Airedale NHS Foundation Trust

Pain Agitation and Delirium Guidelines

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GUIDELINE REVIEW HISTORY

Version No:	Review Date:	Reviewer:	Changes Made:
1.1	09/05/2019	Governance groups	New Guideline

If printed, this Guideline is **valid on the day of printing only**. Please ensure that you check AireShare to ensure you are using the current version

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INTRODUCTION to Pain, Sedation& Agitation and Delirium (PAD)

Critically ill patients present multiple challenges to the medical and nursing personnel managing their care. Recognition, assessment and management of (PAD) are part of these challenges. Failure to manage all aspects of this triad well can have a detrimental effect on patient outcomes and is not in line with our trust value of Right Care.

PAD management strategies should be delivered in a holistic and time sensitive manner such that quality of care and patient experience in the critical care unit can be improved and a reduction in length of stay in critical care, duration of mechanical ventilation and associated mortality while optimising utilisation of Trust resources can be achieved.

While this document provides guidance for management of PAD on the critical care unit, it is neither for use outside of Critical care nor does it provide guidance on perioperative or pre procedural sedation or analgesia.

PAD assessment and a clear management plan should be documented on the daily review sheet for each patient. It should be reviewed daily or more frequently in accordance with clinical demands. This guideline will be divided into two parts, each covering a section of PAD, but needs to be delivered as a complete bundle of care.

Part A- Provides guidance on Pain and sedation: structured assessment and management of pain, assessment of sedation, sedation hold and management of sedation.

Part B-. Summarises assessment and management of agitation and delirium

Airedale NHS Foundation Trust fully recognises that the obligation to implement guidance should not override any individual clinician to practice in a particular way if that variation can be fully justified in accordance with Bolam Principles. Such variation in clinical practice might be both reasonable and justified at an individual patient level in line with best professional judgement. In this context, clinical guidelines do not have the force of law. However, the Trust will expect clear documentation of the reasons for such a decision and for this variation. In addition, any decision by an individual patient to refuse treatment in line with best practice must be respected, escalated to the consultant and fully documented in the appropriate records of care/treatment

PART A: Pain and Sedation

A1. INTRODUCTION

Pain Management in Critical Care.

The international Association for the study of Pain defines pain as “unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”. Most critically ill patients will likely experience pain during their Critical Care stay and identify it as a great source of stress. However, many critically ill patients may be unable to self-report their pain (either verbally or with other signs) because of an altered level of consciousness, the use of mechanical ventilation, or high doses of sedative agents or neuromuscular blocking agents. Yet the ability to reliably assess the patient’s pain is the foundation for effective pain treatment. As the international Association for the Study of Pain also states, “the inability to communicate verbally does not negate the possibility that an individual is experiencing pain and is in need of pain relieving treatment”.

The negative physiologic and psychological consequences of unrelieved pain for Critical Care patients are significant and long-lasting. For many years, Critical Care patients have identified pain as their greatest concern and leading cause of insufficient sleep.

The stress response evoked by pain can have deleterious consequences for Critical Care patients. Increased circulating catecholamine’s can cause arteriolar vasoconstriction, impair tissue perfusion, and reduce tissue-oxygen partial pressure. Other responses triggered by pain include catabolic stimulation and hypoxemia also impairs wound healing and increase the risk of wound infection.

Unrelieved acute pain in adult Critical Care patients is ubiquitous and far from benign, with short and long term consequences. Adequately identifying and treating pain in these patients require focused attention.

A2 . MANAGEMENT

Nurses will assess the patient’s level of pain using the Critical Care Pain Observation Tool (CPOT), Appendix A3.2, for sedated and ventilated patients and the Numerical Rating Score (NRS) for patients that are able to verbalise. This assessment will be documented in the nursing care plan and on the observation chart.
All nursing staff will adhere to the established protocol for the management of pain and be competent to follow the protocol in order to relieve the patient of pain.
The effectiveness of the analgesia administered will be evaluated using the relevant pain score tool.

The outcome criteria are:

The patient's pain score will be assessed on admission
The assessment will be documented in the nursing care plan
The patient's pain score will be assessed and documented at least 4 hourly
All staff will be aware off the effective administration of analgesia

Analgesic drugs

Individual patient circumstances, cautions, contraindications should be considered on a case by case basis when selecting therapeutic agents for a particular patient. Therefore, in this guidance revision, we are not being prescriptive in our approach by suggesting a hierarchy of agents. A comprehensive review of a patient's analgesia, anti-anxiolytic and sedation needs should be performed at least daily, and should be dynamically reviewed with the availability of a more collateral history to inform decision making. Appendix A1 Pain Assessment.

Paracetamol

See ANHST Guideline for Oral and Intravenous Dosing of Paracetamol in ADULTS

- http://sharepoint-srv2/C13/C17/Medicines%20Management%20Policies/default.aspx

NSAIDS

NSAIDs are effective analgesics but are insufficient alone after major surgery. Their use may reduce opioid usage (and their associated side effects) whilst increasing quality of analgesia. However caution is needed as they can cause GI Bleeding, trigger acute kidney injury, increase risk of postoperative bleeding and possibly exacerbate bronchospasm in sensitive asthmatic patients. These agents are usually prescribed for short-term use only via oral/enteral (e.g. Ibuprofen) or rectal (e.g. Diclofenac) routes.

Tramadol

Tramadol is licensed for the treatment of moderate to severe pain and produces analgesia by two mechanisms: an opioid effect and an enhancement of the serotonergic and adrenergic pathways. It has fewer of the typical opioid side effects, e.g. less respiratory depression and constipation, but it is known to lower seizure threshold (caution needed in patients with epilepsy) and psychiatric reactions have been reported. Tramadol has the potential to produce serotonin syndrome when co-prescribed with tricyclic antidepressants or SSRIs. Tramadol can be prescribed via either injectable or oral/enteral routes.

Oral/Enteral Opioids

Morphine is the first-line oral/enteral agent and is usually prescribed in the first instance PRN as the solution form in 10mg/5ml strength. Usual starting dose range between 2.5mg and 10mg, with a frequency between 4 to 6 hourly, both depending on the individual patient, pre-existing opioid tolerance and renal function. Higher doses and increased frequency can be prescribed as per clinical assessment and patients' analgesic requirements.

Morphine solid-dose forms are also available as either immediate release or modified release preparations but these will usually need to be ordered via pharmacy as not routinely stocked on critical care units.

The alternative oral/enteral opioid is oxycodone which is available in solution form and both immediate release and modified release solid dose formations. These will usually need to be ordered via pharmacy, except when used as specific protocols. Oxycodone mainly undergoes hepatic metabolism, however elimination via the kidneys remains prolonged in renal impairment albeit to a lesser extent than morphine. Therefore cautious dosing is still recommended in patients with AKI or CKD with a gradual titration, ideally administering doses when required in the first instance, to minimise risk of accumulation. Appendix 3B, 3C, 3D.

Injectable Critical Care Therapy

Please see AIRESHARE for ANHST policies that have information relating to PCA, epidural and continuous local anaesthetic infusion use. These are the most common forms of injectable analgesia delivered to patients who are not intubated on critical care.

In an intubated and mechanically ventilated patient when the CCPOT score >2 and/or the numeric and facial pain score are>5, injectable forms of analgesia should be considered.

Morphine Sulphate

Morphine Sulphate is an opioid analgesic which has been widely used in critical care.

It is metabolised primarily by the liver into multiple active metabolites, and is excreted by the kidneys, with an initial half-life of up to 6 hours and a long terminal half-life of up to 44 hours.

Therefore morphine is less suitable for patients with significant hepatic and renal impairment, and in those patients where short periods of sedation are required.

