A CALMING INFLUENCE:

A Review of the Application of the 'Managing the Agitated Patient' Algorithm

INTRODUCTION

The Managing the Agitated Patient algorithm was introduced in order to provide a comprehensive and systematic approach to managing agitation in the Critical Care Unit.

Key drivers to the compilation of the algorithm were the desire to improve the management of sedation by identifying and treating causes for agitation (such as pain, discomfort, anxiety or withdrawal states) where possible, sedating where indicated and titrating sedation to avoid excess or insufficiency; and the perception of the need to demonstrate that the potentially legally and ethically controversial use of protective mitts is regulated and documented.

METHOD

I had great difficulty in deciding how to approach this audit, firstly in identifying suitable patient records to be included in the study, and secondly in that the algorithm is quite complex with multiple decision points covering a range of patient interventions. I tried to identify a pool of agitated patients for investigation by leaving a clipboard with the stored protective mitts requesting that the names of patients be recorded; however I had to abandon this after 2 months as only one name had been recorded.(The first recommendation arising from this audit was enacted at this point, so that a tick box was added to the patient record to identify those to whom protective mitts were applied). Fortunately, thanks to the Unit Information Technology guru, the CIMS database was able to be interrogated and identified the 25 patient days which scored the highest number of +3 agitation scores, which yielded 17 patients for investigation. Initially I attempted to examine each patient chart looking for evidence that each stage of the process had been considered such as titration of sedation to the sedation score, that pain, discomfort and anxiety had been addressed before moving to sedation or physical intervention to maintain safety; however this proved to be impractically time consuming so I have concentrated on the problems, plans and notes, looking to the prompt identification of agitation as a problem, appropriate planning, and documentation of interventions and responses.

To gain an overview of the kind of demand on the service constituted by this kind of patient I collated adverse incident and protective mitt laundry data

- Review 25 cases from CIMs, highest +3 scores
- Review Adverse Incident Forms
- Review Protective Mitt usage

CASES

CASE 1

70 y.o. male

- Diagnosis: acute brain injury after out of hospital arrest

Case 1 Problems

- no problem related to agitation

Case 1 Plan

- No plan for managing agitation

Case 1 Medical Notes

- Day 3: Inappropriate off sedation, resedate
- Day 6: requiring sedation boluses as agitated
- Day 11: agitated but controlled with propofol
- Day 12: much less confused

Case 1 Nursing Notes

- Day 3: propofol PRN for agitation
- Day 5: agitated, trying to climb out of bed, score +3, spoken to calmly, appears uncomfortable
- Day 6: screaming, restless, agitated
- Day 7 agitated
- Day 9: agitated, not sleeping less confused. Sent to ward.

CASE 2

- 71 y.o. female
- Diagnosis: pneumonia.
- Hx: depression, OCD symptoms (on chlorpixol)

Case 2 Problems

1) Not tolerating ETT
2) Requiring high dose propofol

Case 2 Plan

- Day 3 : regular chlorpromazine plus prn, increase if required, “boxing gloves” to hands to prevent third unplanned extubation
- Day 4: increase chlorpromazine to get on top of agitation, keep Posey mitts on

- Day 5:increae regular chlorpromazine, use propofol as rescue for acute agitation, keep Posey mitts on
- Day 6: Sedate with midazolam plus chlorpromazine
- Day 7: Stop sedation
- Day 9: Continue chlorpromazine and midazolam
- Day 10: Add lorazepam, increase chlorpromazine, reduce IV midazolam
- Day 11: increase lorazepam, stop midazolam infusion
- Day 14: Remains very agitated. What was the pre morbid state? Chase psychiatric notes.
- Day 15: Give depot injection, decrease lorazepam/chlorpromazine
- Day 18: Chase depot injection and give!
- Day 19: had depot injection, try to avoid sedation, tolerate agitation as much as possible
- Day 20: Try to avoid sedation, will be some residual agitation
- Day 21:Regular chlorpromazine

Case 2 Medical Notes

- Day 6: Sedate with chlopromazine and propofol, obtain psychiatric notes
- Day 10: Psychiatric history and medication obtained
- Day 13: Agitated, pulled out minitrach. Apply Posey Mitts.
- Day 14: Psychiatric input from Newham, missed previous depot injections, infection exacerbating conditon
- Day 20: extremely agitated, requiring 2 nurses to keep in bed, lorazepam

Case 2 Nursing Notes

- Day 2: patient self extubated, on propofol
- Day 3: weaned propofol, started chlorpromazine, Hands covered with bandages to prevent self extubation
- Day 4: Chlorpromazine increased. Mitts to prevent self extubation.
- Day 5: Very agitated requiring boluses of sedation
- Day 6: Agitation not responding to chlorpromazine, on midazolam infuson.
- Day 8: Pulled central and arterial lines
- Day 9: pulled out NGT, trying to climb out of bed, requiring boluses of sedation, diazepam added
- Day 10: Very agitated
- Day 14: Still agitated and aggressive
- Day 24: Less agitated

