 36 hours. The clinical effect of ZA was not rapid as 10 of 17 participants exhibited minimal or no change in psychotic symptoms at 4 hours. Sedation was evident at 4 hours but it had effectively abated by 72 hours.

A follow-up study by the same research group examined more closely the clinical effects of ZA in 83 participants (Amdisen et al., 1987). The authors concluded that ZA produced 'pronounced and rapid reduction in psychotic symptoms'. In fact, psychotic symptoms were first assessed only after 24 hours and so a claim of rapid effect is not reasonably supported. Sedative effects were measured (0 = no sign of sedation; 1 = slightly sedated; 2 = moderately sedated) after 2 hours when a statistically significant effect was observed. Mean sedation scores were 0.0 at baseline, 0.6 at 2 hours, 2.2 at 8 hours and 1.1 at 72 hours. Dystonia and rigidity were the most commonly reported adverse effects.

Two independently conducted open studies produced similar results with a slow onset of effect peaking at 24 hours and still being evident at 72 hours (Balant et al., 1989; Lowert et al., 1989). Thereafter, the first UK study reported that a significant reduction in psychosis score was first evident at 8 hours and scores continued to fall until the last measurement at 72 hours; of 25 participants assessed only four showed signs of tranquillisation at 1 hour, 19 participants at 2 hours and 22 participants at 24 hours (Chakravarti et al., 1990).

The first comparative trial of ZA examined its effects and those of IM/oral haloperidol and IM/oral zuclopenthixol in multiple doses over 6 days (Baastrup et al., 1993). The two non-ester, IM/oral preparations produced a greater degree of sedation at 2 hours than did ZA, but the effect of ZA and zuclopenthixol was more sustained than with haloperidol over 144 hours (although participants received more zuclopenthixol doses). No clear differences between treatments were detected, with the exception of the slow onset of effect of ZA. The number of doses given varied substantially: ZA 1–4; haloperidol 1–26 and zuclopenthixol 1–22. The key, and perhaps unique, advantage of ZA is that it reduces the need for repeat doses in acute psychosis. Indeed, this was the principal finding of the first double-blind study of ZA (Chin et al., 1998). Participants were given either ZA or IM haloperidol and assessed over three days. Changes in BPRS and Clinical Global Impression (CGI) (Guy, 1976b) scores were near identical on each daily assessment. However, only 1 of 23 ZA participants required a second injection whereas 7 of 21 required a repeat dose of

haloperidol. Rapidity of onset was not examined. Similar findings were reported by Thai researchers comparing the same treatments (Taymeeyapradit and Kuasirikul, 2002) and in three other studies of moderate size (Al-Haddad et al., 1996: *n* = 49; Brook et al., 1998: *n* = 44; Chouinard et al., 1994: *n* = 40). In each study, the timing of assessments was such that time to onset of effect could not be determined.

A Cochrane review by Jayakody et al. (2012) included all of the above comparative studies as well as three further studies (Uys and Berk, 1996; Liu et al., 1997; Ropert et al., 1988) for which we were unable to obtain full details. The authors concluded that all studies were methodically flawed and poorly reported and that ZA did not appear to have a 'rapid onset of action'. They noted that ZA was probably no less effective than other treatments and that its use might 'result in less numerous coercive injections'.

Overall, the utility of ZA in RT is limited by a somewhat delayed onset of both sedative and antipsychotic actions. Sedation may be apparent in a minority of patients after 2–4 hours, but antipsychotic action is evident only after 8 hours. If ZA is given to a restrained patient, their behaviour on release from restraint is likely to be unchanged and will remain as such for several hours. ZA has a role in reducing the number of restraints for IM injection but it has no role in RT. Further, as new indications are considered such as agitation due to novel psychoactive substances (NPS), there is as yet no evidence to support the use of ZA in RT, even when BNF dose limits have been exhausted for other more commonly used drugs in RT. An ECG is advised (Joint Formulary Committee, 2018).

Dexmedetomidine

IV dexmedetomidine is a highly selective α_2-adrenergic receptor agonist that is used in general hospitals, particularly so in medical and surgical intensive care units (Maze et al., 2001). In a meta-analysis of 14 RCTs including a total of 3029 participants in an intensive care unit setting, IV dexmedetomidine appeared to be superior to all other agents, including midazolam and placebo, showing a significant reduction in the incidence of agitation, confusion and delirium (Pasin et al., 2014). Calver and Isbister (2012) investigated the effectiveness and safety of IV dexmedetomidine in difficult-to-sedate patients (i.e. when two attempts at parenteral sedation failed) and reported that it was successful in achieving sedation in all but one patient, although the effect was short lasting and adverse events were frequent, mostly hypotension. The authors concluded that safe administration of dexmedetomidine is beyond the monitoring capability of most emergency departments. Although dexmedetomidine is an established option in the medical intensive care unit, there is scant evidence for its use in the emergency department.

Barbiturates

Until around 20 years ago, barbiturates such as IM amylobarbitone were sometimes used in RT (Pilowsky et al., 1992). Barbiturate use was unsupported by any formal trials or publications. Moreover, as potent respiratory depressants for which no reversing agent is available, barbiturates are exceptionally dangerous drugs when given parenterally and facilities for mechanical ventilation should be available (Kerr and Taylor, 1997; Taylor et al., 1999). Today, only barbiturates used in anaesthesia remain licensed and readily available. Amylobarbitone is available on a 'named-patient' basis but it cannot be recommended for RT given the dangers associated with its use and the near absence of experience of its use amongst clinicians working in acute psychiatry in the context of RT.

Valproate

Sodium valproate was originally introduced as an antiepileptic agent in the 1960s and, soon after, there were reports of its use in bipolar disorder. There have been suggestions that it is of use in acute disturbance, in the context of varying diagnoses, since 1988 (Haddad et al., 2009). It is not generally included in RT protocols but has an acknowledged role in the optimisation of management in patients who are experiencing mania (Bowden et al., 1994; Freeman et al., 1992, Goodwin et al., 2016). In the absence of affective symptoms, there is limited evidence and a lack of RCT evidence to support the role that valproate may have in the management of aggression (Lindenmayer and Kotsaftis, 2000).

In schizophrenia, some uncontrolled studies have suggested that there may be promise for oral valproate as an anti-aggressive agent (Chong et al., 1998; Citrome et al., 2004) but this has not been established in later controlled studies (Volavka and Citrome, 2008). In a Cochrane review, its use as adjunct treatment in the management of schizophrenia in the absence of aggressive symptoms was concluded to have a limited evidence base (Wang et al., 2016).

The best evidence regarding oral valproate is in managing mania which, arguably, could reduce the requirement for RT. In placebo-controlled trials, valproate was found to be effective and comparable to lithium (Bowden, 2003; Pope et al., 1991). However, there is evidence to suggest that the combination of an SGA with sodium valproate is more effective (Goodwin et al., 2016; Ogawa et al., 2014). It should be stressed that these would be treatment choices to stabilise manic symptoms over a period of days rather than in clinical situations where RT is to be considered. Although Keck and McElroy described a rapid clinical response after using 'loading' doses of valproate for a small number of patients (Keck et al., 1993; McElroy et al., 1993, 1996), larger trials are needed.

The limited evidence for the use of valproate in aggression should be considered in the context of the potential side effects although weight gain, which is the most problematic, would not necessarily be considered in the acute situation. However, all prescribers must be aware that it should not prescribed to women of child-bearing age due to the risk of teratogenicity (NICE, 2016a).

Ketamine

Ketamine is an NMDA receptor antagonist that is used as an anaesthetic agent, particularly in emergency situations. In recent years there has been a large amount of research into the use of IV ketamine infusions (most commonly at a dose of 0.5 mg/kg) as a rapidly acting antidepressant treatment (Berman et al., 2000; Zarate et al., 2006). There have been reports that in addition to being an antidepressant, ketamine has a specific acute anti-suicidal effect (Wilkinson et al., 2017). Such effects may be of relevance to the management of the mental disorder underlying the acute disturbance. However, the use of IV ketamine is

complicated. In a psychiatric context, it is usually recommended for use administered by an anaesthetist in an electroconvulsive therapy (ECT) suite, which ensures full resuscitation equipment is to hand (Diamond et al., 2014).

In terms of the specific use of ketamine for the management of acute disturbance, this has mostly been investigated in emergency departments where there is extensive evidence regarding its use for procedural sedation (Bellolio et al., 2016) and the management of pain (Motov et al., 2017). It is argued to be an ideal medication to sedate patients, with a rapid onset of action and minimal effects on airway control, breathing, heart rate, or blood pressure (Scaggs et al., 2016). Data from emergency departments are sparse but include a small retrospective review of 27 patients treated with IM ketamine. This found few major adverse effects on vital signs (mean systolic blood pressure increase of 17 ± 25 mmHg and increased heart rate of 8 ± 17 beats/min), even in a population with alcohol or drug intoxication in 40.6% (Hopper et al., 2015). However, 62.5% of patients required additional pharmacologic treatment for agitation. A subgroup analysis of a blinded RCT that compared IM droperidol, IM midazolam and their combination (Calver et al., 2015b; Isbister et al., 2010) considered a group of 49 patients for whom droperidol failed to induce adequate sedation and who were subsequently administered IM ketamine of varying doses (4–6 mg/kg) (Isbister et al., 2016). With no serious adverse events reported, ketamine was found to be effective when administered in doses > 200 mg.

A more recent prospective observational non-randomised study compared ketamine (IM 4–6 mg/kg or IV 1–2 mg/kg) with IM haloperidol, IM/IV midazolam, IM/IV lorazepam, and the combination of an IM/IV benzodiazepine plus IM haloperidol for acute disturbance in around 100 participants (Riddell et al., 2017). Ketamine led to significantly less agitation at 5, 10 and 15 minutes compared with the other treatments and there was no difference in the need for re-dosing or adverse effects between treatments, but the treatment group sizes were small (n = 10–33).

There have also been several reports of the use of ketamine in 'pre-hospital' settings by paramedics and emergency medical staff; its rapid onset of action being its main advantage (Burnett et al., 2015). For example, a retrospective case series of seven young patients (mean age 24 years) with 'excited delirium' were reported to have been successfully and safely treated with IM ketamine (mean dose 4.4 mg/kg) (Scaggs et al., 2016). A larger retrospective study of 52 patients treated with IM ketamine 4 mg/kg also found a high rate of rapid sedation (in 50/52 patients) (Scheppke et al., 2014). In this study, 26 patients were also given IM/IV midazolam to prevent emergence reactions with ketamine. Of these, three patients experienced significant respiratory depression with two needing intubation. Higher rates of intubation (23%) were also reported in another retrospective review of 36 patients treated with IM or IV ketamine (Keseg et al., 2015). A prospective open-label study of IM ketamine (5 mg/kg) versus IM haloperidol (10 mg) in 146 subjects found the median time to 'adequate sedation' was significantly shorter with IM ketamine (5 vs 17 mins) (Cole et al., 2016). However, complications occurred in 49% of patients treated with IM ketamine (hypersalivation, vomiting, laryngospasm) versus 5% treated with haloperidol and, again, significantly more patients treated with ketamine required intubation (39% vs 4% of those treated with haloperidol). Use of ketamine is supported by the Royal College of Emergency Medicine, but without comment on the strength of evidence (Gillings et al., 2016).

Intranasal esketamine, the active stereoisomer of ketamine, is being investigated by the pharmaceutical industry as a potential treatment for depression, and intranasal administration of ketamine has been proposed for the treatment of patients with severe acute disturbance in the emergency department (Normandin et al., 2016). This may be a safer and easier method of administration. However, more research is required to examine this approach. Pending this, IM or IV ketamine is likely to be relatively rarely used for RT. Importantly, it should be recognised that it leads to sedation rather than tranquillisation and availability of resuscitation equipment is required.

Electroconvulsive therapy (ECT)

Royal College of Psychiatrists (2013) guidance states that ECT is not a desirable measure to treat the risk of violence and NICE (2015b) guidelines on managing acute disturbance do not mention ECT. That being said, ECT may be a consideration for cases with prolonged and severe behavioural disturbance associated with certain psychiatric disorders. In such scenarios it is not inconceivable that RT may have been repeatedly utilised as a management strategy.

ECT reduces disturbed behaviour in mania by treating the manic episode. Although NICE guidelines on the management of bipolar disorder do not mention ECT for mania (NICE, 2016b), NICE guidelines on the use of ECT recommends it for prolonged or severe manic episodes but only to achieve rapid and short-term improvement after other treatments have failed or when the condition is life threatening (NICE, 2009). WFSBP guidelines for the treatment of bipolar disorder recommend ECT for acute manic episodes that are resistant to pharmacotherapy (Grunze et al., 2010), whereas BAP guidelines reserve ECT for patients with mania who are severely ill, whose mania is treatment resistant (including mixed states) and who express a preference for ECT (Goodwin et al., 2016). Others suggest that ECT may be considered at any point in the treatment of acute mania if the patient has a history of positive response or is intolerant of medications (Mohammad and Osser, 2014).

Reviews attest to the efficacy of ECT in treating mania (Mukherjee et al., 1994), with some also citing the speed of treatment effect. ECT may reduce catatonia, aggression and excitement (Fink, 2001). In a review of the use of ECT in patients with catatonia, Luchini et al. (2015) highlighted that ECT is 80–100% effective in all forms of catatonia, including delirious mania or severe catatonic excitement, even after pharmacotherapy has failed.

ECT has also been found to be effective in augmenting antipsychotic treatment in treatment-resistant schizophrenia (Lally et al., 2016; Petrides et al., 2015). In a review of 31 articles on the indications for ECT in schizophrenia, Pompili et al. (2013) concluded that ECT in combination with pharmacotherapy is recommended for patients with schizophrenia presenting with catatonia, aggression or suicidal behaviour, when rapid global improvement and reduction of acute symptomatology are required. In a retrospective study of 20 hospitalised patients with schizophrenia or schizoaffective disorder who had received ECT treatment, aggression was found to be significantly reduced (Iancu et al., 2015). Kristensen

et al. (2012) reviewed the medical records of eight forensic inpatients with schizophrenia, whose psychotic symptoms were accompanied by seriously assaultive behaviour and were unresponsive to medication; all but one had an excellent or good symptomatic and behavioural response to ECT.

From evidence to practice

Recommended. Although no studies have evaluated the use of oral or IM formulations of promethazine as monotherapy, there is good evidence supporting its IM use in combination with haloperidol and so promethazine may also be effective as monotherapy. Oral-inhaled loxapine has trial evidence of efficacy supporting its use although a brief respiratory assessment is required beforehand, as it is contraindicated in patients with asthma or chronic obstructive pulmonary disease, and a short-acting beta-agonist bronchodilator (e.g. salbutamol) should be available.

Not recommended. Oral levomepromazine, valproate and barbiturates have a lack of evidence for use in RT. Although IM levomepromazine has some evidence of effectiveness, this has to be weighed against the risk of cardiovascular adverse effects, especially hypotension. IM ketamine has some evidence of effectiveness, but it carries an important risk of respiratory depression and does not have a reversing agent. IV dexmedetomidine has good evidence of effectiveness but is not safe for use in settings other than possibly in medical intensive care units.

For consideration for non-response. Zuclopenthixol acetate is not recommended for use as RT as the evidence does not support it, particularly as its onset of action takes several hours. However, after other strategies have failed to achieve a required response, its use may be considered as this may result in less numerous injections. A baseline ECG is advised before use due to the risk of QTc prolongation.

ECT may also be considered when other strategies have failed to achieve a required response, and particularly if the underlying disorder has an evidence base for the use of ECT (e.g. mania) or if there is a history of good response for the individual patient.

Modifiers, special settings and circumstances

Pregnancy

Women with pre-existing mental illness are at risk of relapse during pregnancy (NICE, 2014c) and may require hospitalisation, which in turn may include the management of acute disturbance. Commonly, medicines would be avoided during pregnancy; however, this is not always possible, in which case many treatment guidelines recommend treating the mother as per usual clinical algorithms (NICE, 2014c, 2015b).

Pharmacological and pharmacokinetic changes in pregnancy affect drug handling, including: variations in clearance between trimesters; increased glomerular filtration rate; and expansion of plasma volume, which subsequently return to pre-pregnancy states soon after delivery (Wesseloo et al., 2017). Avoiding drugs that may accumulate in both maternal and foetal tissues is an advisable precautionary measure, as is selecting medication with a short half-life (McAllister-Williams et al., 2017).

There are risks to the foetus associated with the use of medicines during pregnancy, but there are also risks to the foetus or neonate if the mother's mental illness were to relapse as a consequence of no treatment. The main concern when prescribing medication for pregnant mothers is whether the medication may increase the baseline risk of malformations in the embryo, affect foetal development or lead to complications at birth. Exposure to a teratogen in the first trimester is more likely to cause structural malformations, whereas later exposure is more likely to cause growth defects (McElhatton, 2010). The risk of teratogenicity may be increased if the number of concomitant drugs is increased (UKMi, 2014). Teratogenic risk can differ among individuals and not every foetus will be affected (McElhatton, 2010). During the second and third trimesters, organs such as the cerebral cortex and the renal glomeruli continue to develop and remain particularly susceptible to damage. Teratogenic effects are usually dose dependent and the dose response curve is steep, in that a small increment in dose can result in a large increase in foetal toxicity (McElhatton, 2010). Due to late-stage pregnancy in utero exposure, benzodiazepines can lead to floppy baby syndrome and antipsychotics are associated with EPS in the neonate.

In a retrospective case series (n = 80), 39% of pregnant women received oral or IM medication for acute disturbance in a US emergency department; the authors did not make any active recommendations as to what to use (Ladavac et al., 2007). Existing RT guidelines give only general advice about the principles of management during pregnancy and do not provide a bespoke RT algorithm for use in pregnancy (McAllister-Williams et al., 2017; NICE, 2014c, 2015b). This is presumably due to the lack of RCTs conducted in pregnancy resulting from both feasibility and ethical concerns, and because the numbers involved in many studies are too small to allow for specific evidence-based recommendations. Consequently, we highlight here the importance of reporting the outcomes of pregnancies exposed to medication to the UK Teratology Information Service (UKTIS; http://www.uktis.org/).

The Maudsley Prescribing Guidelines (Taylor et al., 2015) highlight the lack of published information on the use of RT in pregnant women, and state that acute use of short-acting benzodiazepines such as lorazepam and of the sedative antihistamine promethazine is unlikely to be harmful; there is a caveat presumption that the use of either would be problematic immediately before birth. Recent WFSBP guidelines (Garriga et al., 2016) echo the lack of evidence in management of acute disturbance in pregnancy and suggest that verbal interventions should be employed whenever possible; followed by the minimally effective dose of medication, if necessary. NICE guidelines on the general treatment of psychiatric disorders in pregnancy (NICE, 2014c), recommends that benzodiazepines are not offered to pregnant women, except for the short-term treatment of anxiety and agitation, and that antipsychotic choice considers that there is limited data on safety in pregnancy. It also states that when choosing RT medication, an antipsychotic or benzodiazepine with a short half-life should be considered; it does not specify a particular drug. The BAP Consensus Guidelines (McAllister-Williams et al., 2017) endorse this point and add that, in RT, the minimum effective dose should be used for antipsychotics due to the risk of EPS and that for benzodiazepines, the risks of floppy baby syndrome should be taken into account.

UKTIS collects pregnancy outcome data from women who have been exposed to drugs and chemicals in pregnancy. It does not currently have any specific information in relation to lorazepam or any other benzodiazepine. In relation to haloperidol, UKTIS states that the published data do not demonstrate any increased risk of congenital malformations or spontaneous abortion following haloperidol exposure in pregnancy (UKTIS, 2014). For promethazine, UKTIS states that two small studies on foetal exposure to promethazine by maternal overdose do not suggest an association between in utero promethazine exposure and increased risks of congenital malformation, pre-term delivery, low birth weight or adverse neurodevelopmental outcome; risk of spontaneous abortion has not been studied. In the UK, manufacturers of promethazine state that, due to the risk of neonatal irritability and excitement, use should be avoided in the last two weeks of pregnancy (UKTIS, 2014). Recent meta-analyses (Magee et al., 2002), Cochrane reviews (Boelig et al., 2016; Matthews et al., 2015) and guidelines (NICE, 2008; Royal College of Obstetricians and Gynaecologists, 2016) have concluded that promethazine is safe to use in pregnancy in the ongoing management of nausea and hyperemesis gravidarum and recommend it; although this does not confirm its efficacy for RT in pregnancy, it does provide a degree of evidence regarding its safety.

Due to the lack of an evidence base for pregnant women, RT decisions are potentially more challenging when non-parenteral options (pre-RT) have been exhausted. For IM promethazine (Sanofi, 2016), IM lorazepam (Pfizer, 2014) and IM haloperidol (Concordia, 2017) there is no contraindication in pregnancy stipulated by the European licence for each drug respectively.

The relative risks of using one medicine over another in pregnancy versus leaving the patient untreated are difficult to assess due to a paucity of evidence and due to confounders such as concurrent medication, lifestyle and the illness itself. However, such concerns may be more relevant in relation to ongoing use of medication, not single doses as administered for RT. The direct effects of RT on the embryo or foetus are likely to be minimal, but the risks associated with use of restraint and ongoing regular medicines are likely to be more significant to the embryo or foetus; these should inform prescribers' plans for short-term management such as RT. Further considerations such as restraint positions (not prone or supine but semi-seated), techniques and equipment (e.g. use of beanbags) and suitable injection sites (gluteal or lateral thigh) are beyond the scope of this review but are addressed elsewhere (McAllister et al., 2017; NICE, 2015b).

Intoxication and withdrawal

There is little specific evidence about management of acute disturbance requiring RT where substance use is implicated. Clinical experience constitutes the available evidence. The use of drugs and alcohol and their relationship to mental disorders is outside the scope of this guideline; for their management, please see BAP guidelines on addiction (Lingford-Hughes et al., 2012). NG10 recognises that there are 'major problems' in managing substance-related violence with some patients inappropriately transferred to police cells (NICE, 2015b). In general, studies do not stipulate which substances are implicated, although alcohol, synthetic cannabinoids, gammahydroxybutrate (GHB) and stimulants are most likely to be associated with acute disturbance.

One of the TREC trials examined the impact of substance misuse and found that IM midazolam or IM haloperidol plus IM promethazine were both effective and 'reasonably safe' (see Box 1 and Table 4) (TREC Collaborative Group, 2003). In other clinical guidelines, benzodiazepines are generally recommended due to their limited side-effect profile and propensity for drug interactions, the ability to titrate and to reverse their effects with flumazenil, particularly in an acutely disturbed patient where there is uncertainty about diagnosis and other drugs taken (Lingford-Hughes et al., 2012; NICE, 2015b). It is less clear what the best alternative is for those who may be benzodiazepine tolerant or dependent, alcohol dependent or have taken other respiratory depressants, although benzodiazepines are still likely to be the best approach with monitoring. Concerning antipsychotics, the risk of lowering seizure threshold and impact on cardiovascular rhythm means they should be used with caution and monitoring. In addition, the use of antipsychotics may complicate diagnosis of a psychotic presentation regarding whether it is 'drug induced' on a background of a psychotic illness. Once the acute presentation has resolved, a 'brief intervention' about the link between drug use and consequences should be delivered, as well as consideration given to referral to addiction services for more support and specialised treatment.

Management of alcohol withdrawal and its complications are covered in two NICE guidelines: CG100 (NICE, 2010) and CG115 (NICE, 2011). Benzodiazepines are generally preferred and for delirium tremens, parenteral lorazepam or haloperidol is recommended. Wernicke's encephalopathy and risk of thiamine deficiency should be considered and treated with parenteral thiamine (Lingford-Hughes et al., 2012; NICE, 2010, 2011).

For many of the novel psychoactive substances (NPS), rapid urine or field tests are not available, so assessment is critical for the diagnosis to be made. Clinicians should know signs and symptoms of intoxication and withdrawal of such substances, which broadly fall into the following groups: stimulants, depressants and hallucinogens. The Novel Psychoactive Treatment UK Network guidelines and website (http://neptune-clinical-guidance.co.uk/) are excellent resources regarding NPS and the associated clinical presentations and management of acute harms, including acute disturbance (Abdulrahim et al., 2015). Advice on acute clinical management is also available from the National Poisons Information Service (https://www.toxbase.org/). Cases of suspected harm from illicit substances, including NPS, can be reported to Public Health England (https://report-illicit-drug-reaction.phe.gov.uk/).

Gammahydroxybutrate (GHB) withdrawal can be associated with acute disturbance and is a potentially life-threatening condition that should therefore be considered as a medical emergency (Abdulrahim et al., 2015). Substantial doses of diazepam and/or admission to the medical intensive care unit with intubation to manage the acute disturbance have been described. GABA-B receptors are a target for GHB and addition of baclofen 10 mg three times a day to benzodiazepines has been reported to improve symptom control and reduce the need for large benzodiazepine doses (Lingford-Hughes et al., 2012).

Rapid tranquillisation in the general hospital

The emergency department of a general hospital is a clinical environment that affords the safe administration of a wider range of interventions and formulations than is possible in a psychiatric inpatient setting. With ready access to resuscitation equipment and ventilation apparatus, the risk versus benefit considerations can be different; this is especially pertinent when standard options and preparations fail. IV medications can be used, but these should be considered in line with the evidence outlined above.

As a general hospital has different clinical settings, there is a variety of scope for advanced medical risk management. For example, the emergency department is different to the medical intensive care unit in the general hospital; the latter being outside the scope of our guideline. In addition to the inpatient psychiatric setting, our guideline is also relevant to the standard general hospital acute setting with its ready access to resuscitation equipment and ventilation apparatus.

Psychiatric intensive care units and inpatient forensic psychiatric settings

PICUs are for patients who are in an acutely disturbed phase of a serious mental disorder (NAPICU, 2014). There is an associated loss of capacity for self-control, with a corresponding increase in risk, which does not allow for their safe, therapeutic management and treatment in a less secure ward. PICUs utilise a range of restrictive interventions including seclusion. Forensic psychiatric settings may also use highly restrictive interventions such as segregation or mechanical restraint. These are specialist interventions that require an enhanced understanding of how restrictive interventions can be safely and effectively used individually and in combination.

Inpatient forensic psychiatric settings are for patients who suffer from a mental disorder and who have carried out, or are at increased risk of, serious violence to others and may have been in contact with the Criminal Justice System. They provide acute treatment and rehabilitation within relevant levels of security, with an emphasis on interventions to reduce the risk of recidivism and violence associated with mental disorder.

In principle, the interventions used to manage acute disturbance in such patients should not differ from those described in this guideline. That said, the harmful effect of inadequately managed acute disturbance in PICU and inpatient forensic settings is likely to be more severe in both nature and degree than that seen in general acute wards. The patient population in these settings often has a history of past trauma (Briere et al., 2016), which can lead to the triggering of extreme responses to restrictive interventions, such as parenteral medication and physical restraint. Trauma-informed care management is recommended (Muskett, 2014). Polypharmacy and high-dose antipsychotic prescribing is more common in forensic settings and hence the additional prescribing of RT requires due caution and attention to the risk of adverse effects (Stone-Brown et al., 2016).

Seclusion

The efficacy of seclusion as an intervention used to manage acute disturbance in its own right is outside the scope of this guideline. Here we will briefly consider the relationship between RT and the act of seclusion. A patient in seclusion should have access to a range of interventions to manage acute disturbance.

In the case of RT and seclusion, one may precede the other, or they may be used concurrently. Data are largely unavailable regarding concurrent use. A survey of a medium secure forensic service found that 10% of patients were concurrently secluded and given RT (Haw et al., 2013) and in a general psychiatric sample this was found to be the case for 40% (Talukdar and Lekka, 2013). It is important to note that although these percentages are probably not generalisable, they are not small. In an RCT where participants were randomly allocated to seclusion or RT as first intervention, more than a third of participants eventually experienced both interventions (Georgieva et al., 2012).

Patients receiving RT who are subsequently secluded, or patients in seclusion who receive RT, can present some challenges around psychiatric monitoring. The Mental Health Act Code of Practice (Department of Health, 2015) specifies that secluded patients should be under continuous psychiatric observation with regular nursing (two-hourly) and medical (four-hourly) seclusion reviews (Bhavsar et al., 2014). The schedule and nature of seclusion reviews is not the same as the intensity of physical monitoring observations recommended for RT.

Physical health monitoring and RT

The rationale for physical health monitoring is based on the risk of adverse effects of RT medication, including EPS, sedation, respiratory depression, tachycardia, QTc prolongation with associated risk of arrhythmia, postural hypotension, increased seizure potential and NMS (Innes and Curtis, 2015; Innes and Iyeke, 2012; Innes and Sethi, 2013; Loynes et al., 2012; Macpherson et al., 2005). Pre-existing physical health comorbidities, pregnancy, drug or alcohol intoxication or withdrawal and potential medication interactions confer additional risks (Loynes et al., 2012). Non-medication risks are also a factor and may include the process of restraint (Innes and Curtis, 2015; Loynes et al., 2012). Furthermore, there are the practical challenges of delivering an IM injection into the correct muscle at the correct depth (Abdelmawla and Mitchell, 2006; Blofeld et al., 2003). Consequently, post-RT physical monitoring and documentation is required (Innes and Curtis, 2015; NHS Litigation Authority, 2013; NICE, 2017).

Most mental health organisations include some policy or protocol guidance for the monitoring of physical health post-RT, and yet these are far from uniform (Innes and Sethi, 2013; Loynes et al., 2012). Such variations reflect inconsistency between recommendations from national and international guidelines. Indeed, in national surveys, 97% of RT documents ($n = 44$) specified monitoring parameters but there was considerable variation with a range of 14 different parameters listed (Innes and Iyeke, 2012; Loynes et al., 2012).

Table 6 summarises the key points from guidelines that make pertinent recommendations; the following guidelines make no additional recommendations and are not included: American Association for Emergency Psychiatry (Wilson et al., 2012b); British Association for Psychopharmacology (Barnes et al., 2011); and Austrian Society for Neuropsychopharmacology and Biological Psychiatry (Frey et al., 2015).

In general, the recommended physical health parameters include all those that are monitored by the National Early Warning Score (NEWS) namely, temperature, pulse, systolic blood pressure, respiratory rate, oxygen saturation, level of

Table 6. Summary of key guidelines on post-RT monitoring.

Guideline	Post-RT parameters	Post-RT monitoring	Additional recommendations
Maudsley Prescribing Guidelines 12th edition (Taylor et al., 2015)	Temperature; pulse; blood pressure; respiratory rate	Every 10 minutes for 1 hour, then half-hourly till patient ambulatory	Poor engagement: observe for pyrexia, hypotension, over-sedation, and general physical well-being. Asleep/unconscious: continuous pulse oximetry desirable with nurse presence.
NG10 (NICE, 2015b)	Temperature; pulse; blood pressure; respiratory rate; hydration level; consciousness level; side effects	At least hourly until no further concerns or every 15 minutes (in certain circumstances)	Higher frequency if BNF maximum dose exceeded in prescribing; patient asleep or sedated; associated drugs and alcohol; pre-existing physical health concerns; experienced harm due to restrictive intervention.
NICE Quality Standard QS154 (NICE, 2017)	Vital signs; hydration level; consciousness level; side effects;	At least hourly until no further concerns	If RT is used while the person is in seclusion, additional measures may be needed to ensure safety.
Assessment and management of agitation in psychiatry: expert consensus (Garriga et al., 2016)	Vital signs	Every 15 minutes for 1 hour then every 30 minutes for 4 hours or until awake	Vigilant documented monitoring should be mandatory when physical restraint is used.

RT: rapid tranquillisation; BNF: British National Formulary.

consciousness or new confusion, as these are evidenced as good predictors of patient mortality and deteriorating health (Gao et al., 2007; Royal College of Physicians, 2017). Additionally, ECGs, hydration status and blood tests have been recommended post-RT (Macpherson et al., 2005).

There is an absence of evidence to stipulate the frequency and duration of monitoring post-RT. Most, if not all, of the evidence is based on expert committee and consensus recommendations. The most prescriptive guidance recommends physical health monitoring every 5–10 minutes for the first hour, then every 30–60 minutes until the patient is ambulatory (Macpherson et al., 2005). A singular approach is not possible due to differing monitoring needs for a higher-risk scenario. The monitoring guidance for individual medications found in their SmPC can also direct longer durations of monitoring. For example, the SmPC recommends monitoring for at least 8 hours after parenteral lorazepam (Pfizer, 2014), and for a minimum of 4 hours post-IM olanzapine (Eli Lilly, 2017b). In general, a phased approach to monitoring is widely reported in current clinical practice, with monitoring every 15 minutes post-RT with IM medication for up to an hour, followed by a lower intensity monitoring phase (hourly up to 4 hours); the latter is subject to whether a patient is ambulatory (Innes and Iyeke, 2012).

Ultimately, physical health monitoring essentially requires direct 'hands-on contact' but also needs to be practically feasible and safe. There will be times when direct contact physical observations are associated with increased risks to staff and/or the patient and may even have the counterproductive effect of re-escalating a situation. Examples may involve a secluded patient or one whose degree of acute disturbance is associated with poor engagement with clinicians. For this difficult-to-monitor patient group, there is no evidence base or guidance as to what may constitute non-contact physical monitoring. Respiratory rate, level of consciousness and clinical observational signs (pallor, signs of pyrexia, evidence of dystonia or akathisia and signs of dehydration) have been suggested as practical for such scenarios until direct contact physical monitoring can be established (Innes and Iyeke, 2012; Loynes et al., 2012; Macpherson et al., 2005). As technology continues to develop, the use of non-contact electronic monitoring may be considered. The use of photoplethysmogram technology in seclusion closed-circuit television or patients wearing wrist heart rate and movement monitors are likely to contribute to future innovation in this area (Davis et al., 2014; Kamshilin et al., 2015; Tully et al., 2015).

The relationship between physical health monitoring and psychiatric observation can be a potential source of confusion. Psychiatric observation of behaviour is often enhanced in scenarios where RT is used, with some scenarios requiring one-to-one continuous psychiatric observations. A number of levels of psychiatric observations are commonly used in psychiatric practice including: continuous arm's length, continuous line of sight and intermittent (high or low level, ranging from every 15 minutes to every 60 minutes) (NICE, 2015b). It is recommended that psychiatric observations are carried out in a sensitive manner, minimising the patient's feeling of being under surveillance (Macpherson et al., 2005). Although clearly linked, these two clinical monitoring methods (physical health and psychiatric) are not synonymous. The recommendations presented in Table 7 are for physical health monitoring (with suggested minimum psychiatric monitoring) following the use of medications pre-RT and RT and, given the dearth of evidence available, are based on the consensus of experts.

An algorithm for the management of acute disturbance

Model and components

Algorithms for the management of acute disturbance exist in the literature in the form of RT protocols and, in general, are based on one of two models; neither is ideal. In the first type, interventions are stratified across a number of branches depending on the clinical characteristics of the acute disturbance scenario. Although these can include most clinical sub-groups, such protocols can be too unwieldy to use in an acute emergency and

Table 7. Direct contact monitoring levels.

Level	Criteria	Physical monitoring schedule	Suggested minimum psychiatric observations
Low	All patients following pre-RT medications	NEWS or equivalent every hour for minimum 1 hour	Standard psychiatric observations every hour
Medium	All patients post IM RT, who do not require high/critical level monitoring	NEWS or equivalent every 15 minutes for minimum 1 hour	Intermittent psychiatric observations every 15 minutes
High	All patients post IM RT, who are over-sedated, asleep, or significantly physically unwell	NEWS or equivalent every 15 minutes for minimum 1 hour and include pulse oximetry until patient is ambulatory	Continuous (within line of sight)
Critical	All patients post IV RT as well as patients who are unconscious (not rousable) or severely physically unwell	Continuous monitoring and resuscitation facilities are essential	Continuous (within arm's length)

IM: intramuscular; IV: intravenous; NEWS (National Early Warning Score): temperature, pulse, systolic blood pressure, respiratory rate, oxygen saturation, level of consciousness; RT: rapid tranquillisation.

there is a dearth of evidence supporting stratification of patients to different interventions on the basis of their clinical presentation. Alternatively, in the second type of model, interventions are considered stepwise with a linear flow, with some reference to additional complexities related to certain clinical subgroups. However, interventions are not easily placed in a linear flow as they can be used at different points of a clinical scenario and can be used individually or often in combination.

Our algorithm includes both overarching fundamental principles and interventions (pre-RT, RT and considerations for non-response). We chose to place the interventions in a linear model with stepwise flow. This is in keeping with the general notion that there is an increased likelihood of requiring a later-stage interventional category, if earlier and generally less restrictive interventions have been tried and not had the desired outcome, the clinical state is worsening, the risks are increasing, or patient engagement is challenging.

Principles

The consensus group confirmed the seven fundamental principles as outlined below.

1. **Multidisciplinary approach:** as the aetiology of acute disturbance is complex and heterogeneous, its management warrants a multidisciplinary approach including psychopharmacological, psychological, environmental and social interventions.
2. **Effective interventions:** interventions should have an evidence base confirming they increase positive outcomes and/or reduce negative outcomes (harm) of acute disturbance in the immediate to short term (from minutes to hours). Strategies should be used to minimise the risk of adverse effects of these interventions such as seeking to prescribe the minimum effective dose and checking for increased risk of side effects.
3. **Proportionality of intervention:** an intervention has an associated imposed level of restriction on the patient and this restriction should be proportionate (i.e. not excessive) to the acute severity of the clinical risk posed by the acute disturbance. Further, the least restrictive options available should always be considered in the first instance and so RT should generally be used as a last resort only if non-pharmacological and oral pharmacological options have been exhausted.
4. **Treatment individualisation/choice:** steps should be taken, wherever possible, to ensure that interventions are selected with patient-specific factors (clinical, risk and choice related) as part of the decision-making process. This will include clinical consideration of previous response to specific medication as well as adverse responses and allergies.
5. **Treatment optimisation of underlying disorder:** interventions should be set in a context of the overarching goal of optimising the treatment of the underlying disorder as this may be partially or wholly causing the acute disturbance.
6. **Continuous monitoring/review of: (i) mental/physical health; (ii) risk to self/others; (iii) treatment effectiveness/harm; (iv) patient engagement level.** The clinical scenario and associated risks to self/others change with time. Thus, selection of interventions to reduce risk in the immediate or short term needs to reflect this so that the right intervention is used for the right scenario at the right time. Physical health is also important as both acute disturbance and the interventions are associated with physical health consequences. Further, it should be noted that when prescribing in combination some side effects are additive. As a patient-centred approach is at risk of being compromised, the assessment of the patient's level of engagement in seeking positive solutions to reduce harm and improve clinical outcomes should be kept under review.
7. **Consideration of modifiers:** certain clinical sub-populations merit specific consideration as they may require a modified approach to pre-RT and RT. These include: pregnancy, drugs and alcohol, medically frailty or physically compromised (e.g. dehydrated), psychotropic naivety, patients already prescribed regular psychotropics, learning disability and (extremes of) age.

We also note the importance of an immediate debrief and a post-incident review to consider the learning points. This should also include a review of regular medication with the aim of reducing further episodes requiring RT.

Recommendations for interventions

The efficacy and key safety concerns of the putative interventions in the management of acute disturbance are summarised here, together with the categories of evidence (I–IV) and strength of recommendation (A–D, S), see also Table 1 and Figure 1.

Pre-RT: De-escalation. The following de-escalation components are effective: continual risk assessment, management of environment, passive intervention and watchful waiting, reassurance, respect and avoidance of shame, appropriate use of humour, identification of patient needs, distraction, reframing events for patient, non-confrontational limit setting (III; C).

The following de-escalation components may be effective: self-control techniques, avoidance of provocation, respect patient space, empathy, negotiation (IV; D).

Pre-RT: Oral, oral-inhaled and buccal. Oral-inhaled loxapine is effective although a brief respiratory assessment is required beforehand, as it is contraindicated in patients with asthma or chronic obstructive pulmonary disease, and a short-acting beta-agonist bronchodilator (e.g. salbutamol) should be available (Ib; A).

Buccal midazolam is effective (III; C).

Oral lorazepam may be effective (IV; D).

Oral promethazine may be effective (S).

Oral formulations of aripiprazole, olanzapine and risperidone are effective (Ib; A).

Oral haloperidol is effective and a baseline ECG is advised before use due to the risk of QTc prolongation (III; C).

Oral quetiapine is effective (III; C).

Oral formulations of clonazepam and diazepam are not recommended due to lack of evidence for use in RT together with the risk of accumulation with repeated dosing and the resultant risk of cumulative adverse effects (S).

Oral levomepromazine is not recommended due to lack of evidence for use in RT (S).

Pre-RT pharmacological strategies should be considered before RT (S).

RT: IM monotherapy. IM lorazepam is effective (Ib; A).

Parenteral benzodiazepines have safety concerns due the risk of respiratory depression. Thus, wherever they are used, flumazenil must be immediately available (S).

IM promethazine may be effective (extrapolated Ia; D)

IM aripiprazole is effective (Ia; A).

IM droperidol is effective and a baseline ECG is advised before use due to the risk of QTc prolongation (Ib; A).

IM olanzapine is effective, but it should only be administered by itself and not concurrently with IM benzodiazepines due to risk of hypotension; thus, there should be an interval of at least 1 hour between the two (Ia; A).

IM clonazepam is not recommended due to a relative lack of supporting evidence for use in RT (S).

IM diazepam is not recommended due to lack of evidence for use in RT (S).

IM midazolam is not recommended due to the risk of respiratory depression (Ia; A).

IM haloperidol is not recommended as monotherapy even though it has evidence of effectiveness, and a baseline ECG is advised, as measures need to be in place to offset its adverse effects and especially for the risk of acute dystonia (Ia; A).

IM levomepromazine is not recommended, even though it has some evidence of effectiveness, as there is potential evidence for a risk of cardiovascular adverse effects, especially hypotension (III; C).

RT IM monotherapy should be considered before RT IM combinations (S).

RT: IM combinations. IM promethazine plus IM haloperidol is effective and a baseline ECG is advised before haloperidol use due to the risk of QTc prolongation (Ia; A).

IM lorazepam plus IM haloperidol is effective and a baseline ECG is advised before haloperidol use due to the risk of QTc prolongation (Ia; A).

Parenteral benzodiazepines have safety concerns due the risk of respiratory depression. Thus, wherever they are used, flumazenil must be immediately available (S).

IM lorazepam plus IM promethazine is not recommended due to lack of evidence for efficacy for this combination (S).

RT: IV monotherapy (resuscitation settings only). Due to the potential risk of respiratory depression and cardiac adverse effects, RT IV options must only be used in settings where resuscitation equipment and trained clinicians are available to manage medical emergencies (S).

Both IV lorazepam and IV midazolam are effective (Ib; A).

As flumazenil can reverse respiratory depression caused by an IV benzodiazepine, its immediate availability must be confirmed before an IV benzodiazepine is administered (S).

IV droperidol is effective and a baseline ECG is advised before use due to the risk of QTc prolongation (Ib; A).

IV olanzapine has evidence of effectiveness but caution is advised due to the risk of respiratory depression and the lack of a reversing agent (III; C).

IV diazepam is not recommended due to lack of evidence for use in RT (S).

IV haloperidol is not recommended due to a lack of evidence for its use in RT (S).

IV dexmedetomidine has evidence of effectiveness but is not recommended as it is not safe for use in settings other than possibly in medical intensive care units (Ia; A).

Non-response to pre-RT and RT interventions. Seeking senior advice, conducting a comprehensive case review and a reviewing the appropriateness of the clinical setting should all be considered (S).

Zuclopenthixol acetate is not recommended for use as RT as the evidence does not support it, particularly as its onset of action takes several hours. However, after other strategies have failed to achieve a required response, its use may be considered. A baseline ECG is advised before use due to the risk of QTc prolongation (III; C).

ECT may also be considered when other strategies have failed to achieve a required response, and particularly if the underlying disorder has an evidence base for the use of ECT (e.g. mania) or if there is a history of good response for the individual patient (IV; D).

IM ketamine is effective but it is not recommended due to risk of respiratory depression (III; C).

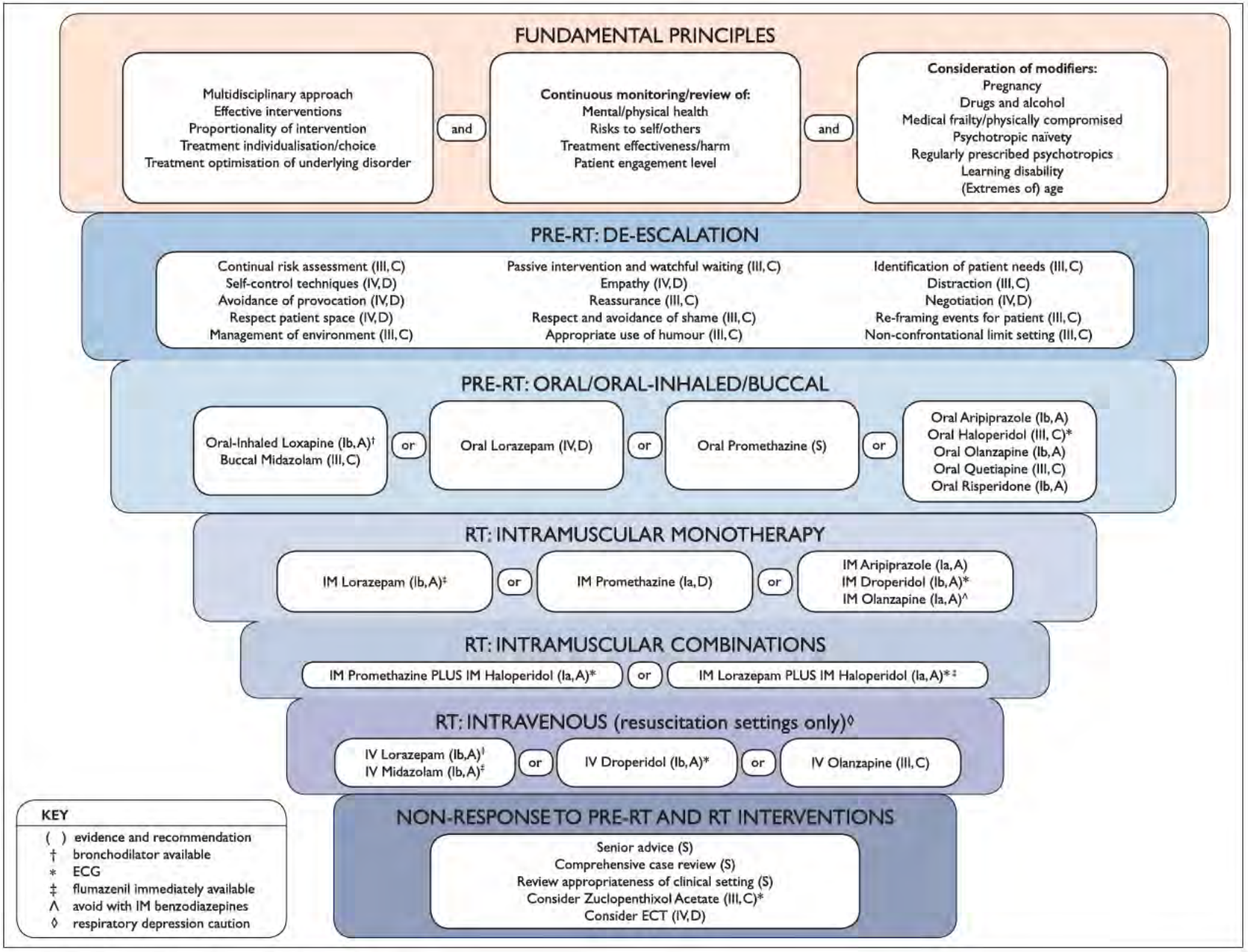

Figure 1. An algorithm for the management of acute disturbance.

Barbiturates and valproate are not recommended due to lack of evidence for use in RT (S).

Physical monitoring. All patients who have received pre-RT medication should be monitored at a minimum of Low Level (S) (see table 7).

All patients who have received IM RT should be monitored at a minimum of Medium Level (IV; D).

All patients who have received IM RT and are over-sedated, asleep or significantly physically unwell, should be monitored at a minimum of High Level (S).

All patients who have received IV RT and/or are unconscious or severely physically unwell, should be monitored at Critical Level (S).

For those patients for whom direct contact physical monitoring is not safe or feasible, non-contact physical monitoring (comprising respiratory rate, level of consciousness, pallor, signs of pyrexia, evidence of dystonia/akathisia and signs of dehydration) should be conducted until direct contact physical monitoring can be established (S).

Due to the potential risk of respiratory depression and cardiac adverse effects, staff should be trained in immediate life support and resuscitation equipment use, and trained clinicians should be available to manage medical emergencies (IV; D).

Discussion

Overview

The management of acute disturbance in the context of an underlying mental or physical disorder presents some of the most challenging clinical scenarios in acute healthcare. The evidence base for interventions in this field remains problematic with some interventions lacking an evidence base or being only supported by evidence of lower quality and thus consensus methods were also required. This guideline specifically focussed on the use of de-escalation methods, and non-parenteral medication used as pre-RT interventions as well as parenteral medications used in RT. We consolidated our recommendations within a clinical algorithm that included seven overarching fundamental principles that promote high-quality patient care. De-escalation was described as comprising numerous active components, each of which were considered individually with regard to the supporting evidence base. To our knowledge this guideline is the first to represent de-escalation in this way.

Historically, non-parenteral medications were included in RT, but more recently these have been relatively excluded from larger reviews and guidelines such as NG10 (NICE, 2015b). In our guideline, we have reviewed oral, oral-inhaled and buccal options and made recommendations accordingly. Parenteral medication used in RT was described across three levels: IM monotherapy, IM combinations and IV medications. Some RT medications were not recommended due to safety considerations, whereas others were recommended with specific safety advice. For IM monotherapy, IM haloperidol alone was not recommended due to risk of adverse effects including dystonia, whereas IM droperidol was recommended if the risk of QTc prolongation is taken into account by performing baseline ECG. Further, we focussed our review of the evidence for IV monotherapy in resuscitation-resourced settings such as emergency departments, acute medical and acute surgical inpatient wards in the general medical hospital.