Alfentanil

Alfentanil is an analogue of fentanyl with a clinical potency of around 10 times the potency of morphine. However it only has between one-fourth and one-tenth the clinical potency of fentanyl but with a shorter duration of action following a single dose.
Alfentanil has the fastest onset to action of all the opioids (90 seconds) due to its ability to rapidly cross the blood brain barrier. Alfentanil has a terminal elimination half-life of approximately 90 minutes which is considerably shorter than fentanyl, due to relatively small volume of distribution. It is primarily metabolised in the liver and may be inhibited by cytochrome P450 3A4 inhibitors (e.g., fluconazole or erythromycin).

Alfentanil is licensed for analgesia and suppression or respiratory activity in mechanically ventilated patients on critical care to aid compliance, improve tolerance of the endotracheal tube and provide analgesia during painful procedures.

Alfentanil given by infusion should only be given in areas where facilities are available to deal with respiratory depression and where continuous monitoring is undertaken. The maximum recommended licensed duration of treatment with Alfentanil infusion is 4 days, and prolonged use should be reviewed and authorised by a critical care consultant. At the standard doses used in ANHST, Alfentanil provides no sedative activity. Therefore supplementation with an appropriate hypnotic or sedative agent may be required and advice should be sought from a critical care clinician.

Alfentanil is a potent opioid and is highly likely to supress spontaneous ventilation (more so than compared fentanyl) and elderly patients' are particularly sensitive so lower doses should be used. Undesirable effects include bradycardia, hypotension, nausea and vomiting, which are typical of all opioids but may be more pronounced with Alfentanil. Clearance is prolonged in hepatic impairment but unaffected in renal impairment.

Initial infusion rate is usually 2mg/hour or (30mcg/kg/hour based on ideal body weight) with a maintenance infusion typically between 1mg to 5mg per hour. Intravenous bolus doses of 0.5mg may be used to provide additional pain relief during brief painful procedures such as physiotherapy, endotracheal suction or wound dressings.

Fentanyl

Fentanyl is a synthetic opioid agonist, approximately 100 times more potent than morphine.
It is a u-receptor agonist and such shares morphine's effects. However, it is less likely to precipitate histamine release. High doses significantly reduce or even eliminate the metabolic stress response to surgery but are associated with bradycardia and chest wall rigidity. Doses vary depending on the duration of analgesia and sedation required, lower doses are usually sufficient for analgesia whilst maintaining spontaneous ventilation (i.e. 1-2 microgram /kg/hour) whilst higher doses are indicated when opioid based analgesia and sedation required in ventilated patients.
Its onset of action is rapid following intravenous administration due to its high lipid solubility (nearly 600 times more lipid-soluble than morphine). At low doses its short duration of action is due solely to distribution. However, following prolonged infusion or higher doses (4mls/hr), the half-life increases dramatically from 30 - 60 minutes to 9-16 hours. This should be borne in mind and the infusion rate altered appropriately. This prolonged context-sensitive half time has reduced the frequency of continuous infusions used within critical care, although bolus doses remain appropriately used for acute analgesia indications.

Remifentanil

Remifentanil is a fentanyl derivative that is a pure u-agonist. It has an ester linkage, which is very rapidly broken down by plasma and non-specific tissue esterase, particularly in muscle. The metabolites have minimal pharmacodynamics activity

and the context sensitive half-life of remifentanil is relatively constant. Therefore a patient may be maintained on a remifentanil infusion for a long period, without significant drug accumulation as seen with other opioids. The advantage of this pharmacokinetic profile is that a patient may be given prolonged infusions of remifentanil, with rapid offset of action when it is no longer required. Analgesic effects wear off so rapidly that pain may be a significant problem immediately post-cessation. This must be anticipated by the administration of a longer acting opioid shortly before therapy is weaned off.

Indications for considering Remifentanil maybe :
Renal or liver dysfunction
Short intended duration of ventilation
Endotracheal intolerance
Neurological dysfunction requiring frequent assessment (e.g. Head/Hypoxic Brain Injuries)
Raised ICP resistant to medical management
Sedation withdrawal after long-term sedation
Tracheostomy and ready to wean

Remifentanil is an extremely potent opioid, and is highly likely to suppress spontaneous ventilation. Undesirable effects include bradycardia, hypotension and muscle rigidity; which resolve on discontinuation. Ideal Body Weight must be used to reduce the likelihood of these adverse effects.

REMIFETANIL MUST NEVER BE BOLUSED; instead the background rate should be increased.

The default remifentanil dose range used within critical care is 0 to 2 micrograms/kg/min.
The licensed maximum rate is higher than this but it has been agreed with the within the critical care usage to limit the upper rate maximum 5 micrograms/kg/min (via consultant authorisation) to permit adequate analgesia without the need to add in additional agents.

The choice of analgesia and the dosage depends on many factors and needs to be individual to the patient. The choice of analgesia can include opioids, NSAIDS, Paracetamol and regional anaesthetics. Enterally administered gabapentin or pregablin should be considered for treatment of neuropathic pain. The pain team should be consulted, where available, in complex cases.
The administration of pre-emptive analgesia and / or non-pharmacologic interventions to alleviate pain prior to invasive and potentially painful procedures in adult Critical Care patients is recommended.

Sedation
Sedation may be administered to facilitate patient cooperation with organ support. This can also be a beneficial side effect of analgesic medication.
Agitated patients have a higher basal metabolic rates and increased oxygen consumption, which interferes with and reduces the efficiency of organ support. There is an increasing body of evidence demonstrating that over use of these therapies, either as sole agents or in combination is associated with increased

mortality, increased duration of mechanical ventilation and increased length of Critical Care stay amongst other detrimental outcomes.

The following issues may occur with both analgesic and sedative agents, especially when used in combination.

There are two areas to consider.

Under Sedation	Over Sedation
Ventilator dysynchrony with VQ mismatch due to effects on pulmonary vasculature, results in increased ventilator support, cough reflex suppression & reduced secretion clearance (2)	Accumulation effects
Accidental self extubation & injury	Tolerance and Tachyphylaxis
Cardiovascular stress response increased inotrope/vasopressor requirements	Withdrawal
Discomfort, anxiety, awareness and Post Traumatic Stress Disorder	Cardiovascular Suppression
	Diagnostic tests 'slow to wake'
	REM sleep deprivation leads to increased delirium (4)
	Prolonged ventilation at risk VAP
	Delayed GI motility poor enteral feeding

Daily interruptions of sedation have been proven to reduce ventilator days and inappropriate diagnostic studies to investigate unexplained altered mental status. The ''sedation hold'' has become widespread practice and has become part of the ventilator care bundle used in high impact Interventions as well as being incorporated in to the surviving sepsis campaign guidelines. A landmark paper published in the Lancet in 2008 by Girard looked at 336 critically ill patients and demonstrated that pairing sedation hold and spontaneous breathing trials reduced the of time on ventilation, length of stay in critical care unit and mortality. It is therefore expected that all patients suitable for sedation holds should receive one.

The reason for omitting a sedation hold should be documented in the medical and the nursing notes.

As well as pairing of the sedation holds with spontaneous breathing trials being effective; there is emerging evidence that early mobilisation of these patients during their sedation holds improves their functional status at hospital discharge and a shorter length of delirium on the Critical Care unit. There has recently been an increase use of analgesia based sedation within literature improving satisfactory levels of sedation compared with hypnotics.

The ability of the patient to remember non-delusional aspects of their stay on Critical Care is protective against long-term dysfunction including post-traumatic stress disorder (PTSD) and sedation holds have been shown to protect against PTSD. The use of patient diaries may also assist in this.

Agitation

If the patient remains agitated and unsettled after the administration of analgesia, then sedation should be added to the therapy. The majority of ventilated patients will require both.