CASE 3

- 72 y.o male, 35 days on ITU
- Diagnosis: TB, pneumonia

Case 3 Problems

- Day 4 Agitated, inadequate sedation,
- Day 9 Confused, agitated

Case 3 Plan

- Day 2: Morphine and midazolam infusions to keep comfortable on ventilator
- Day 4: Aim sedation score -1. Unconscious agitation likely to be related to TBM
- Day 6: Still agitated? Needs CT/LP. Give midazolam as prescribed. Encourage family to help relieve anxiety
- Day 7:Opening eyes to command
- Day 8: rule out neurosyphilis
- Day 10: Neurology improving, agitated
- Day 11: Repeat LP and book MRI
- Day 12: Chase LP/MRI/AFB/Cytology results
- Day 13: Chase LP/MRI/AFB/Cytology results
- Day 14: Continue morphine and midazolam. MRI tomorrow. Get details of anxiolytics from family
- Day 15: Agitated, increased tone. For MRI head this week. ?resistant TB or syphilis?
- Day 16: await MRI
- Day 17: On too much morphine and midazolam as agitated when waking up. Try increasing chlorpromazine. Unable to do MRI as no anaesthetic machine till Monday
- Day 18: Avoid midazolam, use chlorpromazine.
- Day 20: neurology improving

Case 3 Medical Notes

- Day 7: unconscious agitation
- Day 11: agitation continues, sedation boluses
- Day 13: persistently agitated
- Day 15: Hypertension related to agitation?
- Day 17: Agitated, sedation titrated
- Day 21: Convert to chlorpromazine
- Day 22: Conversation with GP, long history of confusion
- Day 23: More settled on chlorpromazine

Case 3 Nursing Notes

- Day 2: agitated, going for ETT, on propofol
- Day 4: agitated by ETT, sedated with morphine, midazolam and propofol
- Day 5: Requiring boluses of sedation on top of infusions
- Day 7: Trial off sedation, awake but inappropriate, going for ETT, sedation recommenced
- Day 8: Restless, agitated, pulled out arterial line, attempted to pull out NGT, son talked to patient but no sign of understanding, bolus of sedation given
- Day 11: Agitated and restless despite midazolam, GCS 3/15
- Day 14: High dose of morphine/midazolam, low GCS
- Day 23 Clonidine added to morphine and midazolam
- Day 24: Chlorpromazine introduced, clonidine stopped
- Day 25: Chlorpromazine plus morphine plus midazolam
- Day 26: Regular chlorpromazine

- Day 27: calmer now
- Day 29: able to follow commands, but not always cooperative, pulled out NGT three times

CASE 4

- 36 y.o. female, 11 days on ITU
- Diagnosis: empyema. Three grand mal seizures on ITU
- PMH: Sjogrens

Case 4 Problems

- Confusion/agitation

Case 4 Plans

- None for agitation

Case 4 Medical Notes

- Agitated and inappropriate, on midazolam infusion and requiring boluses

Case 4 Nursing Notes

- Day 2: Sedation score from -1 to+3, biting ETT, requiring boluses as well as infusion of sedation.
- Day 5 : Propofol increased because agitated
- Day 6: Restless

CASE 5

- 65 y.o. male, 6 days on ITU
- Diagnosis: sepsis, Meningitis?

Case 5 Problems

- Agitated

Case 5 Plan

- Day 2: extubate if agitation controlled
- Day 5: Decreased GCS may be meningitis or hypercalcaemia. If extremely agitated, consider haloperidol

Case 5 Medical Notes

- Day 2: Agitated, requires sedation
- Day 3: Less agitated
- Day 4: Disorientated, GCS 13/15

Case 5 Nursing Notes

- Day 1: Agitated when propofol weaned
- Day 2: Restless, propofol boluses
- Day 5: Drowsy, calm, uncooperative aggressive

CASE 6

- 37 y.o. male, 12 days on ITU
- Diagnosis: Head and neck trauma, found by police with head through plasterboard wall
- PMH IVDU, on methadone, previous assaults

Case 6 Problems

- agitated, confused/agitated

Case 6 Plan

- Day 1: orogastric tube causing agitation, therefore swap to finebore. Switch propfol to midazolam, maintain morphine. Check drug tox screen, contact drugs team.
- Day 2: Continue sedation boluses, introduce chlorpromazine, wean propofol. Chase usual methadone dose,
- Day 3: wean propofol, increae chlorpromazine. On methadone and clonazepam
- Day 6: now on correct dose of opioids, therefore wean chlorpromazine and propofol
- Day 7: more settled