It is important to note that several medications recommended for use in pre-RT (e.g. oral promethazine) or RT (e.g. IV droperidol) would be outside the terms of their licence (off-label) if used for the management of acute disturbance; this may be especially true for pregnant women. Thus, prescribers are advised to consult more authoritative guidance on the use of licensed medication in unlicensed situations (GMC, 2013; MHRA, 2009; Royal College of Psychiatrists, 2007, 2017).

This guideline also makes specific recommendations for monitoring of physical healthcare and psychiatric observations following pre-RT and RT medication and these include the use of non-contact physical observations where direct contact is not possible.

For scenarios where pre-RT and RT interventions have not been effective in managing acute disturbance, it is likely that the clinical picture progresses towards non-acute or prolonged disturbance. In these circumstances, we recommend seeking senior multidisciplinary advice, conducting a comprehensive case review, and reviewing the appropriateness of the clinical setting for the patient and their treatment. Zuclopenthixol acetate or ECT may also be considered, if clinically appropriate.

Key uncertainties and research recommendations

One of our principles for the management of acute disturbance highlights the importance of patient-specific factors as RT medication choices should not be uniform regardless of diagnosis or clinical presentation. However, how best to individualise clinical decision making largely lacks an evidence base. Patient sub-populations should be considered, including but not limited to those who have misused substances such as NPS and pregnant women. The scope of these guidelines specifically excluded the management of acute disturbance relating to children and young people, those with learning disability or traumatic brain injury, or older adults with or without dementia. Over time, it is hoped that the evidence base for RT in these patient populations will be enhanced, allowing us to include their consideration in due course. As patient choice remains a key focus for clinical care in the UK, we also advocate further research on the perspective of patients.

We did not conduct a critical evaluation of the numerous clinical rating scales, including those used as outcome measures. We note that most focus on moderate to severe symptoms such as hostility, uncooperativeness and poor impulse control, thereby ignoring that acute disturbance is a continuum that starts with less severe symptoms such as nervousness, which progress to agitation and may or may not manifest as aggression or violent behaviour. Further consideration is warranted to identify which are the most appropriate scales to use to measure degree or frequency of acute disturbance and the outcomes of management approaches and to consider at what time points these should be evaluated. Similarly, monitoring protocols and methods, including use of technology for non-contact physical monitoring, require enhanced empirical examination.

For de-escalation, the distinct paucity of high-quality research evidence needs to be addressed to confirm the effectiveness of de-escalation as an intervention, together with exploration of the potential reasons as to why de-escalation sometimes fails. Given that failure to successfully de-escalate a situation increases the likelihood of progression to restrictive interventions and markedly

increased risk for the patient and staff; any refinement of the process, active components and skills of de-escalation is important. Further, NG10 identifies the following research question as a priority: 'Which medication is effective in promoting de-escalation in people who are identified as likely to demonstrate significant violence?' (NICE, 2015b). Not only does this place due emphasis on the importance of identifying patients at risk of becoming acutely disturbed, but also notes the potential role of pre-RT medication and whether this may strengthen the use of verbal/psychotherapeutic de-escalation strategies. The interplay of oral, oral-inhaled and buccal pharmacological interventions with de-escalation is yet to be clarified. Moreover, the difference between non-parenteral regularly prescribed or PRN medication in the management of acute disturbance warrants further investigation. Oral promethazine is commonly used as PRN medication and yet the maximum daily dose also remains subject to debate.

In our review of the evidence for RT we identified a key need for a head-to-head trial to ascertain whether there is a difference in efficacy between the combinations IM haloperidol plus IM promethazine versus IM haloperidol plus IM lorazepam. Additionally, IM promethazine may be combined with IM lorazepam and sometimes with IM aripiprazole and yet there is minimal evidence to evaluate the efficacy or harm of these combinations over their respective sole drugs alone. Also, further research on the range of IV medications is required for RT in non-psychiatric medical or surgical settings with a particular focus for medical intensive care settings and the drugs that are more familiar to clinicians working there. We also note that RCTs of RT, including the TREC studies, and naturalistic data (POMH-UK, 2017) show that a significant minority of patients do not respond to an initial attempt at RT. Thus, we ask what measures are taken by clinicians to resolve the acute disturbance for those patients? In turn, this can shape further empirical questions to be addressed by future clinical trials.

Although we found some putative interventions should not be considered as options for RT, others such as ECT treat the underlying disorder and thereby predominantly appear to have an indirect role in the management of acute disturbance. Thus, we highlight the need for further empirical research as to whether its use leads to a reduction in the risk of subsequent episodes of acute disturbance requiring RT.

Conclusions

The management of acute disturbance is a complex process. We have presented the recommended interventions within a structured algorithm for the clinician to consider the various options according to their route of administration and category of evidence. Fundamental overarching principles are included and highlight the importance of treating the underlying disorder. Due emphasis has been placed on the phase pre-RT that includes the use of non-parenteral medication. The interplay of both pharmacological and non-pharmacological interventions, including de-escalation, is important and yet also warrants further empirical investigation. Moreover, it is noted that some medications have been somewhat disregarded for a number of years and now ought to be re-established in light of a new evidence base to support their use.

We conclude that the variety of options available for the management of acute disturbance goes beyond the standard choices of lorazepam, haloperidol and promethazine. Ultimately, we advocate that the clinician can determine the optimal evidence-based interventions centred within a multi-faceted and multidisciplinary approach, which also includes an individualised patient perspective.

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Declaration of conflicting interest

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As required medication

Check allergies/medicine sensitivities and patient identity.
Check regular medicines

Write in CAPITAL LETTERS or use addressograph

Surname: PATIENT

First names: EXAMPLE

Health and Care no: 123 456 7891

DOB:

Medicine: LORAZEPAM — Start date: 04/02/20 — Stop date — Signature — Supply — Pharmacist

Dose: 1-2mg | Route: PO | Frequency: 4-6°

Special instructions/indication: 1st LINE AGITATION *SEE ALSO IM PRN* | Max dose in 24hrs: 4mg

Medicines Reconciliation (circle): Pre-admission dose | Increased dose | Decreased dose | New

Signature: A DOCTOR | Prof No | Print | Bleep

Date | Time 24hr clock | Dose / Route | Given by

Medicine: LORAZEPAM — Start date: 04/02/20 — Stop date — Signature — Supply — Pharmacist

Dose: 1-2mg | Route: IM | Frequency: 4-6°

Special instructions/indication: 1st LINE RT *SEE ALSO PO PRN* | Max dose in 24hrs: 4mg

Medicines Reconciliation (circle): Pre-admission dose | Increased dose | Decreased dose | New

Signature: A DOCTOR | Prof No | Print | Bleep

Date | Time 24hr clock | Dose / Route | Given by

Medicine: HALOPERIDOL — Start date: 04/02/20 — Stop date — Signature — Supply — Pharmacist

Dose: 3-5mg | Route: PO | Frequency: 4-6°

Special instructions/indication: 2nd LINE AGITATION *SEE ALSO IM PRN* | Max dose in 24hrs: 20mg

Medicines Reconciliation (circle): Pre-admission dose | Increased dose | Decreased dose | New

Signature: A DOCTOR | Prof No | Print | Bleep

Date | Time 24hr clock | Dose / Route | Given by

Medicine: HALOPERIDOL — Start date: 04/02/20 — Stop date — Signature — Supply — Pharmacist

Dose: 5mg | Route: IM | Frequency: 4-6°

Special instructions/indication: 2nd LINE RT *SEE ALSO PO PRN* | Max dose in 24hrs: 20mg

Medicines Reconciliation (circle): Pre-admission dose | Increased dose | Decreased dose | New

Signature: A DOCTOR | Prof No | Print | Bleep

Date | Time 24hr clock | Dose / Route | Given by

Medicine: PROMETHAZINE — Start date: 04/02/20 — Stop date — Signature — Supply — Pharmacist

Dose: 25-50mg | Route: IM | Frequency: 4-6°

Special instructions/indication: WITH IM HALOPERIDOL | Max dose in 24hrs: 100mg

Medicines Reconciliation (circle): Pre-admission dose | Increased dose | Decreased dose | New

Signature: A DOCTOR | Prof No | Print | Bleep

Date | Time 24hr clock | Dose / Route | Given by

This is an example of how to write up Rapid Tranquillisation (RT).

This example would be appropriate for a new admission. Variable doses and 1st and 2nd line choices should be reviewed by the patients own team.

NOTE:
RT is NOT required for all patients, only those who are at high risk of acutely disturbed behaviour.
Many patients may only need oral medication for agitation.

Belfast Health and Social Care Trust
caring supporting improving together

Policy Code: BHSCT/PtCtCare (02) 2021

Title:	**Non-Medical Prescribing (NMP) of Medicines Policy**		
Policy Author(s)	Eimear McCusker, Head of Pharmacy & Medicines Management Tel: 028 95043357 eimear.mccusker@belfasttrust.hscni.net Karen Devenney, Senior Manager Central Nursing Tel: 028 950 49907 karen.devenney@belfasttrust.hscni.net Paula Cahalan, Allied Health Professional Lead Tel: 028 950 44684 paula.cahalan@belfasttrust.hscni.net Katie Graham, Optometrist Tel: 028 950 49277 Katie.Graham@belfasttrust.hscni.net		
Responsible Director:	Caroline Leonard, Director of Surgery and Specialist Services		
Policy Type: (tick as appropriate)	*Directorate Specific ☐	Clinical Trust Wide ☒	Non Clinical Trust Wide ☐
If policy type is confirmed as ***Directorate Specific*** please list the name and date of the local Committee/Group that policy was **approved**			
Approval process:	Drugs and Therapeutics Committee Standards and Guidelines Committee Executive Team Meeting	**Approval date:**	05/03/2021 13/04/2021 07/06/2021
Operational Date:	June 2021	**Review Date:**	June 2026
Version No.	4	**Supercedes**	V3 – August 2020 – August 2025
Key Words:	Non Medical Prescribers, NMP, Medicines		
Links to other policies	BHSCT Dealing with discrepancies or concerns involving controlled drugs (2019) SG 18/11 BHSCT Community Medicines Code (2020) SG 06/13 BHSCT Medicines Code Policy (2020) SG 09/11 BHSCT Clinical monitoring of patients prescribed controlled drugs (2016) SG 64/14 BHSCT Controlled Drug Acute and Community Policies		

Date	Version	Policy Author	Comments
21/10/2008	1.0	V Hall	Initial draft
21/09/2009	1.1	V Hall	Revised following consultation
19/12/2017	2.0	E McCusker	Updated with Pharmacy and AHP comments
10/10/2019	3.0	E McCusker	Updated with legislation changes and governance arrangements
01/03/2021	3.1	E McCusker	Annual renewal process updated
June 2021	4		Final version

1.0 INTRODUCTION/SUMMARY OF POLICY

This policy sets out a framework for the development and implementation of non-medical prescribing (NMP) of medicines within the Belfast Health and Social Care Trust (BHSCT) and thus establishes a consistent approach for NMP. This policy applies to all registered nurses, midwives, specialist community public health nurses, pharmacists, optometrists, and other allied health professionals registered with the Trust as non-medical prescribers of medicines in accordance with their job descriptions and KSF outlines.

(Where the term 'nurse' is used throughout the remainder of this document it includes midwives and specialist community public health nurses).

1.1 Background

This policy is required to establish a framework for the development and implementation of NMP of medicines within the Belfast Health and Social Care Trust (BHSCT).

1.2 Purpose

- Ensure professional and statutory obligations are met.
- Contribute to the provision of holistic care.
- Provide robust standards for non-medical prescribing of medicines.
- Clarify accountability and responsibility.
- Provide a framework under which potential applicants could determine eligibility undertake an approved prescribing programme.
- To maintain a live register of NMPs in BHSCT with an agreed annual renewal process.

2.0 SCOPE OF THE POLICY

2.1 This policy will apply throughout the Belfast Health and Social Care Trust for all NMPs.

3.0 ROLES AND RESPONSIBILITIES

3.1 NMPs

NMPs are individually responsible and accountable for their prescribing practice and must adhere to trust policies. NMPs are also responsible for:

- Ensuring that they provide appropriate, evidence based, safe, and cost effective prescribing to service users
- Adhering to their professional codes of conduct (see below) and only practice within their own level of competence and parameters of prescribing.
- Completion of an annual declaration of continued competence.
- Participating in timely annual audit of prescribing practice.

3.2 Line Managers and Professional Leads are responsible for the monitoring of the daily prescribing activities of NMPs in relation to their job description. They are also responsible for ensuring that systems are in place to facilitate prescribing practice to include:

- Ensuring the duties of the NMP are included in job description
- Ensuring that NMPs are supported to attend CPD within the Trust to maintaining their competencies in line with their job description.
- Informing the Trust Professional lead if an NMP leaves the Trust or there is concern about the prescribing practice of the NMP.
- Ensuring NMPs are compliant with any audit requirements.

4.0 CONSULTATION

Executive Director/Co-Directors of Nursing. Associate Directors of Nursing. Head of Pharmacy and Medicines Management. Non Medical Prescribers. Prescribing advisors HSCB, Standards and Guidelines Committee. Drugs and therapeutics committee.

5.0 POLICY STATEMENT/IMPLEMENTATION

5.1 Definitions

Definition of Independent Prescribing – The working definition of independent prescribing is prescribing by a practitioner (e.g. doctor, dentist, nurse, pharmacist, optometrist, or AHP) responsible and accountable for the assessment of patients with undiagnosed or diagnosed conditions and for decisions about the clinical management required, included prescribing of medicines. Within medicines legislation the term used is “appropriate prescriber”.

Definition of Supplementary prescribing – A voluntary partnership between an independent prescriber (a doctor or dentist), who has made the initial assessment and diagnosis, and a supplementary prescriber who may prescribe any medicine, in accordance with the agreed patient-specific clinical management plan with the patient’s consent.

Prescribing from the Nurse Prescribers Formulary – Community Practitioner Nurse Prescribers (CPNPs) V100 – formerly District Nurse/Health Visitor prescribers must only prescribe items listed within the Nurse Prescribers Formulary for Community Practitioners as outlined in the Northern Ireland Drug Tariff.

5.2 Key Policy Statements

5.2.1 Categories of individuals who can prescribe medicines as independent/ supplementary prescribers

Non-Medical staff who have successfully completed a recognised prescribing course, have registered with the appropriate professional body as a prescriber of medicines and have been approved and registered as a NMP on the BHSCT NMP register can prescribe as either independent or supplementary

prescribers (As appropriate). *Qualified staff transferring from other Trusts must apply to register as a NMP in BHSCT.*

5.2.2 The categories of nurses who can prescribe medicines:

- Nurse Independent Prescribers can prescribe any medicine for any medical condition within their competence including some controlled drugs.
- Nurse Supplementary Prescribers can prescribe any medicine, including some controlled drugs under a Clinical Management Plan in partnership with an independent prescriber (doctor or dentist).
- CPNPs must only prescribe items listed within the Nurse Prescriber's Formulary for Community Practitioners as outlined in the Northern Ireland Drug Tariff. More detailed information is provided in the British National Formulary (BNF).

5.2.3 The categories of pharmacists who can prescribe medicines:

- Pharmacist Independent prescribers can prescribe any medicine for any medical condition within their competence including some controlled drugs.
- Pharmacist Supplementary prescribers can prescribe any medicine, including some controlled drugs under a Clinical Management Plan in partnership with an independent prescriber (doctor or dentist).

5.2.4 The categories of Allied Health Professionals who may prescribe medicines:

- Physiotherapy, Therapy Radiography, Paramedics and Podiatry Independent Prescribers can prescribe any medicine for any medical condition within their competence including some controlled drugs (Confirm for each profession)
- Physiotherapy, Podiatry, Paramedics, Radiography and Dietetics prescribers can prescribe under a Clinical Management Plan in partnership with an independent prescriber (doctor or dentist). AHPs can only prescribe controlled drugs as supplementary prescribers when the drugs are clearly defined within the clinical management plan.

5.2.5 The categories of Optometrists who may prescribe medicines:

- Optometrist independent prescribers can prescribe any licensed medicine for ocular conditions, affecting the eye and adnexa, within their recognised area of expertise and competence of the optometrist. Optometrist Independent Optometrists cannot prescribe controlled drugs.

5.2.6 Application process for Independent/Supplementary Prescribing Programme

All entrants must be selected according to the criteria set by the individual prescribing programme and the respective professional body for each of the professional groups. Applicants must have a named medical officer within the clinical area who will act as a mentor and have the approval of BHSCT to complete the training course. Applicants must have the support of their line manager. The prescriber must have the opportunity to prescribe within their post following completion of training. The therapeutic areas for prescribing must be identified.

5.2.7 Application and Admission to Nurse Independent/Supplementary Prescribing Programme

The Nurse Independent/Supplementary Prescribing course is delivered by Queen's University, Belfast and the University of Ulster, Jordanstown over one academic year. Part time employees must have worked for a sufficient period to be deemed competent by their line manager.

The aim in selection of students to undertake the programme is to identify those who will successfully complete the course and be able to carry out the role of nurse prescriber within their speciality/area of expertise.

Commissioning for nurse independent/supplementary prescribing should be undertaken in line with the framework for the management of nursing and midwifery post registration education commissioning for the BHSCT. Any nurse wishing to undertake the course may apply, having first discussed with and gained approval from their line manager /Divisional Nurse Lead. The NMC circular 29/2007 requires that all nurses have an up-to-date criminal records bureau check i.e. within the last 3 years, before they commence the course. Appendix 1 details the admission criteria checklist.

5.2.8 Admission criteria to Community Practitioner Nurse Prescribing Programme

At present the nurse prescribing programme is integrated into the BSc (Hons)/PG Diploma Community and Public Health Nursing.

5.2.9 Admission criteria to Pharmacist Independent Prescribing Course

The course is over a six month period leading to a Post Grad Certificate in Independent/Supplementary Prescribing for pharmacists. The course is provided jointly by Queens University, Belfast and NICPLD (Northern Ireland Centre for Pharmacy Learning and Development). Part time employees must have worked for a sufficient period to be deemed competent by their line manager/Professional Lead. Candidates may also complete the Pharmacist Independent Prescribing Course as part of the MSc in Advanced Clinical Pharmacy Practice

Applicants must be registered with the Pharmaceutical Society of Northern Ireland (PSNI) (or eligible to register), have 2 years post-registration experience and have experience in the clinical area in which they wish to practice as a pharmacist independent prescriber.

Pharmacists must have approval from the Pharmacy Post-graduate Application Working Group. All applications must be forwarded by 31st January to the Pharmacy Services Manager for consideration. Appendix 2 outlines the admission criteria checklist.

5.2.10 Admission criteria to AHP Independent/Supplementary Prescribing Programme

The AHP Independent/Supplementary Prescribing Course is delivered by the Ulster University. The applicant must be registered with at least one year's experience immediately preceding the application in the clinical area in which they intend to prescribe. Part time employees must have worked for a

sufficient period to be deemed competent by their line manager/ Professional Lead, as appropriate.

Allied Health Professionals
The course will be available through the AHP commissioning process. Any AHP within the Trust who wishes to apply must have approval from their Trust Professional Lead. Appendix 3 outlines the admission criteria checklist.

5.2.11 Admission criteria to Optometrist Independent Prescribing Programme
The Optometrist Independent Prescribing Course is delivered by a number of institutions across the UK. The Optometrist must have been practising as a qualified Optometrist for at least 2 years in order to commence this course. Approval by line manager or Professional Lead is required prior to commencing if funding is available from the BHSCT, or if study leave is being applied for. Optometrists preparing to become independent prescribers will undertake a specific General Optical Council (GOC) approved programme of training, and must successfully complete the Common Final Assessment of Competence

Optometrists require prior approval from their line manager or Professional Lead in order to commence an Independent Prescribing course, if funding is available from BHSCT or if study leave is required. These are provided by a number of University Optometry departments in the UK, and the Optometrist may be required to self-fund their training and Independent Prescriber qualification.

5.3 BHSCT and Regional Registration Process

5.3.1 Application for inclusion on the BHSCT NMP Register

- A central live register of all non-medical prescribers of medicines within BHSCT can be located at: http://intranet.belfasttrust.local/directorates/css/MedicinesManagement/Pages/NMPC.aspx
- The NMP must complete the application form for inclusion on the BHSCT NMP Register. (Appendix 4).
- The Head of Pharmacy and Medicines Management will review the application and if approved issue a letter to the NMP to authorise that he/she can prescribe as part of their role.
- The Divisional Nurse/ AHP Professional Lead/ Optometry Professional Lead will add the name to the locally held database and ensures the individual's job description details the applicant will work as a non-medical prescriber in BHSCT.

5.3.2 Annual Renewal on the BHSCT NMP Register

- The Line Manager must review and verify by the 30th April each year that the non-medical prescriber is working within their authorised parameters of prescribing.
- In order to do this the annual renewal form (Appendix 5) should be completed and returned via e-mail before the 30th April each year.PharmacyCentralAdmin@belfasttrust.hscni.net

- The NMP register on the intranet will then be updated to indicate the registrant has renewed for the current financial year e.g. 21/22, 22/23 etc. (Rather than the previous process which indicated the month the registrant joined the register)
- New Registrants who join part way through the year must complete the annual renewal for the following year in line with the above.
- Failure to comply with this requirement within the time-frame will result in the practitioner being removed from the BHSCT register and a suspension of prescribing rights within BHSCT.
- The Head of Pharmacy and Medicines Managment will forward a list of registrants removed from the register to the professional representative on the trust NMP group by 31st May each year.
- Any practitioner wishing to 'rejoin' the BHSCT register will be required to re-submit a full application as set out in Appendix 4.

5.3.3 Parameters of prescribing and expanding parameters of prescribing
Initially the parameters of prescribing are agreed with the line manager/professional lead as part of the BHSCT registration process as outlined above. The parameters of prescribing will be reviewed as part of the annual appraisal process. It is the Department of Health's policy in Northern Ireland to extend prescribing responsibilities to a range of non-medical professions. Further information is available at:
https://www.health-ni.gov.uk/articles/pharmaceutical-non-medical-prescribing
Professional Leads who approve application forms and parameters of prescribing should ensure applications are in line with this policy and DOH guidance at the link above.

Any changes in prescribing practice must be notified to the Head of Pharmacy and Medicines Management by forwarding a new appendix 4.

5.3.4 Maternity Leave and annual registration
It is the responsibility of the individual NMP to advise the Head of Pharmacy before commencing maternity leave – Upon receipt of this information the Head of Pharmacy will annotate *"Maternity leave"* besides the registrant name for a period of 15 months on the trust register. An annual renewal form must be completed within the 15 months to remain on the register.

It is the responsibility of the line manager to advise the Head of Pharmacy when a prescriber has left the trust or is no longer practicing.

5.3.5 Application for inclusion on the regional Web Based Registration for prescribing in primary care
The Business Services Organisation (BSO) Regional Web Based Registration system maintains a register of non- medical prescribers who wish to obtain their own HS21 prescription pad in line with DoH guidance. All primary care/community non medical prescribers must register with BSO using this system in order to obtain a cipher number. Before commencing the online registration process, please refer to the 'Northern Ireland Non-Medical Prescriber Registration Manual' which is available at the link below:
http://intranet.belfasttrust.local/directorates/css/MedicinesManagement/Docu

ments/Non-Medical%20Prescriber%20Registration%20Manual%20-%20Jun%202013.pdf

5.4 Guidance on Prescribing

5.4.1 Patient assessment

Before writing a prescription the non-medical prescriber should have assessed the patient and have knowledge of:

- Patient's full medication (this should include all prescribed and non-prescribed medication including over the counter and alternative remedies).
- Past medical history.
- Allergy status.
- Patient's current health status.
- A thorough knowledge of the item to be prescribed, i.e. dosage, therapeutic action, side effects, and interactions, frequency of use.
- The current British National Formulary (BNF) or Nurse Prescribers Formulary (NPF) for reference, including guidance on prescription writing.

All non-medical prescribers should prescribe according to the Trust's generic prescribing policy except where this would not be clinically appropriate or where there is no approved generic name. The N.Ireland Formulary should be adhered to as well as Trust approved policies e.g. BHSCT Medicines Code Non medical prescribers should clearly annotate that they are a supplementary or independent prescriber.
http://niformulary.hscni.net/Pages/default.aspx

Prescriptions should be regularly reviewed and only re-issued to meet clinical need. Suitable provision for monitoring each patient/client's condition should be in place for ensuring that patient/client's who need a further examination or assessment do not receive further prescriptions without being seen by an appropriate prescriber.

Non-medical prescribers may discontinue medication if they have assessed a patient and in their clinical judgement think this is the best course of action for the patient. Non-medical prescribers should always consider themselves part of the team and not undertake actions without considering the prescribing actions of others.

5.4.2 Patient information

The non-medical prescriber must inform the patient that they are acting as a non-medical prescriber. The non-medical prescriber will explain the following to the patient:

- Indication for the medication.
- The dosage, frequency and method of administration.
- The common side effects.
- Any precautions they should take.
- What to do if they have any concerns or adverse reactions.
- How to store medicines safely.
- What to do with any leftover medicines at the end of treatment.
- Plan for review if indicated.

- And test their understanding of the information provided

5.4.3 Prescribing and administration/supply/dispensing

Wherever possible, the actions of prescribing, dispensing/supply and administration are performed by separate healthcare professionals. Exceptionally, where clinical circumstances make it necessary and in the interests of the patient, the same healthcare professional can be responsible for the prescribing and supply/administration of medicines. Where this occurs, an audit trail,documents and processes are in place to limit errors.

https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/SSHM%20and%20Admin/Admin%20of%20Meds%20prof%20guidance.pdf?ver=2019-01-23-145026-567

5.4.4 Prescribing for Self/Family/Friends

Non-medical prescribers must **not** prescribe any medicine for themselves or for anyone with whom they have a close personal or emotional relationship other than in exceptional circumstances.

5.5 Prescribing controlled drugs

5.5.1 Nurses

Amendments to the Misuse of Drugs Regulations (Northern Ireland) 2002 were introduced on 10 May 2012 to allow a nurse independent prescriber and a pharmacist independent prescriber to prescribe controlled drugs (CDs) as described in the Department circular DH1/12/112169 (Appendix 7).

Formerly nurse independent prescribers could only prescribe controlled drugs from a limited formulary for specific conditions or by using supplementary prescribing.

Nurse independent prescribers can prescribe any controlled drug listed in schedules 2-5 for any medical condition within their competence except diamorphine, cocaine and dipipanone for the treatment of addiction (nurse independent prescribers are able to prescribe other controlled drugs for the treatment of addiction).

Nurse independent prescribers are able to requisition controlled drugs and are authorised to possess, supply, offer to supply and administer the drugs they are able to prescribe. Persons acting in accordance with the directions of a nurse independent prescriber are authorised to administer any schedule 2-5 drugs that the nurse can prescribe,
Detailed advice on writing a prescription for Controlled Drugs is contained in the BNF.

All nurse prescribers wishing to undertake prescription of CDs under this legislation will be required to:

- gain approval from their professional line manager

- provide parameters of prescribing practice for inclusion on the BSO/Trust Central Register provide evidence of successful completion of controlled drugs training
- provide evidence of safe prescribing practice and CPD at annual appraisal
- adhere to BHSCT Controlled Drug policy
- adhere to BHSCT Dealing with discrepancies and concerns about Controlled Drugs

Non-medical prescribers who need to prescribe controlled drugs as part of their role must specify them individually on the parameters of prescribing section of the application form (Appendix 5) and forward to Head of Pharmacy and Medicines Management with evidence of successful completion of CD training.

Schedules are highlighted in the BNF.A comprehensive list of schedules is available from the Home Office and all non-medical prescribers should obtain a copy of this document available from the Home Office Website www.homeoffice.gov.uk/drugs/licensing. A list of schedules is also available in the BHSCT CD policy.

5.5.2 Pharmacists

Pharmacists can prescribe controlled drugs as supplementary prescribers when the drugs are clearly defined within the clinical management plan (Appendix 8).

Pharmacist independent prescribers can prescribe any controlled drug listed in schedules 2-5 for any medical condition within their competence except diamorphine, cocaine and dipipanone for the treatment of addiction (pharmacist independent prescribers are able to prescribe other controlled drugs for the treatment of addiction). Pharmacist independent prescribers are able to requisition controlled drugs and are authorised to supply or administer the drugs they are able to prescribe. Persons acting in accordance with the directions of a pharmacist independent prescriber are authorised to administer any schedule 2-5 drug that the pharmacist can prescribe,
Detailed advice on writing a prescription for Controlled Drugs is contained in the BNF. Non-medical prescribers who need to prescribe controlled drugs a part of their role must specify them individually on the parameters of prescribing section of the application form (Appendix 5).

BHSCT pharmacy independent prescribers must:

- Adhere to BHSCT Controlled Drug policies
- Adhere to BHSCT Dealing with discrepancies and concerns about Controlled Drugs

Schedules are highlighted in the BNF.A comprehensive list of schedules is available from the Home Office and all non-medical prescribers should obtain a copy of this document available from the Home Office Website www.homeoffice.gov.uk/drugs/licensing. A list of schedules is also available in the BHSCT CD policy.

5.5.3 Allied Health Professionals

Physiotherapist Independent Prescribers and Podiatrist Independent Prescribers have the authority to prescribe a limited range of controlled drugs. AHPs can only prescribe controlled drugs as supplementary prescribers when drugs are clearly defined within the clinical management plan (Appendix 8).

The clinical management plan should clearly indicate:

- The dates all parties [IP, AHPISP, and patient] agree the Clinical Management Plan
- Name of prescriber and the category of prescriber
- Name of item prescribed, quantity, dose, frequency, and treatment duration.

In primary/community care the non-medical prescriber should agree the process for accessing medical records and recording prescriptions with the GP. If the non-medical prescriber is using computerised records he/she must ensure that they receive adequate and relevant training. Prescribers wishing to produce computer-generated scripts should contact the Professional Lead in the first instance.

Where there is no direct access to the GP records, the prescriber will ensure:

- Written documentation of prescription is sent to the practice manager or an agreed designated member of staff at the GP practice at time of writing (in exceptional circumstances this may be extended to 48 hours). The duplicate copy pad may be used to facilitate this process. These are available from the Professional Lead.
- This designated member of staff at the GP practice will be responsible for ensuring details of the prescription are entered on the prescribing section of the patient's electronic record.

5.5.4 Optometrists

Optometrist Independent Prescribers cannot prescribe controlled drugs.

5.6 CPD and Governance Arrangements

5.6.1 Professional Bodies

Non-medical prescribers are individually accountable to their professional body for this aspect of their practice, as for any other, and must act at all times in accordance with the same. Non-medical prescribers are advised to ensure that they have sufficient professional indemnity, for instance by means of membership of a professional organisation or trade union which provides this cover. NMPs must always prescribe within their parameters of prescribing and feel comfortable with the prescribing decision they have made

5.6.2 Continuing professional development (CPD)

Non-medical prescribers are responsible for ensuring continuous professional development (which should address their prescribing role) and keeping up to date with evidence and best practice in management of conditions for which they prescribe, and in the use of relevant medicines and legislative changes.

5.6.3 Annual Renewal for BHSCT Register - A Competency Framework for all Prescribers July 2016 (RPS)

To support all prescribers to prescribe effectively a single prescribing competency framework was published by the National Prescribing Centre/ National Institute for Health and Clinical Excellence (NICE) in 2012. Based on earlier profession specific prescribing competency frameworks this framework was developed because it became clear a common set of competencies should underpin prescribing regardless of professional background.

The 2012 framework is now in wide use across the UK and was due for review in 2014. NICE and Health Education England approached the Royal Pharmaceutical Society (RPS) to manage the update of the framework on behalf of all the prescribing professions in the UK. The RPS agreed to update the competency framework in collaboration with patients and the other prescribing professions many of whose professional bodies have endorsed this updated framework.

The Royal Pharmaceutical Society has produced a competency framework for all prescribers -RPS competency framework for all prescribers 2016 - which should be used as a tool to reflect on practice and identify CPD needs.

https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/Prescribing%20competency%20framework/prescribing-competency-framework.pdf

The key points to note about the scope of the prescribing framework are that:

- It is a generic framework for any prescriber (independent or supplementary) regardless of professional background. It therefore does not contain statements that relate only to specialist areas of prescribing.
- It must be contextualised to reflect different areas of practice and levels of expertise.
- It reflects the key competencies needed by all prescribers; it should not be viewed as a curriculum but rather the basis on which one can be built.
- It applies equally to independent prescribers and to supplementary prescribers but the latter should contextualise the framework to reflect the structures imposed by entering into a supplementary prescribing relationship

Non-medical prescribers will be expected to ensure continuous professional development and to keep up to date with evidence and best practice in the management of the conditions for which they prescribe, and in the use of relevant medicines and any legislative changes.

The non-medical prescriber must discuss learning needs and provide evidence of learning and development as a prescriber, as part of the annual declaration of continued competence.

Evidence of learning and development should also include any compliments or negative feed-back.

As for any professional it is critical NMPs audit their own work as a means of improving the quality of care they provide their patients and provide evidence of learning as part of the annual declaration of continued competence.

. **5.7 Dissemination**

Non – Medical prescribers, Managers of Non-Medical Prescribers. Professional Leads of Non-medical Prescribers. Services which have or wish to develop the NMP role.
Update to current policy- for immediate implementation
Notify Head of Pharmacy and Medicines e. if there are significant barriers and timescales not being met.

5.8 Resources

All line managers and Professional Leads must be familiar with this policy
All non-medical prescribers must be familiar with this policy

5.9 Exceptions

All non-medical prescribers must comply with this policy
All line managers and Professional Leads of non-medical prescribers must comply with this policy.
Services which have or wish to develop the NMP role must comply with this policy

6.0 MONITORING AND REVIEW

The number of NMPs from each profession will be monitored by the trust NMP committee

7.0 EVIDENCE BASE/REFERENCES

Medicines Code and CD polices .DOH guidance for NMPs

8.0 APPENDICES

Appendix 1 Admission to Nurse NMP Programme
Appendix 2 Admission to Pharmacist NMP Programme
Appendix 3 Admission to AHP NMP Programme
Appendix 4 Application for inclusion on the BHSCT Register of Non-Medical Prescribers
Appendix 5 Annual declaration of continued competence for BHSCT NMP Register
Appendix 6 Clinical Management Plan

9.0 NURSING AND MIDWIFERY STUDENTS

Nursing and/or Midwifery students on pre-registration education programmes, approved under relevant 2018/2019 NMC education standards, must be given the opportunity to have experience of and become proficient in the **Non-Medical Prescribing (NMP) of Medicines**, where required by the student's programme. This experience must be under the appropriate supervision of a registered nurse, registered midwife or registered health and social care professional who is adequately experienced in this skill and who will be accountable for determining the required level of direct or indirect supervision and responsible for signing/countersigning documentation.

Direct and indirect supervision

- Direct supervision means that the supervising registered nurse, registered midwife or registered health and social care professional is actually present and works alongside the student when they are undertaking a delegated role or activity.
- Indirect supervision occurs when the registered nurse, registered midwife or registered health and social care professional does not directly observe the student undertaking a delegated role or activity. (NIPEC, 2020)

This policy has been developed in accordance with the above statement.

Wording within this section must not be removed.

10.0 EQUALITY IMPACT ASSESSMENT

The Trust has legal responsibilities in terms of equality (Section 75 of the Northern Ireland Act 1998), disability discrimination and human rights to undertake a screening exercise to ascertain if the policy has potential impact and if it must be subject to a full impact assessment. The process is the responsibility of the Policy Author. The template to be complete by the Policy Author and guidance are available on the Trust Intranet or via this **link**.

All policies (apart from those regionally adopted) must complete the template and submit with a copy of the policy to the Equality & Planning Team via the generic email address equalityscreenings@belfasttrust.hscni.net

The outcome of the equality screening for the policy is:

Major impact ☐
Minor impact ☐
No impact ☒

Wording within this section must not be removed

11.0 DATA PROTECTION IMPACT ASSESSMENT

New activities involving collecting and using personal data can result in privacy risks. In line with requirements of the General Data Protection Regulation and the Data Protection Act 2018 the Trust considers the impact on the privacy of individuals and ways to militate against any risks. A screening exercise must be carried out by the Policy Author to ascertain if the policy must be subject to a full assessment. Guidance is available on the Trust Intranet or via this **link**.

If a full impact assessment is required, the Policy Author must carry out the process. They can contact colleagues in the Information Governance Department for advice on Tel: 028 950 46576

Completed Data Protection Impact Assessment forms must be returned to the Equality & Planning Team via the generic email address equalityscreenings@belfasttrust.hscni.net

The outcome of the Data Protection Impact Assessment screening for the policy is:

Not necessary – no personal data involved ☒
A full data protection impact assessment is required ☐
A full data protection impact assessment is not required ☐

Wording within this section must not be removed.

12.0 RURAL NEEDS IMPACT ASSESSMENT

The Trust has a legal responsibility to have due regard to rural needs when developing, adopting, implementing or revising policies, and when designing and delivering public services. A screening exercise should be carried out by the Policy Author to ascertain if the policy must be subject to a full assessment. Guidance is available on the Trust Intranet or via this link.

If a full assessment is required the Policy Author must complete the shortened rural needs assessment template on the Trust Intranet. Each Directorate has a Rural Needs Champion who can provide support/assistance.

Completed Rural Impact Assessment forms must be returned to the Equality & Planning Team via the generic email address equalityscreenings@belfasttrust.hscni.net

Wording within this section must not be removed.

13.0 REASONABLE ADJUSTMENT ASSESSMENT

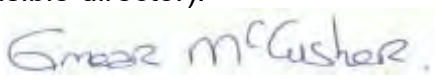
Under the Disability Discrimination Act 1995 (as amended) (DDA), all staff/ service providers have a duty to make Reasonable Adjustments to any barrier

a person with a disability faces when accessing or using goods, facilities and services, in order to remove or reduce such barriers. E.g. physical access, communicating with people who have a disability, producing information such as leaflets or letters in accessible alternative formats. E.g. easy read, braille, or audio or being flexible regarding appointments. This is a non-delegable duty.

The policy has been developed in accordance with the Trust's legal duty to consider the need to make reasonable adjustments under the DDA.

Wording within this section must not be removed.

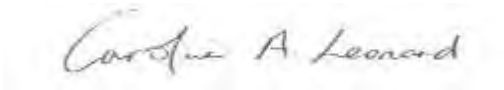
SIGNATORIES
(Policy – Guidance should be signed off by the author of the policy and the identified responsible director).



05/03/2021

_____ **Date:** _____

Policy Author



07/06/2021

_____ **Date:** _____

Director

Appendix 1 ADMISSION TO THE NURSE INDEPENDENT SUPPLEMENTARY PRESCRIBING PROGRAMME (criteria checklist)

Applicant's details……..

Admission criteria checklist Ref: NMC Standards	**Criteria met Y/N**
Registered first level nurse, midwife and/or specialist community public health nurse	
At least three years post registration experience. The year immediately preceding application must have been in the clinical field in which the applicant intends to prescribe	
The nurse has been identified through individual Performance Review Appraisal, the suitability to prescribe before they apply for a training place	
The applicant is in a role that enables them to prescribe following completion of training and which has clear benefits for patients clients	
The applicant must have had a Pocva completed within 3 years of starting the course	
The prospective candidate must either be deemed competent in Health Assessment by his/her professional lead and has successfully undertaken a relevant module in Health Assessment*	
Demonstrated ability to study at degree level through: **1.** Undergraduate level **(60 credits)** Successful completion of three modules (60 credits) of study at level 2 with a mark of at least 50%. This will include evidence of the skills necessary for the implementation of evidence based practice **OR** **2.** Postgraduate level • Pre-registration degree in Nursing or Midwifery • Post-registration degree in Nursing, Midwifery or Health Studies/Sciences • Degree in any other relevant subject area	
In addition written confirmation will be required from **1.** The Professional Lead/Line Manager of their support for the nurse to undertake the preparation programme and facilitate ongoing CPD and supervision to support the prescribing role **2.** A designated medical practitioner who meets eligibility criteria for medical supervision of nurse prescribers, and who has agreed to provide the required term of supervised practice. (A guide to help doctors prepare for and carry out the role of designated medical practitioner. Feb 2005. Available at www.npc.co.uk	

*The Health Assessment module for prescribing will be offered concurrently with the NISP programme for approximately the first two years of the new programme (commencing autumn 2007). After that students will be expected to have evidence of successful completion of the relevant Health Assessment module in advance of the programme.

Checklist confirmed by.....(Line Manager) Date.....

Applicant..... Date.....

Divisional Nurse Lead..... Date.....

Appendix 2 **ADMISSION TO THE PHARMACIST INDEPENDENT / SUPPLEMENTARY PRESCRIBING PROGRAMME (criteria Checklist)**

Applicant's details.....

Admission Criteria Checklist	**Criteria met Y/N**
Registered pharmacist with PSNI	
At least two years experience practicing as a pharmacist in a clinical environment in a hospital setting, following their pre-registration year.	
NMP has been identified through Staff Development Appraisal as appropriate in this role	
The applicant is in a role that enables them to prescribe following training and which has clear benefits for patients/clients or has been identified as a potential role	
In addition written confirmation will be required from: **1.** The Pharmacy Services Manager of their support for the pharmacist to undertake the preparation programme and facilitate ongoing CPD and supervision to support their prescribing role	
2. A designated medical practitioner who meets eligibility criteria for medical supervision of pharmacist prescribers, and who has agreed to provide the required term of supervised practice	

Criteria confirmed: (Line Manager).....
Date.....

Applicant signature..... Date.....

Head of Pharmacy..... Date.....

Appendix 3 **ADMISSION TO THE ALLIED HEALTH PROFESSIONAL INDEPENDENT SUPPLEMENTARY PRESCRIBING PROGRAMME**

Applicant's details.....

Admission Criteria Checklist	**Criteria met Y/N**
HCPC registered radiographer, physiotherapist, paramedic, podiatrist, or dietitian	
At least three years post registration experience. The year immediately preceding application must have been in the clinical field in which the applicant intends to prescribe	
Before applying for a training place the radiographer, physiotherapist, paramedic, podiatrist, optometrist or dietitian's suitability to become a prescriber has been identified through performance review/appraisal	
The applicant is in a role that enables them to prescribe following completion of training and which has clear benefits for patients/clients	
The applicant must have had an Access NI assessment which has been completed within the previous 3 years (NB in order to prescribe a registrant is required to have an up to date Access NI Assessment)	
In addition written confirmation will be required from: **1.** The Line Manager/Professional Lead confirming their support for the radiographer/physiotherapist/paramedic/podiatrist/optometrist/dietitian to undertake the preparation programme and facilitate ongoing CPD and supervision to support the prescribing role **2.** A designated medical practitioner who meets eligibility criteria for medical supervision of radiographer/podiatrist/physiotherapist/paramedic/optometrist/dietitian prescribers, and who has agreed to provide the required term of supervised practice. (A guide to help doctors prepare for and carry out the role of designated medical practitioner. Feb 2005. Available at www.npc.co.uk.	

Criteria confirmed by (Professional Lead)

Date.....

Applicant.....
Date.....

Signature of Designated Professional Head of Service or Trust AHP Lead

..... **Date.....**

Appendix 4

Application for inclusion on the BHSCT NMP REGISTER
(Details as per professional register)

(Application forms must be typed)

First Names	**Surname**
Hospital / Base	**Job Title**

New application/ Updated Parameters of Prescribing **(Please delete above as necessary)**	**Registration Details** NMC Pin No. / Pharm Soc Reg No /AHP HCPC/ GOC no : **Type of prescriber:** (Please circle) Nurse Independent / supplementary V300 • Pharmacist Independent/Supplementary prescriber • AHP Supplementary Prescriber • AHP Independent Prescriber • Optometrist Independent Prescriber •

Location (please delete as appropriate)
Hospital in-patients Yes / No Primary Care / Community Yes / No Hospital out-patient / interface Yes / No **Prescription Pad:** Only non-medical prescribers prescribing in the community will be able to prescribe from the non-medical prescribing budget and therefore require a prescription pad from BSO Prescription pad required Yes / No If Yes please refer to the section on obtaining prescription pads – process for registration of Non-medical Prescribers with Central Services Agency (BSO)

Parameters of Prescribing (Must be completed in this section)

Therapeutic area	Groups of drugs to be prescribed	Evidence based prescribing – state local / national guidelines e.g. .NI formulary, NICE	Please demonstrate how competency was gained in this area
Controlled drugs schedules 2,3 and 4, 5 must be listed individually			

<table>
<tr><td rowspan="2">Prescriber (As per professional register)</td><td>I confirm I will work as a NMP within my agreed parameters of prescribing and in line with trust policy. I have developed and attained competencies specific to my role.</td><td>Name (Block Capitals)</td><td rowspan="2">Address:</td></tr>
<tr><td>Date:</td><td>Signature</td></tr>
<tr><td rowspan="3">Professional Lead AHP / Divisional Lead Nurse/ Pharmacy Team Lead (8B and above)</td><td colspan="3">• The Trust is in agreement that the above named professional will prescribe in an Independent and Supplementary capacity as part of their employed role for the parameters detailed above.
• I am satisfied that the professional is appropriately qualified to undertake this role.
• I will ensure that the professional conforms to the standards of proficiency for their professional body in relation to prescribing in his/her area of competence.

Verification of prescribing status
1. Copy of NMC “Statement of Entry” attached
2. Copy of PSNI registration with annotation for prescribing
3. Copy of HCPC registration with annotation for prescribing
4. Copy of GOC Optometrist Independent Prescriber qualification</td></tr>
<tr><td>Name Block Capitals</td><td></td><td rowspan="2">Date:</td></tr>
<tr><td>Signature</td><td></td></tr>
</table>

Original to be kept by Professional Lead/Line Manager.

Please send completed form by e-mail to the Head of Pharmacy and Medicines Management (Eimear.mccusker@belfasttrust.hsnci.net) :

Pharmacy Section:

BHSCT NMP Register Updated	*Signature :*	*Date:*

Appendix 5 Annual Declaration of Competence BHSCT NMP Register

Non-medical prescribers are required by the Trust to confirm on a yearly basis that they are competent to remain on the trust NMP register.

Year e.g. 21/22 22/23	
Name	
Hospital or Base	
Job title	
NMC pin/AHP HCPC no./ Pharmaceutical Society registration number / GOC no.	

Non-medical prescribers will be expected to ensure continuous professional development and to keep up to date with evidence and best practice in the management of the conditions for which they prescribe, and in the use of relevant medicines and any legislative changes.

The non-medical prescriber must discuss learning needs and provide evidence of learning and development as a prescriber, as part of the annual Annual Declaration of Competence process. The Royal Pharmaceutical Society has produced a competency framework for all prescribers -RPS competency framework for all prescribers 2016 - which should be used as a tool to reflect on practice and identify CPD needs

The NMP is compliant with the requirements of Section 7 in the policy and the line manager has verified this.	Signature and Date
NMP	
Professional Manager (usually line manager)	

Please send completed form by e-mail to: PharmacyCentralAdmin@belfasttrust.hscni.net

Pharmacy Section:

BHSCT NMP Register Updated	*Signature :*	*Date:*

Appendix 6 CLINICAL MANAGEMENT PLAN (CMP)

The Clinical Management Plan is the foundation stone of supplementary prescribing – it must be formally agreed by the Independent Prescriber (Doctor) before prescribing occurs. It is essential that there is an agreed CMP in place (written or electronic) relating to a named patient and to that patient's specific condition to be managed by the supplementary prescriber. This must be included in the patient's record.
The CMP must include the following:

- A reference to the medicines (by individual medicine or class of medicines) that may be prescribed for the named patient by the supplementary prescriber.

- The CMP may include references to published national or local guidelines. However they must clearly identify the range of relevant medicinal products to be used in the treatment of the patient and the CMP should draw attention to the relevant part of the guideline. The guidelines must also be accessible.

- The circumstances in which the supplementary prescriber can vary the dosage, frequency and formulation of the specific medicines.

- The circumstances in which the supplementary prescriber should refer back to the independent prescriber.

- Relevant warning about any known sensitivities of the patient to particular medicines and arrangements for the notification of any adverse drug reactions.

- The date on which the supplementary prescribing arrangements commence and the date by which it should be reviewed.

- The formal agreement to the CMP of the independent and supplementary prescribers and of the patient.

