Worcestershire Acute Hospitals NHS Trust

Analgesia, Sedation and Management of Delirium in Critically Ill Adult Patients

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Key Document Owner:	Dr Nick Fitton, Dr Olivia Kelsall, Rachel Hodkinson
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Key Amendments

Date	Amendment	Approved by
8th October 2019	Document extended with no changes as part of Disease Management section in critical care	Dr Nick Cowley/ Dr Andy Burtenshaw
14th November 2022	Documented extended with changes to the management of delirium on intensive care and the use of dexmedetomidine as first line agent for agitation	Ms Rachel Hodkinson Intensive Care Pharmacist
17th November 2023	Document reviewed and approved – sticker for notes no longer required	ICM Forum

Introduction

This guideline is largely based on the National Intensive Care Society Guideline and the recommendations of the American Society of Critical Care Medicine. It also seeks to improve recognition and treatment of delirium in critically ill adults.

Some degree of analgesia and sedation is often required to allow patient cooperation with organ support and associated nursing care. The goal is to achieve early spontaneous breathing and an awake, calm and comfortable patient.
While it is clear that patient care is compromised when the patient is agitated or distressed, over sedation is also detrimental:

- accumulation with prolonged infusion, delaying weaning from supportive care increasing complications and consequently morbidity and mortality
- detrimental effects on the circulation leading to increased inotrope requirements
- detrimental effects on the pulmonary vasculature. increasing VQ mismatch leading to increased ventilatory support with the consequent increase in complications
- tolerance during sedation and withdrawal when it is stopped
- reduced intestinal motility impairing establishment of enteral feeding

It is therefore vital that analgesia and sedation are managed as precisely as possible and given the priority attention that they deserve.
In addition, delirium is under recognised and consequently undertreated in many patients.

Competencies Required

The guideline is to be utilised by all qualified nursing and medical staff working in the critical care environment, caring for patients receiving infusions of intravenous sedatives. All staff will have access to the guideline. There will be a copy available on the unit in the standards folder

or via the intranet. The sedation score and algorithm will be located on the reverse of the ITU observation charts and / or in the patient's folder. Competent members of the nursing team will give training on accurate use in the clinical setting at the bedside. Assessment will take place in the form of supervised practice.

AIMS

1. **All patients must be comfortable and pain free**. Analgesia is the prime concern.
2. **Anxiety should be minimised.** Anxiety is an appropriate emotion, but good communication and the provision of compassionate and considerate care are essential parts of achieving this goal.
3. **Patients should be calm, cooperative and able to sleep when undisturbed.** This does NOT mean they need to be asleep all the time.
4. **Patients must be able to tolerate appropriate organ support:** it follows that sedative depth required will vary according to therapies.
5. **Patients must not be paralysed and awake.**
6. **All patients should be assessed for delirium.**

Principles of Management

Before increasing sedation or adding neuromuscular blockade:

- Any avoidable source of physical discomfort should be excluded.
- The need for any uncomfortable or disturbing therapies should be reviewed.
- A perceived need to increase sedatives may be an index of clinical deterioration.
- When sedation has been stopped night sleep is often fitful because of rebound REM sleep. Continued night sedation may prolong this rather than treating it.
- Sleep promotion should include optimization of the environment and non-pharmacological methods to promote relaxation with adjunctive use of hypnotics.
- The patient should be assessed for delirium, and treated if necessary. The CAM-ICU tool is useful in the assessment of delirium (see below).

Administration:

- A drug given by intravenous infusion will take four half-lives to achieve steady state levels. This means that it will take some time for adequate sedation to be achieved by starting an infusion without a loading dose. It also means that changes in sedation infusion rate will take some time to be effective. As a result there is a tendency for infusion rates to be started at a high rate in order to achieve adequate sedation quickly. Unfortunately, this high initial rate is often continued in the mistaken belief that it will continue to be needed. This also applies to increases in infusion rate which tend to be too great.
- The correct way to initiate sedation is thus to administer a loading dose which is titrated to effect and then to start an infusion. Increases in sedative infusion rate should follow the same principle i.e. a bolus, titrated to effect, should be administered and the infusion rate increased by a small increment.