Case 6 Medical Notes

- Day 1: On maximum dose of morphine and midazolam. Fully alert. Has pulled out NG, trying to remove arterial line. Indicates that he wants to go home. Does not appear confused. Restart propofol for sedation, wean down midazolam, continue morphine.
- Day 2: Keep sedated with industrial doses of propofol as high risk self decannulation
- Day 3: Pulled out trachy tube, reinserted. Sedated with propofol. Agitated despite chlorpromazine.
- Day 5: Increasingly agitated off propofol. No neuro deficit when alert, however says he wants to go home. Continuue sedation and chlorpromazine.
- Day 7: Less agitated, chlorpromazine reduced. Remains on propofol.

Case 6 Nursing Notes

- Day 1: Very agitated, sedated.
- Day 2: Agitated – sedation plus analgesia.

- Day 3: Less agitated. Sedated with propofol, morphine, chlorpromazine and clonazepam. . Becomes considerably worse with his behaviour if he believes he will be given morphine or sedation.
- Extremely aggressive and violent,t hrew himself out of bed, dislodged tracheostomy. Improved with increase of . Hands remain covered for safety. Posey mitts in situ.
- Day 4: Requiring large amounts of propofol. Decannulated himself and removed 3 NGTs overnight despite large amounts of chlorpromazine.
- Highly agitated and aggressive, pulling on trachy and NG. Trying to climb out of bed, wants to go home.
- Day 5: Agitated, unmanageable, trying to get out of bed, pulling on trachy – bloused with sedation.
- Day 6: Agitated and aggressive, getting out of bed, punching and kicking, attempting to headbutt.
- Day 7: Less restless and agitated. Posey mitts removed.
- Day 9: Agitated and restless, pulling on lines, trying to get out of bed. Patient assisted to commode. Huge bowel motion. Patient very settled and has fallen asleep.
- More settled, trying to get out of bed and go home, settled with reassurance.
- Day 10: Not orientated to time, place and person but obeys commands most of the time.
- Patient very agitated, pulled out NG, refused to cooperate, aggressive at times, sedated with chlorpromazine.
- Day 11: Calm, orientated.
- Day 12: Occasionally agitated, settled with reassurance. Discharged to ward.

CASE 7

- 60 y.o. female, 4 days on ITU
- Diagnosis: mandibular tumour
- PMH: smoker and drinker

Case 7 Problems

- smoker and drinker – agitated

Case 7 Plan

- Day 2: nicotine patch and chlorpromazine to settle, opiates for pain
- Day 3: reduce chlorpromazine, only give morphine as needed, simple analgesia as required

Case 7 Medical Notes

- Day 2 Increasingly agitated on stopping sedation, able to respond to commands within severe agitation, apparent pain and discomfort a major part of this. Given morphine and extubated but still agitated therefore given chlorpromazine as pulling off oxygen mask and trying to climb out of bed

Case 7 Nursing Notes

- Day 1: Very difficult to titrate propofol as goes from -2 to +3
- Day 2: Off sedation, trying to climb out of bed, extubated, on chlorpromazine. Pulled out arterial line, morphine restarted. Patient kicking and punching. Started on chlorpromazine infusion.
- Day 3: Constantly agitated, pulling on lines. Chlorpromazine infusion stopped.
- Day 4: Calm and settled.

CASE 8

- 34 y.o. male, 17 days ITU
- Diagnosis: Lithium overdose
- PMH: bipolar disorder

Case 8 Problems

- Day 3 Agitated

Case 8 Plan

- Day 6: reintubate as unable to sedate adequately to commence CVVHF
- Day 7 : propofol boluses for sudden agitation, to protect COETT
- Day 8: propofol +/- morphine and midazolam infusions to prevent self extubation
- Day 9: reduce chlorpromazine then stop, request pysch review
- Day 10: Liaise with psych re effective management of agitation, consider midazolam infusion
- Day 12 Consider adding haloperidol plus midazolam infusion

Case 8 Medical Notes

- Day 6: Agitated, uncooperative, intubated for CCVVHF
- Day 8: Extremely agitated, therefore haloperidol
- Day 9: Extremely agitated despite increasing haloperidol, no obvious cause except psych history, possibly steroids. Benzodiazepine infusion plus QDS chlorpromazine advised.
- Day 9: Patient twisting nurses' fingers, writhing around bed, therefore sedation plus haloperidol
- Day 10: Mood better, doesn't remember hitting out, wants to go out for a fag
- Day 15: Settled