Appendix 6: TEMPLATE CMP 1 (Blank): for teams that have full co-terminus access to patient records

Name of Patient:		Patient medication sensitivities/allergies:	
Patient identification e.g. ID number, date of birth:			
Independent Prescriber(s):		Supplementary Prescriber(s)	
Condition(s) to be treated		Aim of treatment	
Medicines that may be prescribed by SP:			
Preparation	Indication	Dose schedule	Specific indications for referral back to the IP
Guidelines or protocols supporting Clinical Management Plan:			
Frequency of review and monitoring by:			
Supplementary prescriber		Supplementary prescriber and Independent prescriber	
Process for reporting ADRs:			
Shared record to be used by IP and SP:			

Agreed by independent prescriber(s)	Date	Agreed by supplementary prescriber(s)	Date	Date agreed with patient/carer

TEMPLATE CMP 2 (Blank): for teams where the SP does not have co-terminus access to the medical record

<table>
<tr><td colspan="3">Name of Patient:</td><td colspan="3">Patient medication sensitivities/allergies:</td></tr>
<tr><td colspan="6">Patient identification e.g. ID number, date of birth:</td></tr>
<tr><td colspan="3">Current medication:</td><td colspan="3">Medical history:</td></tr>
<tr><td colspan="3">Independent Prescriber(s)

Contact details: (tel/email/address)</td><td colspan="3">Supplementary prescriber(s):

Contact details: (tel/email/address)</td></tr>
<tr><td colspan="3">Conditions(s) to be treated:</td><td colspan="3">Aim of treatment:</td></tr>
<tr><td colspan="6">Medicines that may be prescribed by SP:</td></tr>
<tr><td>Preparation</td><td colspan="2">Indication</td><td>Dose schedule</td><td colspan="2">Specific indications for referral back to the IP</td></tr>
<tr><td colspan="6">Guidelines or protocols supporting Clinical Management Plan:</td></tr>
<tr><td colspan="6">Frequency of review and monitoring by:</td></tr>
<tr><td colspan="2">Supplementary prescriber</td><td colspan="4">Supplementary prescriber and Independent prescriber</td></tr>
<tr><td colspan="6">Process for reporting ADRs:</td></tr>
<tr><td colspan="6">Shared record to be used by IP and SP:</td></tr>
<tr><td>Agreed by independent prescriber(s);</td><td>Date</td><td colspan="2">Agreed by supplementary prescribers(s):</td><td>Date</td><td>Date agreed with patient/carer</td></tr>
</table>

Belfast Health and Social Care Trust
caring supporting improving together

TERMS OF REFERENCE

NAME	**Non- Medical Prescribing Group**
PURPOSE	*Our Current Trust Vision* *''To be one of the safest, most effective and compassionate health and social care organisations'*  This group has been constituted by the Medicines Optimisation Committee to ensure trust policies and processes are in place *for non-medical prescribing and patient group directions.*
DUTIES	This group aims to address legislative and best practice requirements in the development of BHSCT PGDs and NMP and ensure: 1. A framework is established for the development and implementation of patient group directions (PGDs) within the Belfast Health and Social Care Trust through the development of a trust PGD policy and approval process for individual PGDs by directorates. 2. A framework is established for the development and implementation of NMP of medicines within the Belfast Health and Social Care Trust through the development of a trust NMP policy, professional approval process and maintenance of a live Trust NMP register.
REPORTING	Reports to Medicines Optimisation Committee
MEMBERSHIP	**Chair:** Head of Pharmacy and Medicines Management **Membership:** Clinical Lead Pharmacist RMPIS Lead Clinical Pharmacist NMP Optometrist Representative Allied Health Professional Lead Senior Nurse Manager (Central)
MEETINGS	**Frequency of Meetings** Three times per year Formal minutes to include the following: - The names of all present at the meeting - Decisions made - Details on any issues to be escalated. - Declarations of interest of members and participants
REVIEW	Terms of Reference must be reviewed on an annual basis Reviewed 31/10/20
OUTPUT	Report to MOC.

TERMS OF REFERENCE

NAME	**Medicines Optimisation Committee**
PURPOSE	Our Current Trust Vision ‘‘To be one of the safest, most effective and compassionate health and social care organisations’  As a Committee within the Integrated Governance and Assurance Framework (known as the Framework) the purpose of the Medicines Optimisation Committee is to provide assurance to Safety and Quality Improvement Steering Group around the effectiveness of the work of its Groups, as referenced within the Framework. This Committee has been constituted by the Assurance Committee. It is linked to: • Achieving Trust corporate objectives through effective medicines optimisation • Advising the Safety and Quality Improvement Steering Group and Trust Executive Team on Medicines optimisation issues. The Medicines Optimisation Committee will report directly to the Safety and Quality Improvement Steering Group. The Groups reporting into the Medicines Optimisation Committee include: • Drug and Therapeutics Group • Immunoglobulins Group • Non Medical Prescribing Group • Medical Gas Group • Medicines Risk and Safety Assurance Group • Biosimilar Group

DUTIES	The Medicines Optimisation Committee, when providing assurance to the Safety and Quality Improvement Steering Group, will ensure the effectiveness of their Groups by: • Ensuring that the work of the Groups meet their responsibilities as outlined in their Terms of Reference. • Supporting the identification, review, and escalation of risks associated with the Groups' purpose. • The provision of regular assurance updates to Safety and Quality Improvement Steering Group as per the Framework and their individual Terms of Reference to allow scrutiny of ongoing Trust Assurance arrangements. • Identification of assurance sources to be utilised. The Medicines Optimisation Committee as a Line 2 Assurance group, will seek Line 1 assurance from Medicines Optimisation Committee dashboard inputs including Controlled Drug audit compliance; Line 2 assurance from the Committee Groups and Controls Assurance Standards for Medicines Management and Line 3 assurance from Audit Committee, Internal Audit, external regulators eg RQIA, HSENI etc • Review the adequacy of relevant Key Policies and ensuring their timely update. • Establish and maintain a Trust strategy for Medicines Optimisation and manage associated work plans. • Lead implementation of NI Medicines Optimisation Efficiency Programme on behalf of BHSCT through joint Pharmacy/Finance partnership • Support delivery of Medicines Optimisation standards of Trust Quality Improvement Plan • Monitor and audit Trust compliance with the Controls Assurance Standards for Medicines Management and co-ordinate actions as required. • Ensure the handling, storage and use of medicines is safe, clinically effective and economical. • Support the BHSCT Encompass lead in the planning and implementation of Encompass. • Ensure the safe and effective management of Controlled Drugs and audit compliance against Controlled Drug policies and procedures. • Investigate and support new techniques and methodologies for medicines management, in particular, to oversee and support the implementation of electronic prescribing. • Ensure Trust implementation of regional and national guidance including national alerts relating to medicines. • To review and approve work plans from Medicines Optimisation Committee Groups including: o Drug and Therapeutics Group o Immunoglobulins Group o Non Medical Prescribing Group

	○ Medical Gas Group ○ Medicines Risk and Safety Assurance Group ○ Biosimilar group • Each Group must submit a quarterly report using the agreed template to PharmacyCentralAdmin@belfasttrust.hscni.net three weeks before each Medicines Optimisation Committee meeting. The Chair of the Committee is responsible for maintaining a tracker of submission of reports for all Groups that report to the Committee. • Medicines Optimisation Committee will escalate any concerns to the Safety and Quality Improvement Steering Group or otherwise as appropriate. • The Medicines Optimisation Committee will provide assurance as per Assurance Framework to allow scrutiny of ongoing Trust Assurance arrangements
AUTHORITY	This Committee is authorised by the Assurance Committee to investigate or have investigated any activity within its Terms of Reference. In doing so, the Committee shall have the right to inspect records or documents of the Trust, relevant to the Committee's remit, ensuring patient/client and staff confidentiality, as appropriate. It may seek relevant information from any: • Employee (and all employees are directed to co-operate with any reasonable request made by the Committee); • Other Committees, subcommittees or group established within the Assurance Framework to assist in the delivery of its functions. • As appropriate, support Groups to obtain outside independent professional or legal advice as well securing attendance of individuals outside BHSCT with relevant experience and expertise. The Groups that feed into this Committee are as follows: • Drug and Therapeutics Group • Immunoglobulins Group • Non Medical Prescribing Group • Medical Gas Group • Medicines Risk and Safety Assurance Group • Biosimilar group
REPORTING	The Medicines Optimisation Committee is directly accountable to the Safety and Quality Improvement Steering Group for its performance in exercising the functions set out in these Terms of Reference. The Committee, through its Chairs and members, shall work closely with the other Committees and Groups, to provide advice and assurance to the Safety and Quality Improvement Steering Group through the:

	• Joint planning and co-ordination of the Integrated Governance and Assurance Framework business • Sharing of information In doing so, the Committee shall contribute to the integration of good governance across the organisation, ensuring that all sources of assurance are incorporated into the Framework. The Committee chair should: • Report formally, regularly and on a timely basis to the Safety and Quality Improvement Steering Group on the Committee's activities. • Bring to Safety and Quality Improvement Steering Group's specific attention any significant matter under consideration of the Committee. • Ensure appropriate escalation arrangements are in place to alert the Executive Team or Chairs of other relevant Committees or Steering Groups of any risks/urgent/critical matters that may compromise patient/client care and affect the operation and/or reputation of the Trust.
LEAD RESPONSIBILITY	Medical Director
MEMBERSHIP	**Chair:** • Deputy Medical Director, Risk and Governance • Head of Pharmacy and Medicines Management **Membership:** Deputy Heads of Pharmacy Central Nursing representative Lead Medication Safety Pharmacist Co-director finance Drug and Therapeutics Group chair/representative Immunoglobulins Group chair/representative Non-medical prescribing Group chair/representative Medicines Risk and Safety Assurance Group chair/representative New Drugs Group chair/representative Biologics group chair/representative

	In attendance:	The Committee may also co-opt additional 'external' members from outside the organisation to provide specialist skills. Any Director or Senior Manager of the Trust may, where appropriate, be invited to attend.
	Professional Secretary:	Lead Medication Safety Pharmacist
MEETINGS	**Quorum** The quorum for the meeting will be no less than 60% of the membership and must include as a minimum at least one doctor, one nurse and one pharmacist. In the event where a quorum is not achieved at a meeting, an additional meeting will be scheduled to meet its delegated responsibilities. **Frequency of Meetings** Quarterly **Secretarial Support** Formal minutes of this group will be taken. The minutes will include the following: • The names of all present at the meeting (this should include a table of attendance to support the ongoing monitoring, month on month/quarter by quarter of attendance) • A record of the decisions made and any dissent • Details of how the group was assured and the evidence on which this was based • Risks discussed and a record of decisions regarding management/escalation • Details on any issues to be escalated (this will include details of who/Committee this has been escalated) • Declarations of interest of members and participants; • Draft minutes will be issued within 2 weeks following each meeting. • Maintenance of an action log. **Papers** The agenda and papers will be disseminated to Committee members 5 working days before the date of the meeting electronically. These will include Group assurance update reports. Additional papers may also include, but are not restricted to: • Medicines Optimisation Committee dashboard • Review of Risks	

	• Review of compliance against agreed standards • External Reports • Correspondence received from external bodies • New Guidance • Findings from Audits (External & Internal) **Withdrawal of individuals in attendance** The Committee may ask any or all of those who normally attend but who are not members to withdraw to facilitate open and frank discussion of a particular matter. This will be reflected in the minutes of the meeting.
CONFLICT/ DECLARATION OF INTEREST	The Chairs shall seek and record any conflict of interest for items on the agenda from members prior to every meeting.
REVIEW	• Terms of Reference must be reviewed on at least an annual basis. • Membership to be reviewed on at least an annual basis. • Updated Terms of reference and updated membership of Committee to be submitted to the relevant Steering Group for approval on an annual basis. • Assurance that an annual review of the Terms of Reference of all Groups that report directly into this Committee has been completed.
OUTPUT	The Medicines Optimisation Committee will provide the following: • Assurance Summary report The professional secretary on behalf of the Chairs of the Committee, shall oversee the submission of the following to the Risk and Governance Department. This is to ensure effective archiving for all groups within the Framework. • Terms of Reference (annually) • Agendas (after each meeting) • Minutes (on approval) The Chairs will oversee the tracking of this submission and take action re non-submission where required.

[Type here] [Type here] [Type here]

NAME OF PATIENT	PRN	MEDICATION	DATE	TIME	RATIONALE	NURSE 1	NURSE 2

Belfast Health and Social Care Trust

Standards and Guidelines Committee

TITLE	**Policy for measuring and recording physiological observations.**

Summary	To set out processes to ensure the correct measurement and recording of patient's physiological observations.
Purpose	To provide clear guidance for BHSCT nursing and midwifery staff in the measurement and recording of patient's physiological observations. - in accordance with the NICE clinical guideline CG50 - *Acutely ill patients in hospital - Recognition of and response to acute illness in adults in hospital. (July 2007).*
Operational date	June 2010
Review date	June 2011
Version Number	V1
Supersedes previous	
Director Responsible	Brenda Creaney, Director of Nursing
Lead Author	Joanna McCormick
Lead Author, Position	Critical Care Nurse Consultant
Additional Author(s)	
Department / Service Group	Acute Services
Contact details	joanna.mccormick@belfasttrust.hscni.net 2nd Floor West Wing, RVH. 02890 635755

Reference Number	SG 07/09
Supercedes	Legacy Trust Policies

Date	Version	Author	Comments
July 2008	V1.0	Joanna McCormick	First draft
Nov 2008	V2.0	Joanna McCormick	Revised policy
31/03/2009	V0.3	JR Johnston	Amendments; Formatting
25/05/2010	V0.4	JMcC & JRJ	Final changes
3 June 2010	V0.5	JMcC & JRJ	Scope and pdf file
June 2010	1		Final version

Policy Record

		Date	Version
Author (s)			
Director Responsible			

Approval Process – Trust Policies

Policy Committee	Approval		
Executive Team	Authorise		
Chief Executive	Sign Off		

Approval Process – Clinical Standards and Guidelines

Standards and Guidelines Committee	Approval	30/06/2010	V0.5
Policy Committee	Approval	16/08/2010	V0.5
Executive Team	Authorise	18/08/2010	V0.5
Appropriate Director	Sign Off	20/08/2010	V0.5

Full Description

Reference No:	*SG 07/09*
1	**Policy for measuring and recording physiological observations**
2	**Introduction** Physiological abnormality is associated with adverse patient outcome. Track and trigger scoring systems have been designed to identify and monitor ward patients who are, or who may become unwell. Physiological 'track and trigger' systems rely on periodic observation of selected basic physiological signs ('tracking') with predetermined calling or response criteria ('trigger') for requesting the attendance of staff who have specific competencies in the management of acute illness and/or critical care. If track and trigger systems are to alter outcome the following are required; • Measurement of the defined physiological parameters must be accurate. • The measurement must be frequent enough to identify trends and changes in physiology. • The calculation of the track and trigger score with each set of observations must be accurate. • The response to an abnormal score must be prompt.
3	**Purpose:** To ensure the safety of patients in accordance with the NICE clinical guideline CG50 - *Acutely ill patients in hospital - Recognition of and response to acute illness in adults in hospital. (July 2007).*
4	**The scope:** This policy will apply to all BHSCT nursing / midwifery staff working with adult patients in the acute hospital setting. It does not address care that should be provided to: • children, • patients in critical care areas directly under the care of critical care consultants • outpatients • certain areas where the chart might be used to record observations but the escalation algorithm may not be applicable e.g. dying patients receiving palliative care or patients being cared for in a recovery ward.
5	**Objectives:** This policy outlines the steps to be taken in regard to the measuring and recording of patient's physiological observations.
6	**Roles and Responsibilities:** It is the responsibility of all BHSCT nursing / midwifery employees to adhere to this policy.

7	**The definition and background of the policy:** Patients on general adult wards and emergency departments who are at risk of deteriorating may be identified before a serious adverse event by changes in physiological observations recorded by healthcare staff. The interpretation of these changes, and timely institution of appropriate clinical management once physiological deterioration is identified, is of crucial importance to minimise the likelihood of serious adverse events, including cardiac arrest and death. Deterioration which necessitates an admission to a critical care area may also have a significant impact on patient outcome. BHSCT nursing / midwifery staff are key to the accurate measuring and recording of physiological observations. Evidence suggests that this is an area which requires improvement. The effectiveness of track and trigger systems depends on physiological data which is collected accurately and with sufficient frequency.
8	**Policy statements:** <u>Measuring and recording vital signs</u>
8.1	Adult patients in acute hospital settings, including patients in the emergency department for whom a clinical decision to admit has been made, should have physiological observations measured and recorded at the time of their admission.
8.2	A physiological track and trigger system should be used to document vital signs for all adult patients in acute hospital settings. The following parameters should be recorded • Respiratory rate • Heart rate • Systolic (and diastolic) blood pressure • Level of consciousness • Oxygen saturation • Temperature
8.3	Physiological observations must be recorded at least 12 hourly unless a decision has been made to decrease this frequency and the rationale documented in the patient's notes / care plan.
8.4	The frequency of monitoring should increase if abnormal physiology is detected in line with the track and trigger response algorithm. There should be a clear written monitoring plan that specifies which physiological observations should be recorded and how often.
8.5	Physiological observations should be measured, documented and acted upon by staff with competencies in monitoring, measurement and interpretation.
8.6	Prompt response must be made to abnormal physiology in accordance with the track and trigger response algorithm
8.7	Where the responsibility for undertaking and recording observations is delegated to non-registered nurses / midwives, it is the registered nurse / midwife who is accountable for ensuring that observations are recorded accurately and communicated promptly if abnormal (NMC guidelines for records and record keeping 2002).

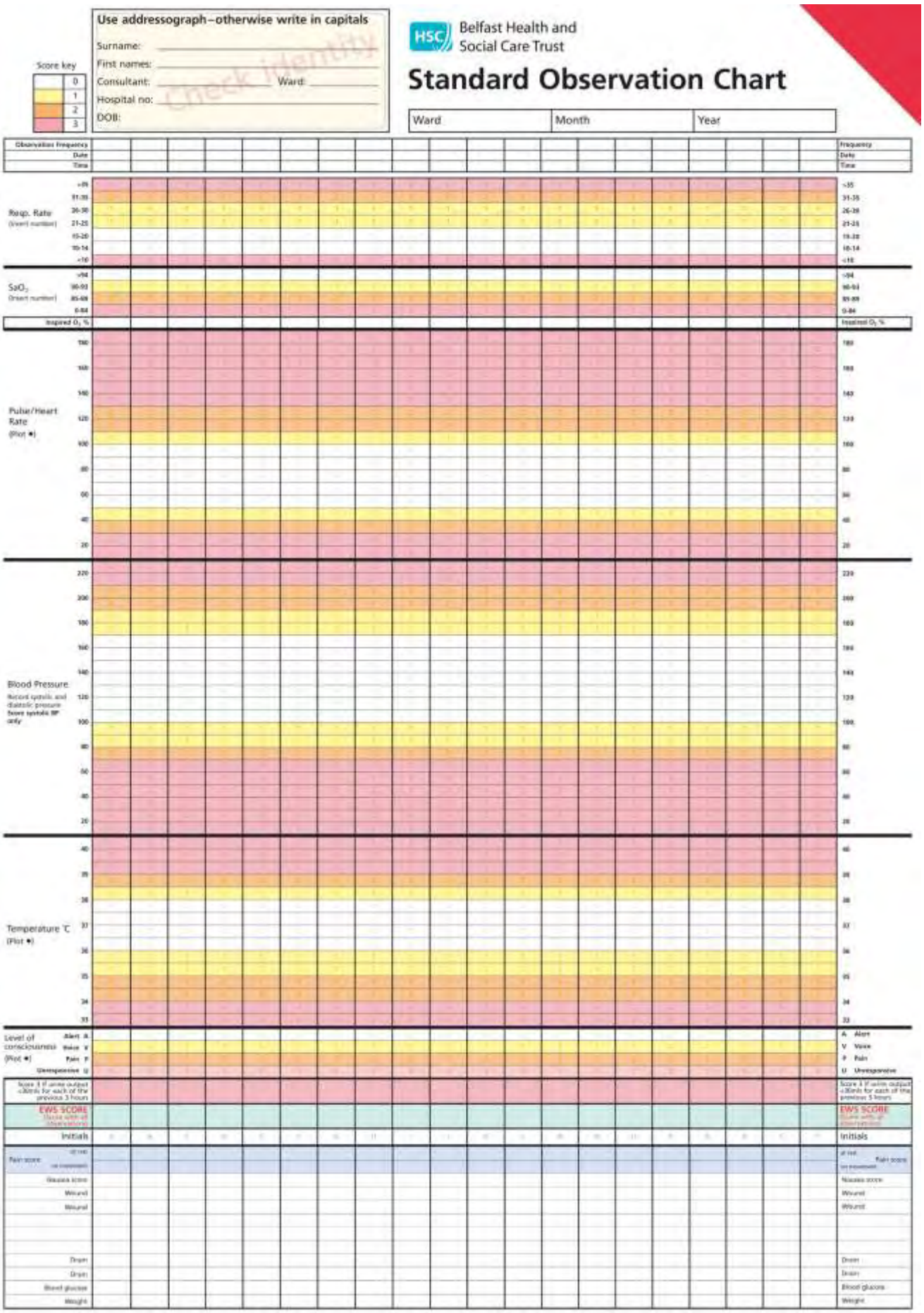
9.	**Source(s) / Evidence Base:**	
	NICE clinical guideline 50 – acutely ill patients in hospital (2007) NMC guidelines for records and record keeping (2002) Royal Marsden Hospital Manual of Clinical Nursing Procedures 6th Ed	
10.	**References, including relevant external guidelines:** 1. NICE clinical guideline CG50 - *Acutely ill patients in hospital - Recognition of and response to acute illness in adults in hospital. (July 2007).* http://www.nice.org.uk/nicemedia/pdf/CG50FullGuidance.pdf **2.** Guidelines for records and record keeping: April 2002 http://www.nmc-uk.org/aDisplayDocument.aspx?documentID=4008 **3.** Royal Marsden Hospital Manual of Clinical Nursing Procedures 6th Ed	
11.	**Consultation Process:** Trust Service Group Directors, Staff Side & Standards and Guidelines Committee	
12.	**Equality and Human Rights screening carried out:** In line with duties under the equality legislation (Section 75 of the Northern Ireland Act 1998), Targeting Social Need Initiative, Disability discrimination and the Human Rights Act 1998, the Belfast Trust has carried out an initial screening exercise to ascertain if this policy should be subject to a full impact assessment.	
	√ Screening completed No action required.	☐ Full impact assessment to be carried out.
13.	**Procedure** Standard Observation Chart	

Director Brenda Creaney

Date: June 2010

Author Joanna McCormick

Date: June 2010



Use addressograph–otherwise write in capitals

Surname:

First names:

Consultant: Ward:

Hospital no:

DOB:

Score key

	0
	1
	2
	3

Belfast Health and Social Care Trust

Standard Observation Chart

Ward	Month	Year

Observation Frequency

Date

Time

Resp. Rate

(Insert number)

SaO_2

(Insert number)

Inspired O_2 %

Pulse/Heart Rate

(Plot ●)

Blood Pressure

Record systolic and diastolic pressure

Score systolic BP only

Temperature °C

(Plot ●)

Level of consciousness

(Plot ●)

Alert A

Voice V

Pain P

Unresponsive U

Score 1 if urine output <30ml for each of the previous 3 hours

EWS SCORE

Initials

Pain score

Nausea score

Wound

Wound

Drain

Drain

Blood glucose

Weight

Early Warning Score (EWS) Algorithm

Total EWS score	Action	Variance
0–1	Continue with current management	
2–3	Inform nurse in charge Hourly observations	Document rationale if action not taken
>4 or 3 for any parameter	Inform nurse in charge Half hourly observations Contact Doctor - to attend within 30 minutes	Document rationale if action not taken

Pain score		
Visual analogue	Numerical	Verbal descriptor
A = None	0	0
B = Mild	1	1–3
C = Moderate	2	4–6
D = Severe	3	7–10

Nausea score
0 = No nausea
1 = Mild nausea
2 = Severe nausea
3 = Vomiting

Belfast Health and Social Care Trust

Standards and Guidelines Committee

Policy for measuring and recording physiological observations.	
Summary	To set out processes to ensure the correct measurement and recording of patient's physiological observations.
Purpose	To provide clear guidance for BHSCT nursing and midwifery staff in the measurement and recording of patient's physiological observations. - in accordance with the NICE clinical guideline CG50 - *Acutely ill patients in hospital - Recognition of and response to acute illness in adults in hospital. (July 2007).*
Operational date	June 2010
Review date	August 2013
Version Number	V2
Director Responsible	Brenda Creaney, Director of Nursing
Lead Author	Joanna McCormick
Lead Author, Position	Critical Care Nurse Consultant
Additional Author(s)	
Department / Service Group	Acute Services
Contact details	joanna.mccormick@belfasttrust.hscni.net 2nd Floor West Wing, RVH. 02890 635755

Reference Number	SG 07/09
Supercedes	V1

Date	Version	Author	Comments
July 2008	V1.0	Joanna McCormick	First draft
Nov 2008	V2.0	Joanna McCormick	Revised policy
31/03/2009	V0.3	JR Johnston	Amendments; Formatting
25/05/2010	V0.4	JMcC & JRJ	Final changes
3 June 2010	V0.5	JMcC & JRJ	Scope and pdf file
June 2010	1		Final version
July 2011	V1.1	JMcC	Review – date change only
July 2011	2		Final version

Policy Record

		Date	Version
Author (s)			
Director Responsible			

Approval Process – Trust Policies

Policy Committee	Approval		
Executive Team	Authorise		
Chief Executive	Sign Off		

Approval Process – Clinical Standards and Guidelines

Standards and Guidelines Committee	Approval	28/07/2011	V0.6
Policy Committee	Approval	15/08/2011	V0.6
Executive Team	Authorise	17/08/2011	V0.6
Appropriate Director	Sign Off	17/08/2011	V0.6

Full Description

Reference No: *SG 07/09*

1 Policy for measuring and recording physiological observations

2 Introduction

Physiological abnormality is associated with adverse patient outcome. Track and trigger scoring systems have been designed to identify and monitor ward patients who are, or who may become unwell.

Physiological 'track and trigger' systems rely on periodic observation of selected basic physiological signs ('tracking') with predetermined calling or response criteria ('trigger') for requesting the attendance of staff who have specific competencies in the management of acute illness and/or critical care.

If track and trigger systems are to alter outcome the following are required;

- Measurement of the defined physiological parameters must be accurate.
- The measurement must be frequent enough to identify trends and changes in physiology.
- The calculation of the track and trigger score with each set of observations must be accurate.
- The response to an abnormal score must be prompt.

3 Purpose:

To ensure the safety of patients in accordance with the NICE clinical guideline CG50 - *Acutely ill patients in hospital - Recognition of and response to acute illness in adults in hospital. (July 2007).*

4 The scope:

This policy will apply to all BHSCT nursing / midwifery staff working with adult patients in the acute hospital setting.

It does not address care that should be provided to:

- children,
- patients in critical care areas directly under the care of critical care consultants
- outpatients
- certain areas where the chart might be used to record observations but the escalation algorithm may not be applicable e.g. dying patients receiving palliative care or patients being cared for in a recovery ward.

5 Objectives:

This policy outlines the steps to be taken in regard to the measuring and recording of patient's physiological observations.

6 Roles and Responsibilities:

It is the responsibility of all BHSCT nursing / midwifery employees to adhere to this policy.

7 The definition and background of the policy:

Patients on general adult wards and emergency departments who are at risk of deteriorating may be identified before a serious adverse event by changes in

physiological observations recorded by healthcare staff.

The interpretation of these changes, and timely institution of appropriate clinical management once physiological deterioration is identified, is of crucial importance to minimise the likelihood of serious adverse events, including cardiac arrest and death. Deterioration which necessitates an admission to a critical care area may also have a significant impact on patient outcome.

BHSCT nursing / midwifery staff are key to the accurate measuring and recording of physiological observations. Evidence suggests that this is an area which requires improvement. The effectiveness of track and trigger systems depends on physiological data which is collected accurately and with sufficient frequency.

8 Policy statements:

Measuring and recording vital signs

8.1 Adult patients in acute hospital settings, including patients in the emergency department for whom a clinical decision to admit has been made, should have physiological observations measured and recorded at the time of their admission.

8.2 A physiological track and trigger system should be used to document vital signs for all adult patients in acute hospital settings. The following parameters should be recorded

- Respiratory rate
- Heart rate
- Systolic (and diastolic) blood pressure
- Level of consciousness
- Oxygen saturation
- Temperature

8.3 Physiological observations must be recorded at least 12 hourly unless a decision has been made to decrease this frequency and the rationale documented in the patient's notes / care plan.

8.4 The frequency of monitoring should increase if abnormal physiology is detected in line with the track and trigger response algorithm.

There should be a clear written monitoring plan that specifies which physiological observations should be recorded and how often.

8.5 Physiological observations should be measured, documented and acted upon by staff with competencies in monitoring, measurement and interpretation.

8.6 Prompt response must be made to abnormal physiology in accordance with the track and trigger response algorithm

8.7 Where the responsibility for undertaking and recording observations is delegated to non-registered nurses / midwives, it is the registered nurse / midwife who is accountable for ensuring that observations are recorded accurately and communicated promptly if abnormal (NMC guidelines for records and record keeping 2002).

9. Source(s) / Evidence Base:

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1. NICE clinical guideline CG50 - *Acutely ill patients in hospital - Recognition of and response to acute illness in adults in hospital. (July 2007).* http://www.nice.org.uk/nicemedia/pdf/CG50FullGuidance.pdf

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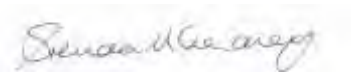
11. Consultation Process:
Trust Service Group Directors, Staff Side & Standards and Guidelines Committee

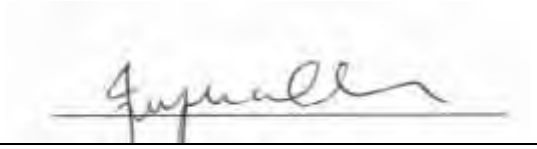
12. Equality and Human Rights screening carried out:
In line with duties under the equality legislation (Section 75 of the Northern Ireland Act 1998), Targeting Social Need Initiative, Disability discrimination and the Human Rights Act 1998, the Belfast Trust has carried out an initial screening exercise to ascertain if this policy should be subject to a full impact assessment.

√ Screening completed
No action required.

☐ Full impact assessment to be carried out.

13. Procedure
Standard Observation Chart



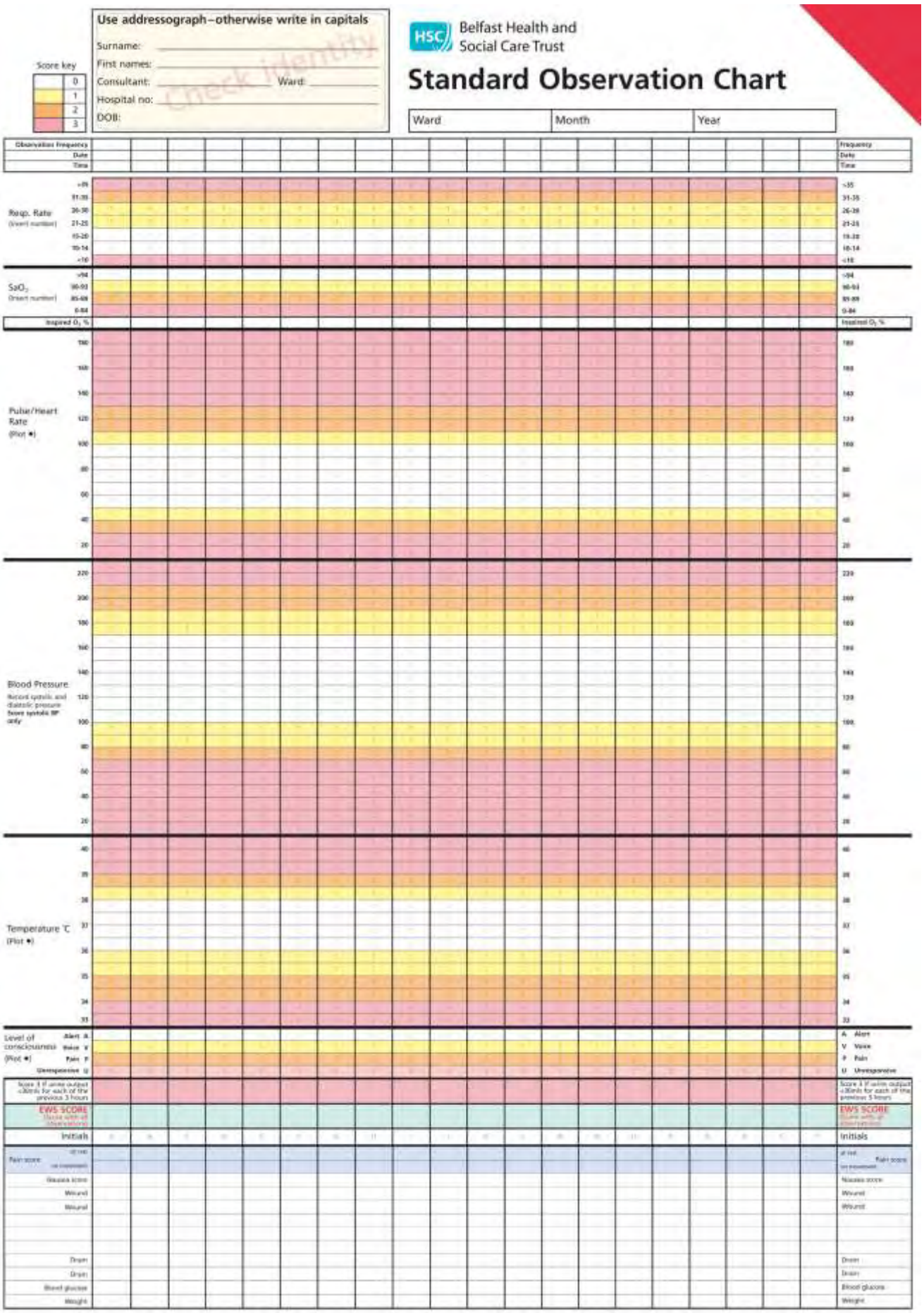


Director: Brenda Creaney

Date: August 2011

Author: Joanna McCormick

Date: August 2011



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Score key

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Belfast Health and Social Care Trust

Standard Observation Chart

Ward	Month	Year

Observation Frequency

Date

Time

Resp. Rate

(Insert number)

SaO_2

(Insert number)

Inspired O_2 %

Pulse/Heart Rate

(Plot ●)

Blood Pressure

Record systolic and diastolic pressure

Score systolic BP only

Temperature °C

(Plot ●)

Level of consciousness

(Plot ●)

Alert A

Voice V

Pain P

Unresponsive U

Score 1 if urine output <30ml for each of the previous 3 hours

EWS SCORE

Initials

Pain score

Nausea score

Wound

Wound

Drain

Drain

Blood glucose

Weight

Early Warning Score (EWS) Algorithm

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Belfast Health and Social Care Trust

Standards and Guidelines Committee

Policy for measuring and recording physiological observations.	
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Operational date	June 2010
Review date	~~August 2013~~ June 2020
Version Number	V2.1
Director Responsible	Brenda Creaney, Director of Nursing
Lead Author	Joanna McCormick
Lead Author, Position	Critical Care Nurse Consultant
Additional Author(s)	
Department / Service Group	Acute Services
Contact details	joanna.mccormick@belfasttrust.hscni.net 2nd Floor West Wing, RVH. 02890 635755

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June 2010	1		Final version
July 2011	V1.1	JMcC	Review – date change only
July 2011	2		Final version
06/06/2019	2.1		Awaiting Input – review extended 1 year

Policy Record

		Date	Version
Author (s)			
Director Responsible			

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Executive Team	Authorise		
Chief Executive	Sign Off		

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2 Introduction

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Physiological 'track and trigger' systems rely on periodic observation of selected basic physiological signs ('tracking') with predetermined calling or response criteria ('trigger') for requesting the attendance of staff who have specific competencies in the management of acute illness and/or critical care.

If track and trigger systems are to alter outcome the following are required;

- Measurement of the defined physiological parameters must be accurate.
- The measurement must be frequent enough to identify trends and changes in physiology.
- The calculation of the track and trigger score with each set of observations must be accurate.
- The response to an abnormal score must be prompt.

3 Purpose:

To ensure the safety of patients in accordance with the NICE clinical guideline CG50 - *Acutely ill patients in hospital - Recognition of and response to acute illness in adults in hospital. (July 2007).*

4 The scope:

This policy will apply to all BHSCT nursing / midwifery staff working with adult patients in the acute hospital setting.

It does not address care that should be provided to:

- children,
- patients in critical care areas directly under the care of critical care consultants
- outpatients
- certain areas where the chart might be used to record observations but the escalation algorithm may not be applicable e.g. dying patients receiving palliative care or patients being cared for in a recovery ward.

5 Objectives:

This policy outlines the steps to be taken in regard to the measuring and recording of patient's physiological observations.

6 Roles and Responsibilities:

It is the responsibility of all BHSCT nursing / midwifery employees to adhere to this policy.

7 The definition and background of the policy:

Patients on general adult wards and emergency departments who are at risk of deteriorating may be identified before a serious adverse event by changes in

physiological observations recorded by healthcare staff.

The interpretation of these changes, and timely institution of appropriate clinical management once physiological deterioration is identified, is of crucial importance to minimise the likelihood of serious adverse events, including cardiac arrest and death. Deterioration which necessitates an admission to a critical care area may also have a significant impact on patient outcome.

BHSCT nursing / midwifery staff are key to the accurate measuring and recording of physiological observations. Evidence suggests that this is an area which requires improvement. The effectiveness of track and trigger systems depends on physiological data which is collected accurately and with sufficient frequency.

8 Policy statements:

Measuring and recording vital signs

8.1 Adult patients in acute hospital settings, including patients in the emergency department for whom a clinical decision to admit has been made, should have physiological observations measured and recorded at the time of their admission.

8.2 A physiological track and trigger system should be used to document vital signs for all adult patients in acute hospital settings. The following parameters should be recorded

- Respiratory rate
- Heart rate
- Systolic (and diastolic) blood pressure
- Level of consciousness
- Oxygen saturation
- Temperature

8.3 Physiological observations must be recorded at least 12 hourly unless a decision has been made to decrease this frequency and the rationale documented in the patient's notes / care plan.

8.4 The frequency of monitoring should increase if abnormal physiology is detected in line with the track and trigger response algorithm.

There should be a clear written monitoring plan that specifies which physiological observations should be recorded and how often.

8.5 Physiological observations should be measured, documented and acted upon by staff with competencies in monitoring, measurement and interpretation.

8.6 Prompt response must be made to abnormal physiology in accordance with the track and trigger response algorithm

8.7 Where the responsibility for undertaking and recording observations is delegated to non-registered nurses / midwives, it is the registered nurse / midwife who is accountable for ensuring that observations are recorded accurately and communicated promptly if abnormal (NMC guidelines for records and record keeping 2002).

9. Source(s) / Evidence Base:

NICE clinical guideline 50 – acutely ill patients in hospital (2007)
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Royal Marsden Hospital Manual of Clinical Nursing Procedures 6th Ed

10. References, including relevant external guidelines:

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3. Royal Marsden Hospital Manual of Clinical Nursing Procedures 6th Ed

11. Consultation Process:
Trust Service Group Directors, Staff Side & Standards and Guidelines Committee

12. Equality and Human Rights screening carried out:
In line with duties under the equality legislation (Section 75 of the Northern Ireland Act 1998), Targeting Social Need Initiative, Disability discrimination and the Human Rights Act 1998, the Belfast Trust has carried out an initial screening exercise to ascertain if this policy should be subject to a full impact assessment.

√ Screening completed
No action required.

☐ Full impact assessment to be carried out.

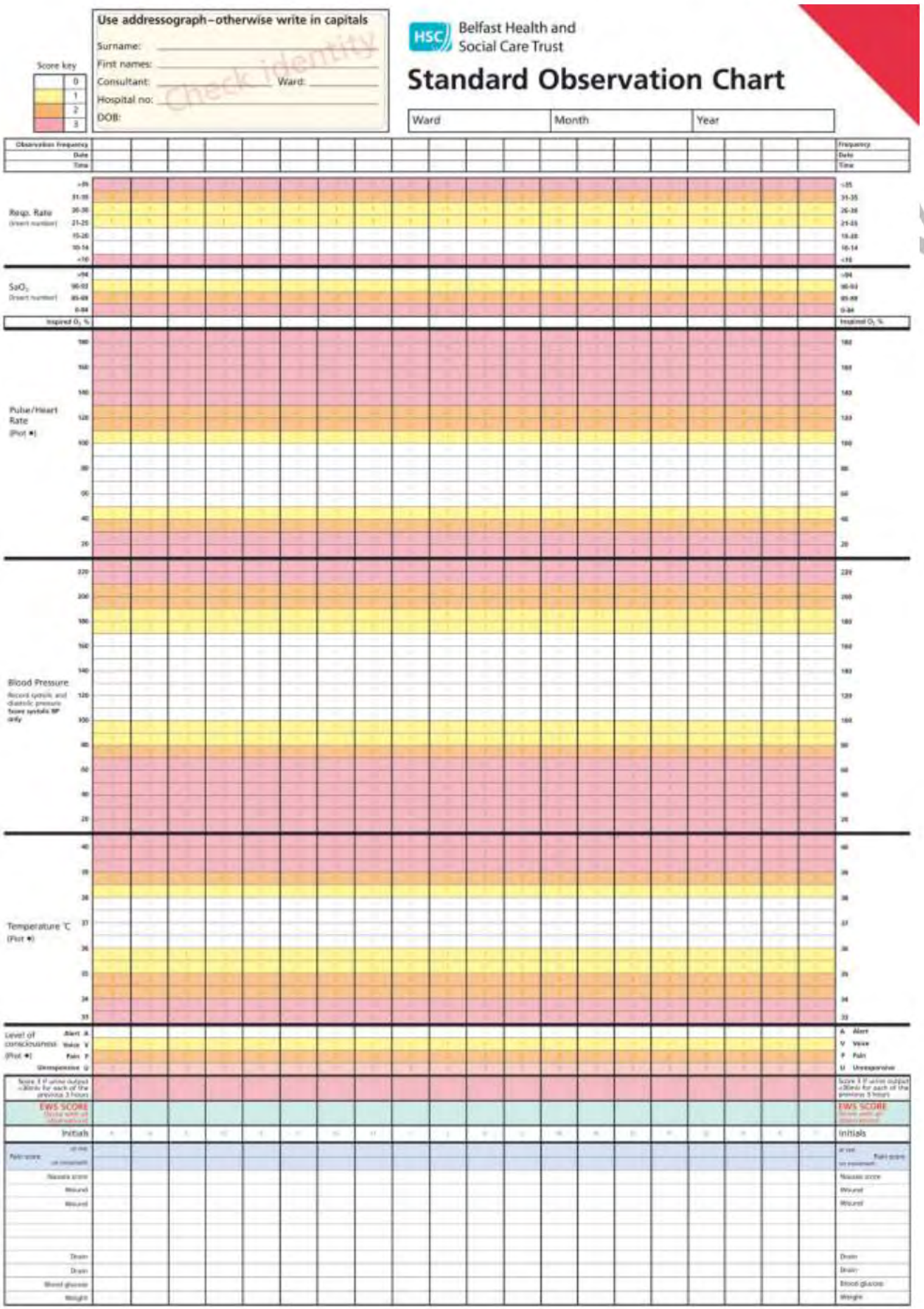
13. Procedure
Standard Observation Chart

Director: Brenda Creaney

Date: August 2011

Author: Joanna McCormick

Date: August 2011


Use addressograph–otherwise write in capitals
Surname:
First names:
Consultant:
Ward:
Hospital no:
DOB:
Score key
0
1
2
3
Belfast Health and Social Care Trust
Standard Observation Chart
Ward
Month
Year
Observation frequency
Date
Time
Resp. Rate
(Insert number)
SaO2
(Insert number)
Inspired O2 %
Pulse/Heart Rate
(Plot •)
Blood Pressure
Record systolic and diastolic pressure
Score systolic BP only
Temperature °C
(Plot •)
Level of consciousness
(Plot •)
Alert A
Voice V
Pain P
Unresponsive U
EWS SCORE
Initials
Pain score
Nausea score
Wound
Wound
Drain
Drain
Blood glucose
Weight

Early Warning Score (EWS) Algorithm

Total EWS score	Action	Variance
0–1	Continue with current management	
2–3	Inform nurse in charge Hourly observations	Document rationale if action not taken
>4 or 3 for any parameter	Inform nurse in charge Half hourly observations Contact Doctor - to attend within 30 minutes	Document rationale if action not taken

Pain score		
Visual analogue	Numerical	Verbal descriptor
A = None	0	0
B = Mild	1	1–3
C = Moderate	2	4–6
D = Severe	3	7–10

Nausea score
0 = No nausea
1 = Mild nausea
2 = Severe nausea
3 = Vomiting

Belfast Health and Social Care Trust

Standards and Guidelines Committee

Policy for measuring and recording physiological observations.	
Summary	To set out processes to ensure the correct measurement and recording of patient's physiological observations.
Purpose	To provide clear guidance for BHSCT nursing and midwifery staff in the measurement and recording of patient's physiological observations. - in accordance with the NICE clinical guideline CG50 - *Acutely ill patients in hospital - Recognition of and response to acute illness in adults in hospital. (July 2007).*
Operational date	June 2010
Review date	~~August 2013 - June 2020~~ October 2021
Version Number	V2.2
Director Responsible	Brenda Creaney, Director of Nursing
Lead Author	Joanna McCormick
Lead Author, Position	Critical Care Nurse Consultant
Additional Author(s)	
Department / Service Group	Acute Services
Contact details	joanna.mccormick@belfasttrust.hscni.net 2nd Floor West Wing, RVH. 02890 635755

Reference Number	SG 07/09
Supercedes	V1

Date	Version	Author	Comments
July 2008	V1.0	Joanna McCormick	First draft
Nov 2008	V2.0	Joanna McCormick	Revised policy
31/03/2009	V0.3	JR Johnston	Amendments; Formatting
25/05/2010	V0.4	JMcC & JRJ	Final changes
3 June 2010	V0.5	JMcC & JRJ	Scope and pdf file
June 2010	1		Final version
July 2011	V1.1	JMcC	Review – date change only
July 2011	2		Final version
06/06/2019	2.1		Awaiting Input – review extended 1 year
28/10/2020	2.2		Awaiting Input – review extended 1 year

Policy Record

		Date	Version
Author (s)			
Director Responsible			

Approval Process – Trust Policies

Policy Committee	Approval		
Executive Team	Authorise		
Chief Executive	Sign Off		

Approval Process – Clinical Standards and Guidelines

Standards and Guidelines Committee	Approval	28/07/2011	V0.6
Policy Committee	Approval	15/08/2011	V0.6
Executive Team	Authorise	17/08/2011	V0.6
Appropriate Director	Sign Off	17/08/2011	V0.6

Full Description

Reference No: *SG 07/09*

1 Policy for measuring and recording physiological observations

2 Introduction

Physiological abnormality is associated with adverse patient outcome. Track and trigger scoring systems have been designed to identify and monitor ward patients who are, or who may become unwell.

