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

	Within 24 hours after ICU admission (PRE-DELIRIC)	**At ICU admission** (E-PRE-DELIRIC)
Predictors	Age APACHE-II Urgent admission Admission category Infection Coma Sedation Morphine use Urea level Metabolic acidosis	Age History of cognitive impairment History of alcohol abuse Blood urea nitrogen Admission category Urgent admission Mean arterial blood pressure Use of corticosteroids Respiratory failure

REFERENCES AND ACKNOWLEDGEMENTS

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