Case 8 Nursing Notes

- Day 1: restless, agitated, inappropriate, and unable to administer treatment until patient sedated and ventilated. Parents took photos of patient against advice!
- Day 3; Agitated but obeying commands, on morphine and midazolam

- Day 7: Very agitated, requiring boluses of sedation plus infusions, attempting to self extubate.
- Day 8: Agitation score= +3. Attempting to self extubate, therefore propofol plus midazolam. Trying to jump out of bed, aggressive.
- Day 8: 3 nurses to hold patient down, given haloperidol. Still agitated, Posey mitts applied to prevent removing lines. Started midazolam IV and chlorpromazine IM. Kicking, punching, pulling out lines, throwing self out of bed
- Day 9: Agitated, pulled out NGT, restless, aggressive. Given haloperidol and lorazepam to good effect
- Day 10: Restless and slightly disorientated
- Day 11: slightly agitated but manageable
- Day 14: No aggressive behaviour

CASE 9

- 72 y.o. male, 38 days on ITU
- Diagnosis Ca bowel, resected
- PMH: COPD, AF, HTN

Case 9 Problems

- Agitation

Case 9 Plan

- Day 4: Agitation not controlled by haloperidol
- Day 5: Increase haloperidol
- Day 16: Uncooperative, refusing examination. He would like to see Father Peter. If behaviour doesn't improve will need to see psychiatrist.
- Day 25: morphine if agitated

Case 9 Medical Notes

- Day 1: if agitated can have very small dose of haloperidol
- Day 5: Sedation an issue, unsettled until given haloperidol
- Day 9; Propofol if agitated with facial PSV

Case 9 Nursing Notes

- Day 1: Very agitated, refusing nursing interventions given haloperidol
- Day 2: Agitated, pulling out lines, given haloperidol
- Day 3: Confused, disorientated, agitated, pulling out lines
- Day 4: Very agitated, pulling out lines and trying to decannulate. Posey mitts applied.
- Day 10: Very agitated, pulling on tubes appears to understand instructions and obeys commands at times, communicates by writing, requiring haloperidol. Refusing all treatment.
- Day 14: Agitated when awake, cannot tolerate CPAP mask
- Day !5: Intubated

- Treatment withdrawn Day 38

CASE 10

- 46 y.o. male
- Diagnosis: olanzapine overdose
- PMH: known psychiatric patient, suicide attempts, overdoses, ETOH

Case 10 Problems

- Agitation

Case 10 Plan

- regular haloperidol, lorazepam prn

Case 10 Medical Notes

- Day 1: agitated, reaching for tube
- Day 2; agitated +++, unable to settle with reassurance, gave lorazepam
- Day 3: persistent agitation and hallucinations
- Day 4: remains aggressive but manageable with haloperidol and lorazepam
- Day 5: very keen to go for a cigarette, can reason with him most of the time, but gets aggressive, wants to be sectioned, still feels suicidal, is trying to leave. PO diazepam
- Day 6: very aggressive, hitting out, trying to leave, unable to be talked down, to be sectioned
- Transfer to Huntley St

Case 10 Nursing Notes

- Day 1: trying to punch nurses
- Day 2; agitated, hallucinating, aggressive, requiring 2 nurses, lorazepam. Trying to run out of Unit, punching staff, lorazepam ineffective. Security staff called.
- Day 3: mattress placed on floor as frequently tryng to climb out of bed
- Day 4: aggressive, punching, given haloperidol, security called
- Day 5: aggressive, punching, given haloperidol and lorazepam
- Day 7: left Unit, security called to remove from lift

CASE 11

- 55 y.o. female, 27 days on ITU
- Diagnosis: biliary leak post laparoscopic cholecystectomy, sepsis, ARDS

Case 11 Problems

- Agitation

Case 11 Plan:

- Day 3: sedate with morphine and midazolam

- Day 4: Increase sedation to minimise discomfort
- Day 6: Agitated when sedation reduced – aim for -1 sedation score
- Day 8: Add clonidine
- Day 10: Reintroduce clonidine, then wean morphine and midazolam
- Day 12: If unconscious agitation, for pancuronium bolus. For BIS monitor.
- Day 14: Switch to chlorpromazine, wean other sedation
- Day 16: Huge improvement, continue chlorpromazine

Case 11 Medical Notes

- Day 6: Still agitated, give morphine bolus and increase infusions.
- Day 7: Undersedated, thrashing around bed, sedate appppropriately.
- Day 10: Agitated after withdrawal of sedatives, re-introduce clonidine.
- Day 10: Agitation or oversedation? Clonidine has helped but not solved. Agitated, desaturating, increase infusions.
- Day 11: more settled
- Day 13: Sedation difficult. No reason for pain. Try to run with agitation. Try increasing O2 and ventilation, not obeying commands, looks distressed. Try chlorpromazine.
- Day 15: Very agitated, pulling on lines, ETT.