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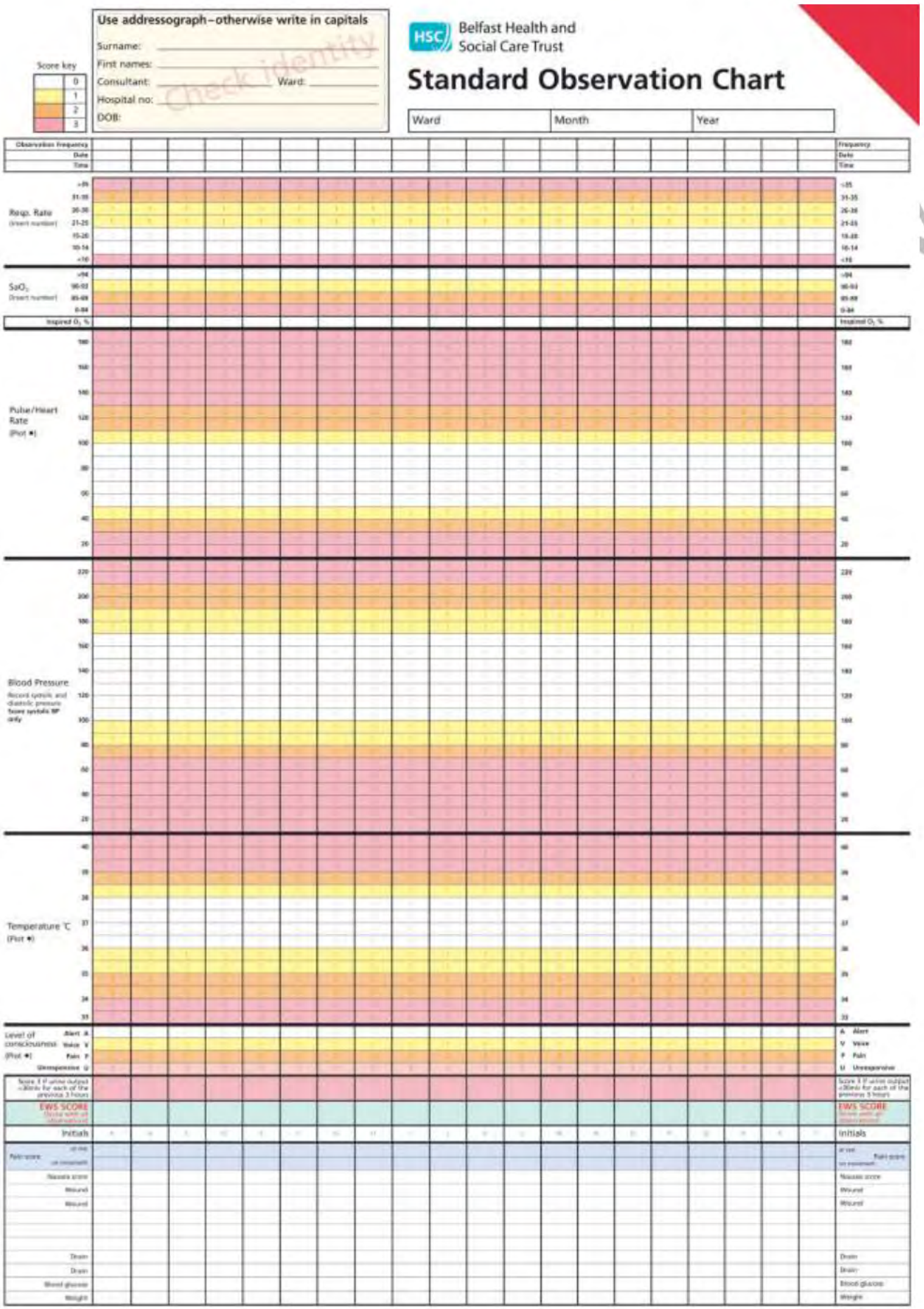
Use addressograph–otherwise write in capitals
Surname:
First names:
Consultant:
Ward:
Hospital no:
DOB:
Score key
0
1
2
3
Belfast Health and Social Care Trust
Standard Observation Chart
Ward
Month
Year
Observation frequency
Date
Time
Resp. Rate
(insert number)
SaO2
(insert number)
Inspired O2 %
Pulse/Heart Rate
(Plot •)
Blood Pressure
Record systolic and diastolic pressure
Score systolic BP only
Temperature °C
(Plot •)
Level of consciousness
(Plot •)
Alert A
Voice V
Pain P
Unresponsive U
EWS SCORE
Initials
Pain score
Nausea score
Wound
Wound
Drain
Drain
Blood glucose
Weight

Early Warning Score (EWS) Algorithm

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Psychiatry Induction

Prescribing and Medication in Psychiatry

Belfast Health and Social Care Trust

Rapid Tranquillisation

Regional RT Policy incorporating NICE NG 10 – Violence and Aggression

Belfast Health and Social Care Trust

Aim of Presentation

- To raise awareness of the Regional Rapid Tranquillisation (RT) guideline

Objectives

At the end of this presentation you should be able to:

- Describe what is and what isn't RT
- Describe the main pharmacological options for RT based on NICE Violence Guideline, NG10
- Describe where Regional Policy Deviates from NG10
- Describe key safety issues with haloperidol and promethazine
- Describe the monitoring required after RT

NG10 Key recommendations

- Principles for managing violence and aggression
- Anticipating and reducing the risk of violence and aggression
- Preventing violence and aggression
- Using restrictive interventions in inpatient psychiatric settings
- Managing violence and aggression in emergency departments
- Managing violence and aggression in community and primary care settings

Rapid Tranq - definition

- NG 10 defines RT as

*"Use of medication by the **parenteral route** (usually intramuscular or, **exceptionally**, intravenous) if oral medication is not possible or appropriate and urgent sedation with medication is needed."*

NG 10 – Oral medication - PRN

- Oral PRN not included in NICE NG 10
  - Oral is not considered to be RT
- However,
  - Oral PRN may be part of de-escalation plan
  - Oral PRN on its own is not de-escalation

NG 10 – Oral medication – PRN

- To guide staff, Regional Policy offers oral PRN options as part of a de-escalation strategy
- There should be
  - Clarity about indication for oral PRN
  - Clarity about 1st and 2nd line choices
- Tailor PRN to individual circumstances – involve patient in discussion
- Avoid doses over BNF max dose

Rapid Tranquillisation

- Part of the Restrictive Intervention Policy
- Policy on Trust Intranet (search “Rapid”) – read as part of training
- Significant risks are associated with RT
- Risks with RT may be additive to those with physical restraint
- Post RT observation and documentation are essential

Options with disturbed patient

- De-escalation techniques – talking down
- Seclusion
- Regular medication – review effectiveness
- Oral PRN – as part of a de-escalation strategy
- Rapid Tranquillisation – use of IM medication

The risk of harm increases going down the list – use the option consistent with the level of risk

Things to Consider

- Patient age – use appropriate flow chart
- Separate Flow charts for
  - Children and Young People 6 to 17 yrs
  - Adults over 18yrs
  - Older and Frail Adults
  - People with dementia
- NOTE – RT Guide is not for Delirium or Alcohol withdrawal – use appropriate pathways

Oral versus Intramuscular

- Patients must be offered the chance to accept oral treatment unless
  - The team has agreed the risks are disproportionate
- Risks are increased with IM medication
- Oral and IM doses are not necessarily equivalent

IM injection risks

- Small risk of Inadvertent IV or IA injection
  - Might explain the small number of historic deaths during RT - a bolus dose is inadvertently given
- Needle stick injury – patient and staff
- Needle detaching from syringe
- Enhanced effect in struggling patient
  - activated sympathetic system
  - increased muscle blood flow

NICE RECOMMENDATIONS

Lorazepam - possible first line

- Compared to diazepam
  - It does not accumulate, less hangover effect
  - More consistent IM absorption
- Oral and IM dose 1mg to 2mg
- No significant difference between oral and IM dosing – very slightly faster onset for IM
- Max dose 4mg/24hrs – document reasons for higher doses

Lorazepam - Problems

- Risk of over sedation/loss of consciousness
- Risk of respiratory depression or arrest
  - Caution when used along with restraint
- Paradoxical reactions – increased agitation
- <u>Caution with IM olanzapine</u>
  - Increased risk of respiratory/cardiovascular collapse when given together
  - Separate doses by at least one hour

Haloperidol – possible first line

- Oral dose 5 -10mg – max dose 20mg/24hr
- IM dose 5 -10mg – max dose 20mg/24hr
- Onset within 30-45 mins
  - may be repeated after 45 minutes
- 5mg IM is equivalent to 8 -10mg orally
  -reduce dose if repeated injections are given.
- Give IM haloperidol and IM promethazine together (NICE NG10)

Haloperidol - problems

- Risk of dystonic reactions
- Risk of cardiac arrhythmias, especially QTc prolongation.
- Avoid if no recent ECG or there is evidence of cardiac disease
- Risk of over sedation

IM Promethazine – give with IM haloperidol

- Sedative antihistamine & anticholinergic
  - Enhanced sedative effect
  - Reduces haloperidol induced EPSE
- IM Dose 25 - 50mg. Max dose 100mg/24hrs
- Allow 1-2 hrs for response before repeat
- Avoid if MAOIs used in last 14 days
- Avoid if suffering from CNS depression
  - e.g. alcohol intoxication

IM Promethazine – problems

- Significant anticholinergic effects
  - Enhances effects of anticholinergics drugs
- Considering omitting IM promethazine in older people or people with dementia

Why are common treatments omitted from NG 10

- Haloperidol combined with lorazepam
  - no evidence it is more effective than lorazepam alone
- Rapid Acting Olanzapine IM
  - not marketed in UK – (unlicensed import available)
- Rapid Acting Aripiprazole IM
  – insufficient evidence for NICE to make a recommendation
- Acuphase
  – Not rapid acting
  - unfavourable Cochrane review

Antipsychotics - olanzapine

- Oral olanzapine 10mg
- IM olanzapine 5-10mg
- Needs to be reconstituted
- In RT max dose is 20mg/day by any route
- Injection may be repeated after at least 2 hrs
- Do not use with 1hr of IM lorazepam – increased risk of respiratory and circulatory collapse
- Risk of over sedation
- Reserve for Level 3 or Individual Care Plan

Antipsychotics - aripiprazole

- IM aripiprazole 9.75mg (1.3ml)
- Max dose 30mg by any route
- Injection may be repeated after at least 2 hrs
- Reserve for when haloperidol and olanzapine are unsuitable
- Risk of over sedation
- Reserve for Level 3 or Individual Care Plan

Clopixol Acuphase

- Not recommended for RT due to slow onset and prolonged duration of action
- Do not use in struggling patient (?risk of IV/IA injection)
- Do not use in the antipsychotic naïve
- Do not repeat doses within 24hrs
- No such thing as a “course”!
- May have a role in an individual care plan for patients with prolonged periods of disturbed behaviour

Its not in NG10 – can it be used?

- Yes –if they are suitable for the patient
- Should be part of an Individualised care plan
- Consider when
  - Inadequate response to Level 2 interventions
  - Contra-indications to haloperidol or lorazepam

Other Options

- Haloperidol combined with lorazepam
  - No clear evidence more effective than lorazepam on its own
  - Historically used
  - Increase risk of respiratory or circulatory collapse – careful monitoring
  - Doses as for individual drugs

Other Options

- Oral Promethazine
  - Oral treatment is not considered by NICE
  - BAP RT Guideline suggests oral promethazine is safe and effective in management of anxiety/agitation

ADULTS OVER 18YRS

(Not applicable to delirium, also consider using Appendix D for older adults and frail)

Pharmacological management should be part of an overall management plan that includes appropriate nursing care and de-escalation techniques

LEVEL 1 Accepting oral meds and as part of de-escalation strategy	LEVEL 2 Actual or clear risk of violence or aggression. De-escalation including oral PRN not possible or appropriate	LEVEL 3 Situation rapidly deteriorating or failure to respond to LEVEL 2 interventions
Consider combination of oral lorazepam with an oral antipsychotic if indicated by clinical circumstances. Consider moving to LEVEL 2 if oral therapy is refused or is not indicated by previous clinical response or is not a proportionate response.	Review all medication administered in the last 24 hours – be aware of BNF max doses. Ensure resuscitation equipment and emergency response is readily available within 3 minutes.	If Rapid Tranquillisation (LEVEL 2) is being used, a senior doctor must review all treatment and response every 24 hours. If one round of LEVEL 2 interventions have had insufficient effect a senior doctor should review treatment and consider the following: • The appropriateness of current placement • Age and physical presentation • Check sufficient time has been allowed for response • If there has been a partial response to a LEVEL 2 intervention, consider repeating that intervention • If a LEVEL 2 intervention has had insufficient effect consider offering the alternative LEVEL 2 intervention • Carry out a full review of treatment to date and seek a second opinion if needed.
Consider lower doses in older adults or frail (Appendix A & D)		
Suggested Oral Medication **Lorazepam 1 or 2mg** (Max 4mg/24hrs) **OR** **Promethazine 25 or 50mg** (Max100mg/24hrs) **OR** **Haloperidol 5mg** (max 20mg/24hrs) **OR** **Olanzapine 10mg♦** (♦ Available as an orodisperible product) (Max 20mg/24hr Continue de-escalation strategy. If response is inadequate after 45 minutes, consider repeating oral therapy or moving to LEVEL 2	**Suggested Medication** **Lorazepam IM (or IV)[a]** **1 or 2mg** [b, c] (Max 4mg/24hrs) **OR** **Haloperidol IM 5mg** (Max 20mg/24hrs) **Combined with** **Promethazine IM** **25 or 50mg** (Max 100mg/24hrs) If there is continued concern seek advice from a more senior doctor before proceeding further ***NOTES*** ***a. IV in certain clinical settings. NOT recommended in elderly and frail and in mental health settings*** *b. IM Lorazepam and IM Olanzapine must not be administered within 1 hour of each other* *c. IV flumazenil must be readily available*	**If LEVEL 2 interventions have had insufficient effect** **Consider as part of an individualised care plan include:** • Further repeats of LEVEL 2 interventions (do not repeat promethazine if it is < 2hrs since the last injection) • Haloperidol IM combined with Lorazepam IM • Alternative medications (see Section 10) • Zuclopenthixol acetate (Clopixol Acuphase®) (see Section 11)

When deciding which medication to use, consider:	Additional Considerations
• **Oral or parenteral lorazepam is preferred first line if:** o Patient is an older adult or physically frail o There is an uncertain history o Presence of cardiovascular disease o Current illicit drug/alcohol intoxication o Antipsychotic naïve • Antipsychotics and/or promethazine preferred with: o Current regular benzodiazepine use	• Avoid antipsychotics, where possible, in patients with a parkinsonian syndrome (including idiopathic Parkinson's disease Parkinson's disease dementia and Dementia with Lewy Bodies) • Avoid haloperidol in cardiovascular disease or if there has been no recent ECG. • Pre-existing physical health problems (e.g. extra care in patients with eating disorders, physical frailty or comorbidity of any disorders that affect metabolism, including hypothermia, stress, extreme emotional response and post extreme physical exertion) or pregnancy. • Previous response, including adverse effects • Potential for interactions with other medicine • Possible Intoxication

CHILDREN 6 TO 17YRS

(Not applicable to delirium)

Pharmacological management should be part of an overall management plan that includes appropriate nursing care and de-escalation techniques

LEVEL 1
Accepting oral meds and as part of de-escalation strategy

Consider combination of oral lorazepam with an oral antipsychotic if indicated by clinical circumstances.
Consider moving to LEVEL 2 if oral therapy is refused or is not indicated by previous clinical response or is not a proportionate response.

Suggested Oral Medication

Children 6-12 years
Lorazepam 0.5 or 1mg
(Max 4mg/24hrs)

Young People 13-17years
Lorazepam 0.5mg, 1mg or 2mg
(Max 4mg/24hrs)
OR
Haloperidol 1mg up to 5 mg★
(max 10mg/24hrs)
OR
Promethazine 10mg to 25mg
(max 50mg/24hrs)
OR
Risperidone♦
20kg-45kg 0.5mg(Slowly increase to Max 2.5mg/24hrs)
>45kg 0.5mg (Slowly increase to Max3mg/24 hrs)

For both age groups:
Continue de-escalation strategy.
If response is inadequate after 45 minutes, consider repeating oral therapy or moving to LEVEL 2

♦ Available as an orodisperible product.

LEVEL 2
Actual or clear risk of violence or aggression. De-escalation including oral PRN not possible or appropriate

Consult a senior doctor/consultant before using IM medication in a child under 12 years of age.
Consult a senior doctor/consultant before using IM medication in a young person (13-17 years) unless IM medication is already included in the young person's care plan.
Check if an individual care plan recommends an approach not covered in this guideline.
Review all medication administered in the last 24 hours – be aware of BNF max doses.
Ensure resuscitation equipment and emergency bag is available within 3 minutes.

Suggested IM Medication

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(Max 4mg/24hrs)

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Lorazepam IM0.5mg, 1mg or 2mg
(Max 4mg/24hrs)

For both age groups:
If there is continued concern, seek advice from a more senior doctor/consultant before proceeding

LEVEL 3
Situation rapidly deteriorating or failure to respond to Level 2 interventions

If Rapid Tranquillisation (LEVEL 2) is being used, a senior doctor/consultant must review all treatment and response every 24 hours.

If one round of LEVEL 2 interventions have had insufficient effect a senior doctor/consultant should review treatment and consider the following options:

- The appropriateness of current placement
- Check sufficient time has been allowed for response
- If there has been a partial response to lorazepam consider repeating the dose
- Carry out a full review and seek a second opinion if needed.

If there has been insufficient response to IM lorazepam:

Consider as part of an individualised care plan include (in no particular order)

- Further repeats of IM lorazepam
- ≥13yrs, Haloperidol IM 1 - 5mg★ (Max 10mg/24hrs)
- ≥13yrs, Haloperidol IM combined with lorazepam IM
- ≥13yrs, Promethazine IM (10 to 25mg, Max 50mg/24hrs)
- ≥13yrs, Olanzapine 2.5mg, 5mg or 10mg (Max 10mg/24hrs IM). **Do not combine** with IM lorazepam and use with caution if IM lorazepam has been given within 1 hour

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  - Current illicit drug/alcohol intoxication
  - Antipsychotic naïve
- Antipsychotics may be preferred with:
  - Current regular benzodiazepine use
  - History of respiratory depression

Additional Considerations

- Avoid haloperidol in cardiovascular disease or if there has been no recent ECG.
- Pre-existing physical health problems (e.g. extra care in patients with eating disorders, physical frailty or comorbidity of any disorders that affect metabolism, including hypothermia, stress, extreme emotional response and post extreme physical exertion) or pregnancy
- Previous response, including adverse effects
- Potential for interactions with other medicine
- Possible Intoxication
- Promethazine is contraindicated in CNS depression.

★ Dosing for haloperidol should be a fixed dose in the range from 1mg to a max of 5mg. Please consider the available strengths of oral haloperidol 0.5mg, 1.5mg or 5mg to facilitate ease of administration; e.g. 1.5mg is easier to administer than 2mg

ALL OPTIONS SUMMARY

Appendix A - Dose information for specific populations (Not applicable to delirium)

Dose ranges highlighted as a guide only: remember to avoid variable dosing on kardex.

Medication	Time to Peak Plasma concentration	Child (6-12 years)	Young person (13 – 17)	Adults (18 +)	Older and Frail People	People with Dementia
Haloperidol oral solution and tablets **If no recent ECG, consider risk/benefits as use may be unlicensed.**	2 – 6 hours (Sedation usually within 30-45 mins)	***Not Applicable***	*Consider risk of acute dystonia especially in the antipsychotic naïve* PO 1mg up to 5mg Max 10mg/24hrs	PO 5mg Max 20mg/24 hours	*Only use first line if there is confirmed history of previous exposure to typical antipsychotics. Start with lower doses.* PO 0.5mg up to 2.5mg (Usual Max 5mg/24hrs.)	***Not recommended.*** *Use only in very exceptional circumstances and under advice of senior doctors with experience in dementia. Consider licensed oral risperidone as an alternative* PO 0.5mg (Max 2mg/24hrs)
Haloperidol injection **If no recent ECG, consider risk/benefits as use may be unlicensed.**	IM 15 – 60 mins (Sedation usually within 30 – 45 mins) IV: 10 mins	***Not Applicable***	*Unlicensed: Only use as part of an individualised care plan.* *Consider risk of acute dystonia especially in the antipsychotic naïve* IM injection 1mg up to 5mg Max 10mg/24hrs	By IM/IV injection 5mg Max 20mg/24 hours	*Only use first line if there is confirmed history of previous exposure to typical antipsychotics. Start with lower doses* IM 0.5mg up to 2.5mg (Max 5mg/24hrs)	***Not recommended.*** *Use only in very exceptional circumstances and under advice of senior doctors with experience in dementia. Consider licensed oral risperidone as an alternative* IM 0.5mg (Max 2mg/24hrs)
Lorazepam tablets and IM/IV injection	PO/IM 50-90 mins (Sedation usually within 30-45 mins) IV:2-5mins	*Unlicensed but may be justified in some cases* PO or by IM injection 0.5 or 1mg Max4mg/24hrs	PO or IM injection 0.5mg, 1mg or 2mg Max 4mg/24hrs	PO or IM/IV injection 1mg or 2mg Max 4mg/24 hours	PO or IM injection 0.5mg Max 2mg/24 hours (IV route NOT recommended)	PO or IM injection 0.5mg Max 2mg/24 hours (IV route NOT recommended)
Olanzapine tablets/ orodispersible tablets *(NB orodispersible tablets have no advantage in speed of onset but are harder to spit out/conceal)*	5 – 8 hours	***Not Applicable***	***Not Applicable***	Initially 5mg or 10mg PO Max 20mg/24 hours	*Consider as a second line option.* 2.5mg PO Max 10mg/24hrs.	*Unlicensed but may be justified in some cases.* 2.5mg PO Maximum 5mg//24hours
Promethazine oral solution, tablets & IM injection	Oral 2-3 hours IM 1-2 hours *IV:NOT recommended*	***Not Applicable***	*Unlicensed: Only use as part of an individualised care plan* PO or IM injection 10mg to 25mg Max 50mg/24hrs	PO 25mg or 50mg Max 100mg/24 hrs	*Consider appropriateness, if confusion is a concern* PO or IM injection 2.5mg. Max 50mg/24hrs	***Not recommended.*** *Use may be considered in those with compromised respiratory function or sensitive/tolerant to benzodiazepines.* PO or IM injection 12.5mg or 25mg. Max 50mg/ 24hrs

Appendix A - Dose information for specific populations (not applicable to delirium)

Dose ranges highlighted as a guide only: remember to avoid variable dosing on kardex.

Medication	Time to Peak Plasma concentration	Child (6-12 years)	Young person (13 – 17)	Adults (18 +)	Older and Frail People	People with Dementia
Aripiprazole IM injection	1 –3 hours	***Not Applicable***	***Not Applicable***	9.75mg (1.3ml) – Consider lower dose (5.25mg) on basis of clinical status Effective range 5.25 –15mg Max dose 30mg/24hrs by any route	*Effectiveness in over 65's not established. Consider lower doses on basis of clinical status.* Consider starting dose 5.25mg Max of TWO injection in 24 hours.	***Not Recommended***
Olanzapine IM injection	15-45 minutes (peak levels up to 5 times that of oral doses)	***Not Applicable***	*Unlicensed but may be justified in some cases under consultant direction.* 2.5mg, 5mg or 10mg IM repeated after 2 hours if needed. Max of 3 injections/ 24hrs for 3 days Max IM dose is 10mg daily. Max total daily dose by all routes of 20mg not to be exceeded.	5 or 10mg IM repeated after 2 hours if needed. Max of 3 injections/24hrs for 3 days. Max combined oral/IM dose is 20mg daily NOT to be exceeded.	*Use may be justified in some cases under consultant direction.* 2.5mg IM repeated after 2 hours if needed. Max of 3 injections/24hrs for 3 days Max combined oral/IM dose is 10mg daily NOT to be exceeded.	***Not recommended.*** *Use only in very exceptional circumstances and under advice of senior doctors with experience in dementia. Consider licensed oral risperidone as an alternative* 2.5mg IM repeated after 2 hours if needed. Max of 2 injections/24hrs for 3 days Max combined oral/IM dose is 5mg daily NOT to be exceeded.
Quetiapine Oral tablets/Solution	1-2 hours	***Not Applicable***	***Not Applicable***	*Unlicensed but may be justified in some cases.* PO 50-100mg (suggested max 200mg/24hours)	*Unlicensed but may be justified in some cases.* PO 12.5mg or 25mg (suggested Max 50mg/24hrs)	*Unlicensed but may be justified in some cases such as Lewy Body Dementia* PO 12.5mg or 25mg (suggested max 50mg/24hrs)
Risperidone tablets / orodispersible tablets/ oral solution	1 -2 hours	***Not Applicable***	20-45kg 0.5mg, Very slow increase to Max 2.5mg >45kg 0.5mg. Very slow increase to Max 3mg	*Unlicensed but may be justified in some cases.* Suggested dose PO 1-2mg BD PRN Max 4mg/24hours	*Consider as a second line option. Unlicensed but may be justified in some cases.* Suggested dose PO 0.25mg once or twice daily PRN. Max 2mg/24hours	In *Alzheimer's Disease* Suggested dose PO 0.25mg once or twice daily PRN. Max 2mg/24 hours

Summary

- Haloperidol combined with promethazine or lorazepam on its own are possible first line treatments.
- IM Promethazine may reduce induced movement disorders
- IM Lorazepam is the safest with
  - Unknown History
  - No previous antipsychotic use

After Rapid Tranquilisation

- Consider a post incident debrief
- Review current treatment
  - Consider effectiveness of current regimen
  - Consider change of regular antipsychotic
  - Consider depot if concerned about adherence
  - Consider augmentation strategies
  - Consider non-pharmacological treatments

POST RT OBSERVATIONS

Post RT Observations

- Observations MUST be attempted after any IM medication has been administered
- Obs only needed after oral meds if clinically indicated.
- If obs are refused this must be recorded
- Complete and record any line of sight obs that can be done e.g. respiratory rate.

Non-Contact ABCDE Assessment Tool

Ensure that observations are repeated every 15mins for 1 hours post intramuscular injections

Utilise the ABCDE guidance below to assess the patient and document in the table below

If any RED box statements are true the patient MUST be escalated to an doctor and a full ABCDE assessment should be undertaken.

Medical team/999 MUST be contacted if required.
DO NOT leave the patient.

Use addressograph or write in CAPITAL LETTERS

Surname: .....

First names: .....

H&C number: .....

DOB: ..... Check Identity

Airway	Talking (not just moan and groans) Airway clear- including when asleep
Breathing	Breathing is quiet and regular Respiratory rate 12-10 breaths per minute
Circulation	Mobility normal for the patient Presenting as normal If asleep, monitor movement Warm skin, normal colour for patient Comfortable presentation
Disability	Alert Drinking and eating as normal Active
Exposure	No signs of injury, bruising, bleeding or rashes.

Airway	Airway obstructed? Silence? Coughing? Swelling? Gurgling? If awake can they speak(not just moans and groans) Risk of vomiting? Consider moving onto their side and carry out constant observations to prevent choking/aspiration if there is a risk of vomiting
Breathing	Noisy or difficult breathing even with open airway Respiratory rate less than 12 or more than 20 breaths per minute Shallow rapid breathing pattern Struggling to breath (using additional muscles and working hard) Abnormal breathing sounds? Stridor? Wheeze? Gurgling? **Consider asthma, COPD, intoxication and has rapid tranquillisation been used?**
Circulation	Change in ability to mobilise Flushed? Pale? Sweaty? Clammy? Mottled? (purplish discolouration to skin) Central cyanosis (blue tinge to lips, tip of nose or ear lobes) Ashen (grey discolouration to skin) Trauma/significant bleeding
Disability	Unresponsive Unexpected sleepiness, drowsiness, confusion or fitting Responsive to voice, pain or unresponsive **Consider diabetes or epilepsy**
Exposure	Abnormal shuffling or unsteady gait Muscle rigidity **THINK NMS** Signs of dehydration: dry cracked lips not passing urine. Signs of physical injury/bleeding/rash Signs of infection: **THINK SEPSIS**

Observation and monitoring

Appendix F	Rapid tranquillisation Monitoring	
Following any IM/IV drug administered for RT, or where considered clinically necessary after oral medication, monitor and record as shown below. Document and record on the Trust Standard Observation Chart (SOC) e.g. NEWS 2 or clinical notes as appropriate. **The Early Warning Score should be calculated from the Trust Standard Observations Chart e.g. NEWS 2 each time and further action taken if indicated**		
Observations	**Monitoring Frequency**	**General Comments**
• Respiratory Rate • SaO2 (if appropriate) • Pulse • Blood Pressure • Temperature • Level of Consciousness • Assess for Side effects • Monitor level of hydration	Every 15 minutes for first hour. After one hour, continue observations at least hourly until there are no further concerns about physical health status. **Action when Observations are not possible** The Non-Contact Physical Health Observations Guidance and Assessment tool (Appendix F) should be used. Record if the patient's mental state or behaviour prevents observations. Complete and record any observations possible, in Trust Standard Observational Chart e.g. NEWS 2.	• Arrange medical review of the patient after administration of IM medication • Protection of the airway is paramount • Ensure adequate levels of hydration are maintained • Consider urgent transfer to an Emergency Department if not already in ED, if condition warrants • Pay particular attention to level of consciousness and blood pressure when IM antipsychotics and IM benzodiazepines are used in combination. • An ECG is recommended when antipsychotics, in particular when haloperidol or higher doses are given. • An ECG is essential after IM antipsychotics are administered to Young People.

Managing Side effects

Management of side effects and problems that can occur during and after rapid tranquillisation (RT) (and occasionally during and after oral pharmacological de-escalation)	
Problem	**Remedial Measures**
Acute Dystonia (including oculogyric crises, torticollis) *NB. 10% prevalence, more common in young males, neuroleptic naïve, high potency drugs e.g. haloperidol*	Give **procyclidine 5 - 10mg Orally or IM (IV in ED Departments only)** **NOTE** Do not pre-emptively administer procyclidine when IM haloperidol is combined with IM promethazine as the risk of extrapyramidal side effects (EPSE) is significantly reduced by the promethazine. If EPSE do occur after the IM haloperidol/promethazine combination, administer additional procyclidine with caution. Monitor for increased anticholinergic side effects.
Reduced respiratory rate • <10/minute or • Oxygen saturation <92% (Note: COPD patients may have a lower baseline SPO_2)	Give oxygen; ensure patient is not lying face down. If induced by any agent other than a benzodiazepine the patient will require transfer for mechanical ventilation ***If benzodiazepine induced:*** Give flumazenil 200microgram IV over 15 seconds. If desired level of consciousness is not obtained within 60 seconds, a further 100microgram can be injected and repeated at 60 second intervals to a maximum total dose of 1mg (1000microgram) in 24 hours (initial + 8 additional doses). Monitor respiration rate continuously until it returns to baseline level. The effect of flumazenil may wear-off & respiratory depression return – monitoring must continue beyond initial recovery of respiration. Clinicians should be familiar with the use of flumazenil or if being considered on a psychiatric ward, it should be used with input from general clinicians. Additional information is available from Medusa (see local Trust for details), on the treatment of benzodiazepine poisoning and flumazenil should be administered in this context. *Do not use flumazenil if the patient has a history of epilepsy; co-ingested pro-convulsants including tricyclic antidepressant; or in benzodiazepine dependent patients. These patients will require transfer for mechanical ventilation, maintain airway management until transfer .*
Irregular or slow pulse <50 beats/min	**Refer to specialist medical care immediately.**
Fall in blood pressure > 30mmHg drop in systolic BP on standing or diastolic BP <50mmHg	Lie patient flat, raise legs if possible. Monitor closely and seek further medical advice if necessary.
Increased temperature	**Withhold antipsychotics –**risk of NMS or perhaps arrhythmias. Monitor closely, cool the patient, maintain hydration and check muscle creatinine kinase. **Refer to specialist medical care** if continued or other signs of NMS present e.g. sweating, hypertension or fluctuating BP, tachycardia, incontinence (retention/obstruction), muscular rigidity (may be confined to head and neck), confusion, agitation or loss of consciousness.
Akathisia	Review antipsychotic choice, consider propranolol 30-80mg/day pm in 2-3 divided doses (caution with asthma, bradycardia hypotension) or benzodiazepines e.g. diazepam 5-15mg/day prn in divided doses

Psychiatry Induction

Prescribing and Medication in Psychiatry

Belfast Health and Social Care Trust

Rapid Tranquillisation

Regional RT Policy incorporating NICE NG 10 – Violence and Aggression

Belfast Health and Social Care Trust

Aim of Presentation

- To raise awareness of the Regional Rapid Tranquillisation (RT) guideline

Objectives

At the end of this presentation you should be able to:

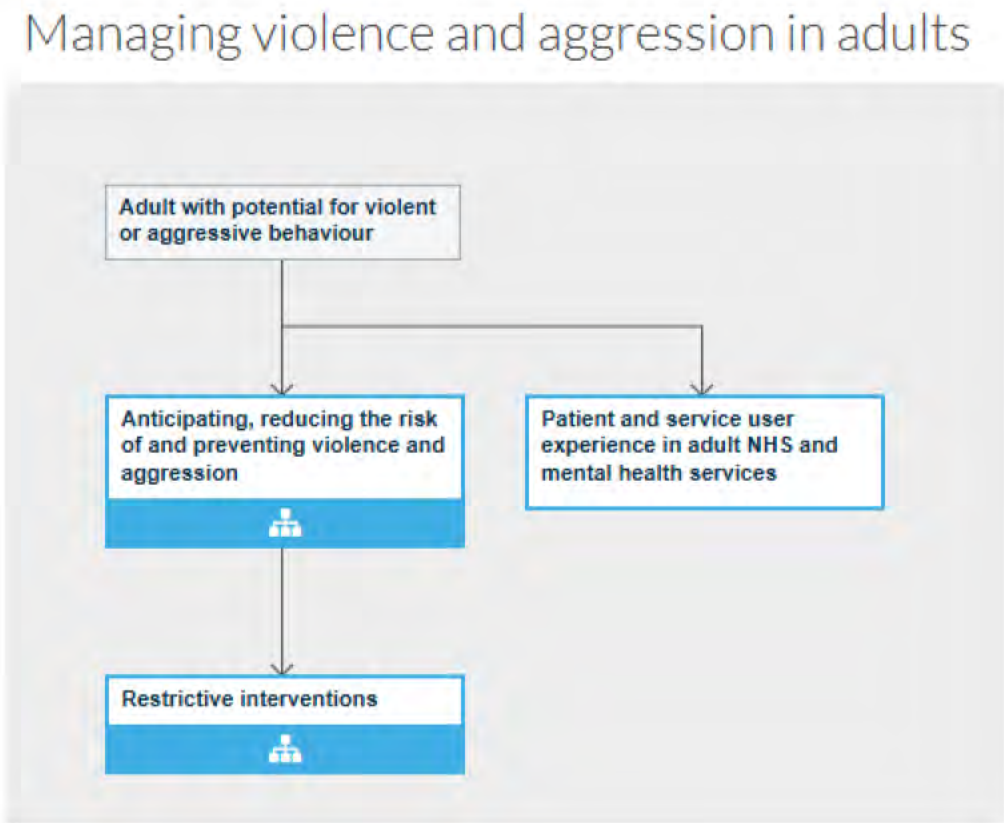
- Describe what is and what isn't RT
- Describe the main pharmacological options for RT based on NICE NG10
- Describe where Regional Policy Deviates from NG10
- Describe key safety issues with haloperidol and promethazine
- Describe the monitoring required after RT

NG10 Key recommendations

- Principles for managing violence and aggression
- Anticipating and reducing the risk of violence and aggression
- Preventing violence and aggression
- Using restrictive interventions in inpatient psychiatric settings
- Managing violence and aggression in emergency departments
- Managing violence and aggression in community and primary care settings

NICE Pathway for NG10

- https://pathways.nice.org.uk/pathways/violence-and-aggression



Rapid Tranq - definition

- NG 10 defines RT as

*"Use of medication by the **parenteral route** (usually intramuscular or, **exceptionally**, intravenous) if oral medication is not possible or appropriate and urgent sedation with medication is needed."*

NG 10 – Oral medication - PRN

- Oral PRN not included in NICE NG 10
  - Oral is not considered to be RT
- However,
  - Oral PRN may be part of de-escalation plan
  - Oral PRN on its own is not de-escalation

NG 10 – Oral medication – PRN

- To guide staff, Regional Policy offers oral PRN options as part of a de-escalation strategy
- There should be
  - Clarity about indication for oral PRN
  - Clarity about 1st and 2nd line choices
- Tailor PRN to individual circumstances – involve patient in discussion
- Avoid doses over BNF max dose

Rapid Tranquillisation

- Part of the Restrictive Intervention Policy
- Policy on Trust Intranet (search “Rapid”) – read as part of training
- Significant risks are associated with RT
- Risks with RT may be additive to those with physical restraint
- Post RT observation and documentation are essential

Options with disturbed patient

- De-escalation techniques – talking down
- Seclusion
- Regular medication – review effectiveness
- Oral PRN – as part of a de-escalation strategy
- Rapid Tranquillisation – use of IM medication

The risk of harm increases going down the list – use the option consistent with the level of risk

Things to Consider

- Patient age – use appropriate flow chart
- Separate Flow charts for
  - Children and Young People 6 to 17 yrs
  - Adults over 18yrs
  - Older and Frail Adults
  - People with dementia
- NOTE – RT Guide is not for Dementia or Alcohol withdrawal – use appropriate pathways

Oral versus Intramuscular

- Patients must be offered the chance to accept oral treatment unless
  - The team has agreed the risks are disproportionate
- Risks are increased with IM medication
- Oral and IM doses are not necessarily equivalent

IM injection risks

- Small risk of Inadvertent IV or IA injection
  - Might explain the small number of historic deaths during RT - a bolus dose is inadvertently given
- Needle stick injury – patient and staff
- Needle detaching from syringe
- Enhanced effect in struggling patient
  - activated sympathetic system
  - increased muscle blood flow

NICE RECOMMENDATIONS

Lorazepam - possible first line

- Compared to diazepam
  - It does not accumulate, less hangover effect
  - More consistent IM absorption
- Oral and IM dose 1mg to 2mg
- No significant difference between oral and IM dosing – very slightly faster onset for IM
- Max dose 4mg/24hrs – document reasons for higher doses

Lorazepam - Problems

- Risk of over sedation/loss of consciousness
- Risk of respiratory depression or arrest
  - Caution when used along with restraint
- Paradoxical reactions – increased agitation
- <u>Caution with IM olanzapine</u>
  - Increased risk of respiratory/cardiovascular collapse when given together
  - Separate doses by at least one hour

Haloperidol – possible first line

- Oral dose 5 -10mg – max dose 20mg/24hr
- IM dose 5 -10mg – max dose 20mg/24hr
- Onset within 30-45 mins
  - may be repeated after 45 minutes
- 5mg IM is equivalent to 8 -10mg orally
  -reduce dose if repeated injections are given.
- Give IM haloperidol and IM promethazine together (NICE NG10)

Haloperidol - problems

- Risk of dystonic reactions
- Risk of cardiac arrhythmias, especially QTc prolongation.
- Avoid if no recent ECG or there is evidence of cardiac disease
- Risk of over sedation

IM Promethazine – give with IM haloperidol

- Sedative antihistamine & anticholinergic
  - Enhanced sedative effect
  - Reduces haloperidol induced EPSE
- IM Dose 25 - 50mg. Max dose 100mg/24hrs
- Allow 1-2 hrs for response before repeat
- Avoid if MAOIs used in last 14 days
- Avoid if suffering from CNS depression
  - e.g. alcohol intoxication

IM Promethazine – problems

- Significant anticholinergic effects
  - Enhances effects of anticholinergics drugs
- Considering omitting IM promethazine in older people or people with dementia

Why are common treatments omitted from NG 10

- Haloperidol combined with lorazepam
  - no evidence it is more effective than lorazepam alone
- Rapid Acting Olanzapine IM
  - not marketed in UK – (unlicensed import available)
- Rapid Acting Aripiprazole IM
  – insufficient evidence for NICE to make a recommendation
- Acuphase
  – Not rapid acting
  - unfavourable Cochrane review

Antipsychotics - olanzapine

- Oral olanzapine 10mg
- IM olanzapine 5-10mg
- Needs to be reconstituted
- In RT max dose is 20mg/day by any route
- Injection may be repeated after at least 2 hrs
- Do not use with 1hr of IM lorazepam – increased risk of respiratory and circulatory collapse
- Risk of over sedation
- Reserve for Level 3 or Individual Care Plan

Antipsychotics - aripiprazole

- IM aripiprazole 9.75mg (1.3ml)
- Max dose 30mg by any route
- Injection may be repeated after at least 2 hrs
- Reserve for when haloperidol and olanzapine are unsuitable
- Risk of over sedation
- Reserve for Level 3 or Individual Care Plan

Clopixol Acuphase

- Not recommended for RT due to slow onset and prolonged duration of action
- Do not use in struggling patient (?risk of IV/IA injection)
- Do not use in the antipsychotic naïve
- Do not repeat doses within 24hrs
- No such thing as a “course”!
- May have a role in an individual care plan for patients with prolonged periods of disturbed behaviour

Its not in NG10 – can it be used?

- Yes –if they are suitable for the patient
- Should be part of an Individualised care plan
- Consider when
  - Inadequate response to Level 2 interventions
  - Contra-indications to haloperidol or lorazepam

Other Options

- Haloperidol combined with lorazepam
  - No clear evidence more effective than lorazepam on its own
  - Historically used
  - Increase risk of respiratory or circulatory collapse – careful monitoring
  - Doses as for individual drugs

Other Options

- Oral Promethazine
  - Oral treatment is not considered by NICE
  - BAP RT Guideline suggests oral promethazine is safe and effective in management of anxiety/agitation

ADULTS OVER 18YRS

(Not applicable to delirium, also consider using Appendix D for older adults and frail)

Pharmacological management should be part of an overall management plan that includes appropriate nursing care and de-escalation techniques

LEVEL 1 Accepting oral meds and as part of de-escalation strategy	LEVEL 2 Actual or clear risk of violence or aggression. De-escalation including oral PRN not possible or appropriate	LEVEL 3 Situation rapidly deteriorating or failure to respond to LEVEL 2 interventions
Consider combination of oral lorazepam with an oral antipsychotic if indicated by clinical circumstances. Consider moving to LEVEL 2 if oral therapy is refused or is not indicated by previous clinical response or is not a proportionate response.	Review all medication administered in the last 24 hours – be aware of BNF max doses. Ensure resuscitation equipment and emergency response is readily available within 3 minutes.	If Rapid Tranquillisation (LEVEL 2) is being used, a senior doctor must review all treatment and response every 24 hours. If one round of LEVEL 2 interventions have had insufficient effect a senior doctor should review treatment and consider the following: • The appropriateness of current placement • Age and physical presentation • Check sufficient time has been allowed for response • If there has been a partial response to a LEVEL 2 intervention, consider repeating that intervention • If a LEVEL 2 intervention has had insufficient effect consider offering the alternative LEVEL 2 intervention • Carry out a full review of treatment to date and seek a second opinion if needed.
Consider lower doses in older adults or frail (Appendix A & D)		
Suggested Oral Medication **Lorazepam 1 or 2mg** (Max 4mg/24hrs) **OR** **Promethazine 25 or 50mg** (Max100mg/24hrs) **OR** **Haloperidol 5mg** (max 20mg/24hrs) **OR** **Olanzapine 10mg♦** (♦ Available as an orodisperible product) (Max 20mg/24hr Continue de-escalation strategy. If response is inadequate after 45 minutes, consider repeating oral therapy or moving to LEVEL 2	**Suggested Medication** **Lorazepam IM (or IV)[a]** **1 or 2mg** [b, c] (Max 4mg/24hrs) **OR** **Haloperidol IM 5mg** (Max 20mg/24hrs) **Combined with** **Promethazine IM** **25 or 50mg** (Max 100mg/24hrs) If there is continued concern seek advice from a more senior doctor before proceeding further ***NOTES*** ***a. IV in certain clinical settings. NOT recommended in elderly and frail and in mental health settings*** *b. IM Lorazepam and IM Olanzapine must not be administered within 1 hour of each other* *c. IV flumazenil must be readily available*	**If LEVEL 2 interventions have had insufficient effect** **Consider as part of an individualised care plan include:** • Further repeats of LEVEL 2 interventions (do not repeat promethazine if it is < 2hrs since the last injection) • Haloperidol IM combined with Lorazepam IM • Alternative medications (see Section 10) • Zuclopenthixol acetate (Clopixol Acuphase®) (see Section 11)

When deciding which medication to use, consider:	Additional Considerations
• **Oral or parenteral lorazepam is preferred first line if:** o Patient is an older adult or physically frail o There is an uncertain history o Presence of cardiovascular disease o Current illicit drug/alcohol intoxication o Antipsychotic naïve • Antipsychotics and/or promethazine preferred with: o Current regular benzodiazepine use	• Avoid antipsychotics, where possible, in patients with a parkinsonian syndrome (including idiopathic Parkinson's disease Parkinson's disease dementia and Dementia with Lewy Bodies) • Avoid haloperidol in cardiovascular disease or if there has been no recent ECG. • Pre-existing physical health problems (e.g. extra care in patients with eating disorders, physical frailty or comorbidity of any disorders that affect metabolism, including hypothermia, stress, extreme emotional response and post extreme physical exertion) or pregnancy. • Previous response, including adverse effects • Potential for interactions with other medicine • Possible Intoxication

CHILDREN 6 TO 17YRS

(Not applicable to delirium)

Pharmacological management should be part of an overall management plan that includes appropriate nursing care and de-escalation techniques

LEVEL 1 Accepting oral meds and as part of de-escalation strategy	LEVEL 2 Actual or clear risk of violence or aggression. De-escalation including oral PRN not possible or appropriate	LEVEL 3 Situation rapidly deteriorating or failure to respond to Level 2 interventions
Consider combination of oral lorazepam with an oral antipsychotic if indicated by clinical circumstances. Consider moving to LEVEL 2 if oral therapy is refused or is not indicated by previous clinical response or is not a proportionate response. **Suggested Oral Medication** **Children 6-12 years** **Lorazepam 0.5 or 1mg** (Max 4mg/24hrs) **Young People 13-17years** **Lorazepam 0.5mg, 1mg or 2mg** (Max 4mg/24hrs) **OR** **Haloperidol 1mg up to 5 mg★** (max 10mg/24hrs) **OR** **Promethazine 10mg to 25mg** (max 50mg/24hrs) **OR** **Risperidone♦** **20kg-45kg 0.5mg**(Slowly increase to Max 2.5mg/24hrs) **>45kg 0.5mg** (Slowly increase to Max3mg/24 hrs) ♦ Available as an orodisperible product. For both age groups: Continue de-escalation strategy. If response is inadequate after 45 minutes, consider repeating oral therapy or moving to LEVEL 2	Consult a senior doctor/consultant before using IM medication in a child under 12 years of age. Consult a senior doctor/consultant before using IM medication in a young person (13-17 years) unless IM medication is already included in the young person's care plan. Check if an individual care plan recommends an approach not covered in this guideline. Review all medication administered in the last 24 hours – be aware of BNF max doses. Ensure resuscitation equipment and emergency bag is available within 3 minutes. **Suggested IM Medication** **Children 6-12 years** **Lorazepam IM0.5 or 1mg** (Max 4mg/24hrs) **Young People 13 -17 years** **Lorazepam IM0.5mg, 1mg or 2mg** (Max 4mg/24hrs) For both age groups: If there is continued concern, seek advice from a more senior doctor/consultant before proceeding	If Rapid Tranquillisation (LEVEL 2) is being used, a senior doctor/consultant must review all treatment and response every 24 hours. If one round of LEVEL 2 interventions have had insufficient effect a senior doctor/consultant should review treatment and consider the following options: • The appropriateness of current placement • Check sufficient time has been allowed for response • If there has been a partial response to lorazepam consider repeating the dose • Carry out a full review and seek a second opinion if needed. **If there has been insufficient response to IM lorazepam:** **Consider as part of an individualised care plan include** (in no particular order) • Further repeats of IM lorazepam • ≥13yrs, Haloperidol IM 1 - 5mg★ (Max 10mg/24hrs) • ≥13yrs, Haloperidol IM combined with lorazepam IM • ≥13yrs, Promethazine IM (10 to 25mg, Max 50mg/24hrs) • ≥13yrs, Olanzapine 2.5mg, 5mg or 10mg (Max 10mg/24hrs IM). **Do not combine** with IM lorazepam and use with caution if IM lorazepam has been given within 1 hour

When deciding which medication to use, consider:	Additional Considerations
• Oral or parenteral lorazepam is preferred first line if: o There is an uncertain history o Presence of cardiovascular disease o Current illicit drug/alcohol intoxication o Antipsychotic naïve • Antipsychotics may be preferred with: o Current regular benzodiazepine use o History of respiratory depression	• Avoid haloperidol in cardiovascular disease or if there has been no recent ECG. • Pre-existing physical health problems (e.g. extra care in patients with eating disorders, physical frailty or comorbidity of any disorders that affect metabolism, including hypothermia, stress, extreme emotional response and post extreme physical exertion) or pregnancy • Previous response, including adverse effects • Potential for interactions with other medicine • Possible Intoxication • Promethazine is contraindicated in CNS depression. ★ Dosing for haloperidol should be a fixed dose in the range from 1mg to a max of 5mg. Please consider the available strengths of oral haloperidol 0.5mg, 1.5mg or 5mg to facilitate ease of administration; e.g. 1.5mg is easier to administer than 2mg

ALL OPTIONS SUMMARY

Appendix A - Dose information for specific populations (Not applicable to delirium)

Dose ranges highlighted as a guide only: remember to avoid variable dosing on kardex.

Medication	Time to Peak Plasma concentration	Child (6-12 years)	Young person (13 – 17)	Adults (18 +)	Older and Frail People	People with Dementia
Haloperidol oral solution and tablets **If no recent ECG, consider risk/benefits as use may be unlicensed.**	2 – 6 hours (Sedation usually within 30-45 mins)	***Not Applicable***	*Consider risk of acute dystonia especially in the antipsychotic naïve* PO 1mg up to 5mg Max 10mg/24hrs	PO 5mg Max 20mg/24 hours	*Only use first line if there is confirmed history of previous exposure to typical antipsychotics. Start with lower doses.* PO 0.5mg up to 2.5mg (Usual Max 5mg/24hrs.)	***Not recommended.*** *Use only in very exceptional circumstances and under advice of senior doctors with experience in dementia. Consider licensed oral risperidone as an alternative* PO 0.5mg (Max 2mg/24hrs)
Haloperidol injection **If no recent ECG, consider risk/benefits as use may be unlicensed.**	IM 15 – 60 mins (Sedation usually within 30 – 45 mins) IV: 10 mins	***Not Applicable***	*Unlicensed: Only use as part of an individualised care plan.* *Consider risk of acute dystonia especially in the antipsychotic naïve* IM injection 1mg up to 5mg Max 10mg/24hrs	By IM/IV injection 5mg Max 20mg/24 hours	*Only use first line if there is confirmed history of previous exposure to typical antipsychotics. Start with lower doses* IM 0.5mg up to 2.5mg (Max 5mg/24hrs)	***Not recommended.*** *Use only in very exceptional circumstances and under advice of senior doctors with experience in dementia. Consider licensed oral risperidone as an alternative* IM 0.5mg (Max 2mg/24hrs)
Lorazepam tablets and IM/IV injection	PO/IM 50-90 mins (Sedation usually within 30-45 mins) IV:2-5mins	*Unlicensed but may be justified in some cases* PO or by IM injection 0.5 or 1mg Max4mg/24hrs	PO or IM injection 0.5mg, 1mg or 2mg Max 4mg/24hrs	PO or IM/IV injection 1mg or 2mg Max 4mg/24 hours	PO or IM injection 0.5mg Max 2mg/24 hours (IV route NOT recommended)	PO or IM injection 0.5mg Max 2mg/24 hours (IV route NOT recommended)
Olanzapine tablets/ orodispersible tablets *(NB orodispersible tablets have no advantage in speed of onset but are harder to spit out/conceal)*	5 – 8 hours	***Not Applicable***	***Not Applicable***	Initially 5mg or 10mg PO Max 20mg/24 hours	*Consider as a second line option.* 2.5mg PO Max 10mg/24hrs.	*Unlicensed but may be justified in some cases.* 2.5mg PO Maximum 5mg/24hours
Promethazine oral solution, tablets & IM injection	Oral 2-3 hours IM 1-2 hours *IV:NOT recommended*	***Not Applicable***	*Unlicensed: Only use as part of an individualised care plan* PO or IM injection 10mg to 25mg Max 50mg/24hrs	PO 25mg or 50mg Max 100mg/24 hrs	*Consider appropriateness, if confusion is a concern* PO or IM injection 2.5mg. Max 50mg/24hrs	***Not recommended.*** *Use may be considered in those with compromised respiratory function or sensitive/tolerant to benzodiazepines.* PO or IM injection 12.5mg or 25mg. Max 50mg/ 24hrs

Appendix A - Dose information for specific populations (not applicable to delirium)

Dose ranges highlighted as a guide only: remember to avoid variable dosing on kardex.

