

Altered Mental Status

Definitions

Normal consciousness= arousal + cognition

Arousal: function of brainstem; keeps us awake

- Problem with arousal → Delirium
 - ↑ arousal: Hypervigilance
 - ↓ arousal: Lethargy, stupor, coma

Cognition: function of cortex

- Problem with cognition → Dementia

Table 1. Main characteristics differentiating delirium, dementia, and psychosis

Delirium	Dementia	Psychosis
MEDICAL EMERGENCY FAST progression Abnormal VS Abnormal consciousness Reversible Fluctuating	Slow in onset Slow progression Normal VS Normal consciousness Degenerative	Diagnosis of exclusion

VS: Vital Signs

Differential Diagnosis

AEIOU (all vowels) **TIPS**

Alcohol

Epilepsy/ Endocrine/ Electrolytes/ Encephalopathy

Insulin

Oxygen/ Opiates

Uremia

Trauma/ Temperature

Infection

- CNS (meningitis, encephalitis)

- Systemic (UTI, pneumonia, sepsis)

Poisoning/ Psychosis

Shock/ Stroke/ SAH/ Space occupying lesion

CNS: Central Nervous System; UTI: Urinary Tract Infection; SAH: Subarachnoid Hemorrhage

Investigations

Table 2. Investigations according to differential diagnosis

Alcohol	Alcohol levels, serum osmoles
Epilepsy/ Endocrine/ Electrolytes/ Encephalopathy	EEG, referral to neurology, TFTs, cortisol, chemistry panel, LFTs/NH ₃
Insulin	Glucose
Oxygen/ Opiates	UDS
Uremia	BUN/Cr
Trauma/ Temperature	CT Head, C-Collar, CT C-Spine
Infection	CBC, BCx, UA, UCx, CXR, LP/CSF*
Poisoning/ Psychosis	Drug Levels (e.g. lithium, digoxin)
Shock/ Stroke/ SAH/ Space occupying lesion	UDS, ECG, Troponin, CT Head, LP*

*Must do CT head prior to LP

EEG: Electroencephalography; TFTs: Thyroid Function Tests; LFTs: Liver Function Tests; NH₃: ammonia; UDS: Urine Drug Screen; BUN: Blood Urea Nitrogen; Cr: Creatinine; CT: Computerized Tomography; C-Spine: Cervical Spine; CBC: Complete Blood Count; BCx: Blood Culture; UA: Urinalysis; UCx: Urine Culture; CXR: Chest X-Ray; LP: Lumbar Puncture; CSF: Cerebrospinal Fluid; ECG: Electrocardiogram

Treatment

*** Note that investigations and treatments are often conducted simultaneously

Primary Survey: ABCDE

- **Airway:** Intubate? If suspecting trauma, then put patient on c-spine collar
- **Breathing:** Administer 100% Oxygen (mask or tube)
- **Circulation:** Administer IV Fluids and vasopressors, as needed; Monitor vital signs
- **Disability:** Assess GCS/AVPU
- **Exposure:** Undress patient and examine head to toe

IV: Intravenous; GCS: Glasgow Coma Scale; AVPU: Alert, Voice, Pain, Unresponsive

Initial Actions: DONT

- Dextrose: check and administer sugars
- Oxygen: 100% Oxygen
- Naloxone (Narcan): check pupils; opiates overdose?
- Thiamine, if alcohol-related

Secondary Survey

History

- Collateral (family, nursing home)
- Assess what is different compared to baseline
- When has this started?
- New medications?
- Infections?
- Trauma?

Physical Exam: Head-to-Toe Assessment

VS: HR, RR, BP, Oxygen, Temperature

Neurological exam: Alertness, Consciousness, Focal neurological deficits, Cranial Nerves deficits

Cardiology exam: Atrial Fibrillation, Murmurs, Bruits

Pulmonary: assess for pneumonia

GI: Tenderness, Rigidity, Peritonitis

GU: Urine malodour, Bloody stool, Vaginal Infection

Dermatological exam: Rashes, Patches, Jaundice, Trauma

Treatment Elements

- TREAT UNDERLYING CAUSE (e.g. treat seizures with benzodiazepine)
- DONT (dextrose, oxygen, naloxone, thiamine)
- IV Fluids
- Insulin
- Antibiotics (broad-spectrum)
- Warm/Cool

- Control BP

Disposition

Most patients will be admitted, either to ICU (close monitoring) or General Medicine Floor

CREDITS: AJ (Amjed) Kadhim-Saleh, Dr. Rahul Patwari, and Dr. Stella Yiu