CASE 11 Nursing Notes

- Day 2: Agitated, given morphine.
- Day 4: Needing lot of sedation to keep calm.
- Day 6: Very agitated and desaturating, morphine increased.
- Day 8: Pulling out lines, sedation boluses given, rates increased, clonidine added
- Day 9: Trying to get out of bed, biting on ETT.
- Day 10: Agitated +++, climbing out of bed, bolus of midazolam given, reassured, denies pain.
- Day 11: Less agitated, sedation weaned, no boluses required.
- Day 12: Occasional boluses of sedation required for agitation, trying to climb out of bed, eventually settles with medication and reassurance
- Day 14: Very restless and agitated, chlorpromazine given and midazolam.
- Day 15: Agitated, given lorazepam and clorpromazine.
- Day 16: Hands remain in mittens to protect tracheostomy and lines.
- Day 17: Obeying commands, interacting appropriately.

CASE 12

- 66 y.o. male, 8 days on ITU
- Diagnosis: fem-pop bypass graft
- PMH: PVD, IHD, low EF, heavy drinker

Case 12 Problems

- Agitation

Care 12 Plan

- Haloperidol if agitated

Case 12 Medical Notes

- Day 2: Acutely confused +++. Uncontrollable. Unable to co-operate with treatment. Likely to be sepsis.
- Day 4: Currently agitated, but not purposeful. Midazolam boluses PRN titrated to achieve sedation score = 0
- Day 5: More confused.

Case 12 Nursing Notes

- Day 2: Agitated, pulling lines, wanting to get out of bed, demanding cigarettes. Nicotine patch applied with settling effect.
- Day 4: Agitated and uncomfortable requiring morphine and midazolam boluses to protect ETT.
- Day 4: Very aggressive and agitated, placed Posey mitts.
- Day 5: CRITICAL CARE OUTREACH Very agitated, trying to hit Outreach nurse, therefore unable to assess. Will need special on ward.
- Day 5: Agitated, from +3 to -1. Morphine infusion restarted as pain control uneven. Low dose haloperidol as becoming aggressive.
- Day 7: Does not seem confused. Ready for discharge.

CASE 13

- 51 y.o male, 31 days on ITU
- Neck dissection
- PMH: alcohol dependence

Case 13 Problems

- Day 11 Confused/Agitated

Case 13 Plan

- Day 3: Give regular chlorpromazine as needs tranquilising not sedating, plus morphine, aim sedation score -1
- Day 4: Regular chlorpromazine, keep propofol till trachy done.
- Day 5: Increase chlorpromazine
- Day 6: Halve chlorpromazine, continue propofol
- Day 14: Difficult to sedate with midazolam, start chlorpromazine, wean midazolam.
- Day 16: Continue chlorpromazine with propofol boluses
- Day 18: Agitation at night. Morphine for pain, chlorpromazine for agitation.
- Day 21: Stop all sedatives apart from chlorpromazine, change chlorpromazine dose to QDS, lorazepam PRN for breakthrough agitation, morphine for analgesia.
- Day 22: NEURO pain well controlled on low dose morphine infusion. Commence chlorpromazine infusion and regular IV lorazepam, then wean off propofol.
- Day 22: Chlorpromazine appears to exacerbate. Continue propofol.
- Day 26: Lorazepam SL for agitation. Increase sedation if becomes more agitated

Case 13 Medical Notes

- Day 4: Reintubated following partial airway obstruction following increasing agitation, non compliance with nursing care.
- Day 9 : Nocturnal agitation an issue, commenced on chlordiazepoxide. Still requiring lorazepam. Try alcohol if problematic.
- Day 12: Increasing confusion pulled out NG. Given diazepam.
- Day 14: Too sedated, chlorpromazine reduced
- Day 15: Climbing out of bed, pulling lines out. Chlorpromazine increased and propofol bolus.

Case 13 Nursing Notes

- Day 2: Agitated, morphine and midazolam increased, propfol bolus.
- Day 5: 'Unsettled' – requiring chlorpromazine and lorazepam.
- Day 10: Increasingly agitated and aggressive, wanting nicotine and alcohol. Propofol infusion commenced.
- Day 13: Agitated and restless, additional chlordiazepoxide given. Again became aggressive, reassured and settled.
- Day 13: Restless, couldn't be controlled, given haloperidol.
- Day 14: More agitated, kept calm with morphine and midazolam.
- Day 15: Very restless and agitated, pulling on trachy, large amounts of midazolam (30 mgs) plus morphine.
- Day 17: On morphine infusion plus chlorpromazine plus propfol boluses.
- Day 25: Needing chlorpromazine as a continuous infusion.
- Day 26: has required minimal sedation. Regular doses to be withheld unless aggressive. Obeys commands.
- Day 27: Sedation not given. Patient calmed by nurse. Episodes of agitation lasting 10 – 15 minutes.
- Day 29; regular chlorpromazine and diazepam.

