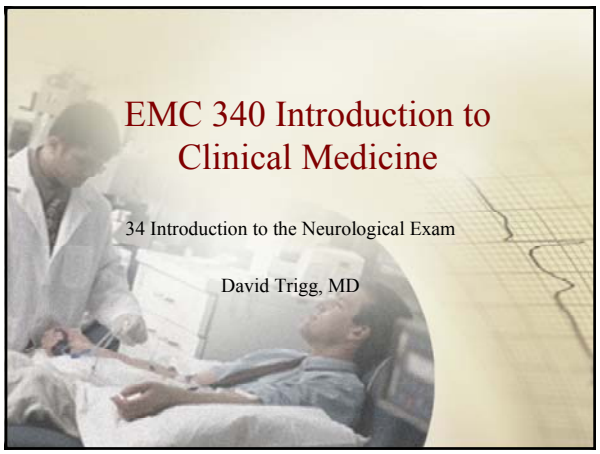

EMC 340 Introduction to Clinical Medicine

34 Introduction to the Neurological Exam

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Outcomes

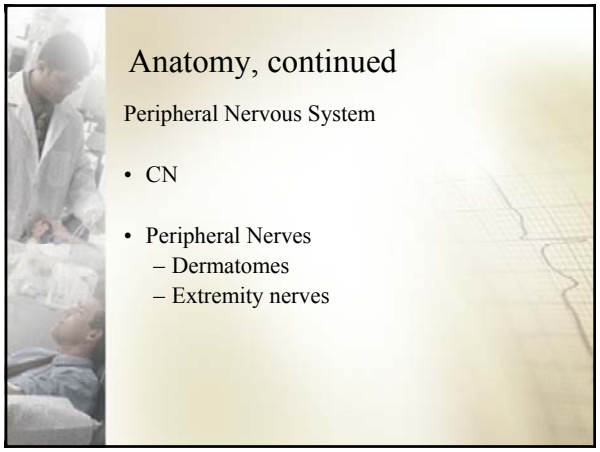
Upon completion of this lecture the learner should be able to discuss:

- The clinical anatomy and physiology of the neurological system, including the cranial nerve anatomy and function.
- The techniques of the exam of the neurological system.
- The detailed exam and interpretation to follow. (skill sheet)
- An introduction to the Mental status exam with an AVPU/GCS initial
- And a brief introduction to the GCS

Neurological System

Anatomy

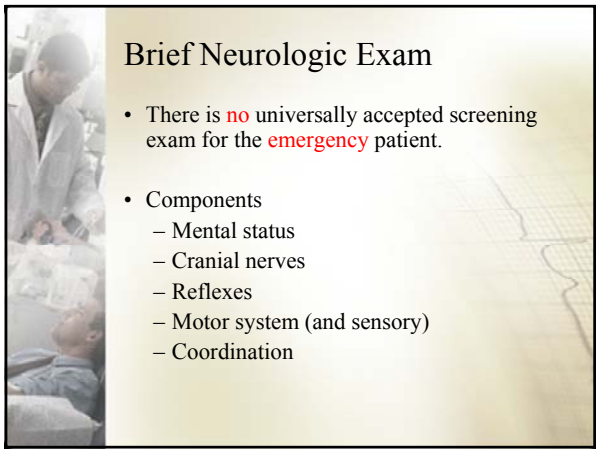
- CNS
  - Brain
    - Lobes
    - Gray / white
    - Basal ganglia
    - Thalamus
    - Hypothalamus
    - Brainstem
      - RAS
    - Cord
      - Motor
      - Sensory



Anatomy, continued

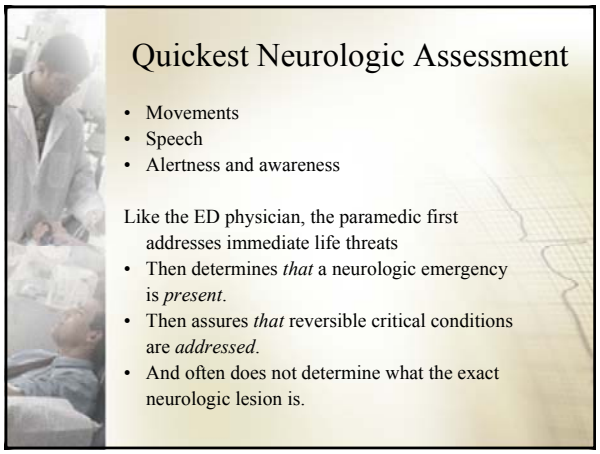
Peripheral Nervous System

- CN
- Peripheral Nerves
  - Dermatomes
  - Extremity nerves



Brief Neurologic Exam

- There is no universally accepted screening exam for the emergency patient.
- Components
  - Mental status
  - Cranial nerves
  - Reflexes
  - Motor system (and sensory)
  - Coordination



Quickest Neurologic Assessment

- Movements
- Speech
- Alertness and awareness

Like the ED physician, the paramedic first addresses immediate life threats

- Then determines *that* a neurologic emergency is *present*.
- Then assures *that* reversible critical conditions are *addressed*.
- And often does not determine what the exact neurologic lesion is.

