DELIRIUM

(Last updated 08/08/2019; Reviewed by: Bo Hu, MD)

PRESENTING COMPLAINT: Altered or fluctuant consciousness

FINDINGS

- **A** Check airway
- **B** Normal RR unless cause specific
- **C** Normal BP, HR unless cause specific
- **D** Variable altered (V,P,U,D)*
- **E** Inattention, acute onset and fluctuant course, may be physical findings related to etiology
- **L\_PC** Serum glucose, ABG ↓ PaO2, ↑ PCO2, electrolytes
- **U\_PC** Cause dependent

*V (verbal), P (pain), U (unconsciousness), D (delirious)

**U\_PC** (point of care ultrasound)  **L\_PC** (point of care labs)

OTHER HISTORY

- **Symptoms:** Altered consciousness, cognitive function, or perception, inattention, acute onset, fluctuating, hypo-/hyperactive or mixed
- **Predisposing Conditions**
  - Does the patient behave differently than at baseline? Baseline dementia, hearing or sight problems, language difficulties
  - Predictive models (see below)

DIFFERENTIAL DIAGNOSES

Hypoxia, hypercapnia, hypotension or low perfusion state (e.g. septic shock, MI), sepsis (even without low perfusion), infection, fever; Metabolic abnormalities: hypoglycemia or hyperglycemia, electrolytes abnormalities (e.g. hyponatremia, hypophosphatemia, hypercalcemia), hypothyroidism or hyperthyroidism, elevated ammonia; Medication overdose or side effect (inappropriate sedation with benzodiazepines) or drug interaction; Intoxication or withdrawal syndromes: alcohol, medication, other drugs or poisonings; Primary CNS problem: head trauma, intracranial hemorrhage, tumor, stroke, convulsions; Primary GI problem: bleeding, pancreatitis; Other organ failure: liver, renal; Post-operative state; General care problems: immobility, pain, sleep disturbance, poor nutrition, dehydration, urinary retention, constipation, sensory impairment, especially in elderly patients

OTHER INVESTIGATIONS

- **Severity Score:** Confusion Assessment Method (CAM-ICU or ICDSC)
○ Titrate sedation to sedation score e.g. RASS or SAS

- **Labs:** Blood count, electrolytes, renal and liver functions, glucose, coagulation, ABG; as needed microbiology, drugs and alcohol levels; consider thyroid function tests

- **Monitoring:** Hemodynamic and respiratory monitoring; neuro observation if indicated

- **Exclude causes that need immediate management** (e.g. hypoglycemia/hypoxia, hypotension) and for potential underlying causes listed above

**THERAPEUTIC INTERVENTIONS**

- **General**
  ○ Identify and treat underlying cause(s)
  ○ Review medication list for potentially offending drugs
  ○ Ensure adequate pain relief and minimize benzodiazepine sedation (see algorithm)
  ○ Ensure effective communication, reorientation and reassurance
  ○ Search for the presence of delusions and hallucinations, normalize the experience and treat specifically with antipsychotics as needed
  ○ Involve family and friends if possible
  ○ Suitable care environment (well lit, quiet room with time /space references)
  ○ Optimize sleep: establish day-night cycle, earplugs, minimize disturbance during night; avoid “night sedation” but consider melatonin
  ○ Constant observation: control dangerous behavior to self and others
  ○ Avoid physical restraints, urinary catheters if possible, and excessive sedation
  ○ Aggressive early mobilization when respiratory/hemodynamic stable

- **If general measures ineffective:**
  ○ Neuroleptic
    ▪ Typical: haloperidol especially if parenteral route or immediate control needed
    ▪ Atypical: olanzapine/risperidone/quetiapine enterally
  ○ Consider alpha 2 agonists: e.g. clonidine or dexmedetomidine
  ○ Avoid benzodiazepines unless needed for specific indication (e.g. alcohol withdrawal state) or for rapid control (see below)

- **Occasionally rapid control may be needed if risk to patient or others:**
  ○ If intubated then may need more sedation (propofol) while antipsychotics are given time to act
  ○ If not intubated, then titrate IV haloperidol, oral atypical antipsychotic if time and route allows
  ○ Consider short term bolus treatment with benzodiazepine
- Consider intubation if deeper sedation needed (this should be the exception)

- If suspicion of alcohol history/withdrawal: thiamine supplementation (Wernicke-Korsakoff syndrome), Benzodiazepine (diazepam, lorazepam, chlordiazepoxide) according to CIWA scale or dexmedetomidine (if no seizures) +/- neuroleptic agents (haloperidol), to achieve light somnolence

- Consider other withdrawal syndromes e.g. opioid or nicotine

**ONGOING TREATMENT**

- **Further diagnostics:** Non-contrast CT brain (generally low yield unless lateralizing signs; +/- MRI, EEG as needed); Additional labs: consider lumbar puncture (very low yield unless post neurosurgery), thyroid function

- **Further treatment:** Remove physical restraints as soon as possible; Treat any underlying cause identified; Continue normalization of sleep-wake cycle, frequent reorientation, and attention to good general care (adequate hydration, nutrition, urinary and bowel function, analgesia, sleep, mobilization)

- **Consult:** Psychiatry and neurology

**CAUTIONS**

- **Benzodiazepines:** use minimally for specific indications or when rapid control of aggression needed, as above

- **Haloperidol:** risk of QTc prolongation and extrapyramidal symptoms

- **Dexmedetomidine:** bradycardia and hypotension

**PREDICTIVE MODEL: PRE-DELIRIC AND E-PRE-DELIRIC**

<table>
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<tr>
<th>Predictors</th>
<th>Within 24 hours after ICU admission (PRE-DELIRIC)</th>
<th>At ICU admission (E-PRE-DELIRIC)</th>
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<tr>
<td>Age</td>
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<tr>
<td>APACHE-II</td>
<td>History of cognitive impairment</td>
<td>History of alcohol abuse</td>
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REFERENCES AND ACKNOWLEDGEMENTS

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