Delirium:

- Delirium is defined as a disturbance of consciousness and cognition that develops over a short period of time (hours to days) and fluctuates over time.
- Many different terms have previously been used to describe this syndrome of cognitive impairment in critically ill patients, including ICU psychosis, ICU syndrome, acute confusional state, encephalopathy, and acute brain failure.
- It is a common manifestation of acute brain dysfunction in critically ill patients, occurring in up to 80% of the sickest intensive care unit patients.

- Critically ill patients are subject to numerous risk factors for delirium. Some of these, such as exposure to sedative and analgesic medications, may be modified to reduce risk.
- Delirium is now recognized to be a significant contributor to morbidity and mortality in the ICU, and it is recommended that all ICU patients be monitored using a validated delirium assessment tool.
- Patients with delirium have longer hospital stays and lower 6-month survival than do patients without delirium, and preliminary research suggests that delirium may be associated with cognitive impairment that persists months to years after discharge.
- Delirium can be categorized into subtypes according to psychomotor behaviour. Hyperactive delirium is characterized by agitation, restlessness, and emotional lability; whereas hypoactive delirium is characterized by decreased responsiveness, withdrawal, and apathy. A high index of suspicion is required

Guidelines

Analgesia

- Pain assessment and response to therapy should be performed regularly using the scale and systematically documented.

No pain	**0**
Some pain / discomfort which can be tolerated	**1**
Causing some distress	**2**
Worst pain possible	**3**

- Patients who cannot communicate should be assessed through subjective observation of pain related behaviours (movement, facial expression and posturing) and physiological indicators (heart rate, blood pressure and respiratory rate) and the change in these parameters following administration of analgesics.
- A therapeutic plan and goal of analgesia should be established for each patient and communicated to all caregivers to ensure consistent analgesic therapy.
- When not contraindicated, neuroaxial and other regional techniques may be beneficial. In surgical patients postoperative epidural analgesia reduces time to extubation, ICU stay, incidence of renal failure, morphine consumption during the first 24 hours, and maximal glucose and cortisol blood concentrations, and improves forced vital capacity.
- Paracetamol is a useful adjunct to other analgesics, preferably enteral route, intravenous therapy being reserved for patients with gut failure.
- Whilst NSAIDs are a useful group of analgesics, use in critically ill patients is potentially extremely hazardous and hence their use is very limited.
- It is important to remember that patients on long term opioids will require their normal intake as a background onto which other analgesia should be added. If the oral route cannot be used, careful consideration of how best to achieve this for each individual is required to avoid considerable problems with pain relief. See also WAHNHST Guidelines For Management Of Adult Opiate Dependant Patients In The Acute Hospital Setting.
- Short acting opioids such as alfentanil or remifentanil are useful infusions for cases where rapid assessment of neurological function is required or in renal failure. Rapid offset of analgesia with remifentanil can result in pain, highlighting the need for proactive pain management.
- Remifentanil monograph: http://nww.worcsacute.nhs.uk/EasysiteWeb/getresource.axd?AssetID=28894&type=full&servicetype=Attachment

- In other cases morphine is the most commonly prescribed intravenous infusion of opioid. Great care should be taken in patients with renal failure especially if they are also elderly.
- Fentanyl infusion is a good alternative in patients in renal failure who require a longer acting opioid.
- Literature suggests that adherence to a clear analgesia based sedation protocol is more important than the choice of medication itself
- Neuropathic pain medication (eg gabapentin, carbamazepine and pregabalin) can be used as adjuncts to opiate medication [1].

Sedation

- A sedation goal or endpoint should be established and regularly redefined for each patient.
- Regular assessment and response to therapy should be systematically documented using the **Richmond Agitation Sedation Scale (RASS)**:

Score	Term	Description
+4	Combative	Overtly combative, violent, immediate danger to staff
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent non-purposeful movement, fights ventilator
+1	Restless	Anxious but movements not aggressive vigorous
0	Alert and Calm	
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/contact) to voice **(≥10 seconds)**
-2	Light sedation	Briefly awakens with eye contact to voice **(<10 seconds)**
-3	Moderate sedation	Movement or eye opening to voice **(but no eye contact)**
-4	Deep sedation	No response to voice, but movement or eye opening to physical stimulation
-5	Unrousable	No response to voice or physical stimulation