Propofol

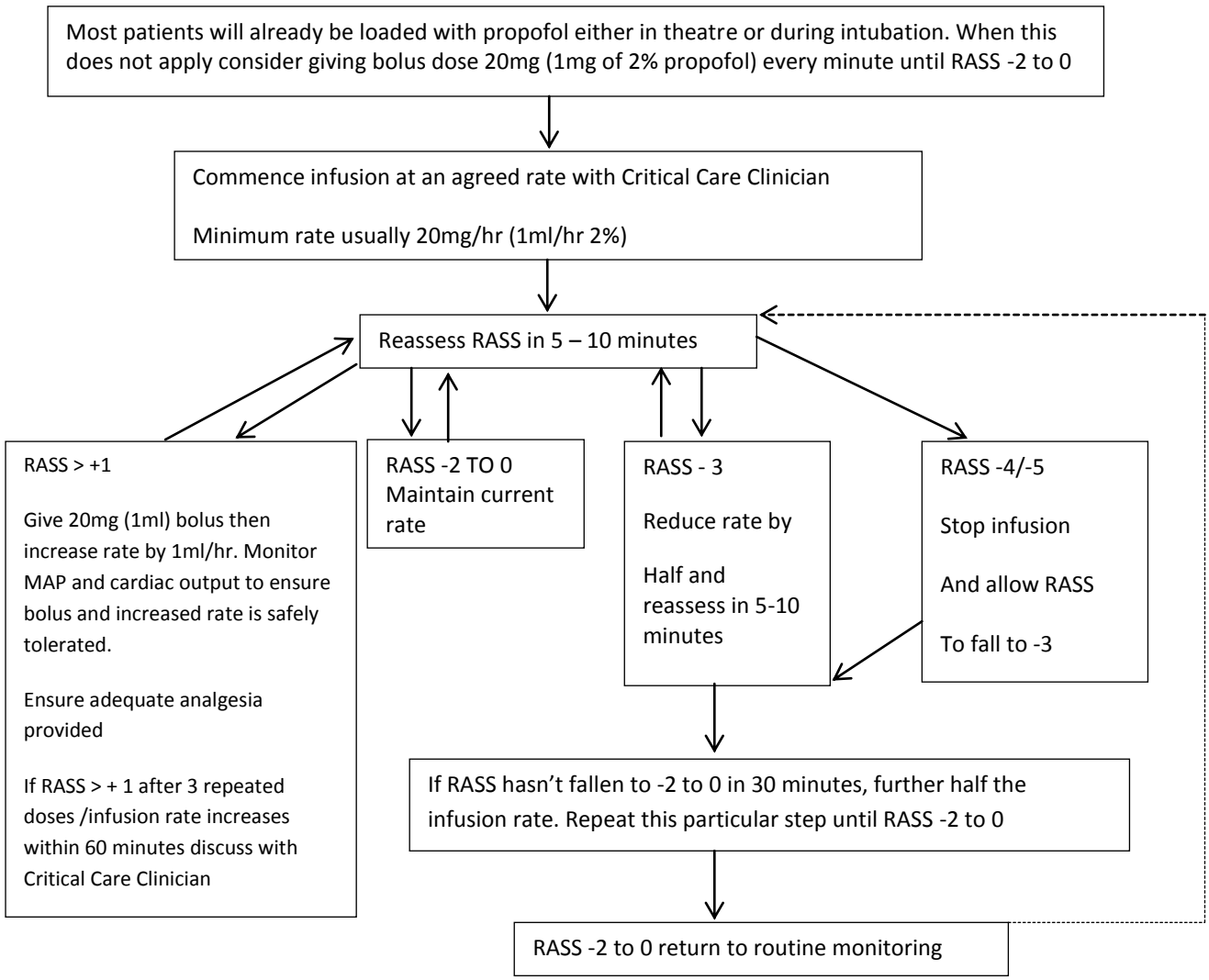
Propofol is highly effective for short-term ventilation (<5 days); reduces mean arterial pressure (MAP) by up to 30%; and reduces cardiac output. Serum triglyceride levels may be necessary in some patients, particularly after 3 days (review if <2mmol/L).

Caution: Propofol infusion Syndrome can occur with infusions over 48 hours. This is characterised by metabolic acidosis, hyperkalaemia, rhabdomyolysis and cardiac failure.

Contraindications: hypersensitivity to soya, peanut, or eggs.

The flowchart on page 11 provides a guide to commencing propofol.

Initiating propofol for Sedation



If the required Propofol dose exceeds 4mg/kg/hour, then consider adding an adjuvant or use of an alternative agent. Adjuvants should be considered in propofol therapy when:-

1. Patient sedated > 5 days
2. Reduction in heart rate, MAP required.
3. Raised serum triglycerides (>2mmol/L) propofol intolerance.
4. Green urine and high clinical suspicion of propofol related syndrome.
5. Unable to sedate
6. Uncontrolled agitation/delirium

Adjuncts or alternatives when sedation is inadequate with propofol alone

1. Alpha -2 agonists (e.g. clonidine or dexmedetomidine)
2. Benzodiazepines (e.g. midazolam or lorazepam)

Clonidine

Clonidine is centrally acting alpha-2 agonist, which reduces blood pressure and slows heart rate by sympathetic stimulation. Analgesia occurs as a result of stimulation of opiate receptors, centrally and peripherally. Primary indication is an adjunct when adequate sedation cannot be maintained using conventional agents such as propofol. In addition to sedation, clonidine has opioid sparing analgesic properties, and can aid weaning from conventional sedation when agitation secondary to alcohol and/or nicotine withdrawal reactions is problematic.

Its half-life has been variably reported between 6 to 24 hours. Fifty per cent is excreted renally, so may accumulate in renal impairment.

Clonidine may cause hypotension and bradycardia. As it is a negative chronotrope, caution should be used in patients with low cardiac output or impaired ventricular function.

Sudden withdrawal of clonidine may result in agitation, sweating and hypertension.

Therefore, reduce the dose gradually, usually over several hours.

Clonidine can be used as a continuous intravenous infusion or via intermittent dosing, either IV or enteral. Intermittent doses range from 25 microgram up to 150 microgram with a frequency up to QDS. If required dose exceeds 150 micrograms QDS consider switching to a continuous intravenous infusion.

When weaning from prolonged intravenous infusion use, clonidine may be switched to the enteral route if appropriate. Although the bioavailability of IV to enteral is 1:1, in clinical practice when converting to enteral dosing this ratio is not used because the intermittent doses would exceed the usual maximum. Instead the infusion rate is usually weaned down to at least 1 microgram/kg/hour before switching to intermittent enteral doses, which are usually divided into 3 daily doses up to a maximum of 150 micrograms per dose.

This can then be weaned gradually over the next 2-3 days (can sometimes extend to 5-7 days) by initially reducing then dose followed by reducing the frequency.

Occasionally patients with a history of chronic pain benefit from clonidine administered by the epidural route and this may be added to plain levobupivocaine epidural using a specified dose regime but should only be done in liaison with the Acute Pain Team and Pharmacy.

A flow chart with suggested clonidine infusion protocol is attached as appendix 3D.

Dexmedetomidine

Dexmedetomidine is a shorter acting alpha 2 agonist, which is used in select patients to provide reusable sedation. Has been shown to reduce prevalence of delirium and shortened length of stay compared to Midazolam. However recent studies have not demonstrated a length of stay benefit over propofol. As yet there are no direct studies of dexmedetomidine vs clonidine.

Suggested Uses:

- Patients who are exceptionally challenging to manage where the somnolent effects of propofol are not desired and the patients have failed a trial of clonidine
- Predicted difficult extubation where sedation is still required
- Patients who have a very high risk of developing critical care delirium
- Patients who immediately require sedation who are receiving non-invasive ventilation

No dose adjustment is required in renal impairment

Contraindications

- Pregnancy or breastfeeding
- Grade 2 or 3 heart block unless paced
- Acute cerebrovascular conditions
- Previous allergy to Dexmedetomidine or other alpha-2 agonists
- Uncontrollable Hypotension

Cautions

- End stage hepatic failure (manufacturer advises caution in hepatic impairment (liver metabolism a reduced maintenance is advised)
- Severe paralytic ileus
- Local vasoconstriction at a higher concentration may be of greater significance in patients with ischaemic heart disease or severe cerebrovascular disease, and these patients should be monitored closely. Dose reduction or discontinuation should be considered in a patient developing signs of myocardial or cerebral ischaemia.