CASE 14

- 40 y.o. male, 25 days on ITU
- Alcoholic liver disease. Arrested in CT scanner.

Case 14 Problems

- Encephalopathy.

Case 14 Plans

- No plan recorded

Case 14 Medical Notes

- Day 2: Agitated, requiring more chlorpromazine

Case 14 Nursing Notes

- Day 1: Patient agitated +3, trying to climb out of bed.

- Day 2: Patient uncontrollable, attempting to kick and hit nurses, 2 to 3 nurses required at bedside. Chlorpromazine as required.

CASE 15

- 46 y.o. male, 63 days on ITU
- Cardiac arrest.
- PMH: IVDU, chronic leg ulcers, cellulitis both legs

Case 15 Problems

- Day 1 - 8: confused, agitated
- Day 13 – 16: confused, agitated
- Day 18: On chlorpromazine
- Day 20 – 29: agitated
- Day 38; Anxiety, drug withdrawal

Case 15 Plans

- Day 1: Use morphine to treat agitation
- Day 6: Find out usual dose of methadone
- Day 7: Increase morphine to requirements. Add midazolam if still agitated
- Day 12: On large doses of morphine, agitated when reduced. Start regular chlorpromazine and increase slowly.
- Day 14: Less agitated, has bursts of agitation, and settles with bolus of chlorpromazine. Continue morphine infusion; try to decrease by 1 mg every 24 hours. May require methadone.
- Day 21: Wean chlorpromazine.
- Day 23: Wean chlorpromazine. Restart methadone.
- Day 25: Over sedated – reduce morphine to 2mgs/hr, continue chlorpromazine.
- Day 26: Reduce chlorpromazine slowly, increasing morphine as necessary to maximum of 10 mg/hr.
- Day 27: Patient was very agitated overnight, today very sedated. Avoid heavy sedation, give verbal support. Morphine to maximum of 10 mg/hr, chlorpromazine in addition at rate compatible with above.
- Day 28: Doing very well. Switch to oral methadone later in weekend.

Case 15 Medical Notes

- Day 6 a.m.: Mildly agitated.
- Day 6 p.m.: Self extubated. Very agitated. Run morphine and midazolam.
- Day 9: Self extubated.
- Day 14: Less agitated on chlorpromazine infusion. Wean midazolam then morphine.
- Day 22: Knocked out with methadone. Withhold then restart with reduced dose.
- Day 24: Add morphine infusion.
- Day 24: Self-decannulation.

- Day 28: restart methadone.

Case 15 Nursing Notes

- Day 8: Increasingly agitated, going for ET tube.
- Day 9: Agitated, biting ET tube.
- Day 10: Agitated, scratching nursing staff, biting. At present wearing mittens.
- Day 20: Unsettled. Chlorpromazine increased.
- Day 20: Increasingly agitated. Doctors contacted for alcohol via NG tube. Lager found in fridge, 50 ml given.
- Day 22: Weaning chlorpromazine, morphine converted to methadone.
- Day 25: Agitated +++
- Day 27: Lots of reassurance given when waking up as he appears very scared and anxious.
- Day 30: Paranoid and confused. Reassurance and explanation given.

CASE 16

- 80 y.o. male, 12 days on ITU
- Duodenal ulcer bleed
- History of vascular dementia and cerebral atrophy

Case 16 Problems

- Day 1: Agitated – tube related
- Day 2: Confused, agitated

Case 16 Plan

- Day 3: Keep boxing gloves on. Chlorpromazine TDS and PRN as monotherapy
- Day 4: Agitation, unable to sit out. Encourage active limb exercises. Reduce chlorpromazine.
- Day 5: Continue chlorpromazine.

Case 16 Medical Notes

- Day 3: Agitated, continue chlorpromazine.
- Day 4: Agitated plus short of breath. Wheezy.
- Day 5: Continue with plan, if still agitated on chlorpromazine, add lorazepam.

Case 16 Nursing Notes

- Day 1: Agitated, confused, paranoid, thinks staff are plotting against him, trying to climb out of bed, very unsafe.
- Day 2: Very agitated and confused, trying to get out of bed.

- Day 3: Very agitated, given midazolam, stopped chlorpromazine infusion, patient more settled.
- Day 3: Very agitated, moving all the time, pulling on lines. Chlorpromazine re-prescribed.
- Day 4: Agitated all day, arterial line pulled out.
- Day 5: Agitated, wheezy. Agitation worse with high temperature.
- Day 6: very settled. Chlorpromazine withheld.
- Day 7: Agitated but did not require chlorpromazine.
- Day 10: Chlorpromazine and lorazepam given to settle. Complaining of pain in right arm and leg.