Procedure for RASS Assessment

1. Observe patient
a. Patient is alert, restless or agitated. (score 0 to +4)

2. If not alert, state patient's name and say to open eyes and look at speaker.
b. Patient awakens with sustained eye opening and eye contact. (score -1)
c. Patient awakens with eye opening and eye contact, but not sustained. (score -2)
d. Patient has any movement in response to voice but no eye contact. (score -3)

3. When no response to verbal stimulation, physically stimulate patient by shaking shoulder.
e. Patient has any movement to physical stimulation. (score -4)
f. Patient has no response to any stimulation. (score -5)

- Any alterations in score requiring adjustment to the rate of drug administration should be recorded additionally
- In general sedation management should be aimed at achieving a score of 0 to -1, or a desired score prescribed by reviewing doctor.

- Daily sedation "holds" (stopping drug infusions) should take place when the score is less than 0 (or less than the prescribed desired score), preferably in the morning at 0800 hours to minimise prolonged sedative effects.
- Research has shown that daily interruption of sedative drug infusions decreases the duration of mechanical ventilation and length of stay in the intensive care unit and enables the performance of daily neurological examinations.
- Local exclusions to sedation holds are:
    - The dying patient.
    - Patients requiring extraordinary respiratory support such as HFOV, prone position or inverse ratio ventilation. Complicated cases should be referred to the doctor in charge for confirmation of sedation hold.
    - Paralysed patients on Neuromuscular Blocking Drugs.
- Neuromuscular blockade agents should also be stopped daily. Once its effect has reversed the sedation should then be held and agitation assessed.
- Peripheral nerve stimulators should be used in conjunction with clinical assessments in patients receiving neuromuscular blocking agents (Rocuronium or Atracurium) as a useful tool to determine depth of blockade.
- Sedation can be recommenced at any time dictated by the patient's level of agitation. REMEMBER when recommencing sedation give a bolus dose followed by the continuous infusion at a rate to achieve a desired score for the individual patient.
- Contact the doctor if the patient is not adequately sedated and haemodynamically unstable.
- Propofol 1% is a popular choice of sedative agent due to its shorter duration of action and certainly is the agent of choice when early extubation is anticipated or when neurological assessment is required. If high volumes are required consideration should be given to the use of the 2% formulation to lower the lipid load.
- Midazolam has historically been used in WAHNHST but although there are some advantages in patients with haemodynamic instability, benzodiazepines are an independent predictor of delirium [1]. Midazolam also has the problem of accumulation particularly in the elderly and patients with renal failure. Midazolam should only be used in patients suffering substance withdrawal or patients deemed suitable by the consultant on for the critical care unit. Rigorous attention to sedation scoring, daily sedation holds and titration to effect is required.
- Clonidine is a useful adjuvant agent in patients on the critical care unit, particularly those with opiate addiction.
- Dexmedetomidine can be used as a first line agent for agitation.
- Volatile anaesthetic agents may be useful. There is no scavenging in the unit at AH, but may be achieved at WRH, under the supervision of an anaesthetist.
- Ketamine may be useful in asthmatics, and as a bolus dose in relatively awake patients required to undergo repeated painful procedures, such as dressing changes.
- Depth of sedation monitoring is recommended in paralysed patients. Masimo Sedline brain function monitoring is available on the unit. Depth of anaesthesia monitoring may improve sedative titration when the RASS scale cannot be used.

Guideline for the Management of Delirium on Intensive Care

Delirium definition

Delirium is an acute confusional state characterised by altered consciousness and a reduced ability to focus, sustain, or shift attention.

Clinical significance of Delirium

Delirium is associated with a longer duration of mechanical ventilation and Intensive Care Unit (ICU) admittance as well as an increased risk of death, disability, and long-term cognitive dysfunction. Delirium predisposes patients to prolonged neuropsychological disturbances after they leave ICU. These factors contribute to the greater intensive care and hospital costs attributed to patients experiencing delirium. Therefore, the early recognition of delirium is important, and ICU medical staff should devote careful attention to both watching for the occurrence of delirium, its prevention and management.