Side Effects and Adverse Reactions

- The most frequent adverse reactions are: hypotension (25%), hypertension (15%), and bradycardia (13%)
- Common adverse reactions (1 to 10%) include: hyperglycaemia, hypoglycaemia, agitation, myocardial ischaemia/infarction, tachycardia, nausea, vomiting, dry mouth, withdrawal syndrome and hyperthermia.

Interactions

- Co-administration with anaesthetics, sedatives, hypnotics and opioids is likely to lead to an enhancement of effects
- Enhanced hypotensive and bradycardic effects may be seen with other drugs that have these effects e.g. beta-blockers

When switching between clonidine and dexmedetomidine, it may take longer to achieve the desired RASS due to differing half-lives and competition for the same receptor sites.

If control is not achieved within 72 hours of initiation, and doses have been optimised to the maximum tolerated dose, then the choice of agent will need to be reviewed.

The flow chart attached in Appendix 3E may help when initiating Dexmedetomidine in the context of pre-existing sedation and analgesia.

Benzodiazepines

Benzodiazepines are useful where sedation is complicated by alcohol withdrawal or where treatment of delirium with antipsychotics which prolong QT interval is contraindicated, and patient is severely or dangerously agitated, and orientation and environmental management has been unsuccessful.

Lorazepam

- Doses of 0.5 – 1mg po/ng/iv 4 to 8 hourly may be considered, **NEVER** prescribe doses of more than 20mg per day.
- Lorazepam is almost completely absorbed from gastrointestinal tract and peak serum levels are reached in 2 hours. It is metabolised by a simple one-step process to a pharmacologically inert glucuronide. There are no major active metabolites. The elimination half-life is about 12 hours and there is minimum risk of excessive accumulation.

Midazolam

- The pharmacokinetics of midazolam is more complicated than that of Lorazepam due to the active metabolite alpha-hydroxy-midazolam.
- Bolus doses in the range of 0.5-5mg can be given each time the patient appears agitated or anxious. This can be in combination with analgesic such as morphine.
- If a patient is requiring repeated bolus dosing to manage agitation and anxiety, this should be reviewed by a Critical Care clinician to decide on continued management.

- The decision to run an infusion of Midazolam **MUST** only be authorised by a Critical Care clinician as there will be increased risk of accumulation associated with delirium and prolonged length of Critical Care stay.

A3. Appendix A Pain Tools

A3.1 Assessment of Pain

Adult patients
Ask the patient, 'Do you have any pain at rest?' and if so 'Is the pain mild, moderate or severe?'

Then, ask the patient, 'Do you have any pain when you move, cough or deep breathe?' and if so is the pain mild, moderate or severe?

Severe pain at rest should also be coded as '3'. **It is important that these terms are used and that patients are NOT asked for a numerical 'score'**.

0	No pain at rest or on movement
1	Mild pain at rest or on movement
2	Moderate pain at rest or on movement
3	Severe pain at rest or on movement

(Verbal rating score with numerical code)

If the site of the pain is not consistent with the known problem then seek advice.

A3.2 Critical Care Pain Observation Tool

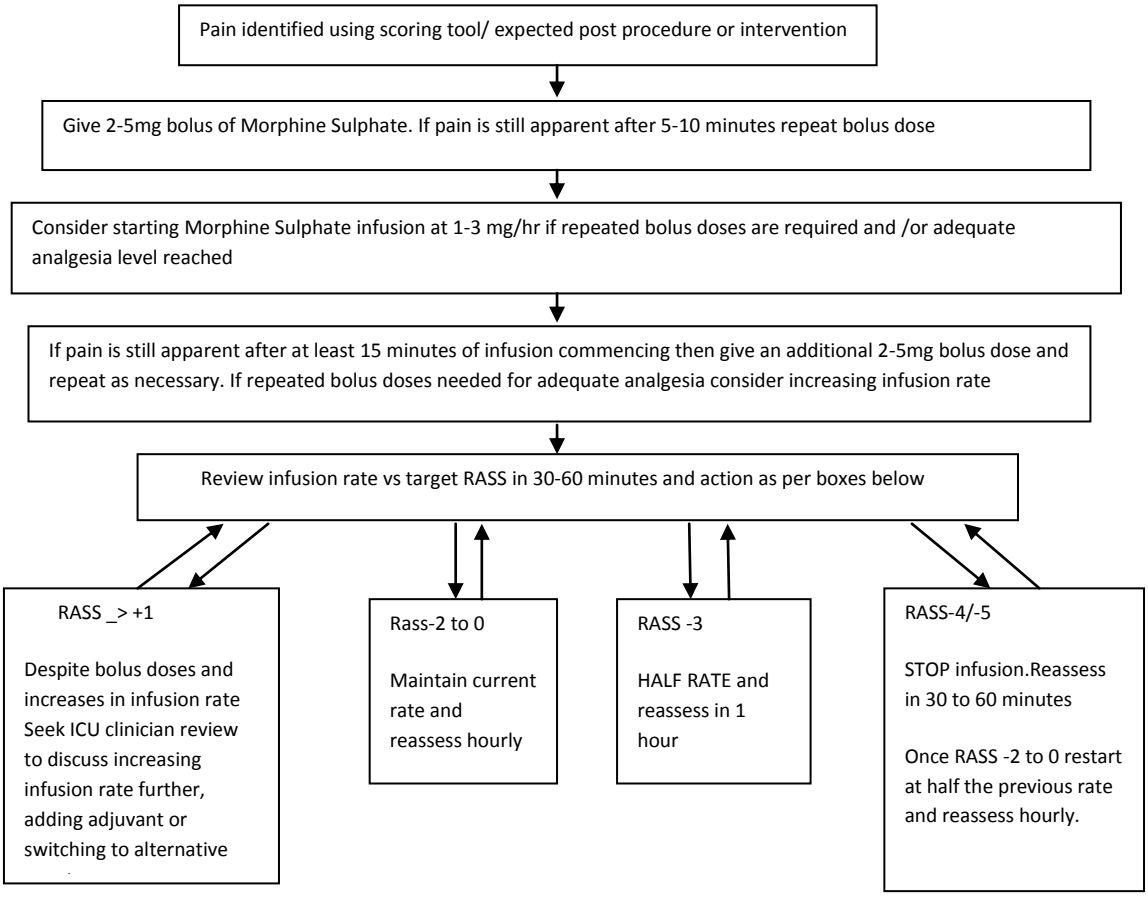
Instructions for completing the Critical-Care pain Observation tool

1. Observe the patients face and body movement at rest and rate those aspects accordingly. Observe for vocalisations (if extubated) or compliance with ventilator and score per the appropriate scale. Passively move the patient's arms and rate the level of resistance on a 0-2 scale. Observe for facial and bodily indicators of pain while providing usual care (e.g. turning) and rate per the scale provided. Add up the scores for each measure to determine a total score. Scores of > 1 at rest indicate the presence of pain. Scores > 2 with movement (turning) indicate pain. Higher scores generally provided more support of the presence of severe pain, but the relationship is not linear (a 4 is not twice as intense as a "2") and low score(e.g. 2) can indicate the presence of severe pain.
2. Gelinas C, Fillion L, Puntillo KA et al, (2006). Validation of the Critical Care Pain Observation Tool in Adult Patients. American Journal of Critical Care, 15 (4) 420-427 Gelinas C, Harel F, Fillion L, Puntillo KA et al, (2009). Sensitivity and specificity of the Critical-Care Pain Observation Tool for the detection of pain in intubated adults after cardiac surgery. Journal of Pain and Symptom Management, 37 (1) 58 – 67.