CASE !7

- 81 y.o. male, 29 days on ITU
- Perforated appendix
- History of alcohol abuse

Case 17 Problems

- Day 14: Agitation
- Day 25; No longer agitated

Case 17 Plans

- Day 9: regular chlordiazepoxide. WCC rising – agitation may reflect sepsis? Note background of alcohol abuse.
- Day 14: Use benzodiazepines for sedation.
- Day 15: Use chlorpromazine for agitation/sedation. Stop other sedatives. Arrange with brother's mental health worker for him to visit.
- Day 16: sedate with chlorpromazine regularly. Can increase dose to 25 mg TDS if still agitated.
- Day 17: Restless on regular chlorpromazine with background of morphine – can bolus sedation if required. Need to discuss with him about continuing care – de-escalate or withdraw under sedation?
- Day 18: Keep comfortable on morphine plus sedation. Not for escalation, allow to pass away peacefully.
- Day 21: Aim to reduce morphine provided patient remains comfortable, inform surgeons that the patient is improving.
- Day 22: Discuss discharge with Respiratory Medicine Team.

Case 17 Medical Notes

- Day 13: Agitated intermittently, no pain. Settled with midazolam, if recurs try lorazepam.
- Day 15: Continues to be intermittently tachypnoeic and distressed but denies pain. Responds briefly to morphine and lorazepam. Try chlorpromazine instead of midazolam.
- Day 15: Still agitated on chlorpromazine. Can be increased as needed.

Case 17 Nursing Notes

- Day 9: agitated and restless, mild sedation prescribed with good effect.
- Day 14: Agitated, oxygen saturation decreased. Denies pain. Lorazepam.
- Attempting to communicate with patient who still denies pain. Refused to try writing what he wants to express.
- Restless all night, settled only for short time on midazolam and lorazepam.
- Restless and agitated, given IV lorazepam.
- Tachypnoeic and unsettled, advised to give morphine.
- Day 15: remains very agitated, chlorpromazine given PRN. To start regular dose.
- GCS remains low, not responding appropriately to voice but appears to hear, noted that he has a hearing aid but not wearing it at present.
- Day 16: Spoke to registrar re continuation of chlorpromazine or alternative as remains intermittently agitated and may be hallucinating and in pain as unable to communicate. Advised to try morphine. Morphine infusion commenced, chlorpromazine discontinued, but remains agitated.
- Day 18: Agitated +++, morphine boluses, position changed, settled with chlorpromazine. Refused hearing aid.

ANALYSIS

HISTORY	NUMBER OF PATIENTS
Brain Injury	1
Psychiatric illness	3
Confusion/dementia	2
Alcohol	5
Drug addiction	1
Other	5

- Problems: most of the patients had agitation or a contributing diagnosis such as alcohol withdrawal or encephalopathy identified as a problem.
- Plans: nearly all patients had a plan to address agitation. Most plans concentrated on the management of sedation but there was some evidence of looking for and removing causes, such as discomfort from endotracheal or orogastric tubes. Two patients with psychiatric history were referred for psychiatric opinion, one patient was investigated extensively for microbiological causes of his agitation and his GP consulted for his pre morbid mental state. Patients with history suggesting contributory withdrawal symptoms were treated with in one case with a nicotine patch plus opiates for pain, or in another patient with a history of intravenous drug abuse, with methadone. Alcohol was suggested “if problematic” for a history of alcoholism.

No reference was made to following the “Management of the Agitated Patient” algorithm, anywhere.

- At times the plan and the medical notes seem indistinguishable, with assessment appearing in the plans and plans appearing in the notes. The response or lack of it, to therapy (mostly in terms of sedation) is documented. Communication as a tool is mentioned: “talked to calmly”, “son talked to patient but no sign of understanding”, “eventually settled with medication and reassurance”; trying to get patient to use hearing aid, asking the patient if he is in pain.
- Of the 17 patients, 7 are mentioned as having “Posey mitts” applied.

1) ‘ “Boxing gloves” to prevent third unplanned self extubation’ is ordered in the plan. The order is repeated for the next three days. The presence of the mitts is noted in the plan, the medical notes and the nursing notes. Initially the nursing notes state that the patient’s hands are “covered with bandages” presumably because of a shortage of the proper protective mitts; subsequently “Posey mitts” are documented.
2) “Posey mitts to prevent removing lines” – nursing notes only.
3) “Posey mitt” applied to prevent decannulation” – nursing notes only.
4) “Very aggressive and agitated, placed Posey mitts” – nursing notes only.
5) “Hands remain in mittens to protect tracheostomy and lines” – nursing notes only
6) “Agitated, scratching nursing staff, biting. At present wearing mittens” – nursing notes only
7) “Keep boxing gloves on” – plan only

The guidelines state that the decision to use a physically restrictive product such as protective mitts should be made by the nurse in charge in agreement with the SpR or Consultant, and that the reason for decision should be entered in the patient record and signed. An approximation of this happened only in 2 of the cases, and then inadequately.