Delirium is further differentiated according to the level of alertness; the motoric subtypes consist of the hyperactive, hypoactive, and mixed subtypes. Patients with hyperactive delirium are aggressive, agitated, hallucinative, deluded, and exhibit increased psychomotor activity. In comparison, patients with hypoactive delirium have reduced alertness, lethargy, decreased responsiveness, and slowed motor skills. Patients with mixed subtypes of delirium fluctuate between hyperactive and hypoactive delirium.

Risk factors for Delirium

Most ICU patients have risk factors for Delirium. Rates of Delirium across both intensive care units vary between 36-80%, with rates being significantly higher in Covid patients.

The causes of Delirium are multifactorial. Risk factors can be separated into predisposing factors and precipitating factors (Table 1)[15]. Other major host factors include age, previous dementia, hypertension, chronic illness, poor nutrition, substance withdrawal, tobacco use, and depression.
Potentially modifiable and iatrogenic factors include hypoxia, metabolic and electrolyte imbalances, infection, dehydration, hyperthermia, sepsis, psychoactive medications, a preceding period of sedation, benzodiazepines [17,24,25], coma, mechanical ventilation, and sleep deprivation [18-22]. Environmental variables that increase the risk of developing delirium in the ICU include isolation, absence of visits, absence of visible daylight, transfer from another ward, immobility, and the use of physical restraints [23,24].

Pathophysiology of Delirium

Imbalances and derangements in multiple neurotransmitters have been implicated in the pathophysiology of delirium. Acetylcholine is one of the major neurotransmitters in the ascending reticular activating system and plays a key role in the pathogenesis of delirium. A reduction in cholinergic function leads to increased levels of glutamate, dopamine and noradrenaline in the brain.
Reduced levels of serotonin and gamma-aminobutyric acid levels contribute to the pathogenesis of Delirium.

Dopamine excesses may contribute to Hyperactive Delirium, which has been linked with simultaneous acetylcholine decreases. Similarly, excess Nor-Adrenaline has been linked with hyperactive delirium.
Pro-inflammatory cytokines (TNFα, IL-1 family of cytokines) are associated with endothelial damage in the Central Nervous System (CNS), thrombin formation and microvascular dysfunction and these events can result in delirium. Higher Procalcitonin levels at the time of ICU admission are associated with prolonged duration of brain dysfunction.

TABLE 1

Predisposing factors	**Precipitating factors**	
Over 65 years of age	Acidosis	Immobilisation
Male sex,	Anaemia	Medications
Alcoholism	Fever	Sleep disturbance
Dementia	Infection	Blood transfusion [1]
Previous history of delirium	Sepsis	
Depression, Hypertension	Metabolic disturbance	
Increasing APACHE, ASA scores [1]	(Na, Ca, Uraemia, Bilirubin)	
Smoking	Respiratory distress	
Visual/hearing impairment	Constipation	

TABLE 2 Perioperative risk factors for Delirium

Intraoperative blood loss
Transfusion requirement
Low HCT
Preoperative Atrial Fibrillation
Longer Surgical Time
Association with systemic hydrocortisone treatment in acute lung injury
High cortisol levels and anxiety preoperative for cardiac bypass surgery

TABLE 3 Common drug causes of delirium

Benzodiazepines	Lithium
Opioid analgesics	Tricyclic antidepressants
Ist generation antihistamines	Cimetidine
Antispasmodics	Anti-arrhythmics
Fluoroquinolones	Statins
Warfarin	Digoxin
Captopril	Steroids
Theophylline	Beta blockers
Isosorbide dinitrate	
Frusemide	

Guideline for the management of delirium.

Delirium care includes 1) Assessment of patients' risk factors [3], 2) Implementation of preventative strategies, 3) Appropriate treatment using non-pharmacological strategies for all patients with delirium, 4) Pharmacological strategies ONLY for those with hyperactive delirium at risk to themselves or others, 5) Appropriate follow up including communication with their GP and information on delirium for the patient and relatives.

Management should aim to keep the patient safe using the least restrictive management. All intensive care patients should be considered at risk of Delirium.

- Assessing Risk factors and Recent and Ongoing Changes in Behaviour: Adults newly admitted to ICU who are at risk of delirium are assessed for recent changes in behaviour, including cognition, perception, physical function and social behaviour. This should form part of the patient admission with collateral history ascertained from friends, family or General Practitioner [3].