Medication	Time to Peak Plasma concentration	Child (6-12 years)	Young person (13 – 17)	Adults (18 +)	Older and Frail People	People with Dementia
Aripiprazole IM injection	1 –3 hours	***Not Applicable***	***Not Applicable***	9.75mg (1.3ml) – Consider lower dose (5.25mg) on basis of clinical status Effective range 5.25 –15mg Max dose 30mg/24hrs by any route	*Effectiveness in over 65's not established. Consider lower doses on basis of clinical status.* Consider starting dose 5.25mg Max of TWO injection in 24 hours.	***Not Recommended***
Olanzapine IM injection	15-45 minutes (peak levels up to 5 times that of oral doses)	***Not Applicable***	*Unlicensed but may be justified in some cases under consultant direction.* 2.5mg, 5mg or 10mg IM repeated after 2 hours if needed. Max of 3 injections/ 24hrs for 3 days Max IM dose is 10mg daily. Max total daily dose by all routes of 20mg not to be exceeded.	5 or 10mg IM repeated after 2 hours if needed. Max of 3 injections/24hrs for 3 days. Max combined oral/IM dose is 20mg daily NOT to be exceeded.	*Use may be justified in some cases under consultant direction.* 2.5mg IM repeated after 2 hours if needed. Max of 3 injections/24hrs for 3 days Max combined oral/IM dose is 10mg daily NOT to be exceeded.	***Not recommended.*** *Use only in very exceptional circumstances and under advice of senior doctors with experience in dementia. Consider licensed oral risperidone as an alternative* 2.5mg IM repeated after 2 hours if needed. Max of 2 injections/24hrs for 3 days Max combined oral/IM dose is 5mg daily NOT to be exceeded.
Quetiapine Oral tablets/Solution	1-2 hours	***Not Applicable***	***Not Applicable***	*Unlicensed but may be justified in some cases.* PO 50-100mg (suggested max 200mg/24hours)	*Unlicensed but may be justified in some cases.* PO 12.5mg or 25mg (suggested Max 50mg/24hrs)	*Unlicensed but may be justified in some cases such as Lewy Body Dementia* PO 12.5mg or 25mg (suggested max 50mg/24hrs)
Risperidone tablets / orodispersible tablets/ oral solution	1 -2 hours	***Not Applicable***	20-45kg 0.5mg, Very slow increase to Max 2.5mg >45kg 0.5mg. Very slow increase to Max 3mg	*Unlicensed but may be justified in some cases.* Suggested dose PO 1-2mg BD PRN Max 4mg/24hours	*Consider as a second line option. Unlicensed but may be justified in some cases.* Suggested dose PO 0.25mg once or twice daily PRN. Max 2mg/24hours	In *Alzheimer's Disease* Suggested dose PO 0.25mg once or twice daily PRN. Max 2mg/24 hours

Summary

- Haloperidol combined with promethazine or lorazepam on its own are possible first line treatments.
- IM Promethazine may reduce induced movement disorders
- IM Lorazepam is the safest with
  - Unknown History
  - No previous antipsychotic use

After Rapid Tranquilisation

- Consider a post incident debrief
- Review current treatment
  - Consider effectiveness of current regimen
  - Consider change of regular antipsychotic
  - Consider depot if concerned about adherence
  - Consider augmentation strategies
  - Consider non-pharmacological treatments

POST RT OBSERVATIONS

Post RT Observations

- Observations MUST be attempted after any IM medication has been administered
- Obs only needed after oral meds if clinically indicated.
- If obs are refused this must be recorded
- Complete and record any line of sight obs that can be done e.g. respiratory rate.

Non-Contact ABCDE Assessment Tool

Ensure that observations are repeated every 15mins for 1 hours post intramuscular injections

Utilise the ABCDE guidance below to assess the patient and document in the table below

If any RED box statements are true the patient MUST be escalated to an doctor and a full ABCDE assessment should be undertaken.

Medical team/999 MUST be contacted if required.
DO NOT leave the patient.

Use addressograph or write in CAPITAL LETTERS

Surname: .....

First names: .....

H&C number: .....

DOB: ..... Check Identity

Airway	Talking (not just moan and groans) Airway clear- including when asleep
Breathing	Breathing is quiet and regular Respiratory rate 12-10 breaths per minute
Circulation	Mobility normal for the patient Presenting as normal If asleep, monitor movement Warm skin, normal colour for patient Comfortable presentation
Disability	Alert Drinking and eating as normal Active
Exposure	No signs of injury, bruising, bleeding or rashes.

Airway	Airway obstructed? Silence? Coughing? Swelling? Gurgling? If awake can they speak(not just moans and groans) Risk of vomiting? Consider moving onto their side and carry out constant observations to prevent choking/aspiration if there is a risk of vomiting
Breathing	Noisy or difficult breathing even with open airway Respiratory rate less than 12 or more than 20 breaths per minute Shallow rapid breathing pattern Struggling to breath (using additional muscles and working hard) Abnormal breathing sounds? Stridor? Wheeze? Gurgling? **Consider asthma, COPD, intoxication and has rapid tranquillisation been used?**
Circulation	Change in ability to mobilise Flushed? Pale? Sweaty? Clammy? Mottled? (purplish discolouration to skin) Central cyanosis (blue tinge to lips, tip of nose or ear lobes) Ashen (grey discolouration to skin) Trauma/significant bleeding
Disability	Unresponsive Unexpected sleepiness, drowsiness, confusion or fitting Responsive to voice, pain or unresponsive **Consider diabetes or epilepsy**
Exposure	Abnormal shuffling or unsteady gait Muscle rigidity **THINK NMS** Signs of dehydration: dry cracked lips not passing urine. Signs of physical injury/bleeding/rash Signs of infection: **THINK SEPSIS**

Observation and monitoring

Appendix F	Rapid tranquillisation Monitoring	
Following any IM/IV drug administered for RT, or where considered clinically necessary after oral medication, monitor and record as shown below. Document and record on the Trust Standard Observation Chart (SOC) e.g. NEWS 2 or clinical notes as appropriate. **The Early Warning Score should be calculated from the Trust Standard Observations Chart e.g. NEWS 2 each time and further action taken if indicated**		
Observations	**Monitoring Frequency**	**General Comments**
• Respiratory Rate • SaO2 (if appropriate) • Pulse • Blood Pressure • Temperature • Level of Consciousness • Assess for Side effects • Monitor level of hydration	Every 15 minutes for first hour. After one hour, continue observations at least hourly until there are no further concerns about physical health status. **Action when Observations are not possible** The Non-Contact Physical Health Observations Guidance and Assessment tool (Appendix F) should be used. Record if the patient's mental state or behaviour prevents observations. Complete and record any observations possible, in Trust Standard Observational Chart e.g. NEWS 2.	• Arrange medical review of the patient after administration of IM medication • Protection of the airway is paramount • Ensure adequate levels of hydration are maintained • Consider urgent transfer to an Emergency Department if not already in ED, if condition warrants • Pay particular attention to level of consciousness and blood pressure when IM antipsychotics and IM benzodiazepines are used in combination. • An ECG is recommended when antipsychotics, in particular when haloperidol or higher doses are given. • An ECG is essential after IM antipsychotics are administered to Young People.

Managing Side effects

Management of side effects and problems that can occur during and after rapid tranquillisation (RT) (and occasionally during and after oral pharmacological de-escalation)	
Problem	**Remedial Measures**
Acute Dystonia (including oculogyric crises, torticollis) *NB. 10% prevalence, more common in young males, neuroleptic naïve, high potency drugs e.g. haloperidol*	Give **procyclidine 5 - 10mg Orally or IM (IV in ED Departments only)** **NOTE** Do not pre-emptively administer procyclidine when IM haloperidol is combined with IM promethazine as the risk of extrapyramidal side effects (EPSE) is significantly reduced by the promethazine. If EPSE do occur after the IM haloperidol/promethazine combination, administer additional procyclidine with caution. Monitor for increased anticholinergic side effects.
Reduced respiratory rate • <10/minute or • Oxygen saturation <92% (Note: COPD patients may have a lower baseline SPO_2)	Give oxygen; ensure patient is not lying face down. If induced by any agent other than a benzodiazepine the patient will require transfer for mechanical ventilation ***If benzodiazepine induced:*** Give flumazenil 200microgram IV over 15 seconds. If desired level of consciousness is not obtained within 60 seconds, a further 100microgram can be injected and repeated at 60 second intervals to a maximum total dose of 1mg (1000microgram) in 24 hours (initial + 8 additional doses). Monitor respiration rate continuously until it returns to baseline level. The effect of flumazenil may wear-off & respiratory depression return – monitoring must continue beyond initial recovery of respiration. Clinicians should be familiar with the use of flumazenil or if being considered on a psychiatric ward, it should be used with input from general clinicians. Additional information is available from Medusa (see local Trust for details), on the treatment of benzodiazepine poisoning and flumazenil should be administered in this context. *Do not use flumazenil if the patient has a history of epilepsy; co-ingested pro-convulsants including tricyclic antidepressant; or in benzodiazepine dependent patients. These patients will require transfer for mechanical ventilation, maintain airway management until transfer .*
Irregular or slow pulse <50 beats/min	**Refer to specialist medical care immediately.**
Fall in blood pressure > 30mmHg drop in systolic BP on standing or diastolic BP <50mmHg	Lie patient flat, raise legs if possible. Monitor closely and seek further medical advice if necessary.
Increased temperature	**Withhold antipsychotics –**risk of NMS or perhaps arrhythmias. Monitor closely, cool the patient, maintain hydration and check muscle creatinine kinase. **Refer to specialist medical care** if continued or other signs of NMS present e.g. sweating, hypertension or fluctuating BP, tachycardia, incontinence (retention/obstruction), muscular rigidity (may be confined to head and neck), confusion, agitation or loss of consciousness.
Akathisia	Review antipsychotic choice, consider propranolol 30-80mg/day pm in 2-3 divided doses (caution with asthma, bradycardia hypotension) or benzodiazepines e.g. diazepam 5-15mg/day prn in divided doses

Datasets for Clinical Improvement

Donegore

@02/05/23

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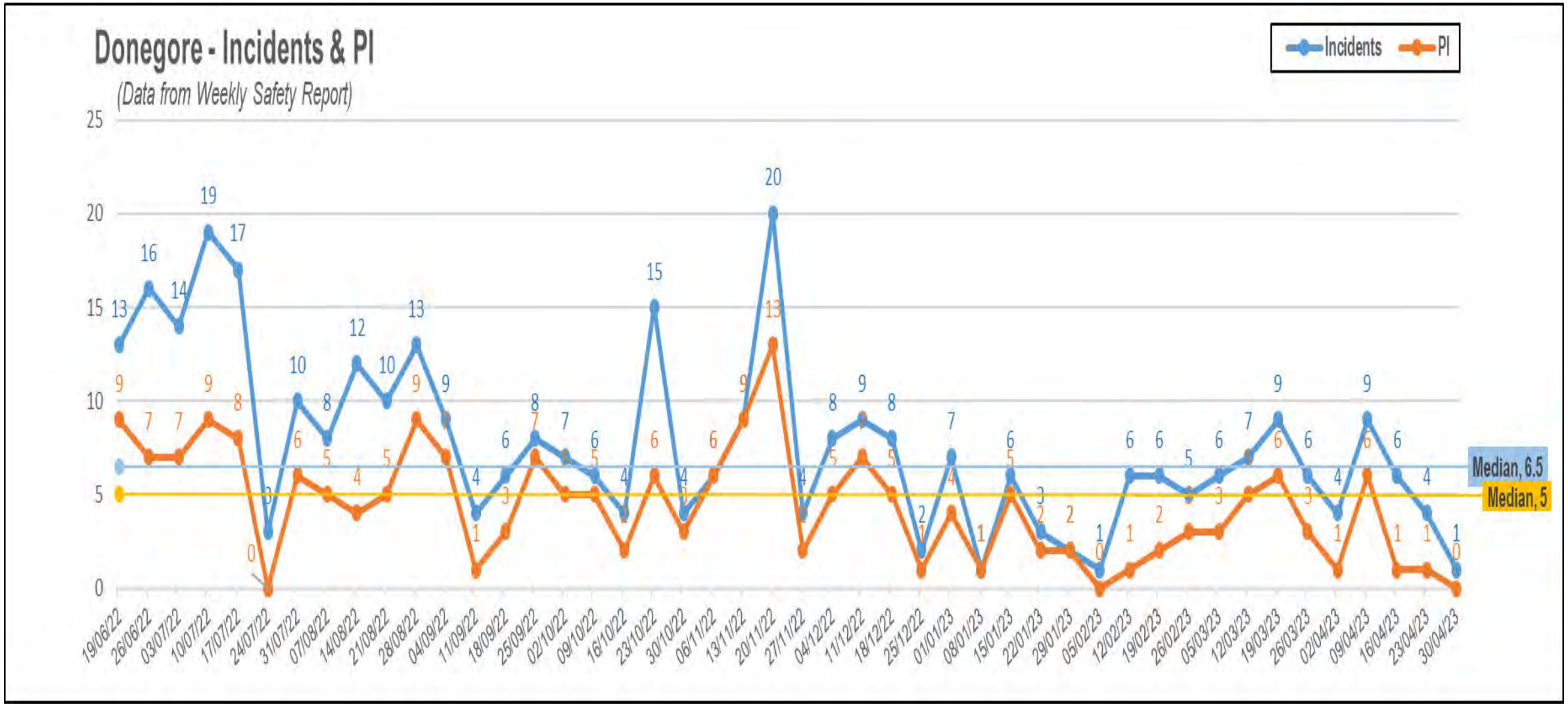

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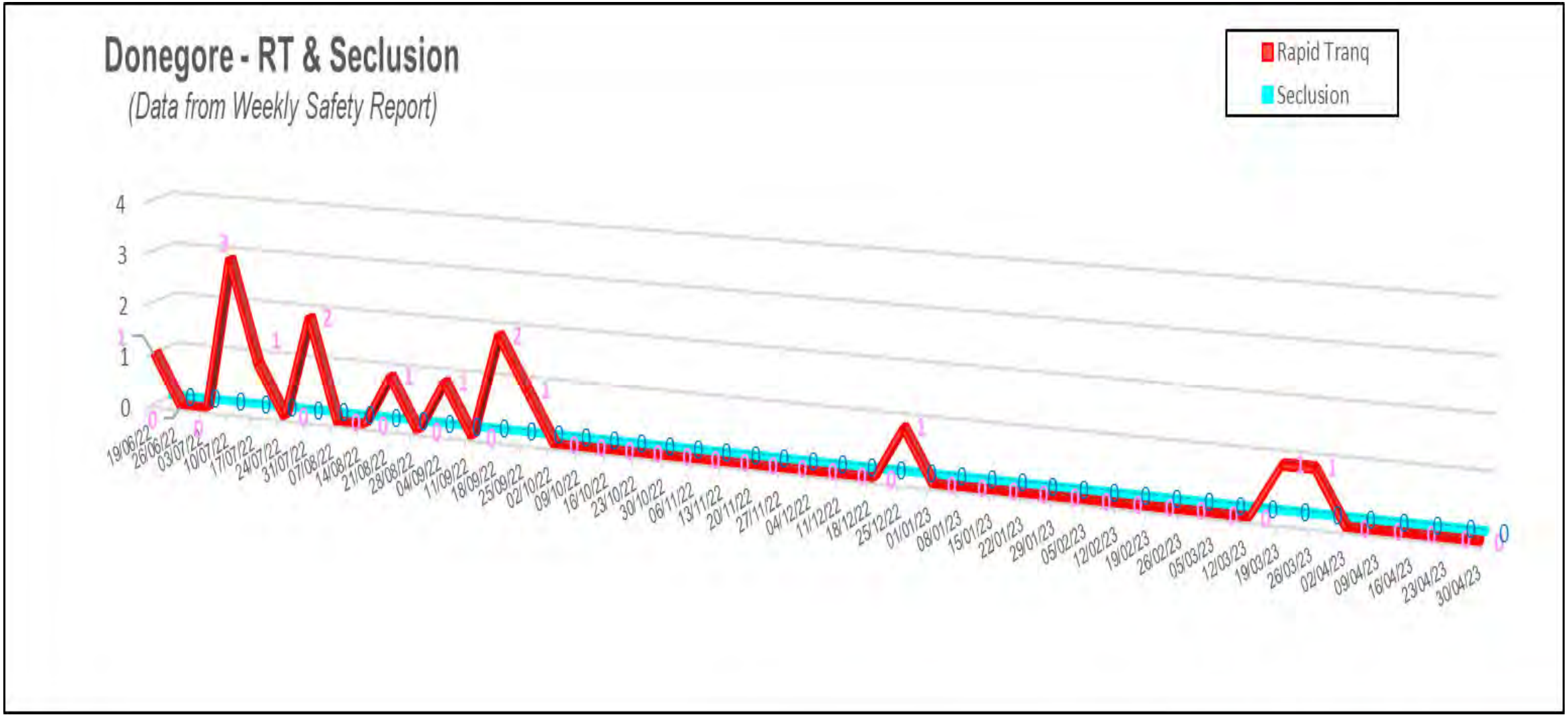

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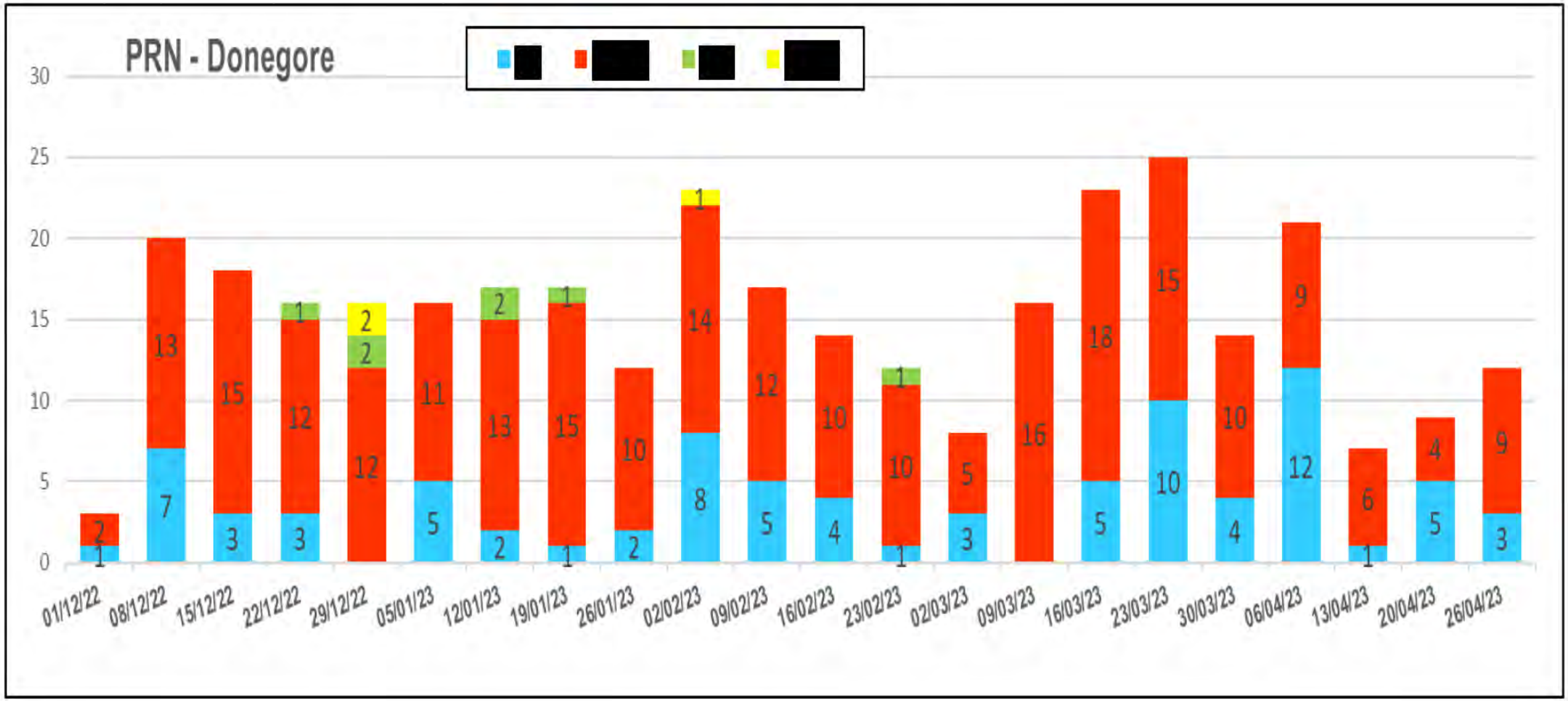

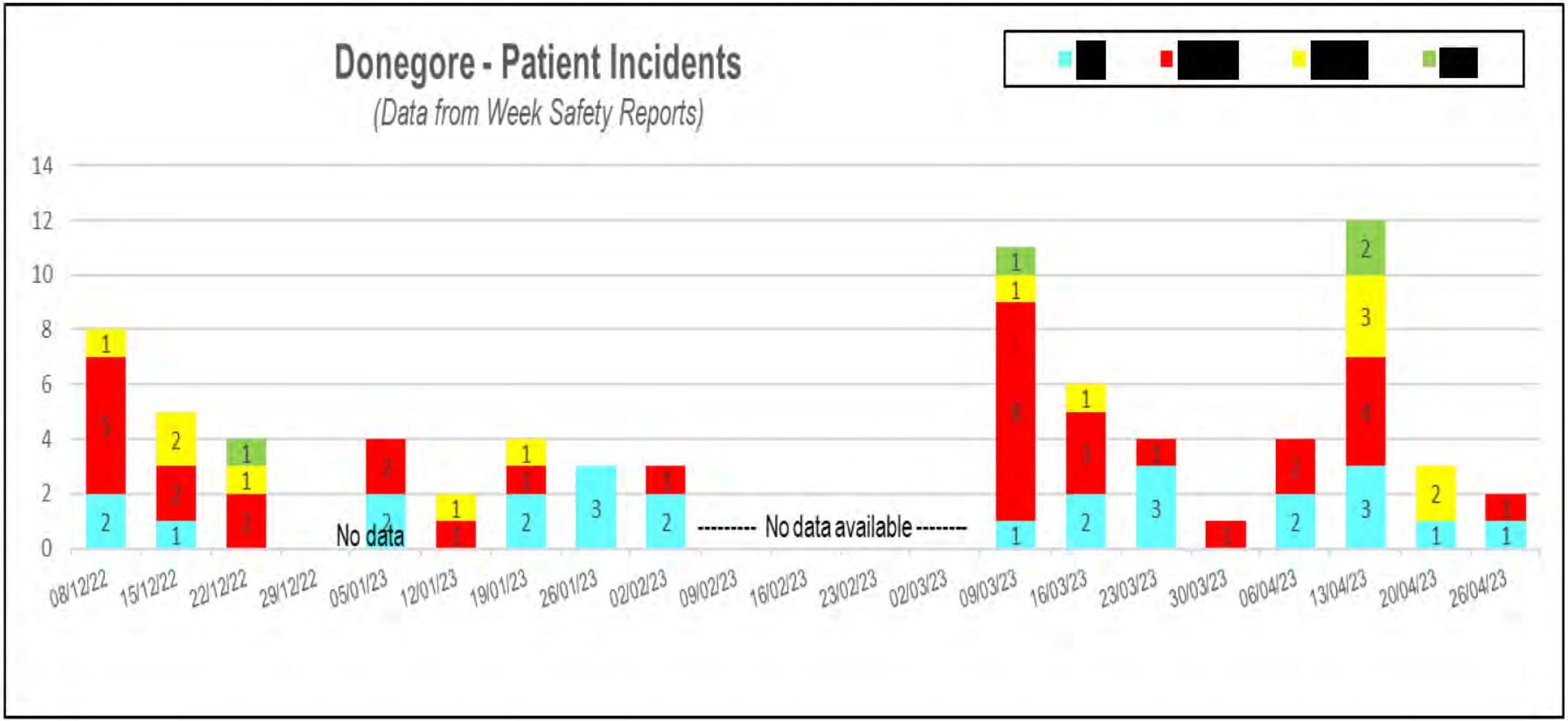
Donegore - Patient Incidents
(Data from Week Safety Reports)
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14
12
10
8
6
4
2
0
No data
--------- No data available -------
08/12/22
15/12/22
22/12/22
29/12/22
05/01/23
12/01/23
19/01/23
26/01/23
02/02/23
09/02/23
16/02/23
23/02/23
02/03/23
09/03/23
16/03/23
23/03/23
30/03/23
06/04/23
13/04/23
20/04/23
26/04/23

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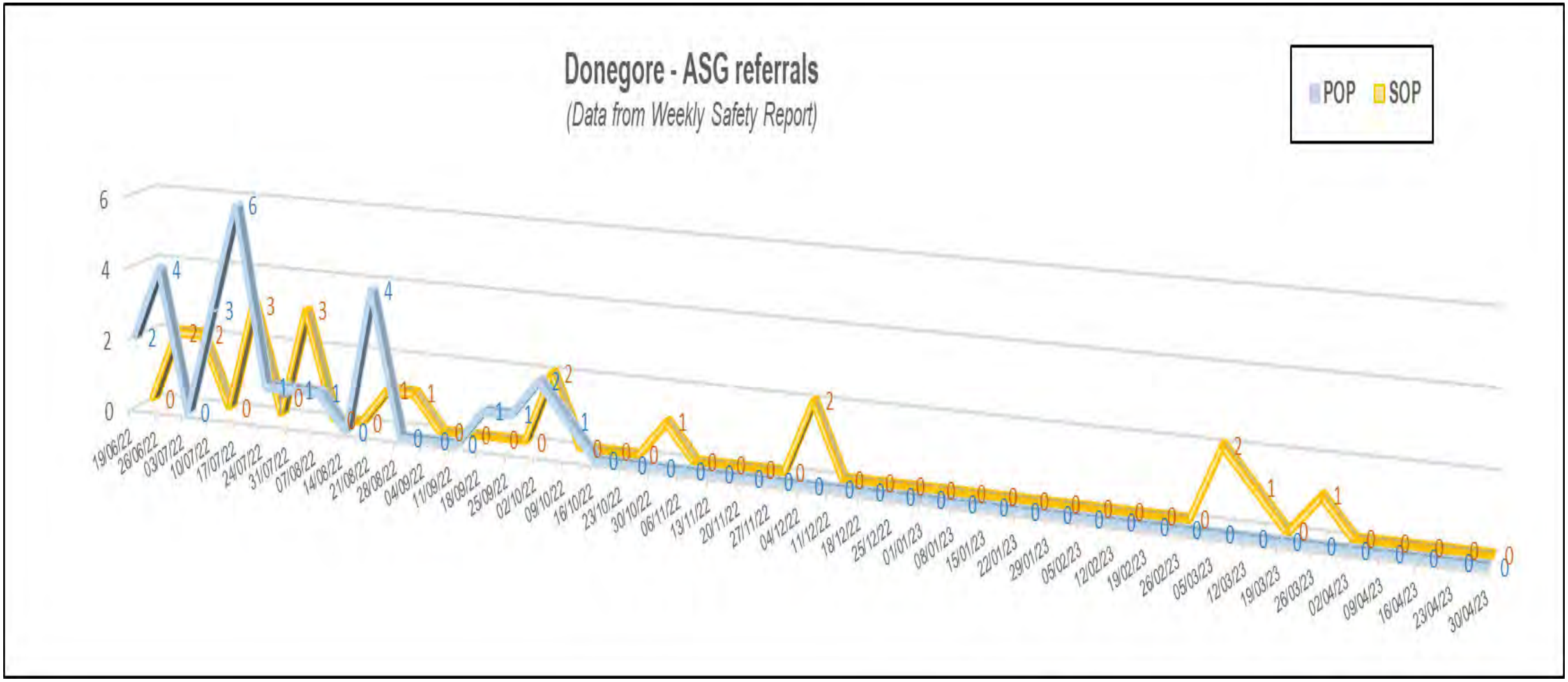

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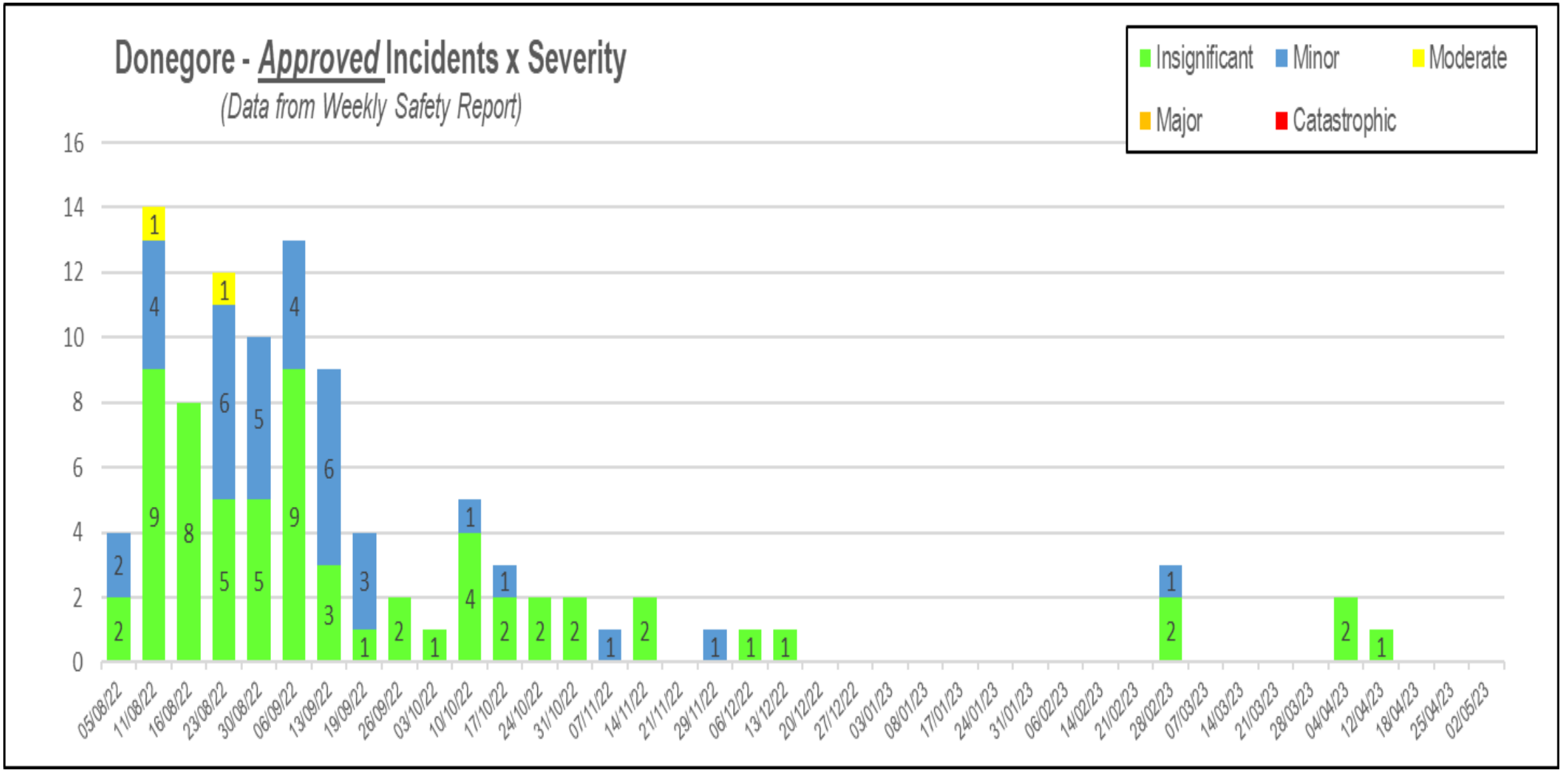
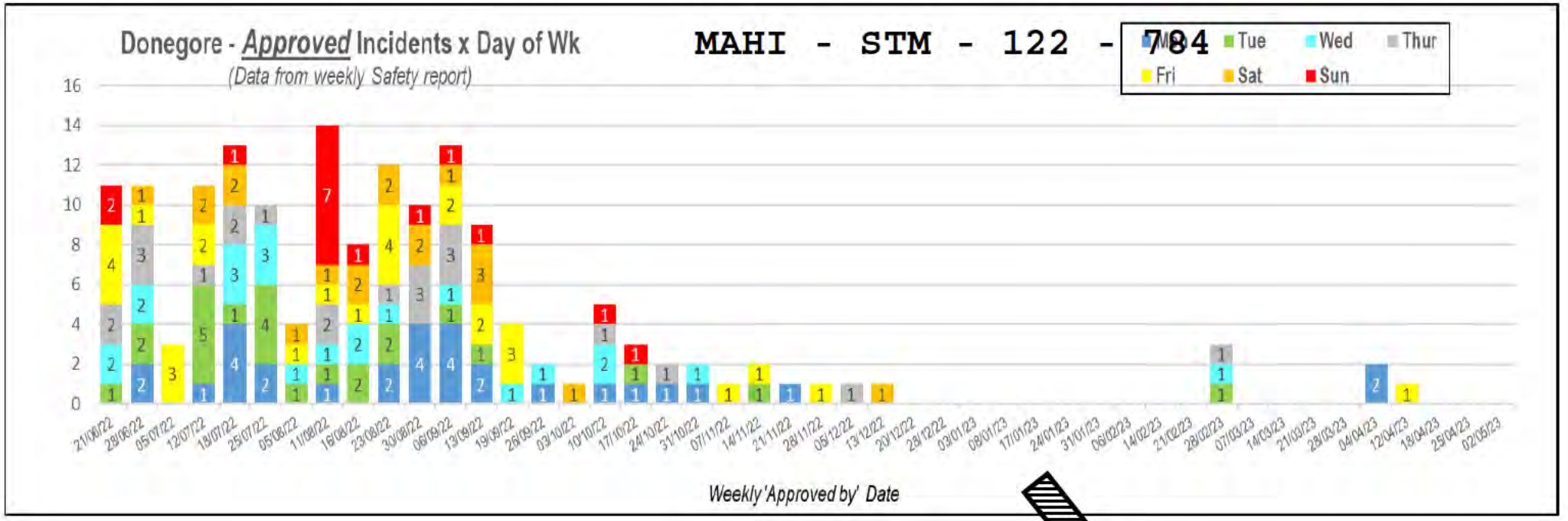
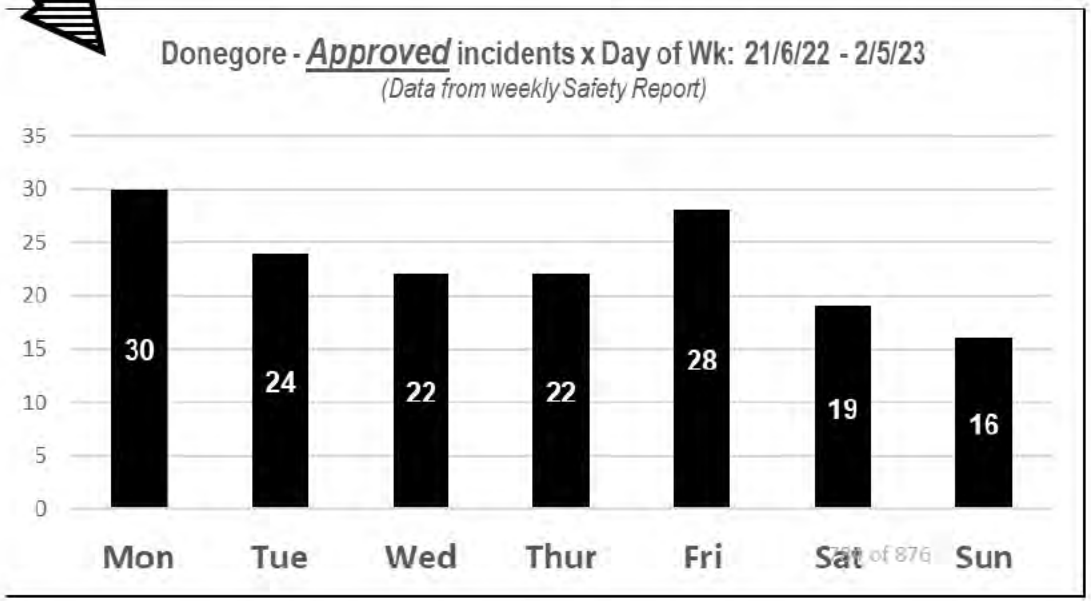



Donegore - Approved Incidents x Day of Wk
(Data from weekly Safety report)
Mon
Tue
Wed
Thur
Fri
Sat
Sun
Weekly 'Approved by' Date


Donegore - Approved incidents x Day of Wk: 21/6/22 - 2/5/23
(Data from weekly Safety Report)
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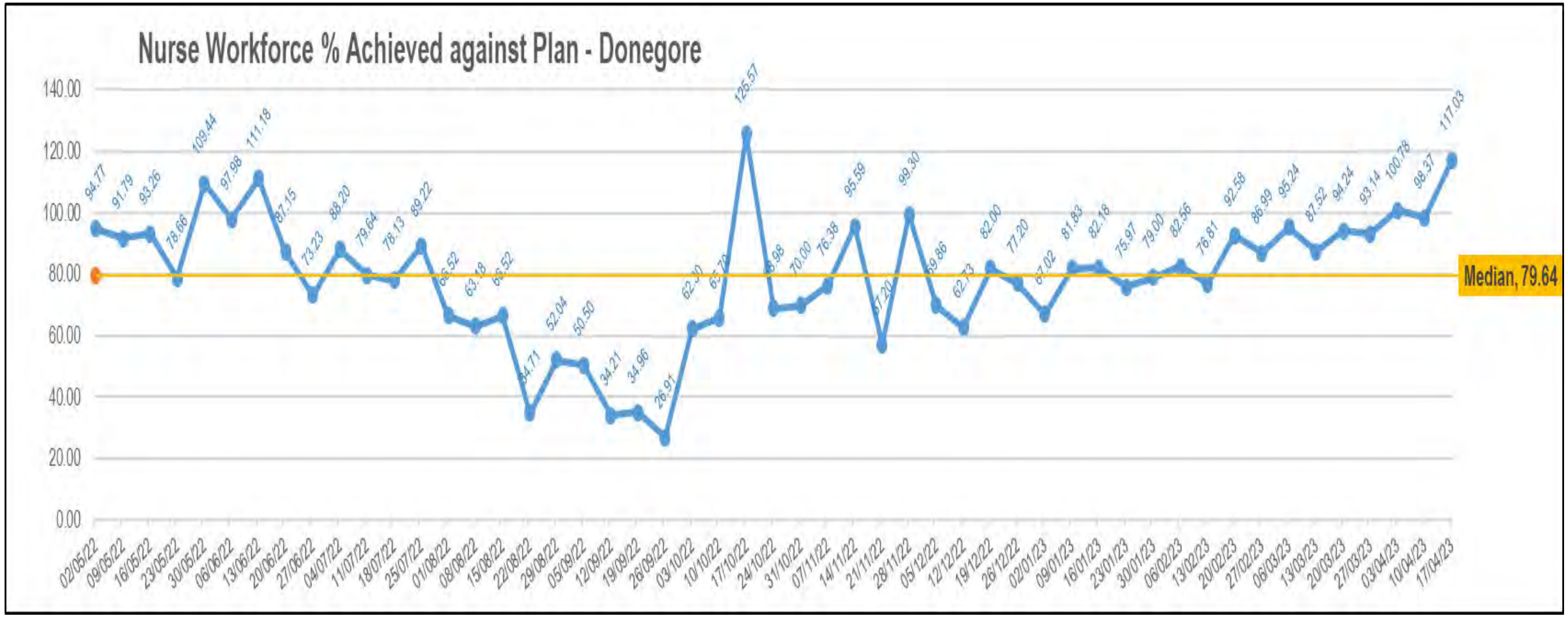
24
22
22
28
19
16
Mon
Tue
Wed
Thur
Fri
Sat
Sun

MAHI - STM - 122 - 785



Safety dashboard

Monthly report 2023

The context led to Meeting with Senior team and CNO in August 2022 & Even better if……

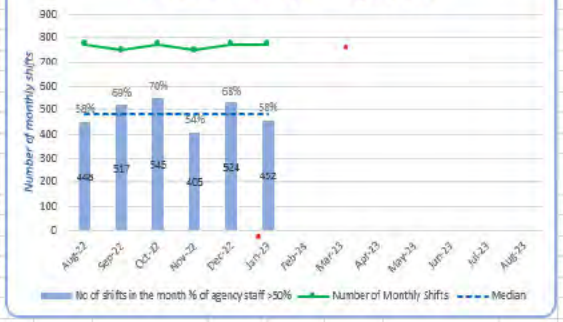
- Review of weekly safety report to inform monthly dashboard
- Demonstrating the story over time
- The report can be shared monthly with the DOH
- The report covers key areas:

Workforce, safety, education & training, leadership and patient numbers and experience

Workforce

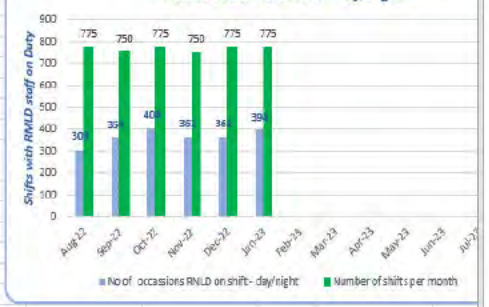
MAH - Month End Workforce
(WTE by Profession)

MAH - Shifts covered by > 50% Agency Staff



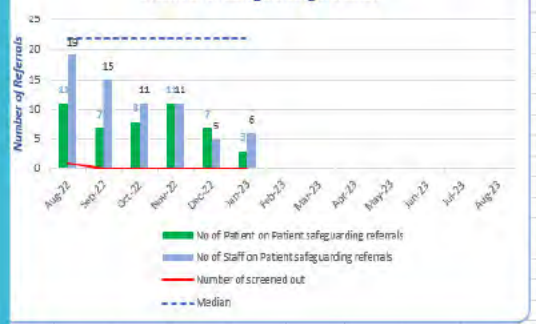
Occasions <2 WTE Reg Nurses per shift/ward

Occasions RNLD on Shift - day/night

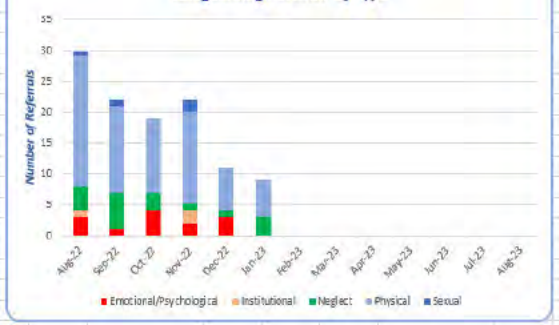


Safety

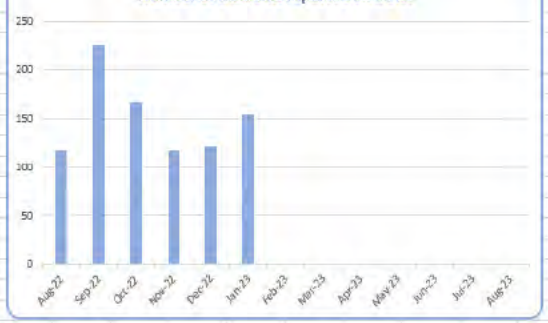
Number of Safeguarding Referrals



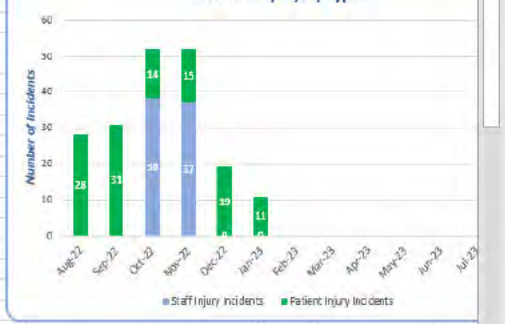
Safeguarding Referrals by Type



Number of Incidents reported on Datix



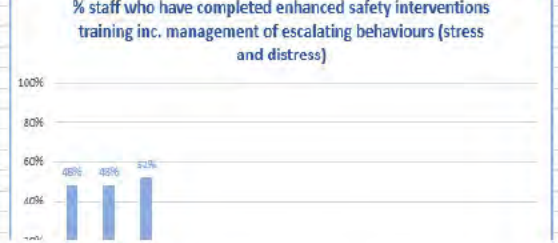
Incidents by Injury Type



Education and Training

% of staff who have completed induction to clinical area

% staff who have completed enhanced safety interventions training inc. management of escalating behaviours (stress and distress)



% Staff who have completed ASG Level 2 Training

Awaiting update from Paul McCabe

Safety picture& Governance structure "where does the dashboard sit ?"

Daily safety huddles

Weekly live governance at ward and site level

Weekly overview from CLT

Weekly safety report

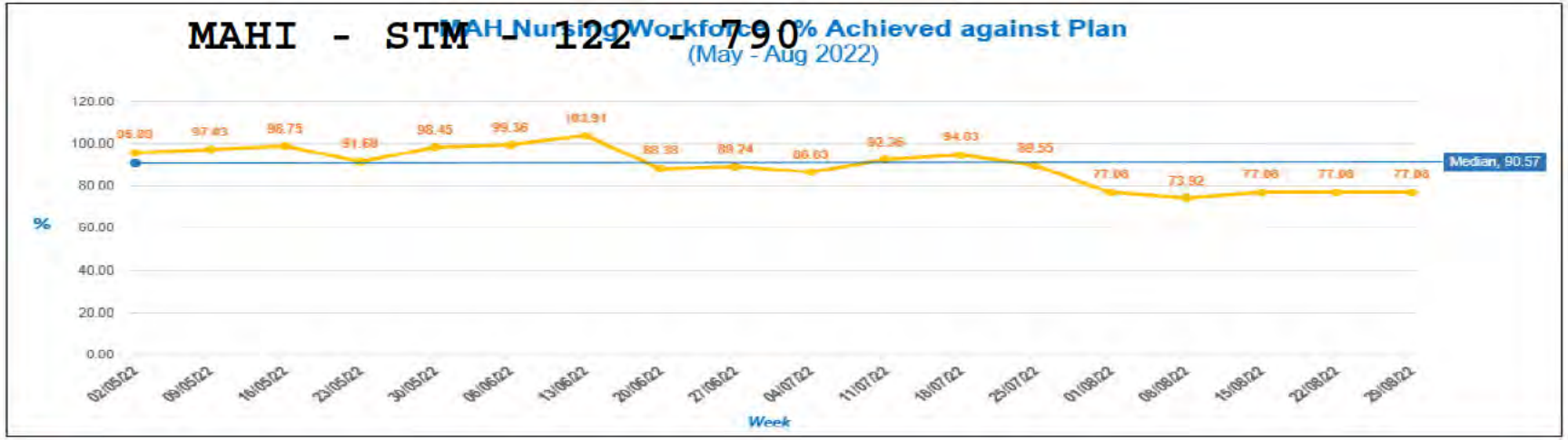
Monthly safety dashboard to report the overall picture and issues for escalation to the DOH

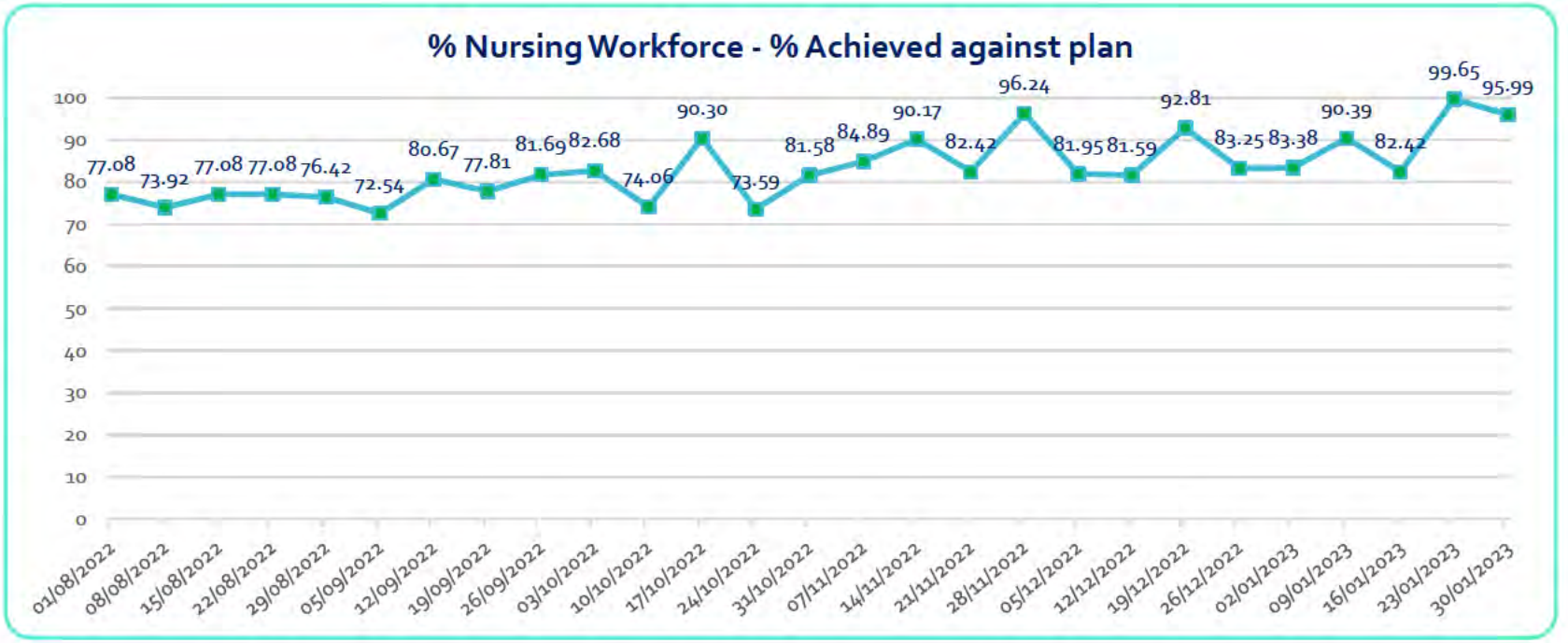
Quality Management system quarterly to Director

&

Bi annually to executive team

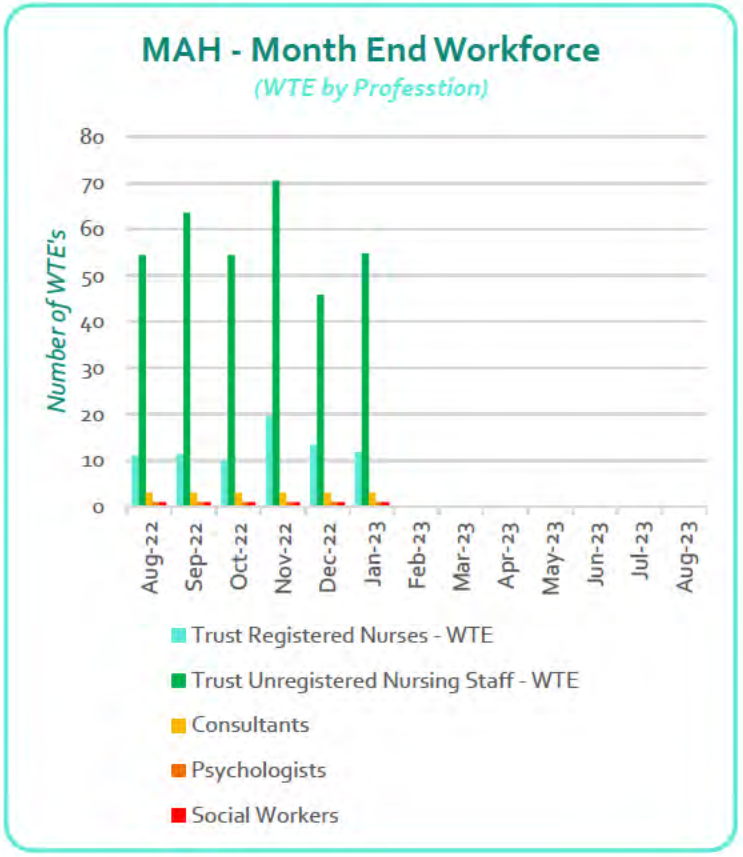
Staffing picture &





Workforce MDT

Current Position



- 3 occupational therapists
- 1 SLT
- 4 PBS
- 23 day care staff
- Nurse consultant
- Reduction in senior nurse assistants
- 1 pharmacist

Safety ASG incidents, restrictive practice complaints and compliments and how we learn

-
- What is this telling us
- Themes trends outcomes and changes
- Reduction from 30 per month to less than 10 last month
- environmental change reduced ASG incidents
- Environmental issues can cause incidents
- Proactive response to prevent ASG
- Safeguarding assurance process on wards, site, to CLT, safeguarding committee and Executive assurance group

- QI to reduce restrictive practice
- Use of seclusion, physical interventions and PRN is measured and presented monthly

- Further work to share learning from complaints and compliments

Education and training

- Improvements
- Safety interventions training increase 48% to 70% which includes ASG awareness and Positive behaviour support
- Upskilling of RMN staff re ID communication relational security and PBS
- Challenges
- Releasing staff of the floor for training but that is improving

Leadership

- 1 Nurse Consultant leading on therapeutic engagement and activity
- Leadership re upskilling , managing learning and development including mandatory training and skills development in learning disability, communication, positive behaviour Support and relational security
- Increase in lead and Senior nurses to enhance nurse role in safeguarding, safety interventions, accelerated resettlement and clear assurance framework for nurses on site
- Increase senior staff over 7 day
- Assurance visits
- Safety quality visits

- Safeguarding assurance group and improved Data Set
- Ongoing listening exercises, staff support/reflective practice sessions and debrief

Real Time Patient Feedback
this is not yes demonstrated on the dashboard

Real Time Patient Feedback Report - Muckamore

Division	Learning Disability	Month	(Multiple Items)	No. Surveyed	4
Ward	Muckamore Cranfield 2	Date	Enter date here		

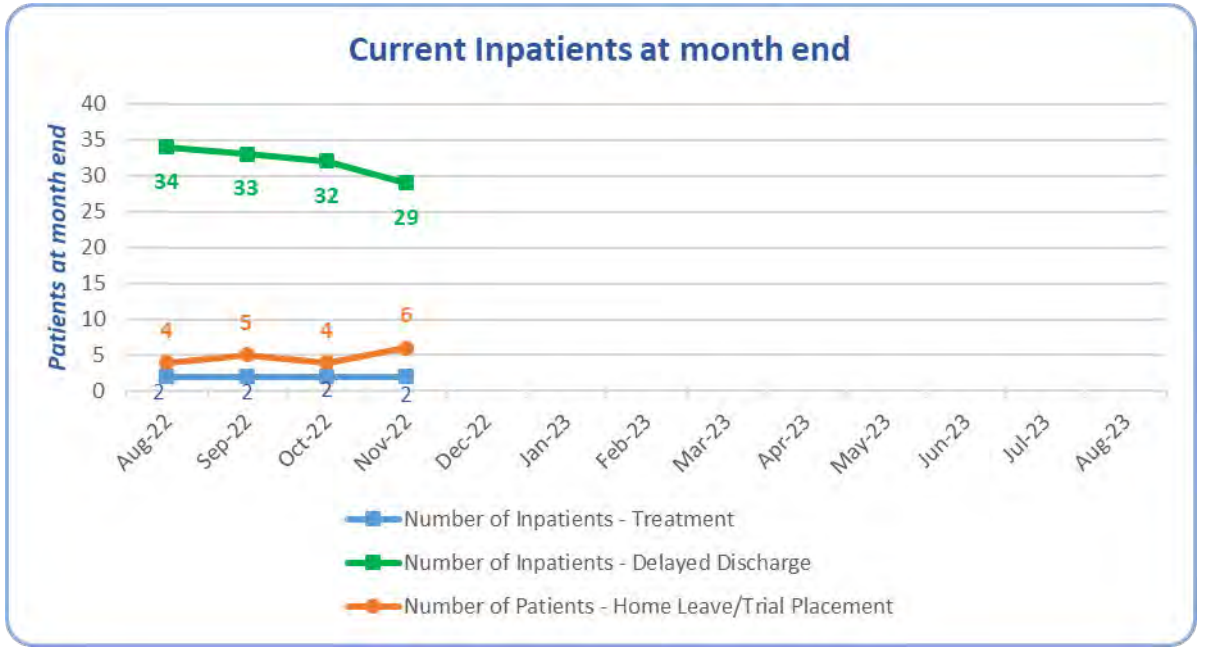
Domain	Domain Score
Consistency & Coordination	9.17
Respect	10.00
Involvement	8.75
Staff	8.33
Cleanliness	10.00
Pain Control	10.00
Medicines	10.00
Noise at night	10.00
Kindness & Compassion	10.00
Friends & Family	10.00
Overall domain score	9.58

Would you tell friends and family good things about the way you have been treated?