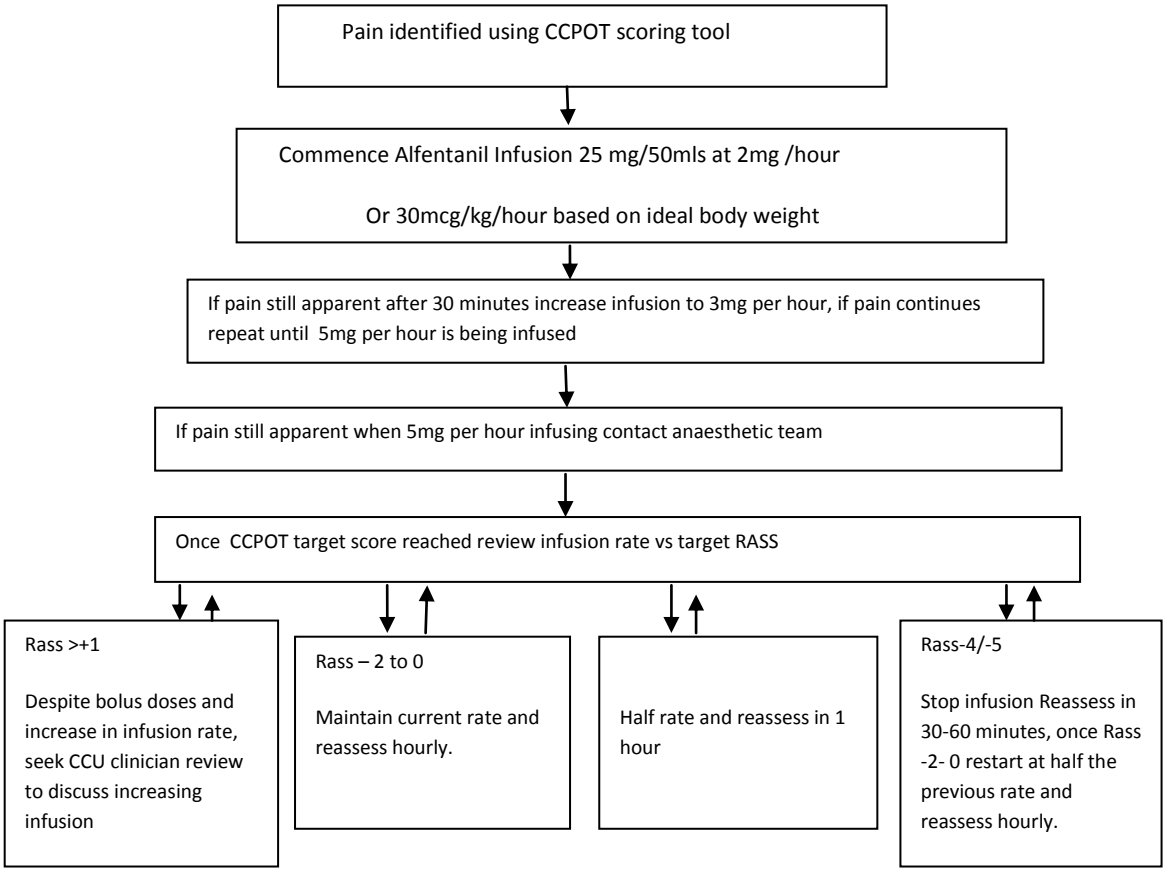
3. M-PAR scale c Copyright 2009. Massachusetts General Hospital

Indicator	Description	Score
Facial Expressions	0 = Relaxed: neutral facial expression 1 =Tense: Frowning, brow-lowering, orbit tightening, and or levator contraction 2 = Grimace: All of facial criteria above plus eyelids tightly closed	
Body Movements	0 = Absence of movements: (does not necessarily mean no pain) 1 = Protection/guard, withdraws: Slow, cautious movements, rubs pain site 2 = Restlessness/thrashing: Pulls tube, attempt to sit, climb out of bed, thrash, Strikes out	
Muscle Tension Evaluate w/passive flexion/extension of arms	0 = Relaxed: No resistance to passive arm movement 1 = Tense Rigid: Resists to passive arm movement 2 = Very tense, rigid: Strong resistance to passive movement	
Ventilation compliance or Vocalisation (if extubated)	<u>Ventilated patient</u> or <u>Extubated vocal patient</u> 0 = Tolerating ventilator or no alarms 0 = Quiet/normal tone 1 = Intermittent alarms, stop spontaneously, coughing 1 = Sigh, moaning 2 = Crying out, sobbing	
Pain with Movement Evidence of pain(e.g. above behaviour or individualised response) While providing usual Care (e.g. turning).	0 = No sign of pain while providing care 1 = Resists movement / guards against certain movements 2 = Pain behaviours (e.g. grimace, withdraws, vocalisation, sudden HR or BP spike) With movement associated with routine care or provided treatments	
	TOTAL:	