- Delirium Assessment should be performed on all Intensive Care patients able to respond to voice. This involves assessment of sedation level and screening for delirium using the *Confusion Assessment Method for ICU (CAM-ICU).* This includes patients who are sedated and requiring ventilation and should be performed at the start of a shift and if any fluctuation in mental state is recognised (APPENDIX 1).

- Adults newly admitted to intensive care should receive a range of tailored interventions to prevent Delirium [3]. An ABCDEF approach to Delirium prevention should be considered daily (A = spontaneous awakening, B = spontaneous breathing, C = choice of analgesia and sedation, D = evaluate, prevent and manage Delirium, E = early mobility and exercise, F = family involvement) [1].

- Repeated re-orientation is vital [1]. Other interventions may include offering sleep packs, noise on the intensive care unit should be kept to a minimum at night (observation of sound ear: green is good and red too loud), reduction in alarm volume, avoidance of unnecessary interventions during rest periods, maintenance of normal circadian rhythms with appropriate levels of light, removal of unnecessary lines. Assistance with site and hearing including the use of glasses, hearing aids, magnifying glasses can help communication [1]. Consider the use of a mirror and explanation to show the patient the equipment in the bed space, what is behind them and their tracheostomy if they have one (with reassurance that this is not permanent). Cognitive activities should be provided for awake patients multiple times a day [1].

- The following drugs should NOT be used to PREVENT Delirium: Haloperidol, Atypical Anti-psychotics, HMG-CoA reductase inhibitors (statins) and Ketamine [1].

- The medical team should be made aware of the patients CAM ICU status and a detailed, individualised delirium management plan should be completed by the multidisciplinary team [3]. (APPENDIX 2).

- After acute, life-threatening complications of critical illness that may lead to delirium have been sought out and addressed, the team should look for potential precipitating factors amenable to treatment.

- Review of drug chart – consider common drug causes of delirium, there may be alternatives to drugs with high cholinergic activity, there may be temporal association with the onset of new medication (TABLE 3).

- A non-pharmacological multicomponent strategy for delirium has been shown to reduce mortality, reduce the duration of delirium and reduce the number of ICU days with delirium (TABLE 4).

- For mechanically ventilated adults where agitation precludes weaning or extubation commencing Dexmedetomidine is advocated [1].

TABLE 4 Non – pharmacological strategies

Regularly relaying anxiety and repeatedly re-orientating the patient – patients may not retain any information given to them during this time and are likely to need continued reassurance
Reducing environmental noise and use of alarms
Establishing light use consistent with circadian cycles
Optimising sleep
Improving cognition and cognitive activity [1]
Promote Early Mobility and Exercise [1]
Involve family – there may be options to do this virtually (trust approved face time) or by telephone, at times when visiting is restricted, familiar objects
Consider change of environment following an episode of delirium

- Avoid the use of where possible Benzodiazepines [1] unless specifically indicated for treatment of other conditions – Alcohol Withdrawal, Status Epilepticus or Benzodiazepine Withdrawal. Reference the Sedative Weaning Guideline if patients have required prolonged sedation with Midaolam and Morphine.
- Adults with delirium on ICU who are distressed or are a risk to themselves should not prescribed antipsychotic medication unless de-escalation techniques are ineffective or inappropriate [1,3].

- Management should aim to keep the patient safe using the least restrictive management. During periods of delirium patients may accidentally remove lines, endotracheal tubes, catheters or nasogastric tubes placing themselves at risk, preventing the administration of life saving treatment and medication, fluids, food and impairing their ability to recover. In patients lacking capacity, proportionate physical restraint with the use of mittens may be a less harmful intervention than the use of chemical restraint in the form of sedative medications. Physical restraint should only be used when other methods have been explored and exhausted and should be performed in line with trust policy as worsen delirium [1].

Pharmacological strategies. Any drug intended to improve cognition may have adverse psychoactive effects, paradoxically exacerbating delirium or causing excessive sedation in some patients. Also, evidence proving the efficacy of pharmacologic strategies for delirium is lacking. All psychoactive drugs should therefore be used judiciously in critically ill patients, in the smallest effective dose for the shortest time necessary.

- It is unclear as to whether these drugs are deemed effective due to their sedating effect (reducing the difficult behavioural component of delirium such as shouting, agitation and wandering) and not necessarily as the result of treatment of delirium.