Mental Status

- Alert: wide awake
- Oriented: awareness of
  - Situation, time
  - Place
  - Person

Will come back to a mental status examination and the end of the unit when we talk about psychiatry. For now, let's consider that the mental status exam can be abbreviated as:

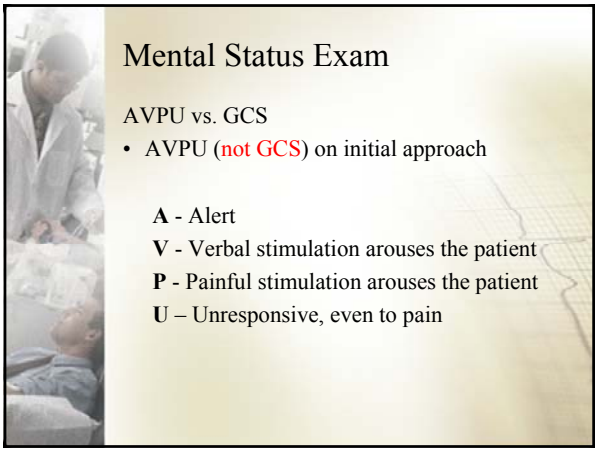
Alert and oriented x 3

Mental Status

- Alert, but not oriented x 3
- but disoriented:
  " the lights are on, but nobody's home ”
  - brain stem working OK
  - cortex seems not be working

Mental Status

- If neither alert nor oriented
  - "the lights are not on and it's hard to tell if anybody is home"
  - more than poor cortical function
- must then rule out brain stem lesion with
  - PERRL
  - EOMI

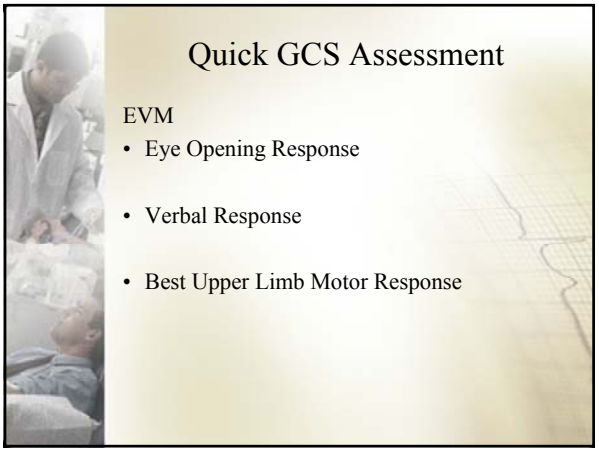


Mental Status Exam

AVPU vs. GCS

- AVPU (not GCS) on initial approach

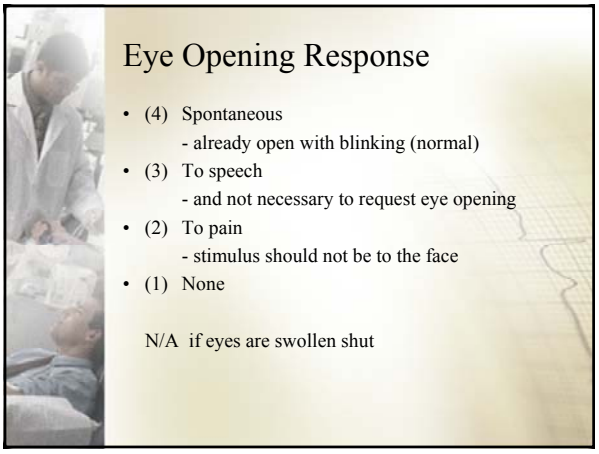
A - Alert
V - Verbal stimulation arouses the patient
P - Painful stimulation arouses the patient
U – Unresponsive, even to pain