Appendix 3B Initiating IV Infusion Morphine Analgesia

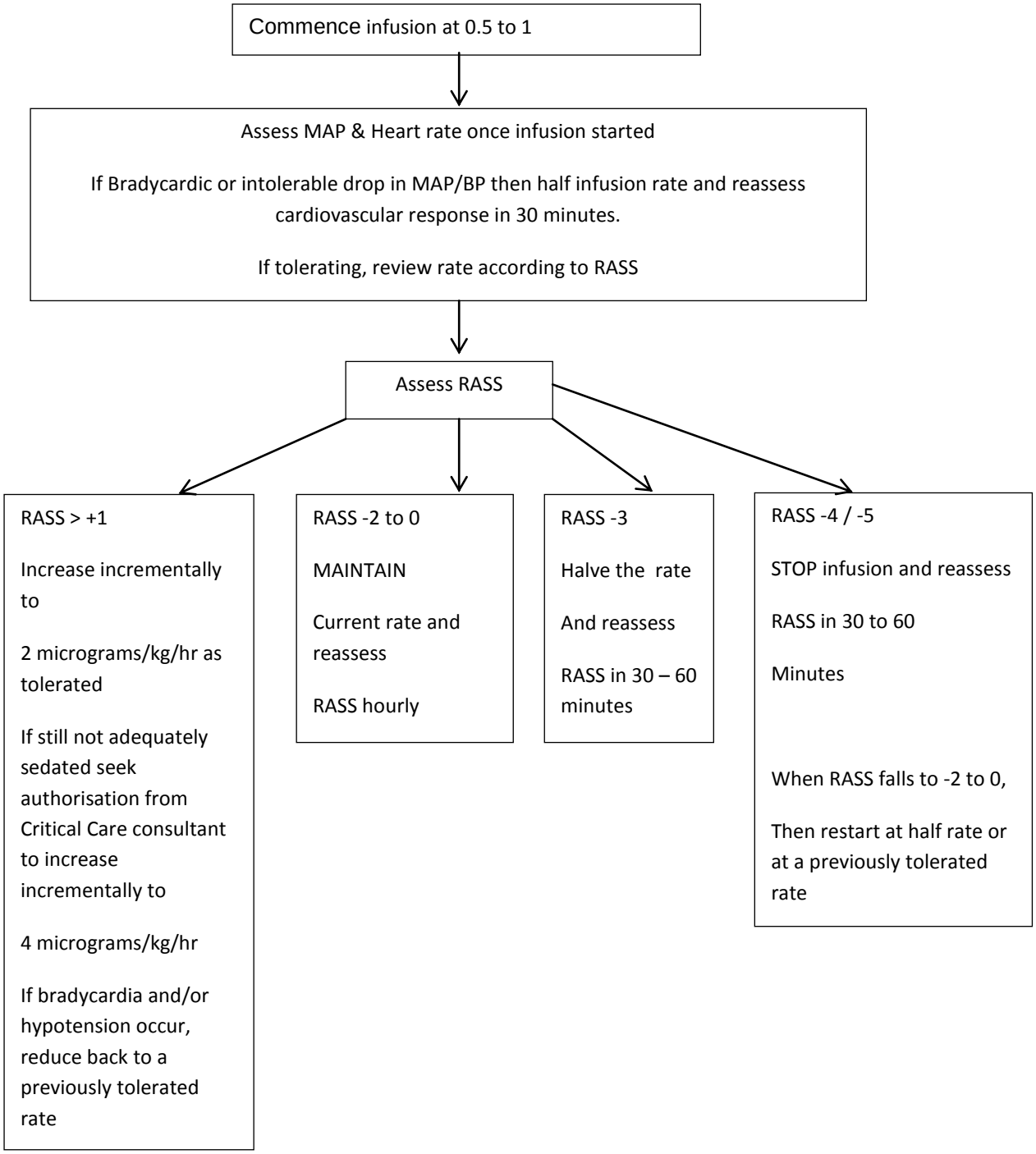


Appendix 3C Initiating IV infusion Alfentanil Analgesia



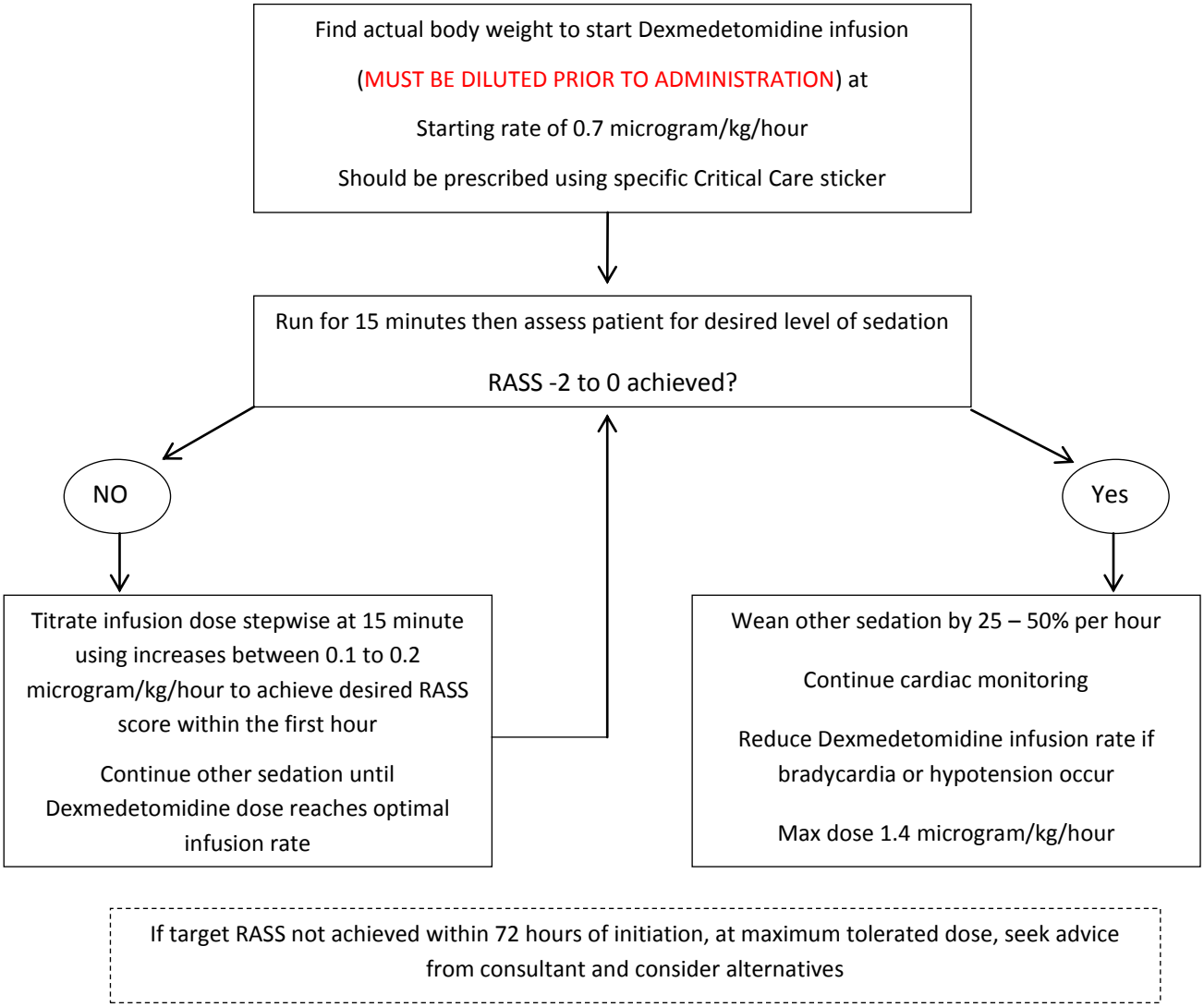
Appendix 3D

Clonidine IV Infusion Initiation.



Appendix 3E

Initiating Dexmedetomidine for rousable sedation



If target RASS not achieved within 72 hours of initiation, at maximum tolerated dose, seek advice from consultant and consider alternatives

To stop Dexmedetomidine:

Dexmedetomidine can either be stopped or if preferred the remainder of the infusion can be run until complete, reducing the dose gradually. This may be preferred especially after very prolonged treatment.

Reduce infusion rate step wise by 0.4 microgram/kg/hour to 0.2 microgram/kg/hour increments over a few hours run until finished.

If no adverse cardiovascular or withdrawal symptoms after reducing, simply allow infusion to run out at a low infusion rate. If possible reduce rate as to allow remainder of infusion to run overnight as may help with sleep.

PART B: Agitation and Delirium

B1 INTRODUCTION to Agitation and Delirium

Delirium is defined as 'an acute, reversible organic mental syndrome with disorders of attention and cognitive function, increased or decreased psychomotor activity and a disordered sleep-wake cycle'[1]. This short term dysfunction can prolong Intensive Care Unit (ICU) and hospital stay, increases costs, and increases long term neuropsychological morbidity (post-traumatic stress disorder) and 6 month mortality[2,3,4].

Its incidence in the ICU has been variably cited as 60-80%, not all patients being delirious on admission. NICE issued delirium guidelines in July 2010[5], for the diagnosis, prevention and management of delirium in hospitals.

Delirium in the Intensive Care Unit (ICU), is an **acute onset brain** dysfunction, an organ failure, and needs to be prevented, promptly diagnosed and treated if it occurs. It follows a fluctuant course and is often reversible. The patient has a reduced ability to focus, direct, sustain and shift attention, failure to organise thought process and may involve hallucinations.

Types of Delirium: Three types of delirium have been identified.

Hyperactive: "agitated" or "paranoid".

Hypoactive: quiet, withdrawn and paranoid.

Mixed: Has features of both forms.

The hyperactive form is usually well recognised and the patient may be labelled as being "agitated". Such patients exhibit some or all of the following features: -

¨ Increased movement (fidgeting, pulling at catheters or tubes, moving from side to side)
¨ Disorientated (in at least one aspect such as who they are or where they are)
¨ Commands may not be followed (May follow simple commands but doesn't "listen" to complex ones)
¨ When verbal communication is possible, it may be unintelligible, or inappropriate

[1] Ely EW et al. Delirium as a predictor of mortality in mechanically ventilated patients in the intensive care unit. JAMA 2004; 1753-62
[2] Jackson J.C> et al . Six month neuropsychological outcome of medical intensive care patients. Critical Care Medicine 2003: 31;1226-34
[3] Milbrandt E.B. et al: Costs associated with delirium in mechanically ventilated patients. Critical Care Medicine 2004: 32; 955-962
[4] Ely EW et al: The impact of delirium in the intensive care unit on the hospital length of stay. Intensive care medicine 2001: 27; 1892-1900
[5] Clinical Guideline 103 Delirium: diagnosis, prevention and management from the National Institute for Health and Clinical Excellence (2010)

responses. The patient may shout or call out.
¨ Pain is exaggerated
¨ Abnormal vital signs

Delirious patients often perceive the environment as harmful and may resort to violence to escape “harm”.
Hypoactive delirium is often missed despite being the most common form of delirium. Patient lies quietly in bed, is lethargic or appears withdrawn. This form is difficult to diagnose and has a worse prognosis.