- The use of Haloperidol and Atypical Anti-Psychotics should be limited to the treatment of those with hyperactive delirium at risk to themselves or to staff [1]. Precipitating factors should be urgently addressed and non-pharmaceutical strategies implemented. The use of Dexmedetomidine should be considered as an adjunct.

- Anti-psychotic medications should be stopped once hyperactive delirium has resolved and should ideally be stopped before transfer to the wards. A plan for de-escalation of these medications should be made prior to discharge.

Choice of Anti-Psychotic Medication
(Also see QUICK REFERENCE GUIDE – APPENDIX 3)

- **Haloperidol** remains the most common agent used for delirium on ICU though evidence is lacking regarding its efficacy. Use as the first option [1] for a patient at risk to themselves or others. Intravenous use is unlicenced but widely accepted with dose range 2.5-10mg. Give an initial dose of 2.5mg. This can be repeated after 15-20 minutes with a higher dose (doubled) if symptoms persist. The patient may require maintenance doses every 4-6 hours. Patients receiving Haloperidol should be monitored for QT Prolongation > 500ms, Extrapyramidal Symptoms (Parkinsonism), Akathesia, Oversedation, Neuroleptic malignant Syndrome and Ventricular Arrhythmias. *Multiple repeated doses increase the likelihood of adverse side effects*

and should be avoided. Stop if the patient is developing drug induced rigidity, pyrexia or long QTc [1].

- **Re-sedation with Propofol** should also be considered in this situation to gain rapid control of a safe environment in those patients who don't respond rapidly to Haloperidol.
- This should allow the clinician time to address precipitating factors, consider starting a **Dexmedetomidine** infusion and the use of oral/nasogastric Atypical Anti-Psychotics.
- Although the current evidence of the efficacy and tolerability of Atypical Anti-Psychotics in the treatment of delirium is limited; Quetiapine and Olanzapine are adequate alternatives to Haloperidol. This is especially significant in patients who are vulnerable to extrapyramidal symptoms, who require sedation or who have an intolerance/poor response to Haloperidol.
- Quetiapine and Olanzapine are also known for their anticholinergic side effects, particularly a dry mouth, constipation, urine retention, mydriasis, and sinus tachycardia and may increase the duration of delirium in elderly medical patients.
- Atypical Antipsychotics drugs should be reviewed daily, as they may worsen the delirium they are being utilised to treat.
- **Quetiapine** dose is 25mg BD and can be increased by 50mg/day to a maximum of 100mg BD (caution in the elderly). Patients on a higher dose need a reducing regime for drug withdrawal and this should be discussed with pharmacy. Quetiapine undergoes hepatic metabolism and no dose adjustments are required for renal failure.
- **Olanzepine** should be started at 2.5mg PO daily and can be increased to a maximum of 10mg daily. Olanzepine can be crushed in 5-10ml water for NG use and is also available as melts. Olanzepine can also be given intramuscularly for patients with extreme agitation and gastric failure.
- Avoid the use of Risperidone on ICU. Risperidone has been shown to be less effective in older patients (70+) compared with Olanzapine and a lower survival rate has been reported with Risperidone compared to non-pharmacological treatment.

- All patients on Atypical Anti-Psychotics and Haloperidol should also be monitored for extrapyramidal side effects and potential drug reactions should be reviewed, for example metoclopramide. Rare side effects associated with Atypical Antipsychotics include Pancreatitis, Hyperglycaemia and Diabetic Ketoacidosis.

- **Melatonin** –Randomised Control Trails (RCTs) on ICU have drawn inconsistent conclusions with small numbers of patients, so it is hard to make recommendations. Melatonin supplementation has a significant preventative effect in decreasing the incidence of delirium in elderly patients that were presenting to medical wards. There is a strong association between sleep deprivation and delirium in the elderly, in postoperative patients and in the critically ill however, a direct causal relationship has not been established. A physiological dose of 0.5mg may be considered in prevention of delirium in elderly patients with sleep disturbance.

- Haloperidol and antipsychotic agents should NOT be used to treat Hypoactive Delirium [1]. Based on current evidence non-pharmacological strategies should be used for the treatment of hypoactive delirium.

