



Advanced Practice Provider Academy

**April 14-18
San Diego, CA**

The Altered Patient

Altered mental status is a very common emergency department presentation. The main issues for acute care providers (emergency physicians and advanced practice providers) is how much of a workup do you need to do? Does everyone need a head CT? Who needs an LP? What diagnoses need to be considered? These are just a few of the questions that will be answered by the presenter.

Objectives:

- Discuss the differential diagnosis of altered mental status in the ED.
- Discuss the key findings to look for on physical examination.
- Discuss an approach to altered mental status in the ED.
- Discuss controversies in the workup of patients with altered mental status.
- Discuss “medical clearance” for psychiatry.
- Discuss the key high-risk presentations and documentation that is essential when caring for these patients.

Date: 4/18/2014
Time: 8:30 AM - 9:00 AM
Course Number: FR-63

(+)Stephen J. Traub, MD, FACEP

Chairman, Department of Emergency Medicine, Mayo Clinic, Phoenix, Arizona; Assistant Professor of Emergency Medicine, College of Medicine, Mayo Clinic, Rochester, Minnesota

(+) No significant financial relationships to disclose

Altered Mental Status

Stephen J. Traub, MD, FACEP

Chairman, Department of Emergency Medicine
Mayo Clinic Arizona
Phoenix, AZ

Associate Professor of Emergency Medicine,
Mayo Clinic College of Medicine
Rochester, MN

Goals

- Crucial points in approaching the patient
- Differential diagnosis: “Buckets” of AMS
- History
- Physical Examination
- Workup
- Controversies

FIRST THINGS FIRST

- Airway
- Breathing
- Circulation/C-Spine
- Fingertick Glucose



AMS: Mnemonics

- A Alcohol
- E Epilepsy
- I Insulin (Hypoglycemia)
- O Overdose
- U Uremia
- T Trauma
- I Infection
- P Psychosis
- S Stroke

AMS: Mnemonics

- M Metabolic
- O Hypoxemia (High CO₂)
- V Vascular
- E Electrolytes/Endocrine
- S Seizures
- T Tumor/Trauma/Temperature/Toxins
- U Uremia
- P Psychiatric/Porphyria
- I Infection
- D Drugs, Including withdrawal

AMS: Mnemonics

- B Bleed
- E Electrolytes
- A Alcohol
- T Toxins
- H HTN Encephalopathy
- O Oxygen
- P Psychiatric
- E Endocrine
- L Liver/Hepatic Encephalopathy
- E Encephalitis/Meningitis
- S Seizures
- S Shock
- U Uremia
- S Sepsis/Other infection
- C CVA



AMS: Mnemonics

- AEIOU TIPS
- MOVE STUPID
- BEAT HOPELESS USC



AMS: "Buckets"

- Brain Fuel: Glucose, Oxygen, blood
- Metabolic: Electrolytes, NH_3
- Toxins: EtOH, Opiates, Cocaine
- Infectious: Peripheral vs. Central
- Structural: CNS lesion (blood, tumor)

History

- Sometimes will be helpful
 - Complained of headache, then collapsed
 - Just like her last UTI
 - Found in garage with car running
- Don't bet on it

Physical Exam

- High Yield points
 - Vital Signs
 - HEENT
 - Neurologic Exam (with asterixis)
 - Toxidrome Exam

Physical Exam

- Vital Signs
 - Temperature
 - Pulse
 - Blood Pressure
 - Respiratory Rate
 - Pulse Oximetry

Physical Exam

- HEENT
 - Head Trauma, Ears, Pupil Findings



Physical Exam

- Neurologic
 - Orientation
 - Higher functions
 - Localized findings
 - Suggests CNS etiology

Physical Exam

- Toxidrome-oriented physical exam
 - Certain drugs produce stereotypical findings
 - Detailed examination and pattern analysis can solve many unknown scenarios

Physical Exam

- Drug Classes
 - Opiates
 - Sedatives
 - Hallucinogens
 - Dissociatives (PCP, K)
 - Sympathomimetics
 - Sedative Withdrawal
 - Anticholinergics
- Findings
 - Pulse
 - Blood Pressure
 - Respiratory Rate
 - CNS status
 - Mucous Membranes
 - Eyes
 - Skin
 - Lungs
 - Bowel Sounds

Traub, Neurology Review for Psychiatrists (2009)

Physical Exam

- Toxidrome Exam: Fairly Effective
 - Practitioner ability to identify toxidromes based on physical exam
 - Nurses 88%
 - Medical Residents 84%
 - Clinical Pharmacists 79%

Nice, Annals of Emergency Medicine 1988

Laboratory workup



Laboratory workup

- Brain Fuel: Fingerstick, O₂ saturation
?: Administer thiamine
- Metabolic: Chem 7, Calcium
?: NH₃, ABG, TSH
- Toxins: EKG
?: CO, EtOH, Urine Tox
- Infectious: CXR, UA
?: LP
- Structural: Head CT

Laboratory workup

- Basic AMS
 - Fingerstick
 - O₂ Saturation
 - Chem 7
 - Calcium
 - EKG
 - CXR
 - UA
 - Head CT
- Also Consider
 - Thiamine administration
 - Ammonia
 - ABG (with CO)
 - TSH
 - EtOH
 - Urine Tox
 - LP

Laboratory workup

- Basic AMS
 - Fingerstick
 - O₂ Saturation
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 - LP



Controversy: The Toxicology Screen

- Measures presence, not intoxication
 - Positives may be misleading
 - Cocaine positive 3 days after use
 - Positive methamphetamine; sedated patient
 - Negatives may be misleading
 - PCP congeners, synthetic cannabinoids
- Rarely impacts management

Kellerman, Annals of Emergency Medicine 1987

Belson, Pediatric Emergency Care 1999

Schiller, Psychiatric Services 2000

Controversy: LP for afebrile AMS

- Young patients: probably just do it
- Older patients: less clear
 - Argument against
 - Confusion can accompany almost any disease
 - Argument for
 - In one pilot study, 18% of LPs performed on afebrile elderly patients with AMS were positive

Shah, Journal of Emergency Medicine 2007

“Medical Clearance” for Psychiatry

- “Lab workup” often requested
- Rarely useful
 - 375 patient study: no change
Amin, Western Journal of Emergency Medicine 2009
 - 519 patient study: one change
 - Hyponatremia/hypokalemia
Janiak, Journal of Emergency Medicine 2009

“Medical Clearance” for Psychiatry

- ACEP Clinical Policy
 - No set battery for “Medical Clearance”
 - Driven by history and physical examination
Lukens, Annals of Emergency Medicine 2006

Summary: Altered Mental Status

- Primary finding vs. final common pathway
- First things first (ABCs, glucose)
- Think of categories/buckets
 - Structural, brain fuel, metabolic, toxic, infectious
- Have your “horses” workup ready