Quick GCS Assessment

EVM

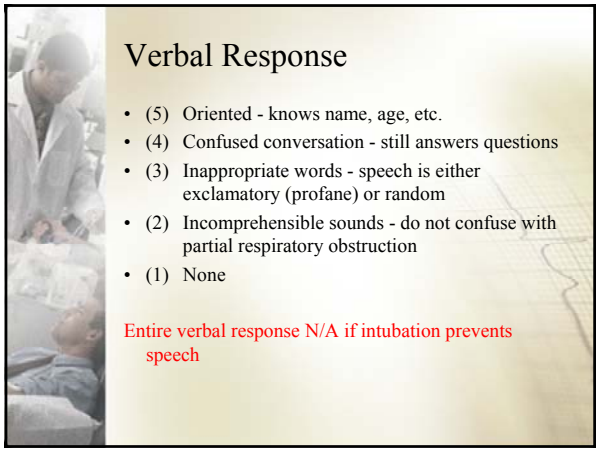
- Eye Opening Response
- Verbal Response
- Best Upper Limb Motor Response



Eye Opening Response

- (4) Spontaneous
  - already open with blinking (normal)
- (3) To speech
  - and not necessary to request eye opening
- (2) To pain
  - stimulus should not be to the face
- (1) None

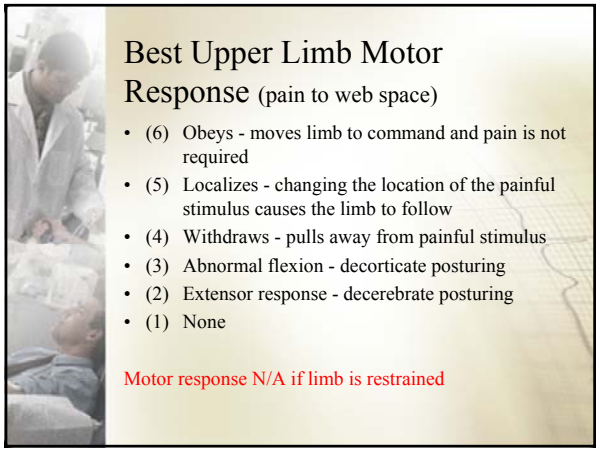
N/A if eyes are swollen shut



Verbal Response

- (5) Oriented - knows name, age, etc.
- (4) Confused conversation - still answers questions
- (3) Inappropriate words - speech is either exclamatory (profane) or random
- (2) Incomprehensible sounds - do not confuse with partial respiratory obstruction
- (1) None

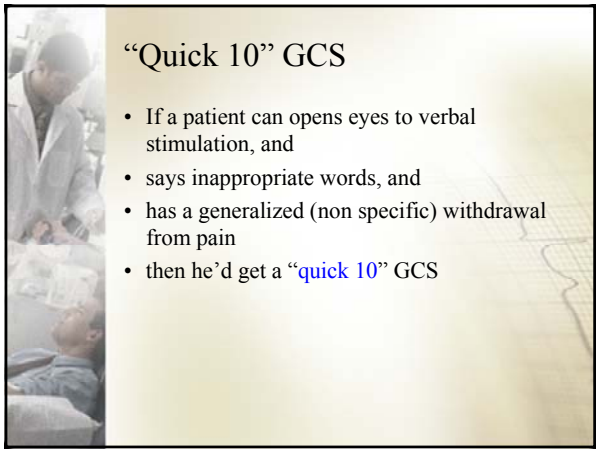
Entire verbal response N/A if intubation prevents speech



Best Upper Limb Motor Response (pain to web space)

- (6) Obeys - moves limb to command and pain is not required
- (5) Localizes - changing the location of the painful stimulus causes the limb to follow
- (4) Withdraws - pulls away from painful stimulus
- (3) Abnormal flexion - decorticate posturing
- (2) Extensor response - decerebrate posturing
- (1) None

Motor response N/A if limb is restrained



"Quick 10" GCS

- If a patient can opens eyes to verbal stimulation, and
- says inappropriate words, and
- has a generalized (non specific) withdrawal from pain
- then he'd get a "quick 10" GCS

Glasgow Coma Score

- (1-4) Good eye contact (4)
  Opens eyes to pain (2)
- (1-5) Slow to answer questions (4)
  Grunting sounds (2)
- (1-6) Obeys commands (6)
  Decerebrate (2)

- E Opens eyes to speech (3)
- V Inappropriate words (3)
- M Generalized withdrawal from pain (4)

GCS

- E Opens eyes to speech (**3**)
- V Inappropriate words (**3**)
- M Simple withdrawal from pain (**4**)

- To quickly calculate the approximate GCS score, start with a quick "10"
- If any one of the eye, verbal, or motor responses deviates from the above "midpoints" then add or subtract from 10.

Summary

We have discussed:

- The clinical anatomy and physiology of the neurological system.
- Briefly the techniques of the exam of the neurological system. (Noting that a more detailed exam and interpretation will follow).
- An introduction to the Mental Status exam with a preference for an AVPU - not GCS on initial approach.
- And a brief introduction to the GCS.