Further Management. All patients who have experienced delirium on ICU should have a "**Patient Diary**" which should include a description of their Delirium and what was happening to them clinically at the time. This may assist patients with their recovery, making sense of false memories generated by delirium and may help in treatment of Post-Traumatic Stress Disorder. Some patients with delirium may develop PTSD as a result of their hallucinations but many do not.
Adults in hospital with Delirium, their family members and carers should be given an **information leaflet on delirium** [1].

- Their **General Practitioner should be informed** that the patient has experienced Delirium whilst on ICU due to the long-term implications and potential need for support following discharge. This information should be included in their discharge letter. Positive delirium screening has a strong association with cognitive impairment at 3-12 months [1].

- **Patients with Delirium on the ICU should be offered an Intensive Care follow- up appointment, regardless of their length of intensive care stay or level of treatment.**

APPENDIX 1

CAM-ICU Tool for assessment of delirium

An example of the CAM-ICU tool in use can be found by following the link below**.**
http://www.youtube.com/watch?v=6WyJ0zL7VkI

Feature 1: Acute onset of mental status changes or fluctuating course

AND

Feature 2: Inattention

AND

Feature 3: Disorganised thinking **OR** **Feature 4: Altered level of consciousness**

Altered mental status

- Has the patient shown any sign of being other than completely "themselves"?

Inattention

- Ask the patient to squeeze your hand. They will need to be responsive to verbal stimulation and keep their eyes open.
- Ask the patient to correctly identify the letter '**A**' in 10 letter sequence by squeezing only when they hear the letter '**A**'. Suggested Sequence: **"SAVE A HAART"**

- They are allowed 2 mistakes - squeezing on a non-A, not squeezing on a A. More than 2 mistakes (however many it does not matter) is inattention.

If they pass the inattention test they are not delirious, the test is now complete. More than 2 mistakes proceed to look for disorganized thinking or decreased level of consciousness.

Disorganized thinking &/or reduced level of consciousness

- 5 elements - 4 simple yes/no questions, one simple command. Use Set A or Set B.

Set A	**Set B**
Will a stone float on water?	Will a leaf float on water?
Are there fish in the sea?	Are there elephants in the sea?
Does 1 pound weigh more than 2?	Does 2 pounds weigh more than 1?
Do you use a hammer to hit a nail?	Do you use a saw to hit a nail?

- Ask the patient to *"raise 2 fingers with one hand"* and then to *"do the same with the other hand"* (do not instruct the patient to "raise 2 fingers" a second time, but instead instruct them to *"do the same with the other hand"*) .
- They are allowed one mistake - one question wrong or unable to do the command. Two mistakes means disorganized thinking. The patient is CAM-ICU positive.

APPENDIX 2

DELIRIUM STICKER / ICCA Guidance

APPENDIX 3

QUICK REFERENCE GUIDE DELIRIUM TREATMENT

ALL PATIENTS WITH DELIRIUM

- DELIRIUM STICKER / DOCUMENTED CARE PLAN
- PATIENT DIARY ENTRY
- ADDRESS POSSIBLE CAUSES, DRUG CHART REVIEW
- NON-PHARMACEUTICAL STRATEGIES
- GP LETTER RE DELIRIUM AND PTSD/COGNITION RISKS
- ITU FOLLOW UP CLINIC APPOINTMENT
- OUTREACH FOLLOW UP RE DELIRIUM
- INFORMATION FOR PATIENT AND RELATIVES

MEDICATION IS FOR HYPERACTIVE DELIRIUM ONLY and WHEN PATIENT AT RISK TO THEMSELVES OR OTHERS

MONITOR QTC and EXTRAPYRAMIDAL S/Es

- HALOPERIDOL 2.5mg then 5mg 15 mins later
- RE-SEDATE PROPOFOL/REMIFENTANYL +/- DEXMEDETOMIDINE
- QUETIAPINE 25mg BD increased by 50mg/day to max 100mg/day OR
- OLANZEPINE 2.5mg PO/NG to max 10mg OD
- STOP MEDICATION PRIOR TO DISCHARGE/CLEAR DOCUMENTATION WITHDRAWAL PLAN
- STOP/WITHDRAW MEDICATION IF PATIENT BECOMES HYPOACTIVE
- STOP IF DRUG-INDUCED INCREASED TONE, HYPERPYREXIA, LONG QTC

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