- Polypharmacy is notable, but driven by the need to achieve safety for the patient. (Consultant preference may be implicated in some changes!)
- Delay between an action being identified in the plan, and being performed, for example in Case 2, on Day 14 the plan is to chase the pre morbid state, on Day 15 it is identified that the patient needs a depot injection, on Day 18 the depot injection still hasn’t been given, and finallyon Day 19 the injection has been given

RECOMMENDATIONS

1) Provide means for recording which patients have required the application of protective mitts. (Already actioned: tick box in patient record).
2) Ideally, there should be a drop down menu following from the tick box to enable the nurse to demonstrate that the guidelines are being followed, which state the mitts should be removed every hour to check circulation and movement, and that the need for the mitts has been reviewed.

3) The decision to use protective mittens should only be made by the nurse in charge and the registrar or consultant after assessment of the patient's mental status for competence, and they should document this under their log-in signature in the patient record. The statement should take the form of: "The patient has been assessed and found to be confused/unconsciously agitated…in order to protect from self-harm/injuring staff, apply protective mitts". Consider the use of a prescription for protective mitts.
4) Avoid using substitutes such as bandages if possible. Try to improve return of mitts from laundry. Otherwise, the use of bandages should be recorded in the same manner as if the patient had protective mitts, but explaining that the mitts are unobtainable, and it is in the patient's best interest to restrict grasping ability. The same precautions regarding circulation and movement apply.
5) Publicise and encourage/enforce use of the algorithm for "Management of the Agitated Patient". All staff are informed currently on induction to the Unit about the Algorithm. An annual update covering the algorithm and the legal and ethical position regarding the use of physical and chemical restriction of patient mobility is recommended (incorporated into the Line Study Day).
6) Continue to seek an environment that reduces agitation and the need for intervention, such as reduction of noise, promotion of sleep at night, stimulation by day, orientation and consistency. Consider division of Critical Care and High Dependency patients in separate areas to achieve environmental goals.
7) Incorporate the recommendations of the review "Detection, Prevention and Treatment of Delirium in Critically Ill Patients" (Borthwick et al). This review has already been discussed by senior medical staff, and there seems to be agreement (broadly) with the recommendations, significantly in regard to pharmaceutical management of delirious/agitated patients.
8) Write "ICU Standard of Care for Agitated Patients" with measurable standards amenable to audit.
9) Action recommendations. and re-audit in 12 months.

CONCLUSION

As demonstrated above, there is room for improvement, particularly in regard to the documentation and on going care of patients requiring the application of protective mitts. As ever, education of both medical and nursing staff to follow the algorithm is the key.

APPENDIX 1: PROTECTIVE MITT USAGE IN ONE YEAR

I examined the receipt book for items sent to the laundry, to get an idea of the Unit's usage of protective mitts: thirty-two pairs were sent for laundry in the 12 month period. However this doesn't reflect demand as laundry is slow to return mitts, so nurses often improvise mitts with bandages which are not recorded, so this number considerably under reports demand..

APPENDIX 2: ADVERSE INCIDENTS INVOLVING AGGRESSIVE BEHAVIOUR TO STAFF (6 month period)

1): Patient with psychiatric history and history of alcohol abuse was aggressive to staff on 2 occasions.

2): Nurse scratched and punched by patient on 2 occasions. Chlorpromazine had been discontinued so restarted.

3): Aggressive patient digging nails into nurse during sheet change, restrained by other nurses until procedure finished.

4): Nurse hit in the face by patient, and kicked. Sedation given.

5): Patient woke up aggressive, self extubated, sedated.

6) Patient spat in nurse's face. Address sedation.
7): Nurse punched in stomach, verbally abused.

8): Patient punched nurse in chest, sedated.

9): Patient slapped nurse in the face, tried to decannulate tracheostomy. Follow Agitated Patient algorithm, use protective mitts, give sedation if indicated.

10): Nurse punched by sectioned psychiatric patient while patient trying to leave Unit x 3. On last occasion the patient was sedated with haloperidol, RMN debriefed over incident.

11): Patient attempted to self extubate then punched nurse. SHO called.

12): Patient extremely agitated, trying to climb out of bed. Given lorazepam which wasn't prescribed.