Overall Satisfaction 96%

Comments
Muckamore Cranfield 1
08/02/23
I like the staff, they're my friends, I trust Eddie. I like the activities, I do art and painted a canvas. I beat Eddie at Pool. Muckamore is good.

Resettlement



ID Experience

Muckamore Abbey Hospital Update

7 **Carer Forum sessions held since December 2021 – every family invited**

- 1 Carer attended regularly
- Bryson House and PCC represented
- Independent facilitator and MAH management attend
- Carer Survey had **70%** return rate and over **80%** wanted forum to continue

"I enjoy receiving information that I can read at my own convenience and follow up with staff if needed".

50+

STAFF TRAINED

Ongoing Introduction to PPI

25 **Focused calls with families**

Adult Safeguarding Questionnaire offered to all families following an investigation from May 2022
3 people participated and feedback shared with Adult Safeguarding Dept to help improve practice

130

CARERS

On email distribution list for LD Involvement
+20 since previous report

FUTURE PLANS

- Continued engagement with carers
- Family engagement events with CLT December 2022 and January 23 will continue bi-monthly
-

id	name	Job title	specialty_2010	base location	audit title	date reg
3183	Arun Subramanian	SpR	Muckamore Operations & Nursing	Muckamore Abbey Hospital	Rapid Tranquilisation for Patients with Learning Disabilities	28/07/2009
3235	Dr D Hughes	Consultant Psychiatrist	Muckamore Operations & Nursing	Muckamore Abbey Hospital	Antipsychotic Monitoring	30/10/2009
3458	Chris Southwell	Dr	Acute Services	Muckamore Abbey Hospital	Dementia in People with Learning Disabilities	23/08/2010
3495	Dr Paula McLorinan	Consultant Psychiatrist	Supported Living and Day Care	Muckamore Abbey	Audit of the resettlement process (Mallow Ward)	05/10/2010
3663	Dr Damien Hughes	Doctor	Primary Care	Muckamore Abbey Hospital	Audit of admission and discharge process in Cranfield	05/04/2011
3760	Dr Ronan Kehoe	Doctor	Muckamore Operations & Nursing	Muckamore Abbey	Physical Examination Equipment Audit	22/07/2011
3893	Janet MacPherson	Consultant		Muckamore Abbey Hospital	Audit of Benzodiazepine use in kilead ward	12/01/2012
4333	Dr Lisa Montgomery	Locum appointed specialist		Muckamore	Prescribing high dose & combination antipsychotics in adult wards	08/05/2013
4532	Dr Colin Milliken	Clinical Director / Consultant		Muckamore Abbey Hospital	Use of Levels of Observation at Muckamore Abbey Hospital	22/01/2014
4602	Shelley Crawford	Lead OT	Occupational Therapy	Muckamore	An evaluation of the OT resettlement service at Muckamore- Service User feedback	20/03/2014
4605	Siobhan Keating	Consultant Forensic Psychologist	Psychological Services	Muckamore (950 46467)	Non-staff support available to Forensic patients in Muckamore Abbey / Belfast Community Forensic LD services	20/03/2014

4623	Katie Carson	Occupational Therapist	Occupational Therapy, Physical Health & Disability	Muckamore	An evaluation of the OT breakfast club	07/04/2014
4703	Heather McFarlane	Clinical Lead LD OT Resettlement	Occupational Therapy	Muckamore	Service Evaluation of Occupational Therapy in Resettlement of LD Patients from Muckamore (Staff feedback)	03/07/2014
4708	Kathryn Carson	Occupational Therapist	Community Treatment & Support	Muckamore Abbey Hospital	Healthy lifestyle audit	08/07/2014
4738	Michael Creaney	Safeguarding Officer		Muckamore	Patient, Carer & Staff Understanding and Implementation of the Adult Safeguarding Process	04/09/2014
5020	Heather McFarlane	Clinical Lead OT Resettlement	Allied Health Professionals, Occupational Therapy	Muckamore Abbey	Effectiveness of a community partnership healthy living programme for those with learning disabilities	02/09/2015
5035	Katie Carson	Occupational Therapist	Community Treatment & Support	Muckamore Abbey Hospital	Sensory modulation room use audit	22/09/2015
5388	Damien Hughes	Consultant Psychiatrist		Muckamore Abbey Hospital	Audit of PRN Benzodiazepine	28/10/2016
5389	Damien Hughes	Consultant Psychiatrist		Muckamore Abbey Hospital	Kardex Audit	28/10/2016
5425	Carole Wilson	ST5		Muckamore	Implementation of Safety Briefings in Muckamore Abbey Hospital	19/12/2016
6012	Joannae Dougherty	Consultant	Psychological Services	Muckamore	Seclusion Record Audit	04/09/2019
6247	Siobhan Keating & Frances Caldwell	Consultant Forensic	Psychological Services	Muckamore Abbey Hospital	An audit of the incidence of trauma and adversity in the life experiences of inpatients with an intellectual disability and forensic history.	09/10/2020

KARDEX AUDIT

Helen Morgan

Overview

- Method of data collection and questionnaires
- Results
- Particularly poor areas
- Areas for improvement

Questionnaire

LOGO

Medicine Prescription and Administration Record

NSV Code

Name of Trust

Record: _____ of _____

Rewritten on (date): _____

Allergies / Medicine Sensitivities

THIS SECTION MUST BE COMPLETED

Date	Medicine (generic) / allergen	Type of reaction e.g. rash	Signature

OR

No Known allergies ☐ Please tick

Signature: ..... Date: .....

Write in CAPITAL LETTERS or use addressograph

Surname: .....

First Names: .....

Hospital no: .....

DOB: .....

Check identity

Hospital: .....

Ward: .....

Consultant: .....

Date of admission: .....

Weight (Kg)	Height (cm)	Date

Requirements for Prescribing and Administration

THIS SECTION MAY BE USED TO HIGHLIGHT KEY POINTS FROM USE AND CONTROL OF MEDICINES, APRIL 2004

Once Only Medicines and Pre-medications (Includes administration under Patient Group Direction)

Prescription						Administration		
Date	Medicine	Dose	Route	Time to be given (24 hour clock)	Signature	Given by	Time given (24 hour clock)	Pharmacy

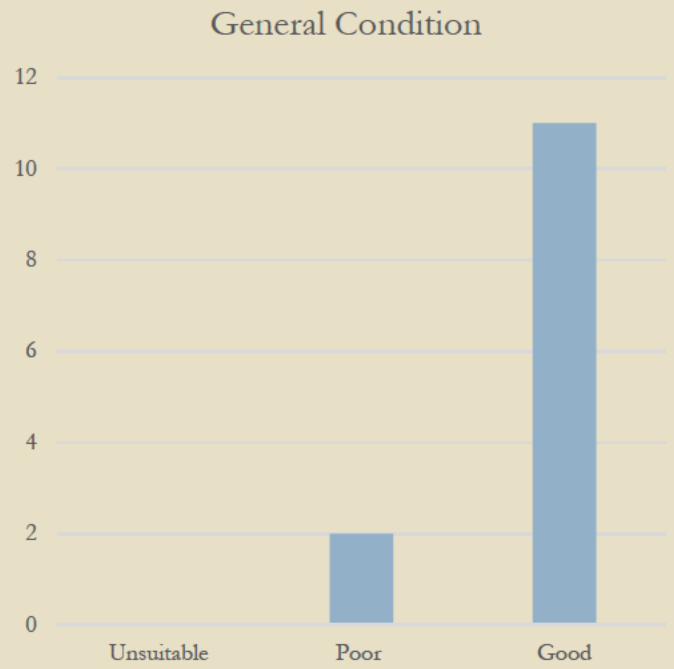
AS REQUIRED MEDICINES

Check for allergies / medicine sensitivities

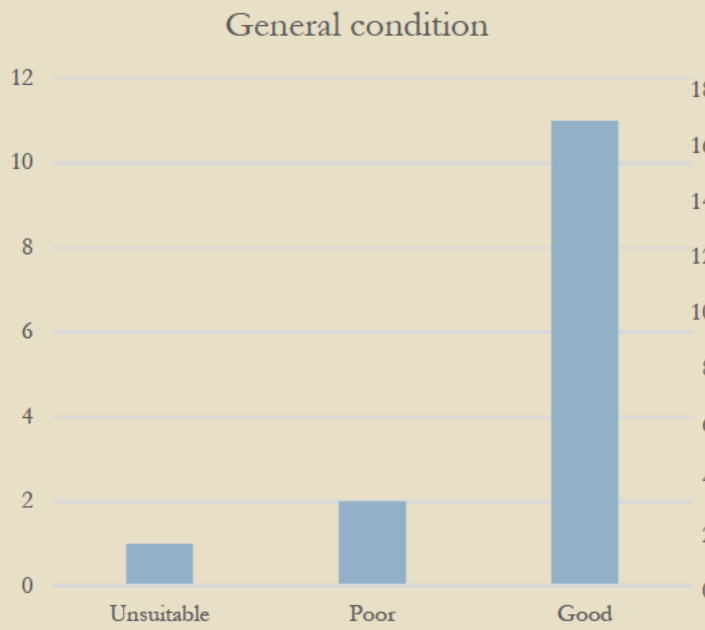
Medicine	PARACETAMOL			Start Date 12.12.05	Date	12/12	12/12					
Dose	1g	Route PO	Freq. (max) 4-6 hourly	Stop Date	Time	1600	2200					
Special Instructions / Directions	MAX 4g/24 HOURS			Signature	Dose / Route	1g PO	1g PO					
Signature	B Getwell	Print Name B Getwell		Pharmacy	Given by	KW	RL					
Bleep	2222											
Medicine	ZOPICLONE			Start Date 12.12.05	Date	12/12	13/12					
Dose	7.5mg	Route PO	Freq. (max) NOCTE	Stop Date	Time	2200	2200					
Special Instructions / Directions	HOSPITAL ONLY			Signature	Dose / Route	7.5mg PO	7.5mg PO					
Signature	B Getwell	Print Name B Getwell		Pharmacy	Given by	RL	RL					
Bleep	2222											
Medicine	CYCLIZINE			Start Date 12.12.05	Date	12/12						
Dose	50mg	Route PO/IV	Freq. (max) 8 HOURLY	Stop Date	Time	1800						

General Condition

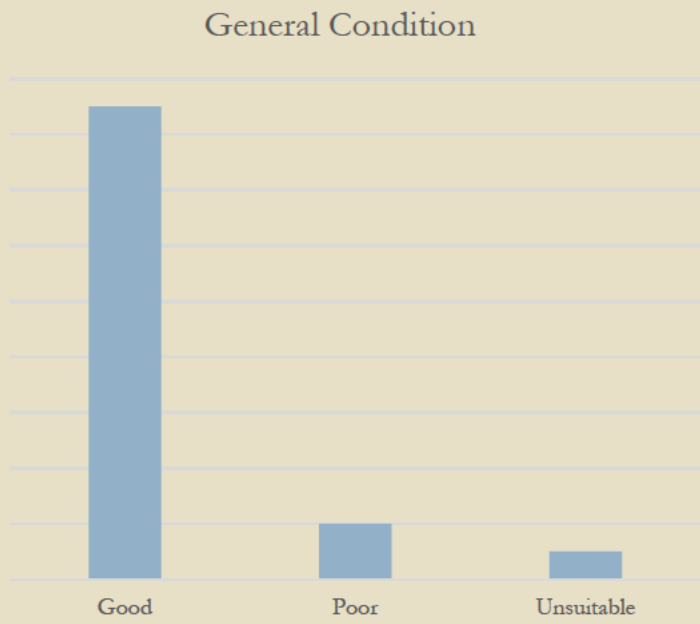
Cranfield Men



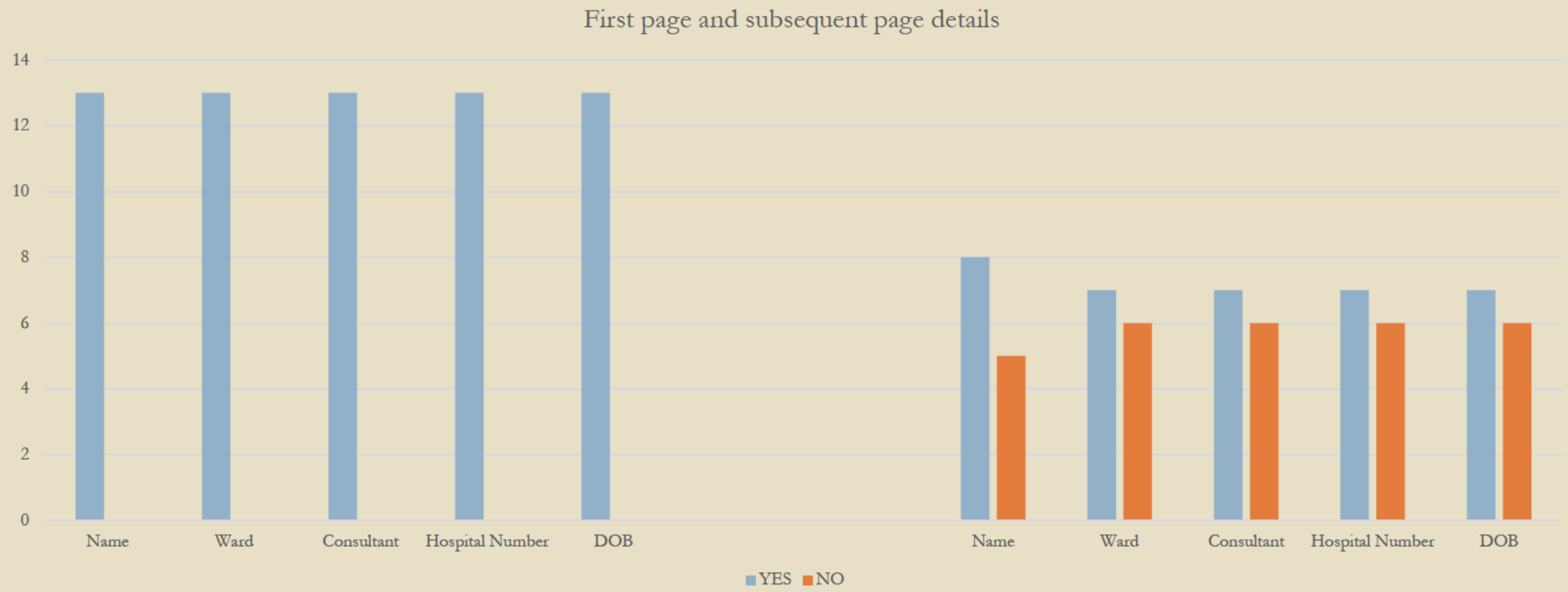
Cranfield Women



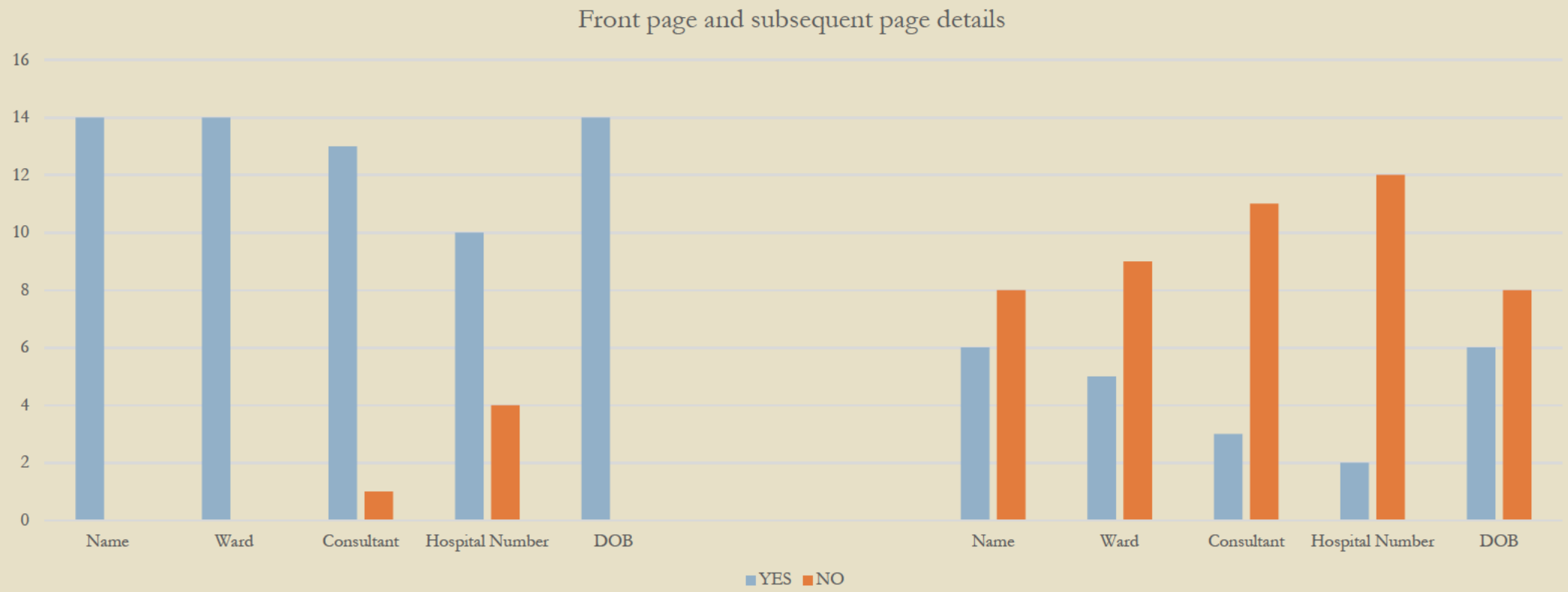
Killead



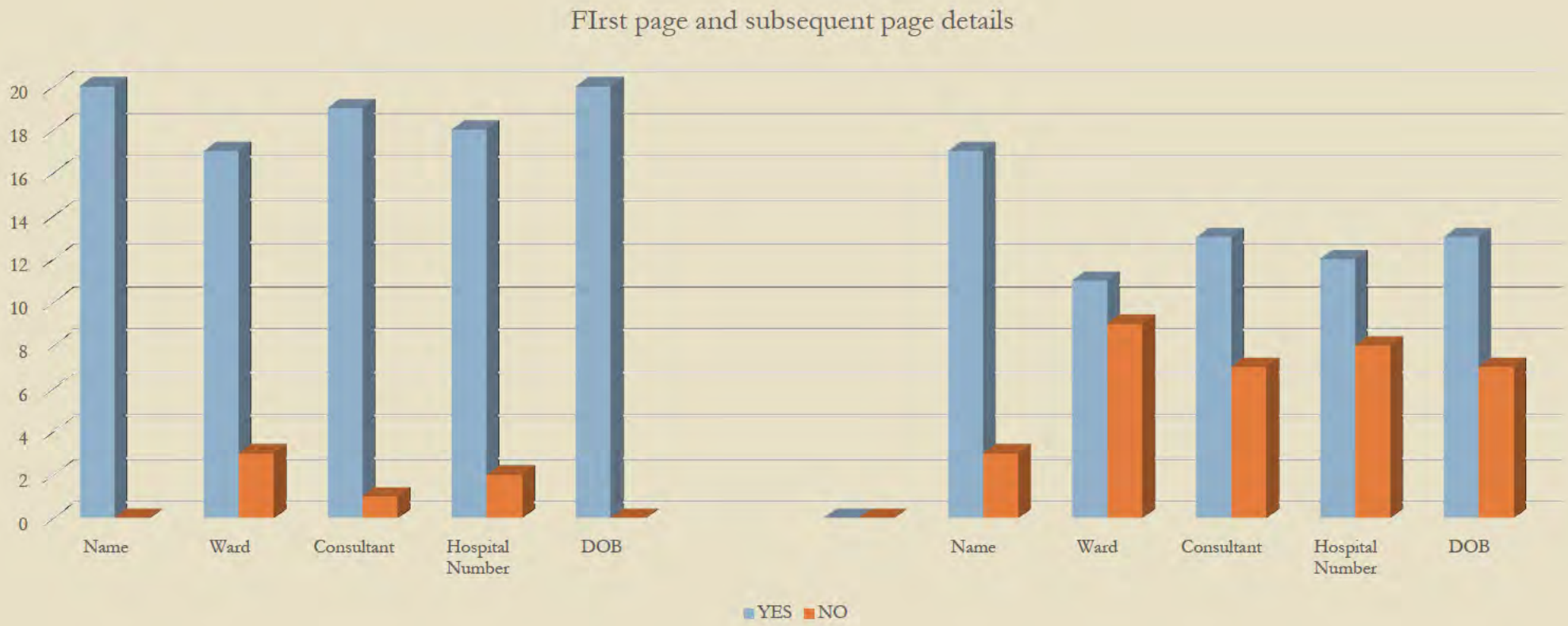
Front and Subsequent pages- Cranfield Men



Front and Subsequent Pages- Cranfield Women



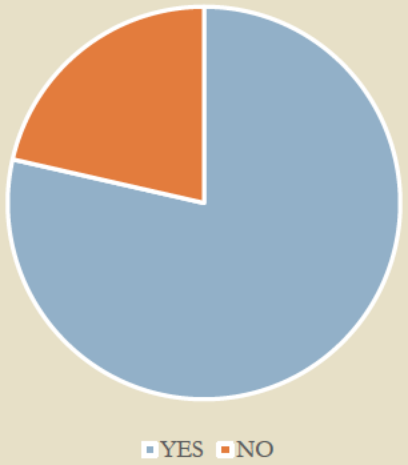
Front and Subsequent Pages- Killead



Allergies

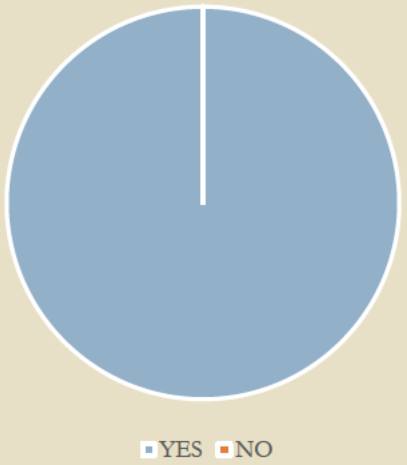
- Cranfield Women

Allergies recorded correctly



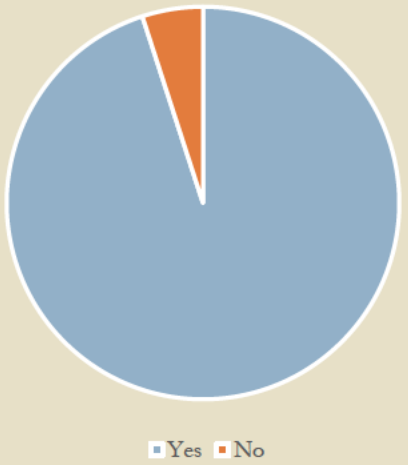
Cranfield Men

Allergies recorded correctly

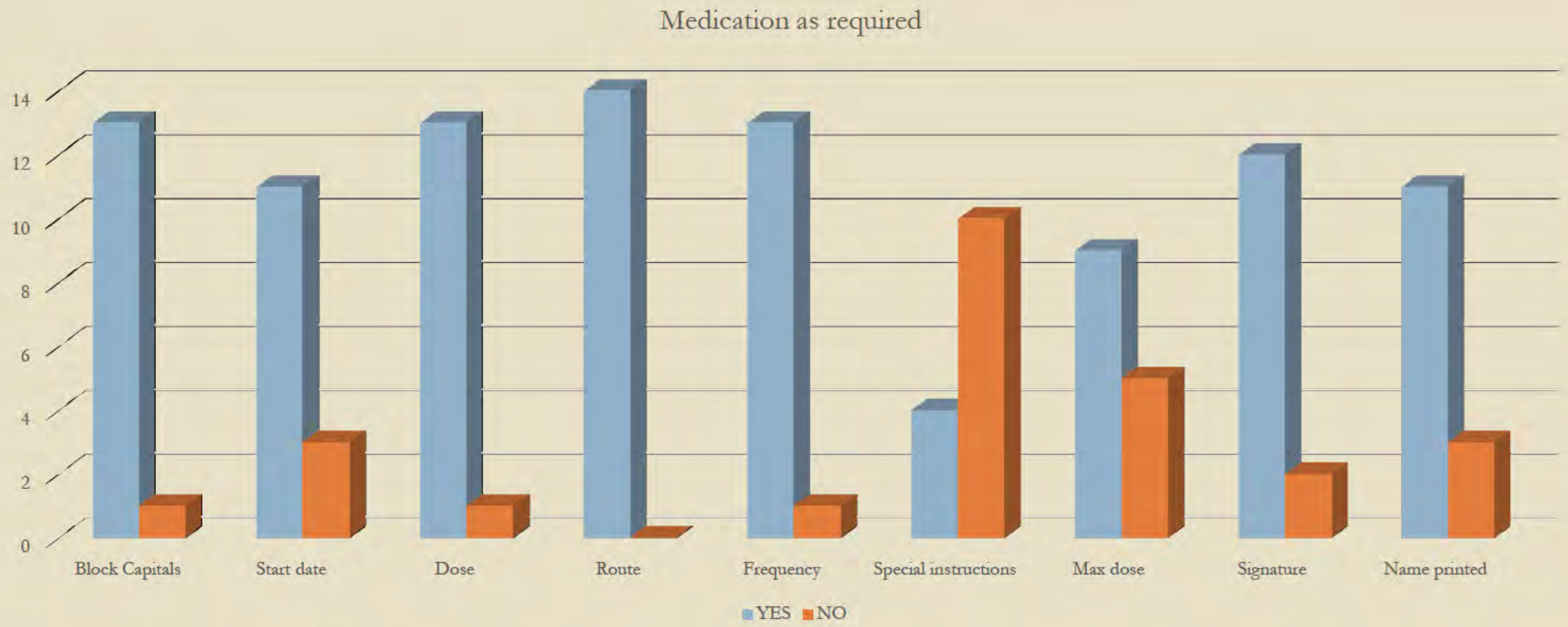


Killead

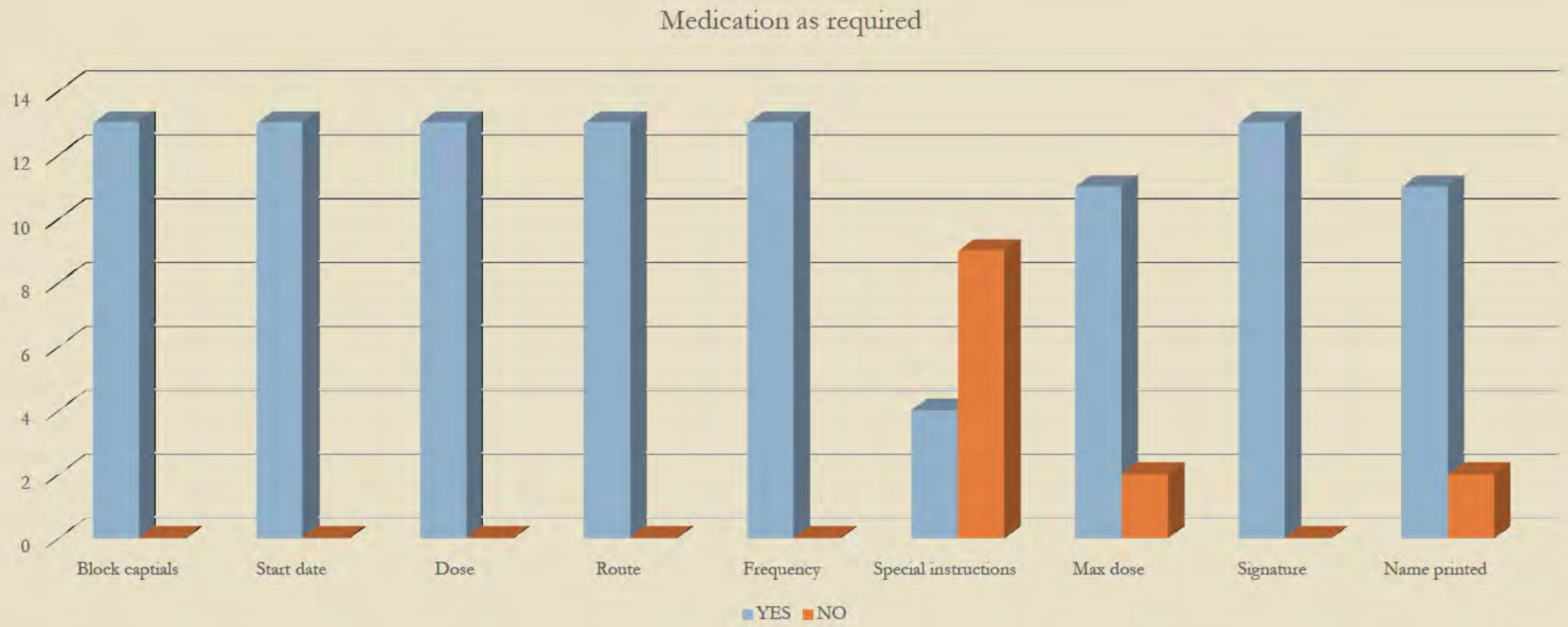
Allergies recorded correctly



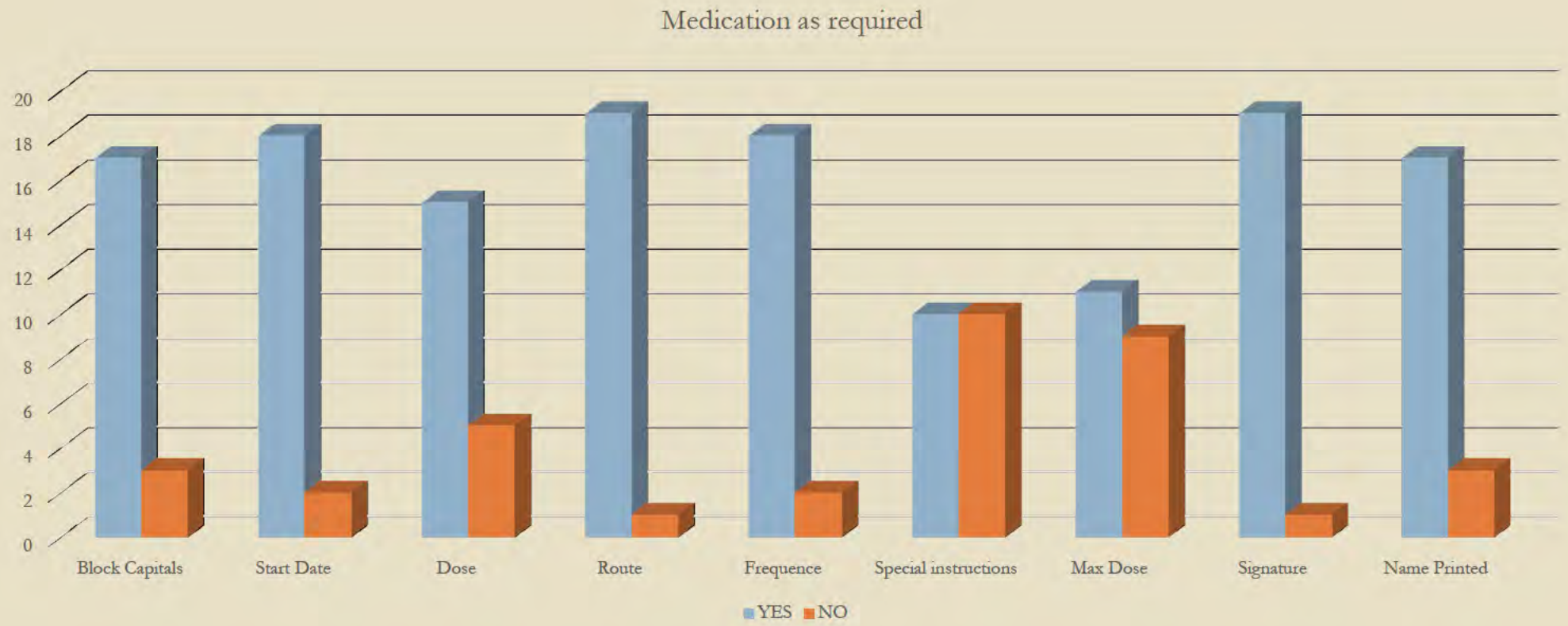
Medication as required- Cranfield Women



Medication as required- Cranfield Men



Medication as required- Killead

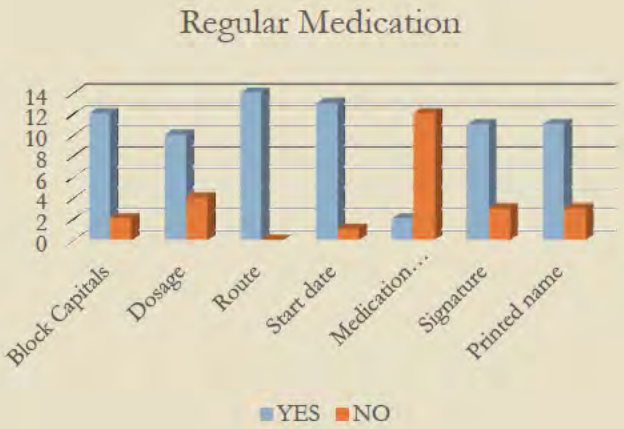


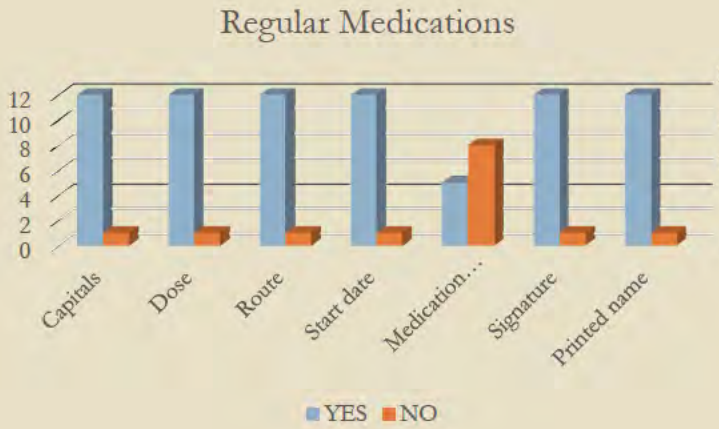
Regular Medications

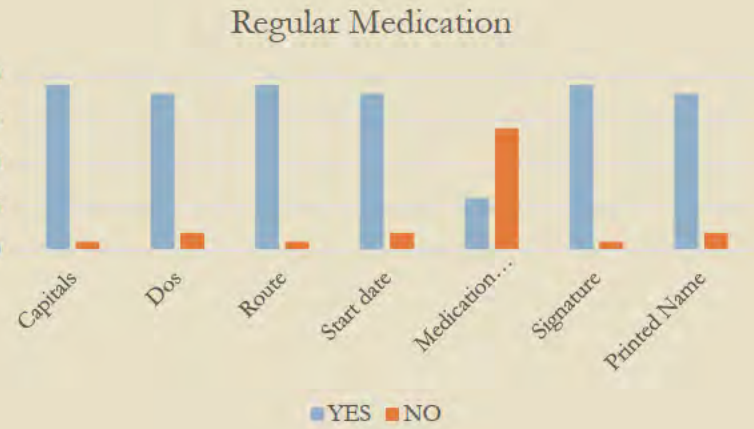
- Cranfield Women

Cranfield Men

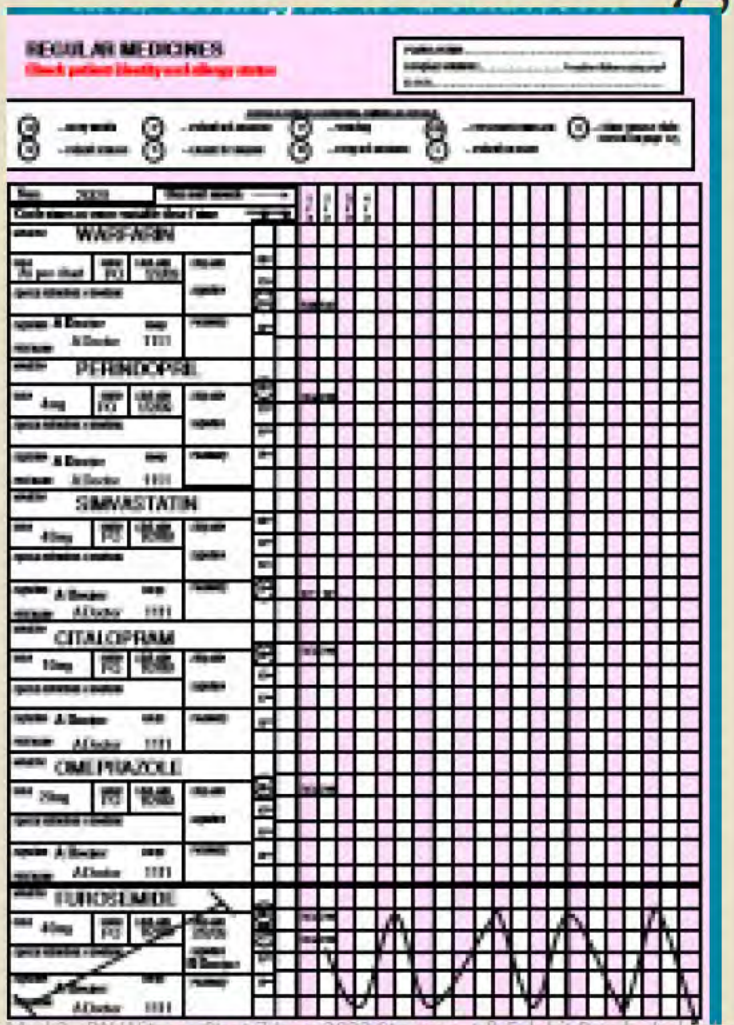
Killead

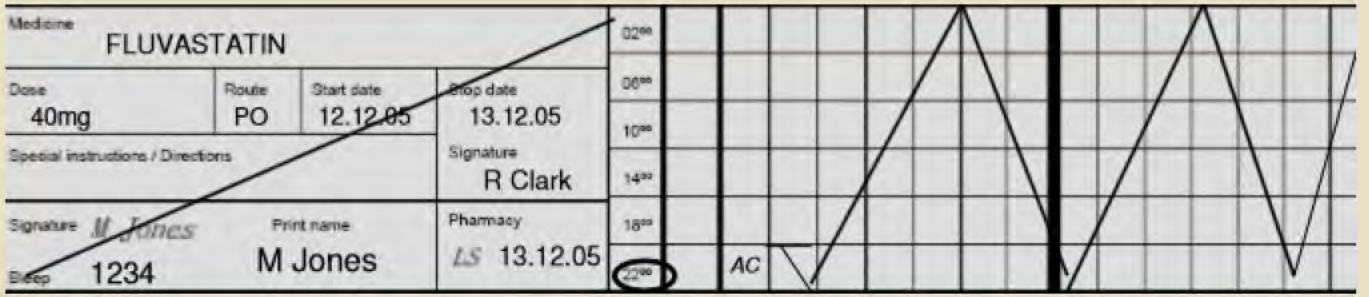






Discontinuing Medication





Areas for improvement

- Handwriting
- Special instructions, Max dose in 24 hours, Medication reconciliation
- Discontinuing medication

References

- Errors on a handwritten Cardex: Is it time for a change? A Rijal,1 K Gautam2 and AS Rijal3 Nepal Med Coll J 2011; 13(4): 267-271
- Long Stay In-patient Medicine Prescription and Administration Record ('kardex') Northern Ireland Medicines Governance team
- WHO good prescribing guide

Thank you for listening

- Any questions?

Queen's University Belfast

Belfast Health and Social Care Trust
caring supporting improving together

Kardex Audit

MUCKAMORE ABBEY HOSPITAL

Pauline McKenna

Third year medical student

Overview

- Method of data collection
- Results
- Comparable results
- Areas for improvement

Method of data collection

Criteria

- General condition
- Front page
- Subsequent pages
- Allergies
- Medication as required (PRN)
- Regular medication
- Discontinuing medication

Results

General condition?

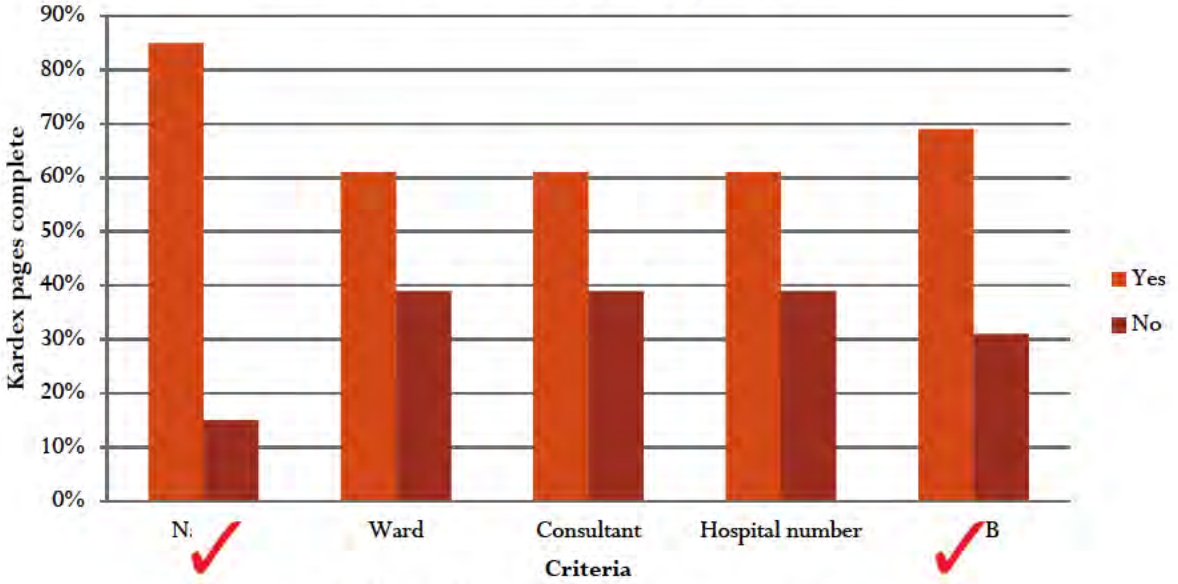
- Cranfield 1 92%
  - Only one kardex was poor
- Killead100%

Results

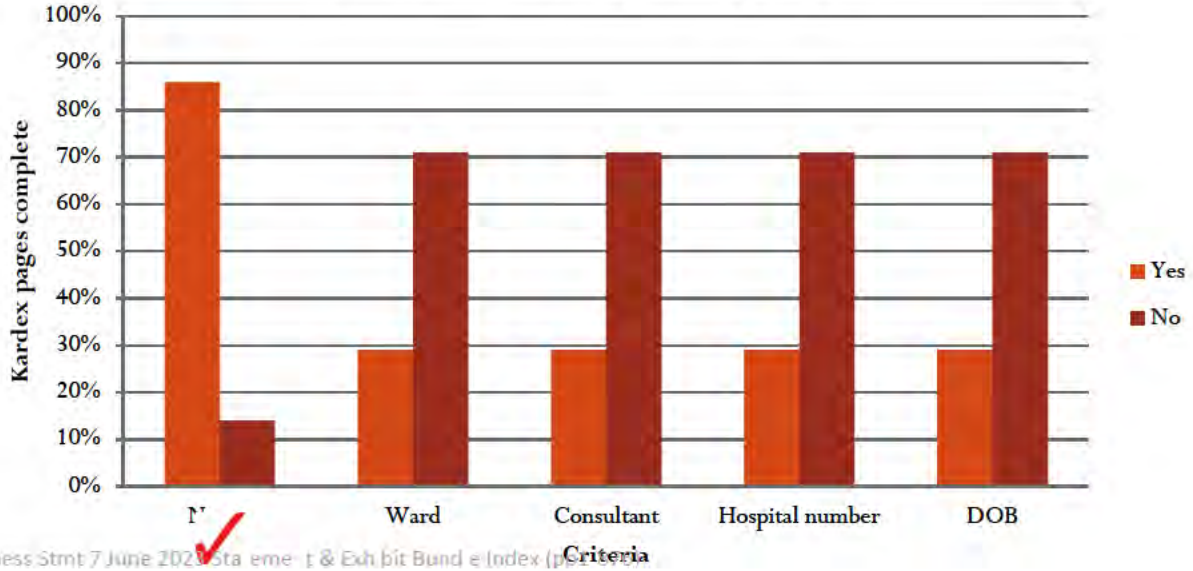
Front pages?