Delirium: **Rapid onset, Bewildered patient, Inattention and Fluctuating course.** The patient’s mental state can change rapidly , within hours to minutes leading to confusion amongst caregivers regarding the patient’s true mental state.

Risk factors for developing delirium:

Advancing age (> 65 years)
Patient-ventilator dyssynchrony
D rugs**:** opiates,benzodiazepines, antiemetics,antiarrythmics
E lectrolytes and physiologic abnormalities: hypoxia, acidosis
L ack of drugs: alcohol withdrawal, **inadequate analgesia**, chronic drug use
I nfection, Immobilization
R educed sensory input (blindness, deafness, inability to communicate)
I ntracranial causes (CVA, meningitis, seizures, Alzheimer’s, Dementia, Stroke)
U rinary retention, faecal impaction
Myocardial Issues (MI, Arrhythmias, CCF, haemodynamic instability)

It is a GPICS standard that every patient in critical care is assessed for delirium regularly and daily. Its assessment examines arousal / sedation level (**R**ichmond **A**gitation **S**edation **S**core) and content of consciousness (**C**onfusion **A**ssessment **M**ethod –**I**ntensive **C**are **U**nit).

CAM-ICU is the most frequently used and quoted tool for diagnosing delirium in ICU patients. It has good specificity and high sensitivity. With only 4 features to identify, it is not time consuming and doesn’t need a specialist doctors’ involvement. (See Appendix A for CAM-ICU worksheet).

Assess pain, sedation and agitation initially before proceeding to assessment of content of consciousness. CAM-ICU can be used on any patient who can respond to verbal stimulus whether intubated or not (RASS more than - 4/-5). CAM-ICU is positive when features 1 and 2 and either 3 OR 4 are present. These assessment tools are available in the appendix of this guideline and on http://www.icudelirium.org/delirium/monitoring.html where training manuals, video examples , worksheets and FAQ can be found.

B2. Non Pharmacological Management.

(If not already part of delirium prevention measures)

1) Establish baseline cognition from the notes/ GP/ nursing home/ relatives/ friends.
2) Re-evaluate all the medications patient has received or chronic medication that has been omitted.
3) Ensure patient is not in pain, hypoxic or has a metabolic cause for impaired cerebral function.
4) Attempt consistency in nursing staff.
5) Provide clocks, calendars discuss the day's schedule with the patient and communicate clearly with repeated reorientation and verbal reminders of day, time, location and persons. Encourage self-participation in care when possible.
6) Involve family members and caregivers in reorienting the patient.
7) Ensure all visual and hearing aids used by the patient are available for use. Interpreters may be needed for some patients.
8) Attempt to create a day / night cycle.
9) Control excess noise (Sound Ear)
10) Keep ICU temperature between 21-24 degrees centigrade.

B3. Pharmacological Management

NICE CG103: Delirium – diagnosis, prevention and management (2010) identified three studies in which the following drugs were used for the management of delirium. These included the typical antipsychotic (haloperidol) and the atypical antipsychotics (olanzapine, quetiapine and amisulpride).

Although not licensed for the treatment of delirium, haloperidol and olanzapine were both identified as being clinically effective for patients with delirium.

The recently published PAD guidelines[6] (Pain Agitation and Delirium guidelines) provide no recommendation for pharmacological intervention.

It is important to note that the decision to commence haloperidol or olanzapine is based on individual patient factors such as age, previous medical history, co-morbidities and other medication.

In all cases, the BNF and/or the Summary of Product Characteristics must be checked for any cautions/contra-indications and potential drug interactions.

[6] Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit 2013; Society of Critical Care Medicine

B3.1 First line treatment:

Haloperidol
Route: intramuscular or oral
Dose: intramuscular 2mg to 5mg (maximum 12 mg in 24 hours), oral 0.5mg to 5mg (maximum 20mg in 24 hours).
The doses of intramuscular and oral haloperidol are **not** bioequivalent.

For elderly patients, use half the normal adult dose and start with a lower dose and then titrate if needed:

For an acute episode:
Haloperidol 0.5 mg to 10 mg (give 2.5 mg IV repeated after 15-20 mins until the acute episode settles). After this prescribe regular haloperidol every 8 hourly either orally or via IV route. Maximum oral dose 30mg / 24 hours

B3.2 Second line treatment:

Olanzapine
Route: oral
Dose: start at 5mg to 10mg and then titrate (maximum 20mg in 24 hours).

For elderly patients, use half the normal adult dose and start with a lower dose and then titrate if needed

B3.3 Contra-indications:

QT prolongation (avoid concomitant administration of drugs which prolong QT interval) QT prolongation, QTc > 450 msec or > 25% prolongation

Parkinson's disease
Bradycardia
Lesions of basal ganglia

B3.4 Cautions:

History of cardiovascular disease - baseline ECG is required before treatment

Epilepsy – potentially increased incidence of seizures

Dementia – in elderly patients with dementia, antipsychotic drugs are associated with a small increased risk of mortality and/or increased risk of stroke or transient ischaemic attack.

The above list is **NOT** extensive, please consult the BNF.

If the patient experiences extrapyramidal symptoms, oral procyclidine can be prescribed at a dose of 2.5mg three times a day, titrating up by 2.5mg daily according to response. Maximum oral dose 30mg in 24 hours in divided doses.

In an emergency (acute dystonia), 5mg to 10mg of intravenous procyclidine may be given and usually provides relief within 5 to 10 minutes.

B3.5 Other pharmacological choices:

2.2.1 **Olanzapine 5 mg** once daily may be used. Use with caution in elderly and patients with dementia as there is an increased risk of mortality and stroke.

2.2.2 Quetiapine can also be given at a starting dose of 25mg once daily and gradually titrated if needed starting dose 25 mg orally.

2.2.3 α2 agonists (e.g. **clonidine**) may be used for management of delirium and may assist in management of patients with acute alcohol withdrawal. Guidance on prescribing clonidine is available on ICU

2.2.4 Benzodiazepines should be avoided in patients with delirium due to the risks of dependence and withdrawal symptoms (which can exhibit as symptoms similar to delirium). Benzodiazepines may be used in acute alcohol withdrawal, when the patient poses a danger to themselves or staff and/or is not responding to haloperidol or olanzapine.

2.2.5 For hypoactive delirium, olanzapine may be chosen over haloperidol but there is no definitive evidence for either agent.

B3.6 Night sedation:

In patients with *no delirium*, oral zopiclone 3.75mg to 7.5 mg may be used if required. Patients on chronic benzodiazepine night sedation may need continuation of therapy to avoid benzodiazepine withdrawal.

For patients *with delirium*, a small dose of haloperidol (such as 2.5 mg at night) is suggested.

B4. Implementation & Audit

Education has been provided to the doctors in the department of Anaesthesia. This is to be repeated as identified by the department. The nursing staff on the critical care unit will receive education on the topic as scheduled by the clinical educator with support from the department of anaesthesia.

All medical staff (nurses and doctors), who work on Level 2 or Level 3 care units should adhere to these guidelines. As a minimum, on morning rounds, the doctors should assess and record results of CAM –ICU on the ICU/ HDU flow sheet for all patients who have a RASS above (-4 / -5) and be repeated by the nurses between 16:00- 19:00 hrs. If clinical need demands, this assessment can be repeated during the day, as often as required.
An audit will be carried out annually to assess compliance with the guideline.

B4.1 Development

Target patient groups: Level 3 and level 2 care patients.
Target professional group: All critical care medical and nursing staff involved in care of Level 2-3 patients.