- Cranfield 1
  - 100% name, ward, DOB, consultant and hospital number
- Killead
  - 100% name, ward, DOB
  - 90.5% consultant and hospital number

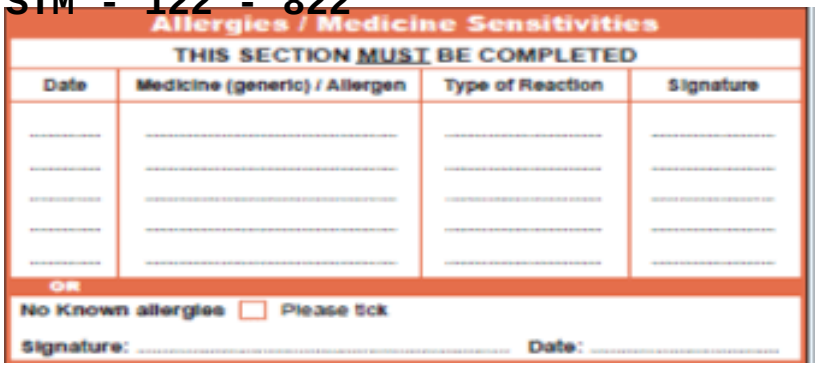
Cranfield- subsequent pages



Killead- subsequent pages



Results



Allergies / Medicine Sensitivities

THIS SECTION MUST BE COMPLETED

Date	Medicine (generic) / Allergen	Type of Reaction	Signature

OR

No Known allergies ☐ Please tick

Signature: ..... Date: .....

Allergies?

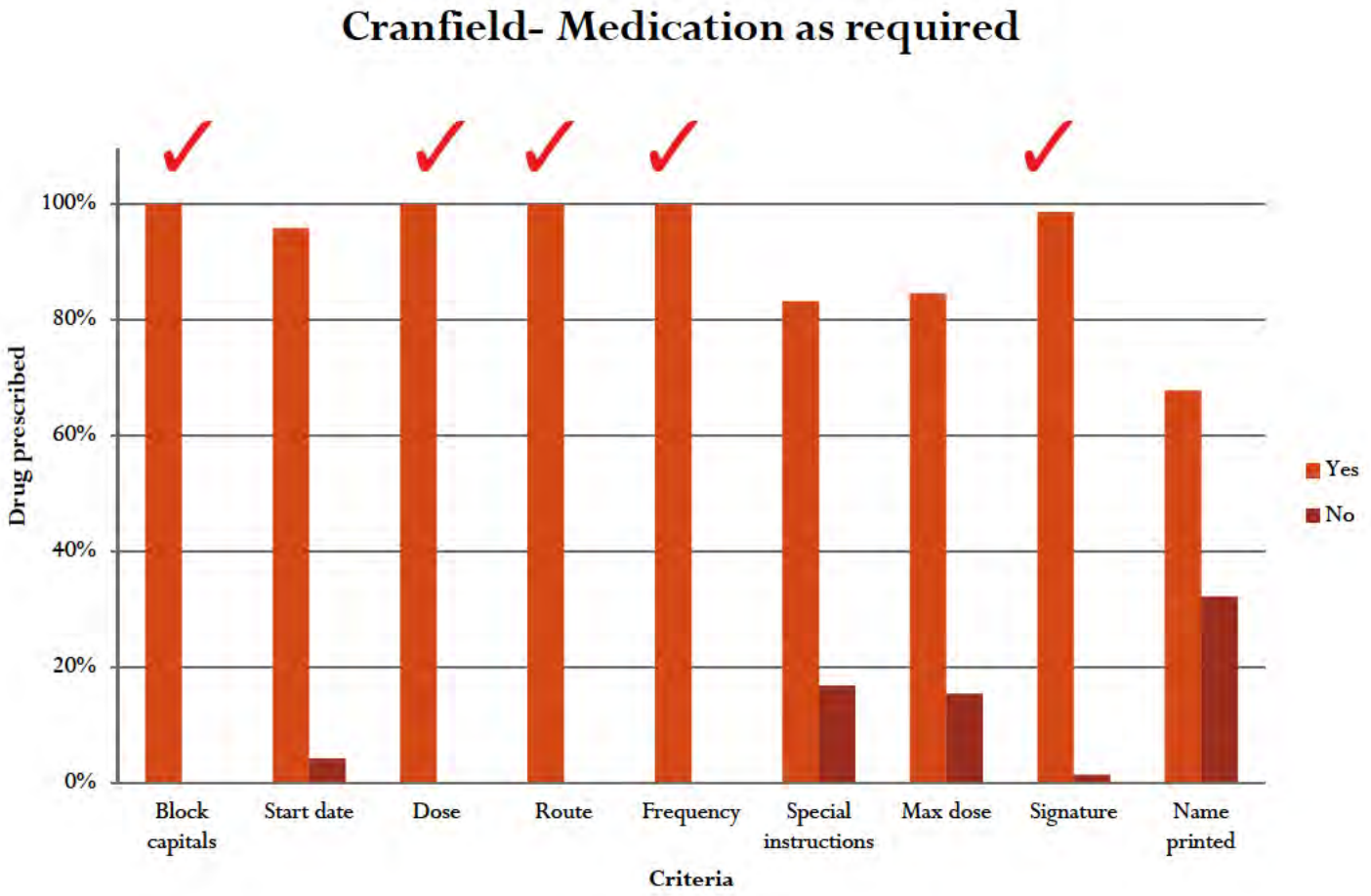
- Cranfield 1
  - 100% filled in and recorded correctly

⚠ 13 allergies for 5pateints not on electronic notes

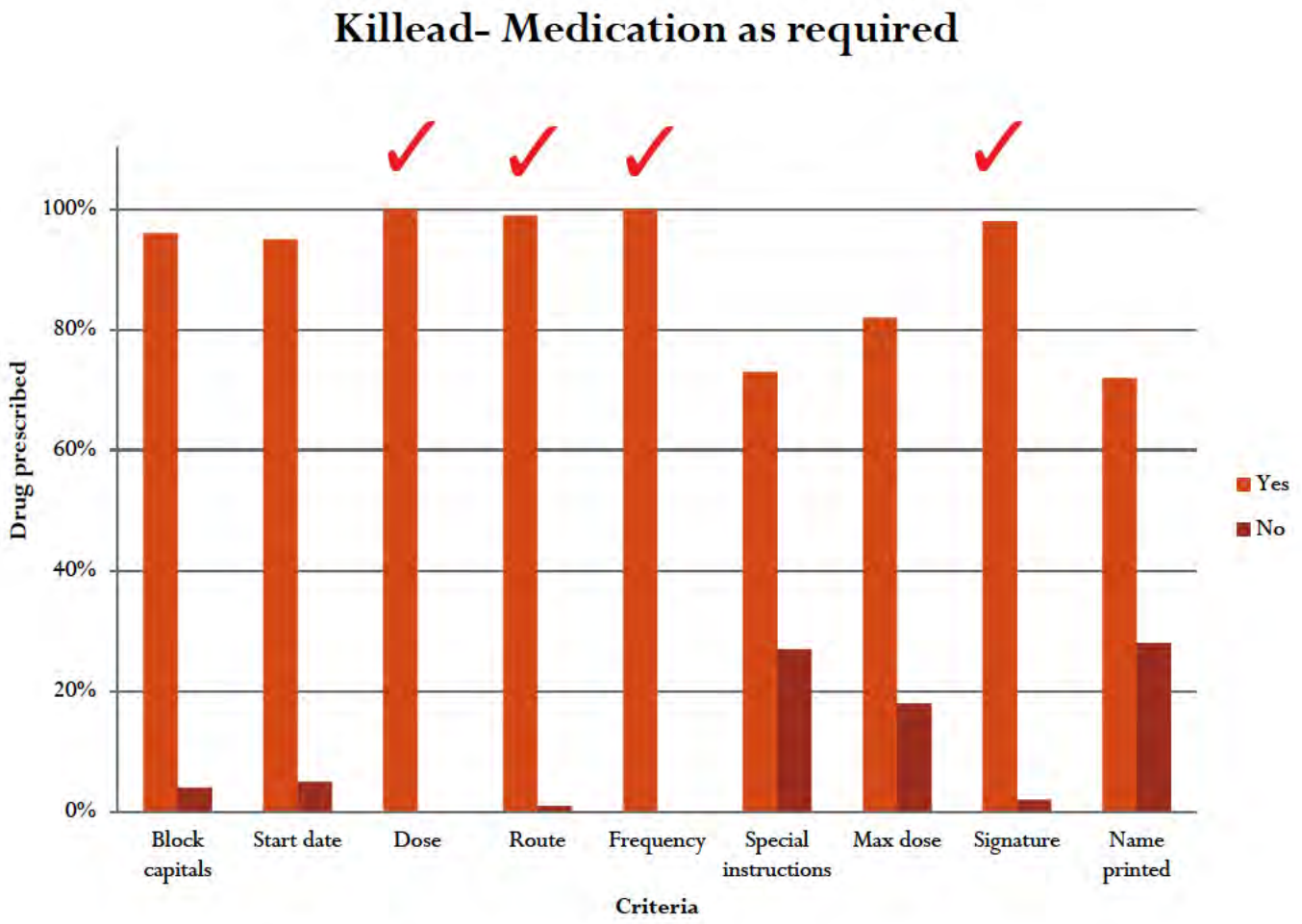
- Killead
  - 100% filled in but 2 patients filled incorrectly

⚠ 15 allergies for 9patients not on electronic notes

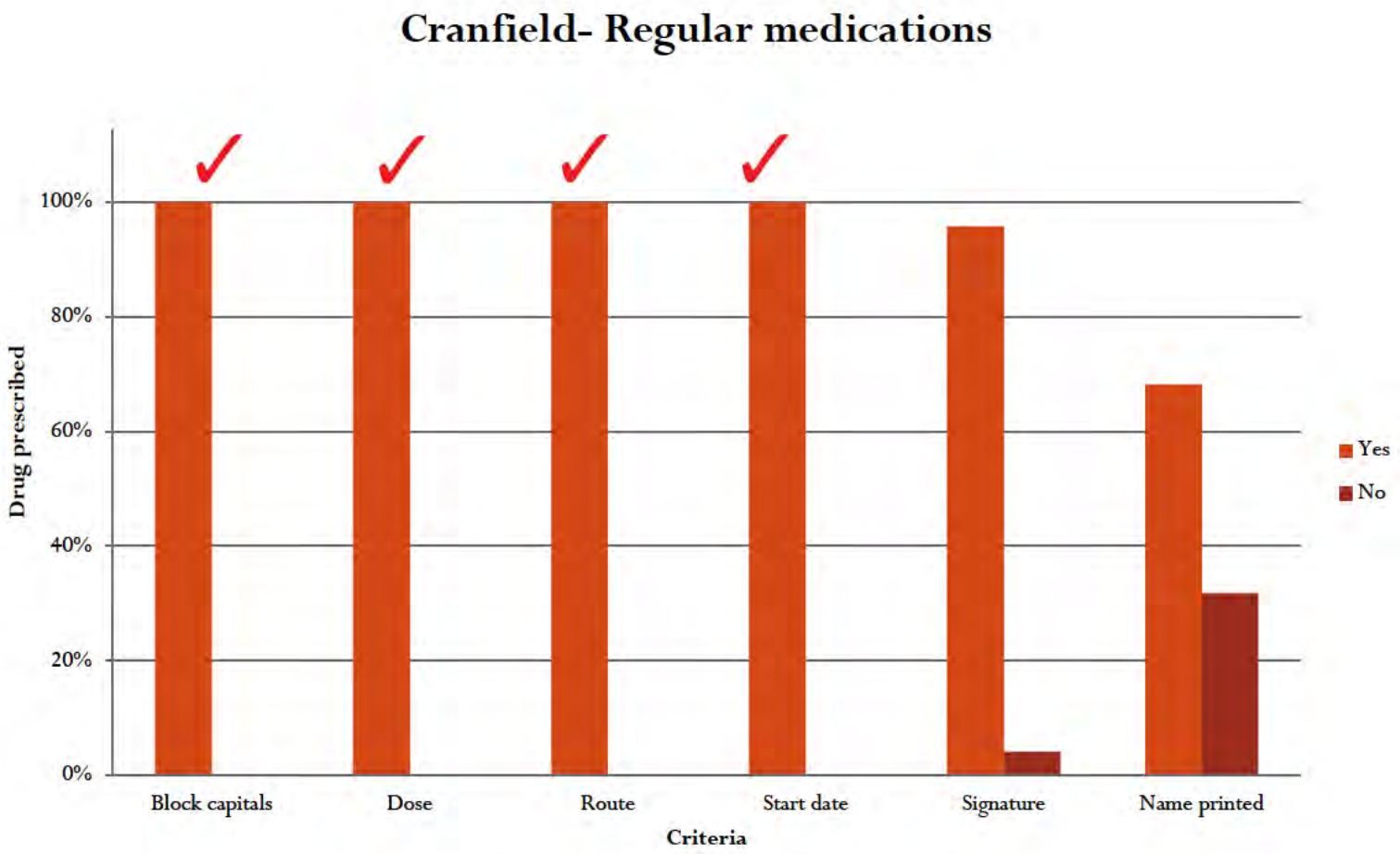
Results


Cranfield- Medication as required
100%
80%
60%
40%
20%
0%
Drug prescribed
Block capitals
Start date
Dose
Route
Frequency
Special instructions
Max dose
Signature
Name printed
Criteria
Yes
No

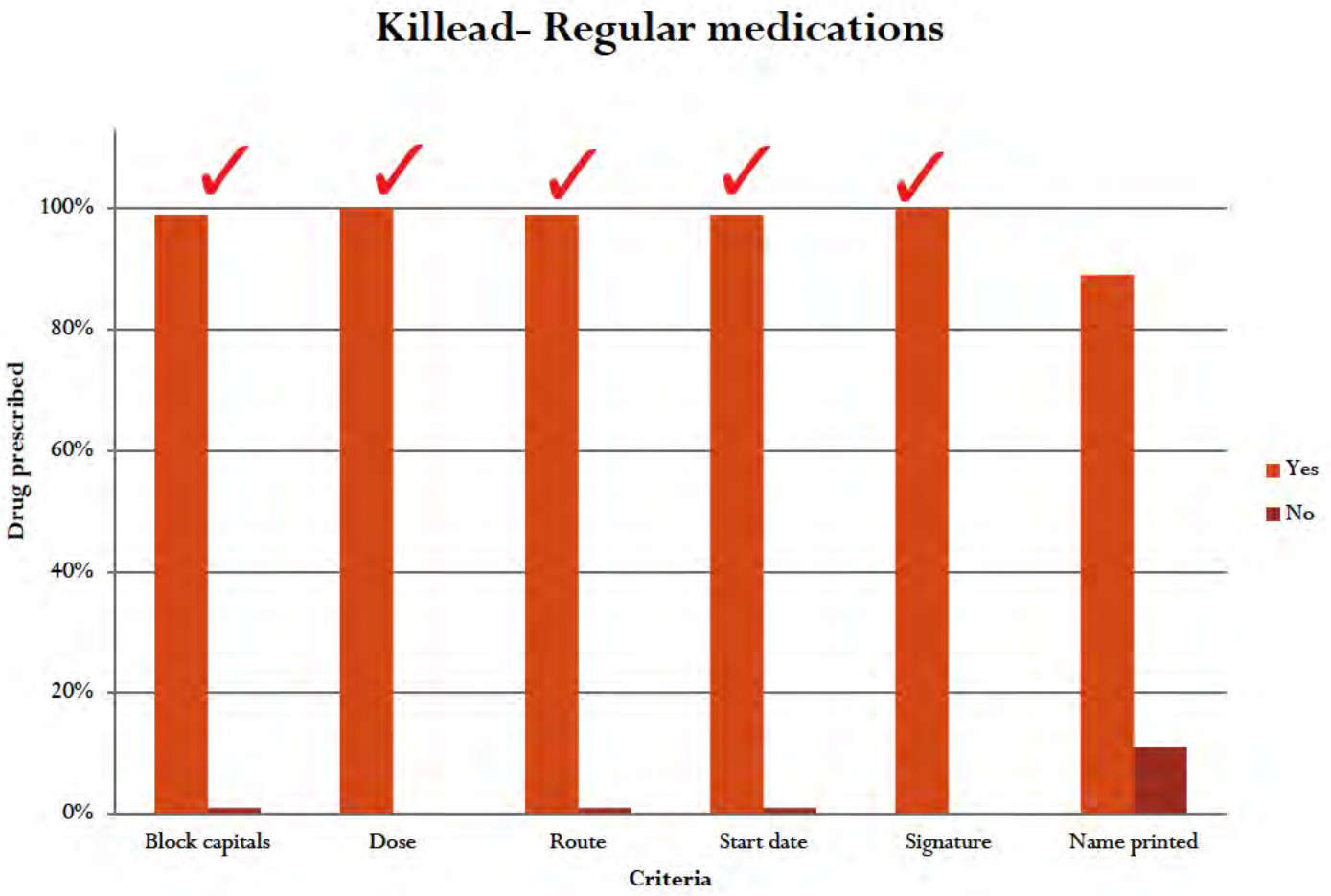
Results


Killead- Medication as required
✓
✓
✓
✓
100%
80%
60%
40%
20%
0%
Drug prescribed
Yes
No
Block capitals
Start date
Dose
Route
Frequency
Special instructions
Max dose
Signature
Name printed
Criteria

Results


Cranfield- Regular medications
100%
80%
60%
40%
20%
0%
Drug prescribed
Block capitals
Dose
Route
Start date
Signature
Name printed
Criteria
Yes
No

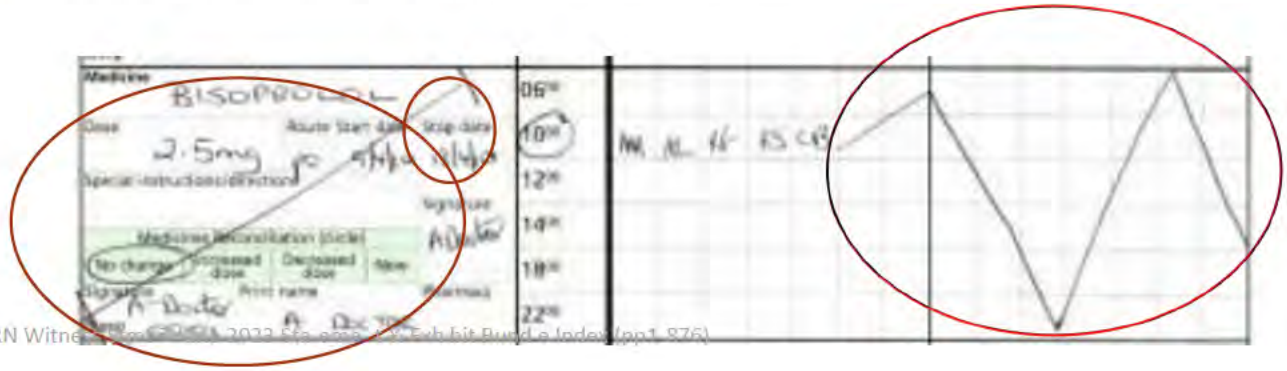
Results


Killead- Regular medications
100%
80%
60%
40%
20%
0%
Drug prescribed
Block capitals
Dose
Route
Start date
Signature
Name printed
Criteria
Yes
No

Results

Discontinued medications?

- Cranfield 1
  - 1 drug had no stop date
  - 1 not scored off correctly
- Killead
  - 11 no stop date
  - 5 not scored off correctly



Comparison of results in re-audit

General condition of the kardex

Front pages filled more accurately

Subsequent pages have more names on them

More allergies recorded correctly

Block capitals, dose, route and frequency.

Subsequent pages have less details

Max dose in 24hours, printed name

Areas of improvement

- Fill out all information in the **subsequent pages** of the kardex
- Update PARIS on the **allergies** of the patients
- For PRNs ensure to fill out **special instructions, max doses**
- Ensure you sign AND **block print** your name
- **Handwriting**
- Need to ensure **stop date** is recorded on kardex and is scored off appropriately

References

- Errors on a handwritten Cardex: Is it time for a change? A Rijal,1 K Gautam2 and AS Rijal3 Nepal Med Coll J 2011; 13(4):267-271
- Who good prescribing guide
- https://www.med.qub.ac.uk/portal/year5/PatientSafetyP5/day3/prescribing/PrescribingHandbookFoundation

Any questions?

6/6/2020

Belfast Health and Social Care Trust

Appendix 1 – Kardex audit form baseline

Kardex audit form

Name of auditor: _____ **Site** _____

Service Group _____ **Clinical Speciality** _____ **Ward** Ardmore **Hospital Site** MAH

Total no. of beds on ward _____

Please review all Kardexes for each ward. Include prescribing/administration entries and pharmacist endorsements in audit data collected. **Use one column for each Kardex, i.e. 2 columns if a patient has two Kardexes in use. See notes regarding data collection. Example results recorded in the first column.**

Data collection:Prescription (General) Q 1-7 are general questions about the kardex and are answered yes or no.
Record total number of medicines on Kardex, include discontinued medicines in the review.

	1	2	3	4	5	6	7	8	9	10	11	Comments – put Kardex number in brackets
Patient identification (Use sequential letters of the alphabet to identify each patient. If a patient has more than one Kardex, enter the same letter in a new column for each Kardex) (Column 1 is an example of patient A with one Kardex	A											
Patient identification	A	A	B	C	D	D	E	F	G	H.	H.	
Prescription (general) 1a. Pt. name, number and DOB on front page	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	
1b. Same on other pages where required Y/N	N	Y	Y	Y	Y		Y	Y	N	Y	Y	
1c. Is the patient <16 years Y/N	N	N	N	N	N		N	N	N	N	N	
1d. Is the patient >60 years Y/N	Y	N	N	N	N		N	N	N	N	N	
2. Weight documented (where relevant to medication) Y/N	N	N	Y	Y	N		Y	N	Y	Y	N	* No weight related meds (A)
3a. Allergy status documented. Y/N	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	
3b. Allergy status signed and dated Y/N	Y	N	Y	Y	Y		Y	Y	Y	Y	Y	* Not dated (A)
3c. Reaction to each allergen noted or recorded as not known Y/N	Y	N	Y	N	Y		N	Y	N	N	N	* Rxn not stated (A)
3d. Medicines prescribed that patient is documented as allergic to Y/N	N	N	N	N	N		N	N	N	N	N	
2e. Medicines administered that patient is documented as allergic to Y/N	N	N	N	N	N		N	N	N	N	N	
2f. Have medicines been administered when the Allergy box is left blank? Y/N	N	N	N	N	N		N	N	N	N	N	

Belfast Health and Social Care Trust

		A	B	C	D	E	F	G	H	H1
4. Ward recorded Y/N	Y	Y	Y	Y	Y	Y	y	y	y	y
5a. More than one current kardex for the patient Y/N	N	N	N	N	Y	N	N	N	y	y
5b. Clearly marked more than 1 kardex Y/N/na	na	Na	N/A	N/A	Y	N/A	N/A	N/A	y	y
6. Year documented on at least one occasion Y/N	Y	Y	Y	Y	Y	Y	y	y	y	y
7a. No. of supplementary charts in use	2	0	0	0	0	0	0	0	0	0
7b. No. of 'additional charts in use' box on front of Kardex ticked (if on kardex).	1	0	0	0	0	0	0	0	0	0
7c Additional Chart Medicine(s) are written in main body in Kardex as appropriate. e.g. clozapine, warfarin or insulin	1	0	0	0	0	0	0	0	0	0
8. Has the kardex been recorded as re-written Y/N	Y	N	N	N	Y	y	y	N	y	y
9. Is VTE risk assessment completed and signed Y/N	N	Y	Y	Y	Y	y	y	y	y	y

Data collection:

Prescription writing Q 8-26, record the number of medications that have the error described, eg sample Q 8a, two medicines had inappropriate abbreviations. It would be useful to state the abbreviations used in the comments section. Record number of medicines prescribed in each section of the kardex, e.g. stat doses, as required, regular medicines

Prescription writing											
10a. **Regular medicines** (No. prescribed)	5	6	13	14	18	14	17	8	12	1	
10b. No of medicines where medicines reconciliation indicated (i) Pre-admission dose	1	04	1	6	0	3	0	0	0	0	
(ii) Increased dose	1	0	0	2	0	1	0	2	5	0	
(iii) Decreased dose	0	1	0	1	3	0	1	0	1	2	
(iv) New	1	3	1	33	1	7	5	0	1	0	
11a. Frequency not prescribed ~~(include both non-injectable & injectable)~~ (number of medicines)	1	0	0	0	0	0	0	0	0	0	
11b.Circled times do no match frequency (No. of errors)		0	0	0	0	0	0	0	0	0	
12. No. of high risk medicines prescribed? (See Appendix 2)	2	-	1		0	3	2	1	1	0	
		A	B	C	D	E	F	G	H	H1	
13a. As required medicines (No. prescribed)	3	8	9	10	5	12	7	8	3	0	
26b. No of medicines where medicines reconciliation indicated (i) No change/Pre-admission dose	9	0	0	0	0	1	0	0	0	N/A	
(ii) Increased dose	1	0	0	0	0	0	0	0	0	N/A	

PRN

(E) (12) Clobazam, perampanel. Lacosamide.

(F) (12) Lamotrigine levetiracetam.

(G) (12) Lamotrigine

(H) (12) Tegretol.

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		A	B	C	D		E	F	G	H	H1
(iii) Decreased dose	2	3	0	0	1		0	0	1	0	N/A
(iv) New	1	4	0	2	1		7	0	1	0	N/A
26c. ~~F~~Maximum frequency not completed	1	0	0	0	0		0	0	0	0	N/A
26d. Maximum dose not completed		0	0	0	0		1	0	0	0	N/A
13a. **Regular** Depot medicines (No. prescribed including discontinued)	8	0	0	1	0		0	0	0	0	N/A
9b. No of regular non-injectable medicines where medicines reconciliation indicated: (i) Pre-admission dose	0	N/A	N/A	0	0		3	0	0	0	N/A
25a. Stat doses (No. prescribed)	3	0	0	2	0		0	0	1	0	N/A
25b. Time to be given not specified	1	0	0	0	0		0	0	1	0	N/A

~~Data collection:~~

~~Administration~~ ~~Q 27 Record the number of days that do not have date AND month entered.~~
~~Count the total number of regular doses for which administration should have occurred or been documented as omitted up to the point of audit.~~
~~Q29-32 Enter the total number of doses that have the error described.~~

		A	B	C	D		E	F	G	H	H1
~~**Administration**~~											
~~27. Date and month NOT entered~~	3	0	0	0	0	0	0	0	0	0	0
~~**28 Number of regular doses prescribed for administration**~~	~~28~~	10	20	26	725		378	924	391	895	33
~~29. Regular doses NOT signed as given or code recorded for omission, i.e. blank box~~	5	0	0	1	1		2	0	0	1	0
~~30. Stat doses NOT documented as given or omitted.~~	1	0	0	0	0		0	0	0	0	N/A

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(c) - peptac 1/6/2020.

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~~31. Doses given in excess of prescribed frequency of regular medicine.~~	~~1~~	0	0	0	0		0	0	0	0	N/A
~~32. Doses given in excess of maximum frequency of~~	~~0~~	0	0	0	0		0	0	0	0	N/A

Any additional comments – please note Kardex and question number

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Appendix 1 – Kardex audit form baseline

Kardex audit form

Name of auditor: _____ **Site** _____

Service Group _____ **Clinical Speciality** _____ **Ward** Ardmore **Hospital Site** _____

Total no. of beds on ward _____

Please review all Kardexes for each ward. Include prescribing/administration entries and pharmacist endorsements in audit data collected. **Use one column for each Kardex, i.e. 2 columns if a patient has two Kardexes in use. See notes regarding data collection. Example results recorded in the first column.**

Data collection:Prescription (General) Q 1-7 are general questions about the kardex and are answered yes or no.
Record total number of medicines on Kardex, include discontinued medicines in the review.

	1	2	3	4	5	6	7	8	9	10	11	Comments – put Kardex number in brackets
Patient identification (Use sequential letters of the alphabet to identify each patient. If a patient has more than one Kardex, enter the same letter in a new column for each Kardex) (Column 1 is an example of patient A with one Kardex	A	H	J									
Patient identification	A	I	J	J								
Prescription (general) 1a. Pt. name, number and DOB on front page	Y	Y	Y	Y								
1b. Same on other pages where required Y/N	N	Y	Y	Y								
1c. Is the patient <16 years Y/N	N	N	N	N								
1d. Is the patient >60 years Y/N	Y	N	N	N								
2. Weight documented (where relevant to medication) Y/N	N	N	N	N								
3a. Allergy status documented. Y/N	Y	Y	Y	Y								
3b. Allergy status signed and dated Y/N	Y	N	N	N								
3c. Reaction to each allergen noted or recorded as not known Y/N	Y	Y	N	N								
3d. Medicines prescribed that patient is documented as allergic to Y/N	N	N	N	N								
2e. Medicines administered that patient is documented as allergic to Y/N	N	N	N	N								
2f. Have medicines been administered when the Allergy box is left blank? Y/N	N	N	N	N								

(I) 30 just signed – not dated.
(I I) " " " "

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4. Ward recorded Y/N	Y	y	y	y										
5a. More than one current kardex for the patient Y/N	N	N	y	y										
5b. Clearly marked more than 1 kardex Y/N/na	na	N/A	y	y										
6. Year documented on at least one occasion Y/N	Y	y	y	y										
7a. No. of supplementary charts in use	2	0	0	0										
7b. No. of 'additional charts in use' box on front of Kardex ticked (if on kardex).	1	0	0	0										
7c.Additional Chart Medicine(s) are written in main body in Kardex as appropriate. e.g. clozapine, warfarin or insulin	1	1	0	0										
8. Has the kardex been recorded as re-written Y/N	Y	y	y	y										
9. Is VTE risk assessment completed and signed Y/N	N	y	y	y										

(I) -pt on clozapine but not ticked on front of kdx. -no addition chart though

Data collection:
Prescription writing Q 8-26, record the number of medications that have the error described, eg sample Q 8a, two medicines had inappropriate abbreviations. It would be useful to state the abbreviations used in the comments section. Record number of medicines prescribed in each section of the kardex, e.g. stat doses, as required, regular medicines

Prescription writing														
10a. **Regular medicines** (No. prescribed)	5	12	15	10										
10b. No of medicines where medicines reconciliation indicated (i) Pre-admission dose	1	0	0											
(ii) Increased dose	1	0	2	0										
(iii) Decreased dose	0	1	0	1										
(iv) New	1	4	1	5										
11a. Frequency not prescribed ~~(include both non-injectable & injectable)~~ (number of medicines)	1	0	0	0										
11b.Circled times do no match frequency (No. of errors)		0	0	0										
12. No. of high risk medicines prescribed? (See Appendix 2)	2	2	2	1										
13a. As required medicines (No. prescribed)	3	4	6	0										
26b. No of medicines where medicines reconciliation indicated (i) No change/Pre-admission dose	9	0	0	N/A										
(ii) Increased dose	1	0	0	N/A										

(I) 12 Epilim & Clozapine

(J) 12 Bisoprolol. Epilim chrono.

J1 (12) Bumetanide.

J1 – NO PRNS

(iii) Decreased dose	2	0	0	N/A										
(iv) New	1	2	0	N/A										
26c. ~~Maximum~~ frequency not completed	1	0	0	N/A										
26d. Maximum dose not completed		0	0	N/A										
13a. **Regular** Depot medicines (No. prescribed including discontinued)	8	0	0	0										
9b. No of regular non-injectable medicines where medicines reconciliation indicated: (i) Pre-admission dose	0	0	0	0										
25a. Stat doses (No. prescribed)	3	0	0	0										
25b. Time to be given not specified	1	0	0	0										

~~Data collection:~~

~~Administration~~ ~~Q 27 Record the number of days that do not have date AND month entered.~~

~~Count the total number of regular doses for which administration should have occurred or been documented as omitted up to the point of audit.~~

~~Q29-32 Enter the total number of doses that have the error described.~~

~~Administration~~														
~~27. Date and month NOT entered~~	~~3~~	0	0	0										
~~28 Number of regular doses prescribed for administration~~	~~26~~	316	477											
~~29. Regular doses NOT signed as given or code recorded for omission, i.e. blank box~~	~~5~~	0	0	0										
~~30. Stat doses NOT documented as given or omitted~~	~~1~~	0	0	0										

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31. Doses given in excess of prescribed frequency of regular medicine.	1	0	0	0								
32. Doses given in excess of maximum frequency of	0	0	0	0								

Any additional comments – please note Kardex and question number

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Appendix 1 – Kardex audit form baseline

Kardex audit form

Name of auditor: _____ **Site** _____

Service Group _____ **Clinical Speciality** _____ **Ward** IVEAGH. **Hospital Site** _____

Total no. of beds on ward _____

Please review all Kardexes for each ward. Include prescribing/administration entries and pharmacist endorsements in audit data collected. **Use one column for each Kardex, i.e. 2 columns if a patient has two Kardexes in use. See notes regarding data collection. Example results recorded in the first column.**

Data collection:Prescription (General) Q 1-7 are general questions about the kardex and are answered yes or no.
Record total number of medicines on Kardex, include discontinued medicines in the review.

		1	2	3	4	5	6	7	8	9	10	11	Comments – put Kardex number in brackets
Patient identification (Use sequential letters of the alphabet to identify each patient. If a patient has more than one Kardex, enter the same letter in a new column for each Kardex) (Column 1 is an example of patient A with one Kardex		A											
Patient identification		A	A1	A2	B	C	D.						
Prescription (general) 1a. Pt. name, number and DOB on front page		Y	Y	Y	Y	Y	Y						
1b. Same on other pages where required Y/N		N	N	N	Y	N	N.						
1c. Is the patient <16 years Y/N		N	N	N	N	Y	Y						
1d. Is the patient >60 years Y/N		Y	N	N	N	N	N						
2. Weight documented (where relevant to medication) Y/N		N	N	N	N	N	N						
3a. Allergy status documented. Y/N	✓	Y	Y	Y	Y	Y	Y						
3b. Allergy status signed and dated Y/N	✓	Y	N	Y	Y	Y	Y						
3c. Reaction to each allergen noted or recorded as not known Y/N		Y	Y	Y	N/A	Y	N/A						
3d. Medicines prescribed that patient is documented as allergic to Y/N		N	N	N	N/A	N	N/A						
2e. Medicines administered that patient is documented as allergic to Y/N		N	N	N	N/A	N	N/A						
2f. Have medicines been administered when the Allergy box is left blank? Y/N		N	N	N	N	N	N						

(A1) 1b. nothing on pg 2-3 & 14-15.
3b. Signed - NOT dated.
3c. Says very sensitive to SSRI's do not prescribe.
2.

(A2) 1b nothing on pg 2-3.

(C) 1b. nothing on pg 2-3.

(D) 1b. nothing on pg 2-3.

(A1) 2 pt. on methylphenidate (Medikinet XL 20mg)

(B) 2 pt on Guanfacine weight Related dose 0.05 – 0.12mg/kg for dose >58.5kg. max 7mg pt is >100kg according to staff.

2. pt on Medikinet XL

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4. Ward recorded Y/N	Y	Y	Y	Y	Y	Y							
5a. More than one current kardex for the patient Y/N	N	Y	Y	N	N	N							
5b. Clearly marked more than 1 kardex Y/N/na	na	Y	Y	NA	NA	NA							
6. Year documented on at least one occasion Y/N	Y	Y	Y	Y	Y	Y							
7a. No. of supplementary charts in use	2	0	0	0	0	0							
7b. No. of 'additional charts in use' box on front of Kardex ticked (if on kardex).	1	0	0	0	0	0							
7c.Additional Chart Medicine(s) are written in main body in Kardex as appropriate, e.g. clozapine, warfarin or insulin	1	0	0	0	0	0							
8. Has the kardex been recorded as re-written Y/N	Y	Y	Y	Y	N	Y							
9. Is VTE risk assessment completed and signed Y/N	N	N	N	Y	Y	Y							

Data collection:

Prescription writing Q 8-26, record the number of medications that have the error described, eg sample Q 8a, two medicines had inappropriate abbreviations. It would be useful to state the abbreviations used in the comments section. Record number of medicines prescribed in each section of the kardex, e.g. stat doses, as required, regular medicines

Prescription writing													
10a. **Regular medicines** (No. prescribed)	5	12	8	4	7	10							
10b. No of medicines where medicines reconciliation indicated (i) Pre-admission dose	1	0	0	0	0	0							
(ii) Increased dose	1	0	1	1	1	4							
(iii) Decreased dose	0	0	1	1	0	4							
(iv) New	1	0	0	0	1	3							
11a. Frequency not prescribed ~~(include both non-injectable & injectable)~~ (number of medicines)	1	0	0	0	0	0							
11b.Circled times do no match frequency (No. of errors)		0	0	0	0	1							
12. No. of high risk medicines prescribed? (See Appendix 2)	2	2	1	1	1	2							
13a. As required medicines (No. prescribed)	3	7	0	4	4	5							
26b. No of medicines where medicines reconciliation indicated (i) No change/Pre-admission dose	9	0	0	0	0	0							
(ii) Increased dose	1	0	0	0	0	0							

Kardex Audit tool Longer stay Kardex V0.1 S Guy 13/11/2014

(A1) 12 - medikinet XL 20mg
- propranolol 5mg at 8.30
2mg at 17.30

A2. 12 ⇒ Aprepitant (amber but not shared care).

(B) 12 ⇒ methylphenidate. (medikinet XL 30mg)

(C) 12 ⇒ Sodium valproate.

(D) 10b (i)(ii) Diazepam ↓ then ↑ again
Sertraline ↑ twice.

(E) 12. Sodium valproate 400 / 400
propranolol 5mg OD.

(D) - Risperidone 2mg OD.
but 8.30 & 21.30 circled ??
*11b

A1 25b. (stat) prescribed as time - not an actual time.

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(iii) Decreased dose	2	0	0	0	0	0						
(iv) New	1	1	0	0	0	1						
26c. ~~F~~Maximum frequency not completed	1	0	0	0	0	0						
26d. Maximum dose not completed		0	0	1	1	1						
13a. **Regular** Depot medicines (No. prescribed including discontinued)	8	0	0	0	0	0						
9b. No of regular non-injectable medicines where medicines reconciliation indicated: (i) Pre-admission dose	0	0	0	0	0	0						
25a. Stat doses (No. prescribed)	3	1	0	0	0	0						
25b. Time to be given not specified	1	1	0	0	0	0						

Should be zero for 100%.

~~Data collection:~~
Administration ~~Q 27 Record the number of days that do not have date AND month entered.~~
~~Count the total number of regular doses for which administration should have occurred or been documented as omitted up to the point of audit.~~
~~Q29-32 Enter the total number of doses that have the error described.~~

Nursing admin

~~Administration~~												
~~27. Date and month NOT entered~~	3	0	0	0	0	0						0 = Good
~~28 Number of regular doses prescribed for administration~~	26	242	24	230	36	361						
~~29. Regular doses NOT signed as given or code recorded for omission, i.e. blank box~~	5	0	0	1	0	1						
~~30. Stat doses NOT documented as given or omitted.~~	1	0	0	0	0	0						

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Kardex Audit tool Longer stay Kardex V0.1 S Guy 13/11/2014

No of days in use

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Related PRN

22 or 0. - all depends on the risperidone prescription

~~31. Doses given in excess of prescribed frequency of regular medicine.~~	~~1~~	0	0	0	0	-						
~~32. Doses given in excess of maximum frequency of~~	~~0~~	0	0,	0.	0	0.						

Any additional comments – please note Kardex and question number

Belfast Health and Social Care Trust

Appendix 1 – Kardex audit form baseline

Kardex audit form

Name of auditor: _____ **Site** _____

Service Group _____ **Clinical Speciality** _____ **Ward** ERNE . _____ **Hospital Site** _____

Total no. of beds on ward _____

Please review all Kardexes for each ward. Include prescribing/administration entries and pharmacist endorsements in audit data collected. **Use one column for each Kardex, i.e. 2 columns if a patient has two Kardexes in use. See notes regarding data collection. Example results recorded in the first column.**

Data collection:Prescription (General) Q 1-7 are general questions about the kardex and are answered yes or no.
Record total number of medicines on Kardex, include discontinued medicines in the review.

		1	2	3	4	5	6	7	8	9	10	11	Comments – put Kardex number in brackets
Patient identification (Use sequential letters of the alphabet to identify each patient. If a patient has more than one Kardex, enter the same letter in a new column for each Kardex) (Column 1 is an example of patient A with one Kardex	A	/											
Patient identification	A	A	B	C	D	E	F	G	G1	H			
Prescription (general) 1a. Pt. name, number and DOB on front page	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
1b. Same on other pages where required Y/N	N	N	Y	Y	Y	Y	Y	Y	Y	Y			
1c. Is the patient <16 years Y/N	N	N	N	N	N	N	N	N	N	N			
1d. Is the patient >60 years Y/N	Y	N	N	N	N	Y	N	N	N	N			
2. Weight documented (where relevant to medication) Y/N	N	N	N	N	N	N	N	N	N	N			
3a. Allergy status documented. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
3b. Allergy status signed and dated Y/N	Y	Y	Y	Y	[redacted]	Y	Y	N	N	Y			
3c. Reaction to each allergen noted or recorded as not known Y/N	Y	N	N/A	N/A	N/A	N/A	N/A	N/A	Y	Y			
3d. Medicines prescribed that patient is documented as allergic to Y/N	N	N	[redacted]	N	N	N	N	N	N	N			
2e. Medicines administered that patient is documented as allergic to Y/N	N	N	N	N	N	N	N	N	N	N			
2f. Have medicines been administered when the Allergy box is left blank? Y/N	N	N	N	N	N	N	N	N	N	N			

A. ② – not on weight Related meds
B. ② – " " " " "
C. ② – " " " " "
D. ② – " " " " "
3b. – Not dated.

E ② – not on weight Related med
F. 2 – " " " " "

G ② pt. weight should be documented as on Lithium (priadel).

3b. allergies Recorded – not signed or dated

G1.

H. ② Not on weight Related m

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*3c. N/A ⇒ No known allergies ticked.

*pt. E prescribed compression stocking → not include in this audit as it is not a medicine.

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		A	B	C	D	E	F	G	H	
4. Ward recorded Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5a. More than one current kardex for the patient Y/N	N	N	N	N	N	N	N	Y	Y	N
5b. Clearly marked more than 1 kardex Y/N/na	na	N/A	N/A	N/A	N/A	N/A	N/A	Y	Y	N/A
6. Year documented on at least one occasion Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7a. No. of supplementary charts in use	2	0	0	0	0	0	0	0	0	0
7b. No. of 'additional charts in use' box on front of Kardex ticked (if on kardex).	1	0	0	0	0	0	0	0	0	0
7c.Additional Chart Medicine(s) are written in main body in Kardex as appropriate, e.g. clozapine, warfarin or insulin	1	0	0	0	0	0	0	0	0	0
8. Has the kardex been recorded as re-written Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9. Is VTE risk assessment completed and signed Y/N	N	N	Y	Y	Y	Y	Y	Y	Y	Y

Data collection:

Prescription writing Q 8-26, record the number of medications that have the error described, eg sample Q 8a, two medicines had inappropriate abbreviations. It would be useful to state the abbreviations used in the comments section. Record number of medicines prescribed in each section of the kardex, e.g. stat doses, as required, regular medicines

Prescription writing											
10a. **Regular medicines** (No. prescribed)	5	12	8	16	10	11	15	16	4	10	
10b. No of medicines where medicines reconciliation indicated (i) Pre-admission dose	1	0	0	0	0	0	0	2	0	0	
(ii) Increased dose	1	0	0	0	0	0	1	1	0	0	
(iii) Decreased dose	0	0	0	0	0	0	1	3	0	0	
(iv) New	1	0	0	0	0	0	2	2	1	2	
11a. Frequency not prescribed ~~(include both non-injectable & injectable)~~ (number of medicines)	1	0	0	0	0	0	0	0	0	0	
11b.Circled times do no match frequency (No. of errors)		0	0	0	0	0	0	0	0	0	
12. No. of high risk medicines prescribed? (See Appendix 2)	2	1	1	2	3	1	1	1	0	0	
13a. As required medicines (No. prescribed)	3	8	4	5	6	5	5	5	0	6	
26b. No of medicines where medicines reconciliation indicated (i) No change/Pre-admission dose	9	0	0	0	0	0	0	0	N/A	0	
(ii) Increased dose	1	0	0	0	0	0	0	0	N/A	0	

A. (12) Tegretol ← 600mg 8:30 / 700mg 21:30. 2 separate entries on kx.

B (12) Eplim chrono 600mg BD 8:30 21:30

C. (12) Carbamazepine 200mg BD 8:30 21:30 should be Tegretol

- Lamotrigine - 125mg 8:30 - 150mg 21:30 should be Lamictal.

D. (12). Clonazepam 4mg BD 21:30 MAR 8:30 & 21:30

- Eplim chrono 600mg BD 8:30 & 21:30
- Tegretol 300mg BD 8:30 21:30 MAR 8:30 & 21:30

E (12) semi-sodium valproate 1g BD 8:30 21:30

F (12) Tegretol 400mg BD 8:30 21:30

G (12) Pelador 450mg OD.

G1 - 13 - PRN none prescribed on second kx - as per good practice

9b Long stay patients.

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		A	B	C	D	E	F	G	H	I
(iii) Decreased dose	2	0	0	0	0	0	0	0	N/A	0
(iv) New	1	2	0	0	0	0	0	0	N/A	0
26c. ~~Maximum~~ frequency not completed	1	0	0	0	0	0	0	0	NA	0
26d. Maximum dose not completed		0	1	1	0	1	0	1	N/A	2
13a. **Regular** Depot medicines (No. prescribed including discontinued)	8	0	0	0	0	1	0	0	0	0
9b. No of regular non-injectable medicines where medicines reconciliation indicated: (i) Pre-admission dose	0	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0
25a. Stat doses (No. prescribed)	3	0	0	0	0	0	0	0	0	0
25b. Time to be given not specified	1	0	0	0	0	0	0	0	0	0

G - (27) 15/5 not entered. pg 10.

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~~Data collection:~~
~~Administration~~ ~~Q 27 Record the number of days that do not have date AND month entered.~~
~~Count the total number of regular doses for which administration should have occurred or been documented as omitted up to the point of audit.~~
~~Q29-32 Enter the total number of doses that have the error described.~~

A. (23) 23 Reg doses ~~meds~~ for 21 days.

~~Administration~~											
~~27. Date and month NOT entered~~	3	0	0	0	0	0	0	1	0	1	
~~28 Number of regular doses prescribed for administration~~	28	183	300	279	19.	460	393	908	409	412	→ 412.
~~29. Regular doses NOT signed as given or code recorded for omission, i.e. blank box~~	5	7	1	2.	0	0	11	14	1	2	
~~30. Stat doses NOT documented as given or omitted~~	1	0	0	0	0	0	0	0	0	0	

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B. (28) 12 Reg. doses ~~meds~~ for 25 days.

C (28) 31 Reg. doses for 9 days

D (28) New kardex.
11 prescribed meds for 2 days only on this kdx.

E (16) Reg doses for 25 days.

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31. Doses given in excess of prescribed frequency of regular medicine.	1	0	0	0	0	0	0	0	0	0	
32. Doses given in excess of maximum frequency of	0	0	0	0	0	0	0	0	0	0	

Any additional comments – please note Kardex and question number

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Appendix 1 – Kardex audit form baseline

(A) 2. Not on weight related meds.

(B) 2. " " "

Kardex audit form

Name of auditor: _____ **Site** _____

Service Group _____ **Clinical Speciality** _____ **Ward** Smile Assessment **Hospital Site** _____

Total no. of beds on ward _____

Please review all Kardexes for each ward. Include prescribing/administration entries and pharmacist endorsements in audit data collected. **Use one column for each Kardex, i.e. 2 columns if a patient has two Kardexes in use. See notes regarding data collection. Example results recorded in the first column.**

Data collection:Prescription (General) Q 1-7 are general questions about the kardex and are answered yes or no.
Record total number of medicines on Kardex, include discontinued medicines in the review.