B4.2 Consultation

The guideline has been adapted from national and international guidelines. All professional groups responsible for implementation of the guideline have been involved in its review and discussion.

B4.3 Peer review

The members of the Department of Anaesthesia, Clinical Pharmacy and Critical Care Nursing, have all had an opportunity to comment and contribute to its content.

B4 Appendices
Appendix B4*.1: Summary Guideline*

This is the working summary guideline for the assessment, treatment and prevention of pain, anxiety and delirium (PAD); if further information is required please refer to the full guideline

Pain

Prevent pain by ensuring:

The patients' regular analgesics (or equivalent) are prescribed

Prophylactic analgesics are used pre-procedure (including local anaesthesia where applicable).

Assess pain when doing observations, or when clinical situation dictates.

Use NPR's or CCPOT.

Patient is in moderate (or greater) pain if NRS/VAS >5 or CPOT >3

If new or changing pain consider the cause

Treat pain according to type, see below, and reassess within 30 minutes.

Non-neuropathic pain

Local anaesthetic/regional blocks (if applicable).

Simple analgesics: Paracetamol and NSAIDs (if appropriate)

Opiates: morphine bolus(+/-infusion or PCA) or Remifentanil infusion.

Agitation

RASS target to be – 2 to 0 unless otherwise clinically indicated.

Daily sedation holds: to occur unless clinical decision to the contrary:

If at RASS – 3 then sedation to be halved.

If RASS < -4 sedation to be held until at target and then restarted at half rate.

Assess agitation when doing observations or when clinical situation dictates.

Use the RASS.

Pain, Anxiety, Delirium

Please see full guideline for other causes which include bowel discomfort/constipation, sleep deprivation and lack of homeostasis.

If over sedated: hold sedation until RASS target (normal target -2 to 0) and then restart at half rate.

If agitated treat cause, treat pain first then exclude other causes.

Pharmacological treatment;

RASS +1 or +2: Haloperidol or alpha 2 agonist (e.g. clonidine) if required.

RASS +3 or +4: propofol or other sedative

Delirium

Identify risk factors: Examples include
dementia, excess alcohol intake and
severity of illness - see full guideline for
more information
Avoid benzodiazepines.
Mobilise.
Communication aids.
Prescribe/provide regular medication.

- Assess delirium twice per shift or as clinical situation dictates
- Use CAM-ICU

If CAM-ICU positive look for the cause.

- Consider delirium if patient has a fluctuating, conscious level, agitation or is not interactive

If CAM-ICU positive assess for cause of delirium.
Non Pharmacological treatment

- Sleep hygiene
- Reassure and orientate to time, place and person.
- Provide glasses and/or hearing aids.

Pharmacological treatment:

- Treat pain (if applicable).
- Use haloperidol or alpha 2 agonist.

Avoid benzodiazepines, whenever possible, unless indicated

Sleep is integral to the prevention of delirium and for recovery
Promote sleep by controlling light and noise; clustering patient care activities to reduce awakening; providing day / night differentiation.
Pharmacological treatment: zopiclone; if a benzodiazepine must be used or haloperidol as night sedation.

Appendix B4.2: Assessing consciousness: linking level of consciousness and delirium monitoring (RASS)

Appendix B4.4: Confusion assessment method for the ICU (CAM-ICU) worksheet

Glossary of terms

ICU	Intensive Care Unit
RASS	Richmond Agitation Sedation Score
CAM-ICU	Confusion Assessment Method- adapted for ICU
PAD Guidelines	Pain, Agitation and Delirium guidelines

References

• Ely EW et al. Delirium as a predictor of mortality in mechanically ventilated patients in the intensive care unit. JAMA 2004; 1753-62.

• Jackson J.C> et al. Six month neuropsychological outcome of medical intensive care patients. Critical Care Medicine 2003: 31;1226-34

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• Clinical Guideline 103 Delirium: diagnosis, prevention and management from the National Institute for Health and Clinical Excellence (2010)

• CAM-ICU The complete training manual. Revised edition : March 2014 Copyright © 2002, E. Wesley Ely, MD, MPH and Vanderbilt University, all rights reserved"

• www.icudelirium.org (for professionals)

• Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit 2013 by the Society of Critical Care Medicine

IMPLEMENTATION & AUDIT

Implementation of local clinical guidelines is the responsibility of local NHS organisations and is an essential part of clinical governance. It is acknowledged that not every guideline can be implemented immediately on publication, but mechanisms should be in place to ensure that the care provided is reviewed against the guideline recommendations and the reasons for any differences assessed and where appropriate, addressed. Local arrangements may then be made to implement them national guideline in individual hospitals, units and practices to monitor compliance.

This may be done by a variety of means including patient specific reminders, continuing education and training, and clinical audit. This guideline is based on best available evidence and will be reviewed in the light of new evidence or guidelines**.**

Consultation

Consultation

Comments were sought from senior clinicians including consultants in anaesthesia,as well as the Clinical Nurse Specialists in acute care and Critical Care and a senior pharmacist.

Peer review

This document was reviewed by members of the Critical Care Team and the Anaesthetic Clinical Governance Group and ratified by the Trust Procedural Documents Ratification Group.

DEVELOPMENT

Methodology

This guideline is based on currently accepted practice, best available evidence and will be reviewed in the light of new evidence guidelines.

Evidence will be gathered using literature reviews and participation by members of the critical Care Forum in the West Yorkshire Critical Care Network, Intensive Care Society, Critical Care Forum of the RCN and regional benchmarking groups.

PROCEDURAL DOCUMENT DEVELOPMENT CHECKLIST

Prior to submitting any document for initial ratification or following a review, the following checklist must be completed and appended by the author to the document. Please remember when writing a procedural document you need to be as specific as possible and not leave any area open for misinterpretation.

TITLE OF DOCUMENT:	✓or X	Comments
Front page – title, document reference table		
Is the title clear and unambiguous?	✓	
Is it clear whether the document is a guideline, policy, or SOP?	✓	
Has the correct document template been used?	✓	
Is the document reference table completed?	✓	
Is the review date identified?	✓	
Is the frequency of review identified? If so, is it acceptable?	✓	
Contents page and associated trust documents		
Are the contents page and page numbers accurate?	✓	
Are all associated trust documents hyperlinked?	✓	
Introduction		
Are the intention, purpose and scope of the document made clear?	✓	
Are all relevant, supporting policies, local and national guidelines and SOPs listed?	✓	
Has an equality impact assessment been completed?	N/A	
Definitions		
Are all terms clearly defined?	✓	
Duties		
Are all roles and responsibilities made clear?	N/A	
Developing a new procedural document		
Have any training needs been identified?	✓	
If so, have Education & Training / practice development been consulted?	N/A	

TITLE OF DOCUMENT:	✓ or X	Comments
Consultation, approval and ratification process		
Is the consultation / peer review process explicit?	✓	
Has the patient and carer panel been consulted?	N/A	
Does the document identify which committee/group has approved it?	✓	
Are there any fraud implications with this policy? If yes has the Local Counter Fraud Specialist been consulted?	N/A	
Is this document used to evidence CQC or NHSLA standards (if yes has the Assistant Director Healthcare Governance been consulted)	N/A	
Dissemination & Implementation		
Is there an outline/plan to identify how this will be done?	✓	
Does the plan include the necessary training/support to ensure compliance?	✓	
Have resources implications (including financial) been considered and documented?	✓	
References		
Are all references properly listed?	✓	
Is there a clear evidence base?	✓	
Version control		
Does the document have a clear version number?	✓	
Are minor amendments clearly documented on the version control page?	✓	
Process for Monitoring compliance		
Are there measurable standards, KPIs or a defined audit tool to support monitoring compliance of the document?	N/A	
Is it clear which committee or group is responsible for monitoring compliance with the policy?	✓	
Overall Responsibility for the Document		
Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	✓	
Are there any other issues to be considered?	✓	