	1	2	3	4	5	6	7	8	9	10	11	Comments – put Kardex number in brackets
Patient identification (Use sequential letters of the alphabet to identify each patient. If a patient has more than one Kardex, enter the same letter in a new column for each Kardex) (Column 1 is an example of patient A with one Kardex	A											
Patient identification	A	A	B	C	D							
Prescription (general) 1a. Pt. name, number and DOB on front page	Y	y	y	y	y							
1b. Same on other pages where required Y/N	N	y	y	y	y							
1c. Is the patient <16 years Y/N	N	N	N	N	N							
1d. Is the patient >60 years Y/N	Y	N	N	N	N							
2. Weight documented (where relevant to medication) Y/N	N	N	N	N	N							
3a. Allergy status documented. Y/N	Y	Y	Y	Y	Y							
3b. Allergy status signed and dated Y/N	Y	Y	Y	Y	Y							
3c. Reaction to each allergen noted or recorded as not known Y/N	Y	N/A	N/A	N/A	N/A							
3d. Medicines prescribed that patient is documented as allergic to Y/N	N	N/A	N/A	N/A	N/A							
2e. Medicines administered that patient is documented as allergic to Y/N	N	N/A	N/A	N/A	N/A							
2f. Have medicines been administered when the Allergy box is left blank? Y/N	N	N	N	N	N							

A-(7b) clozapine box not ticked (ticked now by pharmacist)

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4. Ward recorded Y/N	Y	Y	Y	Y	Y									
5a. More than one current kardex for the patient Y/N	N	N	N	N	N									
5b. Clearly marked more than 1 kardex Y/N/na	na	N/A	N/A	N/A	N/A									
6. Year documented on at least one occasion Y/N	Y	Y	Y	Y	Y									
7a. No. of supplementary charts in use	2	1	0	0	0									
7b. No. of 'additional charts in use' box on front of Kardex ticked (if on kardex).	1	0	0	0	0									
7c.Additional Chart Medicine(s) are written in main body in Kardex as appropriate. e.g. clozapine, warfarin or insulin	1	1	0	0	0									
8. Has the kardex been recorded as re-written Y/N	Y	Y	Y	Y	Y									
9. Is VTE risk assessment completed and signed Y/N	N	Y	Y	Y	Y									

Data collection:
Prescription writing Q 8-26, record the number of medications that have the error described, eg sample Q 8a, two medicines had inappropriate abbreviations. It would be useful to state the abbreviations used in the comments section. Record number of medicines prescribed in each section of the kardex, e.g. stat doses, as required, regular medicines

Prescription writing													
10a. **Regular medicines** (No. prescribed)	5	15	12	11	3								
10b. No of medicines where medicines reconciliation indicated (i) Pre-admission dose	1	0	0	2	2								
(ii) Increased dose	1	0	2	0	0								
(iii) Decreased dose	0	1	1	2	1								
(iv) New	1	1	5	1	0								
11a. Frequency not prescribed ~~(include both non-injectable & injectable)~~ (number of medicines)	1	0	0	0	0								
11b.Circled times do no match frequency (No. of errors)		0	0	0	0								
12. No. of high risk medicines prescribed? (See Appendix 2)	2	1	2	1	1								
13a. As required medicines (No. prescribed)	3	5	11	2	8								
26b. No of medicines where medicines reconciliation indicated (i) No change/Pre-admission dose	9	0	0	0	0								
(ii) Increased dose	1	0	0	0	0								

(A) 12 - Clozapine 300mg BD.
(B) • Tegretol MR - 400mg - 200mg (max 1.5g a day divided doses) For me
• Delmosart 5mg OD.
(C) 12 - Bisoprolol 2.5mg OD.
(D) 12 - propranolol 80mg OD.

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(iii) Decreased dose	2	0	0	0	0							
(iv) New	1	0	1	0	0							
26c. ~~F Maximum~~ frequency not completed	1	0	0	0	0							
26d. Maximum dose not completed		0	1	0	0							
13a. **Regular** Depot medicines (No. prescribed including discontinued)	8	1	0	0	0							
9b. No of regular non-injectable medicines where medicines reconciliation indicated: (i) Pre-admission dose	0	0	0	0	0							
25a. Stat doses (No. prescribed)	3	0	0	0	0							
25b. Time to be given not specified	1	0	0	0	0							

~~Data collection~~:
Administration ~~Q 27 Record the number of days that do not have date AND month entered.~~
~~Count the total number of regular doses for which administration should have occurred or been documented as omitted up to the point of audit.~~
~~Q29-32 Enter the total number of doses that have the error described.~~

~~**Administration**~~												
~~27. Date and month NOT entered~~	3	0	0	13.	0							
~~**28 Number of regular doses prescribed for administration**~~	~~26~~	229	~~229~~ 483	189	8							
~~29. Regular doses NOT signed as given or code recorded for omission, i.e. blank box~~	~~5~~	1	~~#2~~	0	0							
~~30. Stat doses NOT documented as given or omitted.~~	~~1~~	0	~~#0~~	0	0							

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© . 27 - The month not entered - just the day.

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~~31. Doses given in excess of prescribed frequency of regular medicine.~~	~~1~~	0	0	0	0							
~~32. Doses given in excess of maximum frequency of~~	~~0~~	0	0	0	0							

Any additional comments – please note Kardex and question number

IN ASSESMENT

All Kardexes Sage Sixmile on front – not Sixmile Assessment.

(A) 3b. Penicillin (unknown

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Appendix 1 – Kardex audit form baseline

Kardex audit form

Name of auditor: _____ **Site** _____

Service Group _____ **Clinical Speciality** _____ **Ward** Sixmile Treatment **Hospital Site** _____

Total no. of beds on ward _____

Please review all Kardexes for each ward. Include prescribing/administration entries and pharmacist endorsements in audit data collected. **Use one column for each Kardex, i.e. 2 columns if a patient has two Kardexes in use. See notes regarding data collection. Example results recorded in the first column.**

Data collection:Prescription (General) Q 1-7 are general questions about the kardex and are answered yes or no.
Record total number of medicines on Kardex, include discontinued medicines in the review.

	1	2	3	4	5	6	7	8	9	10	11	Comments – put Kardex number in brackets
Patient identification (Use sequential letters of the alphabet to identify each patient. If a patient has more than one Kardex, enter the same letter in a new column for each Kardex) (Column 1 is an example of patient A with one Kardex	A											
Patient identification	A	A	B	C	D	E	F	G	H			
Prescription (general) 1a. Pt. name, number and DOB on front page	Y	Y	Y	Y	Y	Y	Y	Y	Y			
1b. Same on other pages where required Y/N	N	Y	Y	N	Y	Y	Y	Y	Y			
1c. Is the patient <16 years Y/N	N	N	N	N	N	N	N	N	N			
1d. Is the patient >60 years Y/N	Y	N	N	N	N	N	N	N	N			
2. Weight documented (where relevant to medication) Y/N	N	N	N	N	Y	N	N	N	N			
3a. Allergy status documented. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y			
3b. Allergy status signed and dated Y/N	Y	N	Y	N	Y	Y	Y	Y	Y			
3c. Reaction to each allergen noted or recorded as not known Y/N	Y	N/A	N	N/A	N/A	N/A	N/A	N/A	N/A			
3d. Medicines prescribed that patient is documented as allergic to Y/N	N	N	N/A*	N/A	N/A	N/A	N/A	N/A	N/A			
2e. Medicines administered that patient is documented as allergic to Y/N	N	N	N/A	*	N/A	N/A	N/A	N/A	N/A			
2f. Have medicines been administered when the Allergy box is left blank? Y/N	N	N	N	N	N	N	N	N	N			

(C) 3c. No idea what it says. Need to be clear.

3d_Cannot answer
3e_due to unclear allergy status box.

(D) 2. Not on any weight Related medication

(2) * If no note attached pt not on any weight related dosing Review.

(A) 8. - Note left for SHO to do this. assessed.

(E) 7c. pt on clozapine → no additional chart & not ticked on front of Kx.

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		A	B	C	D	E	F	G	H			
4. Ward recorded Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y			
5a. More than one current Kardex for the patient Y/N	N	N	N	N	N	N	N	N	N			
5b. Clearly marked more than 1 kardex Y/N/na	na	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
6. Year documented on at least one occasion Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y			
7a. No. of supplementary charts in use	2	0	0	0	0	0	0	0	0			
7b. No. of 'additional charts in use' box on front of Kardex ticked (if on kardex).	1	0	0	0	0	0	0	0	0			
7c.Additional Chart Medicine(s) are written in main body in Kardex as appropriate. e.g. clozapine, warfarin or insulin	1	0	0	0	0	1	0	0	0			
8. Has the kardex been recorded as re-written Y/N	Y	N	Y	Y	Y	Y	Y	N	Y			
9. Is VTE risk assessment completed and signed Y/N	N	Y	Y	N	Y	Y	Y	Y	Y			

Data collection:

Prescription writing Q 8-26, record the number of medications that have the error described, eg sample Q 8a, two medicines had inappropriate abbreviations. It would be useful to state the abbreviations used in the comments section. Record number of medicines prescribed in each section of the kardex, e.g. stat doses, as required, regular medicines

Prescription writing												
10a. **Regular medicines** (No. prescribed)	5	7	10	7	1	10	2	4	5	8		
10b. No of medicines where medicines reconciliation indicated (i) Pre-admission dose	1	0	0	0	0	0	0	0	0	6		
(ii) Increased dose	1	1	0	0	0	0	0	0	0	0		
(iii) Decreased dose	0	0	1	0	0	0	0	0	1	0		
(iv) New	1	3	0	0	0	0	0	1	2	0		
11a. Frequency not prescribed ~~(include both non-injectable & injectable)~~ (number of medicines)	1	0	0	18	0	0	0	0	0	0		
11b.Circled times do no match frequency (No. of errors)		0	0	1	0	0	0	0	0	0		
12. No. of high risk medicines prescribed? (See Appendix 2)	2	0	1	0	0	2	0	0	0	0		
13a. As required medicines (No. prescribed)	3	0	7	6	3	5	6	2	5			
26b. No of medicines where medicines reconciliation indicated (i) No change/Pre-admission dose	9	N/A	0	0	0	0	0	0	0			
(ii) Increased dose	1	N/A	0	0	0	0	0	0	0			

(B) 12 - Epilim 200mg

(E) 12 - Clozapine - 100 200
Epilim chrono - 500mg 853 - 300mg

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		A	B	C	D	E	F	G	H
(iii) Decreased dose	2	N/A	0	0	0	0	0	0	0
(iv) New	1	N/A	0	0	3	0	1	1	1
26c. ~~FMaximum~~ frequency not completed	1	N/A	0	0	0	0	0	0	0
26d. Maximum dose not completed		N/A	0	0	0	0	0	1	0
13a. **Regular** Depot medicines (No. prescribed including discontinued)	8	0	0	0	0	0	0	0	0
9b. No of regular non-injectable medicines where medicines reconciliation indicated: (i) Pre-admission dose	0	0	0	0	0	0	0	0	0
25a. Stat doses (No. prescribed)	3	0	0	0	0	0	1	0	0
25b. Time to be given not specified	1	0	0	0	0	0	0	0	0

~~**Data collection**~~:
Administration Q 27 ~~Record the number of days that do not have date AND month entered.~~
~~Count the total number of regular doses for which administration should have occurred or been documented as omitted up to the point of audit.~~
~~Q29-32 Enter the total number of doses that have the error described.~~

~~**Administration**~~											
~~27. Date and month NOT entered~~	3	0	0	0	0	0	0	0	0		
~~**28 Number of regular doses prescribed for administration**~~	~~26~~	245	15	389	28	337	41	240	283		
~~29. Regular doses NOT signed as given or code recorded for omission, i.e. blank box~~	~~5~~	8	0	3	0	0	0	0	1		
~~30. Stat doses NOT documented as given or omitted.~~	~~1~~	0	0	0	0	0	0	0	0		

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~~31. Doses given in excess of prescribed frequency of regular medicine.~~	~~1~~	0	0	0	0	0	0	0	0		
~~32. Doses given in excess of maximum frequency of~~	~~0~~	0	0	0	0	0	0	0	0		

Any additional comments – please note Kardex and question number

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Appendix 1 – Kardex audit form baseline

Kardex audit form

Name of auditor: _____ **Site** _____

Service Group _____ **Clinical Speciality** _____ **Ward** Crawfield 2 **Hospital Site** MAH.

Total no. of beds on ward _____

Please review all Kardexes for each ward. Include prescribing/administration entries and pharmacist endorsements in audit data collected. **Use one column for each Kardex, i.e. 2 columns if a patient has two Kardexes in use. See notes regarding data collection. Example results recorded in the first column.**

Data collection:Prescription (General) Q 1-7 are general questions about the kardex and are answered yes or no.
Record total number of medicines on Kardex, include discontinued medicines in the review.

	1	2	3	4	5	6	7	8	9	10	11	Comments – put Kardex number in brackets
Patient identification (Use sequential letters of the alphabet to identify each patient. If a patient has more than one Kardex, enter the same letter in a new column for each Kardex) (Column 1 is an example of patient A with one Kardex	A											
Patient identification	A	A	B	C	D	E	F	G	H.			
Prescription (general) 1a. Pt. name, number and DOB on front page	Y	Y	Y	Y	Y	Y	Y	Y	Y			
1b. Same on other pages where required Y/N	N	Y	Y	Y	N	Y	Y	Y	Y			
1c. Is the patient <16 years Y/N	N	N	N	N	N	N	N	N	N			
1d. Is the patient >60 years Y/N	Y	N	N	N	N	N	N	N	N			
2. Weight documented (where relevant to medication) Y/N	N	N	N	N	N	N	N	N	N			
3a. Allergy status documented Y/N	Y	Y	Y	N	Y	Y	Y	Y	Y			
3b. Allergy status signed and dated Y/N	Y	Y	Y	N	Y	Y	N	Y	Y			
3c. Reaction to each allergen noted or recorded as not known Y/N	Y	N/A	N/A	N/A	N/A	N/A	N/A	Y	N	N/A		
3d. Medicines prescribed that patient is documented as allergic to Y/N	N	N/A	N/A	N/A	N/A	N/A	N/A	N	N	N/A		
2e. Medicines administered that patient is documented as allergic to Y/N	N	N/A	N/A	N/A	N/A	N/A	N/A	N	N	N/A		
2f. Have medicines been administered when the Allergy box is left blank? Y/N	N	N	N	Y	N	N	N	N	N			

2. (A) Not on any weight dependant medication

(B) " " " "

(C) " " " "

(G) on priadel. weight should be recorded

3C. (G) Allergen noted → Rxn not noted.

2. (H) on Atomoxetine weight not recorded.

3C. N/A por = NKA ☑.

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		A	B	C	D	E	F	G	H
4. Ward recorded Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y
5a. More than one current Kardex for the patient Y/N	N	N	N	N	N	N	N	N	N
5b. Clearly marked more than 1 kardex Y/N/na	na	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6. Year documented on at least one occasion Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y
7a. No. of supplementary charts in use	2	0	0	0	0	0	0	0	0
7b. No. of 'additional charts in use' box on front of Kardex ticked (if on kardex).	1	0	0	0	0	0	0	0	0
7c.Additional Chart Medicine(s) are written in main body in Kardex as appropriate. e.g. clozapine, warfarin or insulin	1	0	0	0	0	0	0	0	0
8. Has the kardex been recorded as re-written Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y
9. Is VTE risk assessment completed and signed Y/N	N	Y	Y	Y	Y	Y	Y	Y	Y

(12) D Tegretol 300mg 8:30 / 400mg 21:30

(12) E Tegretol 400mg 8:30 / 400mg 21:30

(12) G Abilify 12.5mg nocte.

(12) H Atomoxetine 80mg @ 11 & 21:30.

Data collection:
Prescription writing Q 8-26, record the number of medications that have the error described, eg sample Q 8a, two medicines had inappropriate abbreviations. It would be useful to state the abbreviations used in the comments section. Record number of medicines prescribed in each section of the kardex, e.g. stat doses, as required, regular medicines

Prescription writing											
10a. **Regular medicines** (No. prescribed)	5	11	4	4	12	11	9	9	10		
10b. No of medicines where medicines reconciliation indicated (i) Pre-admission dose	1	0	0	0	0	0	0	0	0		
(ii) Increased dose	1	0	1	0	0	1	1	0	0		
(iii) Decreased dose	0	1	0	0	0	1	0	0	0		
(iv) New	1	0	1	0	0	0	0	0	0		
11a. Frequency not prescribed ~~(include both non-injectable & injectable)~~ (number of medicines)	1	0	0	0	0	0	0	0	0		
11b.Circled times do no match frequency (No. of errors)		0	0	0	0	0	0	0	0		
12. No. of high risk medicines prescribed? (See Appendix 2)	2	0	0	0	1	1	0	1	1		
13a. As required medicines (No. prescribed)	3	2	8	5	4	6	6	5	9		
26b. No of medicines where medicines reconciliation indicated (i) No change/Pre-admission dose	9	0	0	0	0	0	0	0	0		
(ii) Increased dose	1	0	0	0	0	0	0	0	0		

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(iii) Decreased dose	2	0	0	0	0	0	0	0	0		
(iv) New	1	0	2	0	0	0	0	0	0		
26c. ~~F~~Maximum frequency not completed	1	0	0	0	0	0	0	0	0		
26d. Maximum dose not completed		0	0	0	0	0	0	0	0		
13a. **Regular** Depot medicines (No. prescribed including discontinued)	8	0	0	0	0	0	0	0	0		
9b. No of regular non-injectable medicines where medicines reconciliation indicated: (i) Pre-admission dose	0	0	0	0	0	0	0	0	0		
25a. Stat doses (No. prescribed)	3	0	0	0	0	1	1	2	1		
25b. Time to be given not specified	1	0	0	0	0	0	1	0	1		

~~**Data collection:**~~
~~**Administration** Q 27 Record the number of days that do not have date AND month entered.~~
~~Count the total number of regular doses for which administration should have occurred or been documented as omitted up to the point of audit.~~
~~Q29-32 Enter the total number of doses that have the error described.~~

~~**Administration**~~			8								
~~27. Date and month NOT entered~~	3	0	~~225~~	0	0	0	0	0	0		
~~**28 Number of regular doses prescribed for administration**~~	26	725	319	70	908	828	508	521	601		
~~29. Regular doses NOT signed as given or code recorded for omission, i.e. blank box~~	5	7	7	0	7	7	0	5	9		
~~30. Stat doses NOT documented as given or omitted~~	1	0	0	0	0	0	0	0	0		

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31. Doses given in excess of ~~prescribed frequency of regular medicine~~	1	0	0	0	0	0	0	0	0		
32. Doses given in excess of ~~maximum frequency of~~	9	0	0.	0.	0	0.	0	0	0.		

Any additional comments – please note Kardex and question number

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Appendix 1 – Kardex audit form baseline

(B) 1b. no addressograph on pg 2-5.
(I). no addressographs on. 8-15.
(D) 1b. no ID on pg 14.

Kardex audit form

Name of auditor: _____ Site _____

Service Group _____ Clinical Speciality _____ Ward Cranfield 1 Hospital Site _____

Total no. of beds on ward _____

2.

Please review all Kardexes for each ward. Include prescribing/administration entries and pharmacist endorsements in audit data collected. **Use one column for each Kardex, i.e. 2 columns if a patient has two Kardexes in use. See notes regarding data collection. Example results recorded in the first column.**

Data collection:Prescription (General) Q 1-7 are general questions about the kardex and are answered yes or no.
Record total number of medicines on Kardex, include discontinued medicines in the review.

		1	2	3	4	5	6	7	8	9	10	11	Comments – put Kardex number in brackets
Patient identification (Use sequential letters of the alphabet to identify each patient. If a patient has more than one Kardex, enter the same letter in a new column for each Kardex) (Column 1 is an example of patient A with one Kardex	A												
Patient identification	A	A	B	C	D	E	F	G	H	I			
Prescription (general) 1a. Pt. name, number and DOB on front page	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
1b. Same on other pages where required Y/N	N	Y	N	Y	N	Y	Y	Y	Y	N			
1c. Is the patient <16 years Y/N	N	N	N	N	N	N	N	N	N	N			
1d. Is the patient >60 years Y/N	Y	N	N	N	N	N	N	N	N	N			
2. Weight documented (where relevant to medication) Y/N	N	N	N	Y	N	N	Y	N	N	N			
3a. Allergy status documented. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
3b. Allergy status signed and dated Y/N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y			
3c. Reaction to each allergen noted or recorded as not known Y/N	Y	N/A	N/A	N/A	N/A	N/A	N/A	Y	Y	Y			
3d. Medicines prescribed that patient is documented as allergic to Y/N	N	N/A	N/A	N/A	N/A	N/A	N/A	N	N	N			
2e. Medicines administered that patient is documented as allergic to Y/N	N	N	N	N	N	N	N	N	N	N			
2f. Have medicines been administered when the Allergy box is left blank? Y/N	N	N	N	N	N	N	N	N	N	N			

(A) - not on wt. Related meds
- " " " " "
- " " " " "
" " " " "
(F) - weight is documented
(G) not on wt. Related meds
(I) not on wt Related meds

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4. Ward recorded Y/N	Y	Y	Y	Y	Y	Y	N	Y	Y		
5a. More than one current kardex for the patient Y/N	N	N	N	N	N	N	N	N	N		
5b. Clearly marked more than 1 kardex Y/N/na	na	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
6. Year documented on at least one occasion Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y		
7a. No. of supplementary charts in use	2	0	0	0	0	0	0	0	0		
7b. No. of 'additional charts in use' box on front of Kardex ticked (if on kardex).	1	0	0	0	0	0	0	0	0		
7c.Additional Chart Medicine(s) are written in main body in Kardex as appropriate. e.g. clozapine, warfarin or insulin	1	0	0	0	0	0	0	0	0		
8. Has the kardex been recorded as re-written Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y		
9. Is VTE risk assessment completed and signed Y/N	N	Y	Y	Y	Y	Y	Y	Y	Y		

Data collection:

Prescription writing Q 8-26, record the number of medications that have the error described, eg sample Q 8a, two medicines had inappropriate abbreviations. It would be useful to state the abbreviations used in the comments section. Record number of medicines prescribed in each section of the kardex, e.g. stat doses, as required, regular medicines

Prescription writing											
10a. **Regular medicines** (No. prescribed)	5	8	8	7	8	6	6	2	10	14	
10b. No of medicines where medicines reconciliation indicated (i) Pre-admission dose	1	0	0	0	0	0	0	0	0	0	
(ii) Increased dose	1	0	0	1	0	0	0	0	1	0	
(iii) Decreased dose	0	0	1	0	0	3	1	0	1	0	
(iv) New	1	0	0	0	0	1	2	0	0	0	
11a. Frequency not prescribed ~~(include both non-injectable & injectable)~~ (number of medicines)	1	0	0	0	0	0	0	0	0	0	
11b.Circled times do no match frequency (No. of errors)		0	0	0	0	0	0	0	0	0	
12. No. of high risk medicines prescribed? (See Appendix 2)	2	0	0	1	0	1	0	0	1	1	
13a. As required medicines (No. prescribed)	3	5	6	7	5	8	6	7	7	7	
26b. No of medicines where medicines reconciliation indicated (i) No change/Pre-admission dose	9	0	0	0	0	0	0	0	0	0	
(ii) Increased dose	1	0	0	0	0	0	0	0	0	0	

(C) 12 - Priadel. 800mg OD 19.3

(12) Semisodium valproate 250mg 8.30 500mg 21.30

(12). H - Clozapine 100 I - Eplim 500 1000

Belfast Health and Social Care Trust

B E L F A S T

(iii) Decreased dose	2	0	0	0	0	0	0	0	0	0
(iv) New	1	0	0	0	0	0	0	1	1	0
26c. ~~F~~Maximum frequency not completed	1	0	0	0	0	0	0	0	0	0
26d. Maximum dose not completed		0	0	0	0	0	0	0	0	0
13a. **Regular** Depot medicines (No. prescribed including discontinued)	8	0	0	0	0	0	0	0	0	0
9b. No of regular non-injectable medicines where medicines reconciliation indicated: (i) Pre-admission dose	0	0	0	0	0	0	0	0	0	0
25a. Stat doses (No. prescribed)	3	0	0	1	0	2	0	0	1	1
25b. Time to be given not specified	1	0	0	0	0	0	0	0	0	0

~~**Data collection:**~~

~~**Administration** Q 27 Record the number of days that do not have date AND month entered.~~

~~Count the total number of regular doses for which administration should have occurred or been documented as omitted up to the point of audit.~~

~~Q29-32 Enter the total number of doses that have the error described.~~

~~**Administration**~~										
~~27. Date and month NOT entered~~	~~3~~	0	0	0	0	0	0	0	1	0
~~**28 Number of regular doses prescribed for administration**~~	~~26~~	84	65	857	193	364	362	43	328	259
~~29. Regular doses NOT signed as given or code recorded for omission, i.e. blank box~~	~~5~~	0	0	2	0	0	5	0	0	1
~~30. Stat doses NOT documented as given or omitted.~~	~~1~~	0	0	0	0	1	1	0	1	0

Formatted Table

(F) - 30. 19/6 senna prescribed & not documented as not given - just blank

~~31. Doses given in excess of prescribed frequency of regular medicine.~~	~~1~~	0	0	0	0	0	0	0	0	0	
~~32. Doses given in excess of maximum frequency of~~	~~0~~	0	0	0	0	0	0	0	0	0	

Any additional comments – please note Kardex and question number

Mr Stephen Guy
Pharmacy Department
Knockbracken Healthcare Park
Saintfield Road
Belfast
BT8 8BH

04 February 2010

Dear Stephen and colleagues

RE: Topic 9 – Use of antipsychotic medication in people with learning disabilities

We take pleasure in providing further details to enable your participation in Topic 9. We hope this guide and the enclosed documents will explain everything about the audit, but please contact us if you have any other questions.

To start the data collection process for Topic 9, please find the following documents enclosed:

- Background information for participating teams; please distribute a copy to each participating clinical team, keeping a copy for your own records.
- Topic 9 audit of clinical practice data collection tool and guidance notes; two copies are enclosed with your Trust code pre-entered. Please make copies and pre-enter each team code before sending to participating teams. Please keep a copy for your own records.
- Team codes table; please allocate each participating clinical team a code and keep a record of these in the table. Teams that have already participated in a POMH-UK Topic should keep the code they have been allocated previously. Teams that are participating for the first time should be numbered consecutively from the number given at the start of the table. **Please note that all team codes must be entered in the correct format e.g.56.36; this is your Trust code followed by a decimal point, followed by a two digit team code.** If you have allocated all two digit codes (56.01 –56.99) please begin allocating

56.101, 56.102 etc avoiding numbers which could easily be mistaken for another code e.g. 56.100.

To submit the data, go to **www.rcpsych.ac.uk/pomh/data** and select the Topic 9 link. The username for all your teams is **MHT056** and the password is **pomh_2i**. Data collection and entry will be taking place throughout the month of June. All data must be submitted to POMH no later than **Friday 3 July 2009.**

If you have any questions about participating in this Topic please do not hesitate to contact the POMH-UK Central Project Team by phone or email at any time.

If your Trust has decided not to participate in this audit we would be grateful if you could inform us by phone or email.

Best wishes,

The POMH-UK Central Project Team

Email: pomh-uk@cru.rcpsych.ac.uk
Tel: 0207 977 4998/4999/6641

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Topic 9:

Use of antipsychotic medication in people with a learning disability

Background, method and findings from the baseline audit

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Background

Topic background

- Antipsychotic medications are prescribed "off label" for behavioural problems in people with a learning disability (LD).
- The use of antipsychotics to manage behavioural problems which are **not attributable to diagnosable mental illness**, in people with LD is controversial.
- A recent, influential, double-masked RCT called into question the **role of antipsychotics for aggression of non-psychotic origin.** No difference was found between the efficacy of haloperidol, risperidone or placebo (Tyrer et al, 2008).
- A major consideration in LD prescribing practice is the **capacity** of people with LD and behavioural problems to participate in decisions about their treatment.

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Background

Why this Topic was selected?

POMH-UK member Trusts indicated their interest in benchmarking their prescribing practice in this area through participation in a quality improvement programme.

LD clinicians often feel they lack the guidance and support regarding best practice prescribing that is available in other clinical settings. This audit is the first time that national prescribing practice in LD psychiatry has been reviewed and benchmarked in this way.

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Audit standards

Audit standards

Whilst there is a lack of NICE guidance in this area, the literature has been reviewed and standards set in **"Using medication to manage behaviour problems among adults with a learning disability"** (Deb et al., University of Birmingham, September 2006).

The audit standards used in this report were derived from these, and the third standard is also supported by the **NICE clinical guideline** for the management of schizophrenia CG82 (2009).

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Audit standards

Audit standards

1. The indication for treatment with antipsychotic medication should be documented in the clinical records (Deb, 2006).
2. The continuing need for antipsychotic medication should be reviewed at least once a year (Deb, 2006).
3. Side effects of antipsychotic medication should be reviewed at least once a year. This review should include assessment for the presence of extrapyramidal side effects (EPS), and screening for the 4 aspects of the metabolic syndrome: obesity, hypertension, diabetes and dyslipidaemia (NICE clinical guidelines CG82, 2009).

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Method

Sample

145 clinical teams from 39 mental health Trusts participated in the audit, submitting data for **2,319 patients**, all of whom had a **diagnosis of learning disability and were prescribed one or more antipsychotics.**

This is the largest audit of antipsychotic prescribing in people with a learning disability that has been conducted to date.

Data collected

- Age, gender, ethnicity, severity of learning disability, co-morbid psychiatric diagnoses and care setting
- Diagnosis of epilepsy
- The dose of each oral/short-acting IM and depot/long-acting antipsychotic currently prescribed
- The main indications for antipsychotic prescribing
- Other medications for mental health, behavioural problems or epilepsy
- Documented evidence of side effect monitoring
- Documented evidence of formal review of medication

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Key findings: Part 1

Key findings

1. For patients in whom antipsychotic treatment was initiated less than 12 months ago (n=328), the **indication for treatment was clearly described in 93%** of the clinical records.
2. The most common indications for antipsychotic prescribing in the total national sample (n=2,319) were **comorbid psychotic disorder** (42%), followed by **anxiety and agitation** (42%), and **overt aggression** (38%).
3. Of those patients in whom antipsychotic treatment was initiated more than 12 months ago (n=1,991), **96%** had their continuing need for antipsychotic **medication reviewed** in the last year.

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Key findings: Part 2

Key findings

4. **Oral risperidone** was the **most commonly used antipsychotic,** being prescribed for 40% of the total national sample. Olanzapine was prescribed for 20% of patients, and chlorpromazine, haloperidol and quetiapine for 10% each.
5. Only **4%** of the total national sample were prescribed a **high dose** antipsychotic, and **15%** were prescribed a **combination** of antipsychotics.
6. In addition to an antipsychotic, almost **three quarters** (73%) of patients were **prescribed at least one other drug** for the treatment of mental illness, behavioural problems or epilepsy.

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Key findings: Part 3

Key findings

7. For those patients in whom antipsychotic treatment was initiated more than 12 months ago (n=1,991), **documented evidence of side effect assessment** was as follows:
   - **Blood glucose: 60%** of patients (range across Trusts 11-100%)
   - **Lipid profile: 57%** of patients (12-100%)
   - **Weight/BMI: 56%** of patients (5-100%)
   - **Extrapyramidal side effects: 41%** of patients (0-100%)
   - **Blood pressure: 37%** of patients (0-100%).
8. Of the side effect assessments listed above, **19% of patients had no documented evidence of any** of them being conducted in the last year. 14% of patients had evidence of 1 assessment, 16% had evidence of 2, and 52% had evidence of 3 or more.

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Conclusions

Conclusions

- The **indications** for prescribing antipsychotic medication were **clearly documented** in the clinical records.
- High doses and combinations of antipsychotics are **prescribed less commonly** than in adult mental health services.
- The continuing need for antipsychotic **medication was regularly reviewed and documented** in almost all patients in this sample. The high proportion of patients having medicines changed at review suggests **thoughtful and thorough practice** in this area.
- In just under **three-quarters of patents,** a general statement regarding **side effects** had been **documented** in the last year.
- Documented evidence of **systematic monitoring across a range of side effects was far less common.** Potentially remediable physical health problems may therefore not be detected.

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National findings

Indications* for antipsychotic prescribing:

Initiated within the last 12 months (n=328)

Agitation and anxiety	(n=142; 43%)
Co-morbid psychotic disorder	(138; 42%)
Overt aggression	(120; 37%)
Threatening behaviour	(87; 27%)
Obsessive behaviour	(37; 11%)

Initiated more than 12 months ago (n=1,991)

Co-morbid psychotic disorder	(833; 42%)
Agitation and anxiety	(826; 42%)
Overt aggression	(754; 38%)
Threatening behaviour	(609; 31%)
Self harm	(266; 13%)

**Note that individual patients may have been prescribed antipsychotic medication for more than one indication.*

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Prescribing practice

Details for the 5 most commonly prescribed antipsychotics

	Use: n (%)		
Drug	Monotherapy	Combination	PRN
Risperidone	791 (86%)	134 (14%)	86 (9%)
Olanzapine	380 (81%)	91 (19%)	65(14%)
Chlorpromazine	143 (59%)	98 (41%)	112 (47%)
Haloperidol	117 (49%)	121 (51%)	110 (46%)
Quetiapine	183 (81%)	43 (19%)	25 (11%)

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Prescribing practice

Dosing details for the 5 most commonly prescribed antipsychotics

Drug	Dose: Median (range)			
	Oral	IM	Oral PRN	IM PRN
Risperidone	2mg (0.5-14mg)	-	1mg (0.3-8mg)	-
Olanzapine	10mg (7.5-30mg)	-	5mg (2.5-20mg)	10mg (2.5-20mg)
Chlorpromazine	100mg (7.5-1000mg)	-	100mg (15-1150mg)	125mg (75-250mg)
Haloperidol	6mg (0.5-30mg)	10mg (6-15mg)	10mg (0.5-20mg)	15mg (0.5-30mg)
Quetiapine	250mg (25-800mg)	-	100mg (25-750mg)	-

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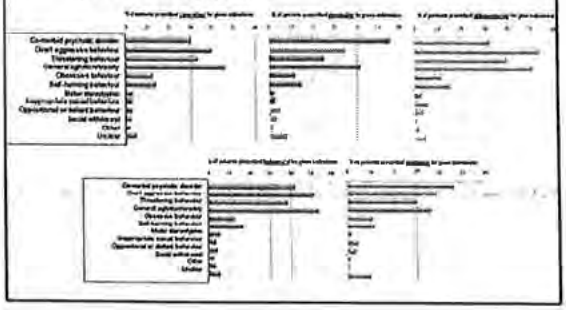
Prescribing practice

Indication profiles for the most 5 most commonly prescribed antipsychotics



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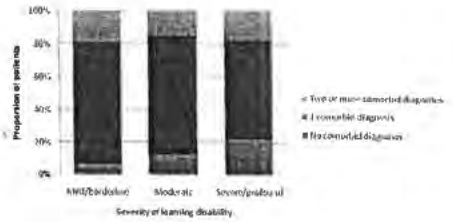
National findings

Proportion of people with co-morbid diagnoses, across mild/borderline, moderate and severe/profound diagnostic subsamples (n=2,319)



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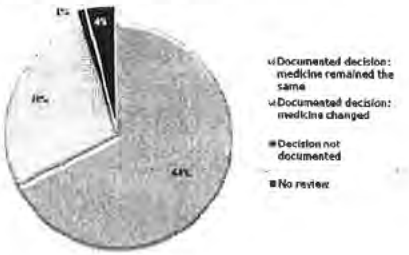
National findings

Medicine review in the last year



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National findings

Side effect monitoring in the last year

	Borderline/mild	Moderate	Severe/profound
General statement that side effects are present	223 (24%)	120 (21%)	81 (17%)
General statement that side effects are not present	442 (48%)	271 (47%)	241 (50%)
No statement about side effects	260 (28%)	186 (32%)	167 (34%)

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Trust level

Analyses presented in this section were conducted for each Trust individually and for the total sample to allow benchmarking.

Data from each Trust are presented by code.

Your Trust code is 56

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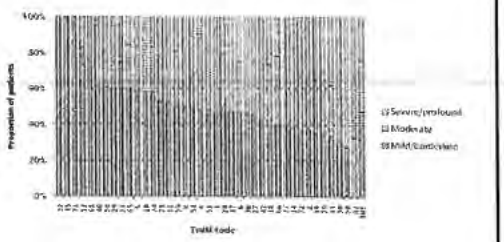
Trust level

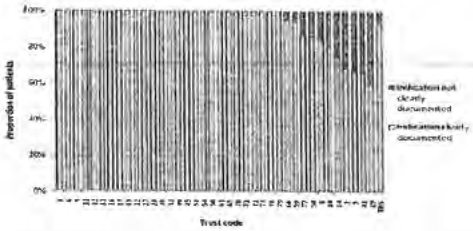
Patients' learning disability severity by Trust and in the total national sample



POMH-UK

Trust level

Proportion of patients in each Trust for whom the indication for antipsychotic prescribing is clearly documented



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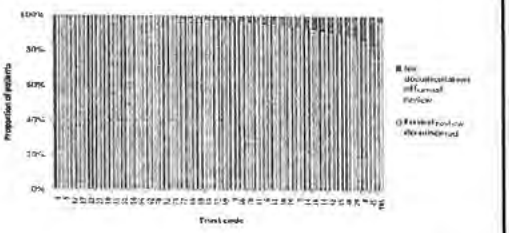
Trust level

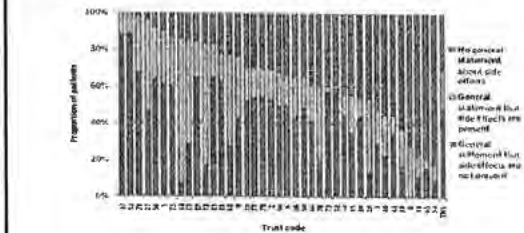
Proportion of patients in each Trust for whom the continuing need for antipsychotic medication was reviewed in the last year



POMH-UK

Trust level

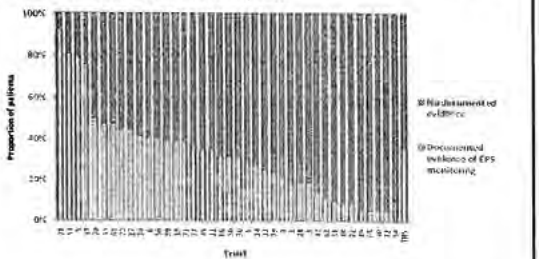
Proportion of patients in each Trust and the total national sample with documented evidence in their clinical records of a general assessment of side effects in the last year.



POMH-UK

Trust level

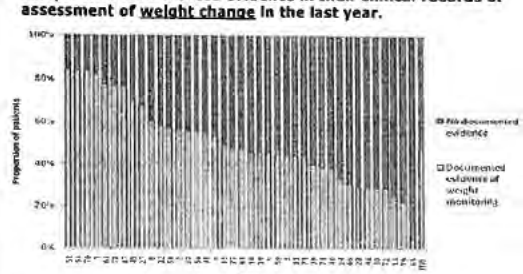
Proportion of patients in each Trust and the total national sample with documented evidence in their clinical records of assessment of EPS in the last year.



POMH-UK

Trust level

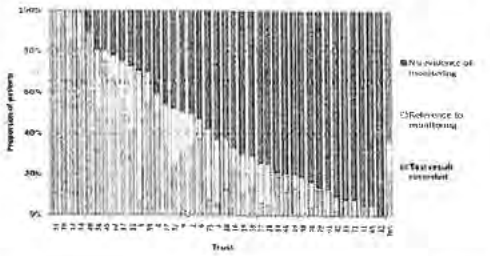
Proportion of patients in each Trust and the total national sample with documented evidence in their clinical records of assessment of weight change in the last year.



POMH-UK

Trust level

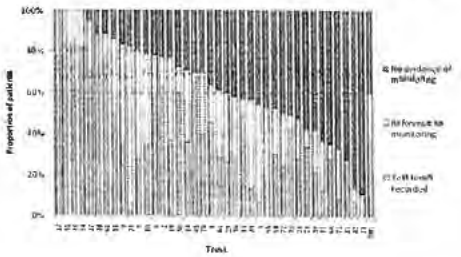
Proportion of patients in each Trust and the total national sample with documented evidence in their clinical records of assessment of <u>blood pressure</u> in the last year.



POMH-UK

Trust level

Proportion of patients in each Trust and the total national sample with documented evidence in their clinical records of assessment of <u>blood glucose</u> in the last year.



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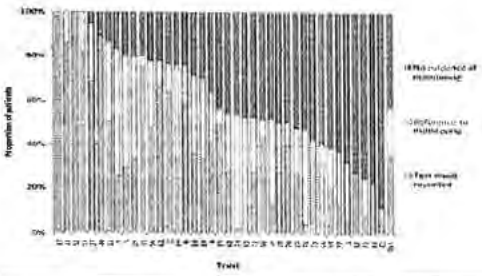
Trust level

Proportion of patients in each Trust and the total national sample with documented evidence in their clinical records of assessment of <u>lipid profile</u> in the last year.



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Team level

Analyses presented in this section were conducted for each clinical team from your Trust individually, for your total Trust sample and for the total national sample to allow benchmarking.

Data from each Trust clinical team are presented by code only.

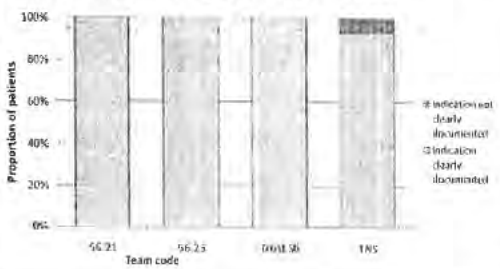
The POMH-UK Central Project Team does not know the identity of individual teams.

Only the Local Project Team lead for your Trust or organisation has the key to team codes. You should contact this person if you need to identify data for your own particular team.

POMH-UK

Team level

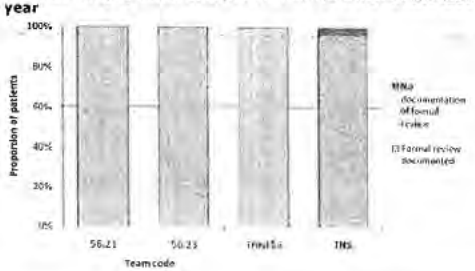
Proportion of patients receiving antipsychotic treatment for <u>under a year</u> (n=11) in each team for whom the indication for antipsychotic prescribing is clearly documented



POMH-UK

Team level

Proportion of patients receiving antipsychotic treatment for <u>over a year</u> (n=36) in each team for whom the continuing need for antipsychotic medication was reviewed in the last year



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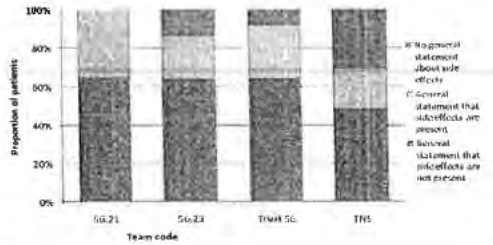
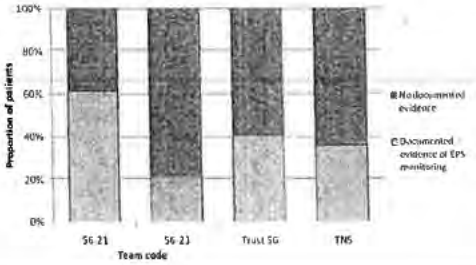
Team level

Proportion of patients in each team and the total national sample with documented evidence in their clinical records of a general assessment of side effects in the last year.



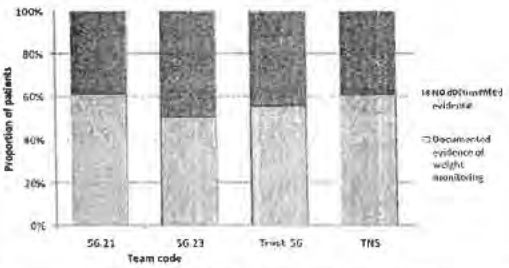
POMH UK

Proportion of patients in each team and the total national sample with documented evidence in their clinical records of assessment of EPS in the last year.



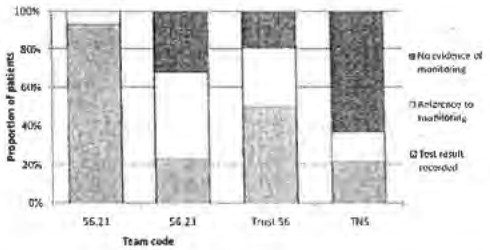
POMH UK

Proportion of patients in each team and the total national sample with documented evidence in their clinical records of assessment of weight change in the last year.



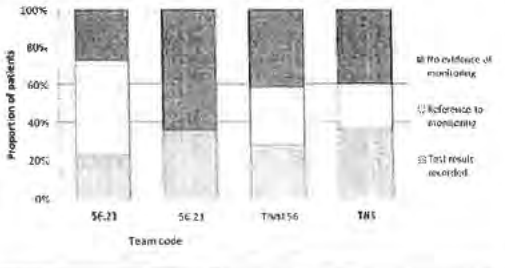
POMH UK

Proportion of patients in each team and the total national sample with documented evidence in their clinical records of assessment of blood pressure in the last year.



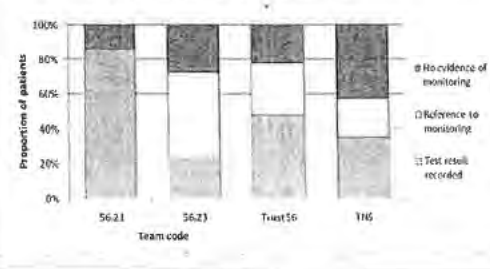
POMH UK

Proportion of patients in each team and the total national sample with documented evidence in their clinical records of assessment of blood glucose in the last year.



POMH UK

Proportion of patients in each team and the total national sample with documented evidence in their clinical records of assessment of lipid profile in the last year.



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What happens next?

- Your Trust's Local Project Team Lead (LPTL) has a copy of the **full report**, please ask them for a copy to see these findings in more detail.
- POMH will consider developing bespoke change interventions to be provided to **each** participating Trust, including opportunities for sharing good practice.
- A **re-audit** will be conducted in **January 2011.**
- If you have any **questions**, please ask your LPTL or email POMH
- pomh-uk@cru.rcpsych.ac.uk

POMH UK
PRESCRIBING OBSERVATORY FOR MENTAL HEALTH

This questionnaire relates to

POMH-UK's quality improvement programme on

Antipsychotic prescribing in people with learning disabilities (Topic 9).

Complete a separate form for each patient - ONLY include patients with a learning disability who are currently prescribed antipsychotic medication.

To help you complete this audit please use the patient's clinical notes - these include **all notes and records that are avaliable** to you and the team, both paper and electronic.

PLEASE REFER FIRST TO THE GUIDANCE NOTES LOCATED AT THE END OF THIS QUESTIONNARE.

(call POMH-UK on 020 7977 4999 for further help)

* Questions marked with an asterix are mandatory for all patients

Trust and Team details

Q1 *** Trust code**

Q2 *** Team code:**
The Team code is your Trust code followed by a 2 digit team code (e.g. 44.02).
Please ensure that the first 2 digits match the Trust code entered in Q1

Q3 **Optional extra identifier**

Q4 *** Initials of data** collector

Patient details

Q5 *** Patient code**

Q6 *** Patient's year of birth**

Q7 *** Patient's gender**

○ Male ○ Female

Audit Summary Form

Paul Devine: Audit Lead

Name: Paul Devine	**Service Group**: Intellectual Disability
Position/Job Title: Clinical Director	**Speciality**: Forensic
Email: paul.devine@belfasttrust.hscni.net	**Tel**: 028 9504 6028

Title: Safer Prescribing: Pro Re Nata (PRN) pre Rapid Tranquilisation (RT) Audit Muckamore Abbey Hospital

Brief summary of results:
Standards derived from:

NICE NG11 **Challenging behaviour and learning disabilities: prevention and interventions for people with learning disabilities whose behaviour challenges** Published: 29 May 2015

NICE NG10 **Violence and aggression: short-term management in mental health, health and community settings** Published: 28 May 2015

BAP/NAPICU EB Consensus for Clinical Mx Acute Disturbance- De-escalation and Rapid Tranquilisation

RCPsych Quality Standards Inpatient Intellectual Disability

RCPsych FR/ID/09 Psychotropic drug prescribing for people with Intellectual Disability, mental health problems and/or behaviours that challenge: practice guidelines Faculty of Psychiatry of Intellectual Disability

Findings:
Mostly safe but:
Prescribing did not take into account Tmax

Choice of first line drug sometimes not in keeping with guidance- reason for variation not easily found on Paris

Risk of high dose prescribing with antipsychotics?

Kardex layout is insufficient to record indications and how to use

Areas of good practice (good results against standards):

CALM cards on each kardex with alternatives to PRN from Positive Behaviour Support plan (PBS) – Billie

“Critical conversation” between 2 registrants before use- Billie

Areas where improvement is needed (poor results against standards):

Add “At Risk” category to High dose prescribing policy- Paul to policy author

Separate medication reviews weekly between medical and pharmacy? Paul and Deirdre Develop PRN and RT pathway kardex through QI methodology? Paul No PRN prescribing after one month without PBS in place? Paul
How and when were the results of this audit disseminated? **Medical staff meeting** **Collective Leadership Team 29.12.2023** **Dr Mark Cross**
Proposals for change: Did the audit confirm good practice? Yes Did the audit identify areas where there is need for improvement? Yes If Yes, please complete the action plan overleaf If an action plan has not yet been produced, please state the reason why: Have protocols or guideline been written as a result of this audit? No If yes, protocol/guideline details:

ACTION PLAN

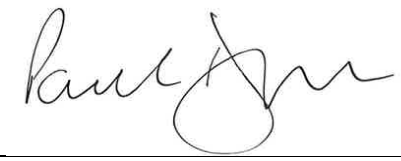
Audit Title:

	Action (i.e. How Recommendation will be implemented)	'Implement by' Date	Staff Member Responsible	Responsible Manager	Change Stage (see key)	Change Stage Key
1	Repeat induction training for all medical staff	Feb 23	Paul Devine	CLT	1	Actioned
2	Develop PRN and RT pathway kardex through QI methodology	Aug 23	Paul Devine	CLT	1	Action in progress
3	Separate medication reviews weekly between medical and pharmacy trial in Sixmile	Jan 23	Paul Devine and Deirdre Murray, pharmacy	CLT		Actioned
4	CALM cards on each kardex	Feb 23	Billie Hughes	CLT		Actioned

	with alternatives to PRN from Positive Behaviour Support plan (PBS) roll out to all wards					
5	"Critical conversation" between 2 registrants before use roll out to all wards	Feb 23	Billie Hughes	CLT		Actioned
6	Suggest No PRN use beyond one month without PBS or WRAP plan for policy review	Aug	Paul Devine	CLT		In progress

Date for Re-Audit: 12 months

Project Lead:

Signature:	Name (printed)	Date: 29.12.2023
	PAUL DEVINE	

Senior Clinician/Manager: In signing this, I agree the above action plan recommendations and, if necessary, will take a lead in ensuring that changes are made in order to obtain improvements in the quality of care

Signature:	Name (printed): Paul Devine	Date: 26.05.2023
		

Action plan can be returned to: QualityandAudit@belfasttrust.hscni.net