Neuropsychiatric Assessment:
The Bedside Exam

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Neurology and Psychiatry
Figure 1. Areas of Impairment Most Addressed by Psychiatry, Neurology, and Neuropsychiatry

Neuropsychiatry
Attention
Abnormal
Perception
Memory
Language and speech
Intelligence
Cognition
Motivation

Neurology
Motor
Sensory
Habitual, pain
Temperature
Two-point

Psychiatry
Mood
Affect
Thought
Behavior

Adapted from the section introduction by Tulsky and Bales (37).

Neuropsychiatry
Figure 2. Factors Influencing the Future Interface of Psychiatry and Neurology

1. Neuroscience discovery
2. Aging of the population
3. Patient advocacy groups
4. Boundary issues with neurophysicians
5. Reimbursement for services
6. Conceptual integrity

Adapted from the section introduction by Tulsky and Bales (37).
The Mental Status Exam

- General Description
  - Appearance, Motor Behavior, Speech, Attitudes
- Emotions
  - mood, affect, appropriateness
- Perceptual Disturbances
  - Halluc, Depersonalization
- Thought Content
  - SI/HI/Delusions/Obsess
- Thought Process
  - linearity, rate, logic
- Orientation
  - person, place, time, situation
- Memory, Attention, Intelligence
- Judgment/Insight
  - awareness, interpretation

The General Neurological Exam

- Mental Status
  - arousal, speech, language, appearance, affect
- Cranial Nerves
  - II-XII
- Motor
  - bulk, tone, strength, tremor
- Muscle Stretch Reflexes
  - hyper/hypo/sym
- Sensory
  - LT, PP, Temp, vibr, propr, DSSE
- Coordination
  - RAM, FTN, HTS
- Gait
  - station, tandem
- Other
  - Babinski, Romberg

The Extended Neurological Exam

- Frontal Release Signs
  - glabellar, root, snout, palmo-mental, grasp
- Executive Functioning
  - EXIT interview
- CLOX
- Luria
  - 3 step, figures
- Praxis
  - constructional, ideomotor
- Examination for Minor Neurological Dysfunction
  - cont perform tasks, competitive stimuli
Frontal-Subcortical Circuits

- **Orbitofrontal cortex**
  - impulsive/disinhibited, utilization bhvr

- **Dorsolateral prefrontal cortex**
  - executive functioning/attention/sequencing

- **Mesial / Anterior cingulate cortex**
  - apathy, abulia, akinetic mutism

(Cummings & Benson, 1992)

Neurology and Psychiatry.
Closing the great divide.

- Emergence of neuroscience
- Abandoning central dogmas, improving reciprocal relationships
- New training curricula and accreditation
- More effective collaborations with neuropsychology, cognitive neuroscience, neurosurgery

Understanding the Brain/Behavior Relationship

2 cases of anorexia nervosa

- 18 y.o. woman, presented with 4 yr hx of eating disorder (persistent food refusal)
- Recent worsening of her condition leading to 37% weight loss in 3 months.
- Decreased sensation in upper limbs, nausea, dizziness, cervical pain, dysphagia, aspiration pneumonia
- Following surgical removal of tumor, full normalization of her feeding habits

Two Patients diagnosed with Anorexia Nervosa

Case of Acute Hebephrenia

- 46 y.o. woman, admitted for sudden onset of abnormal behavior.
- Relatives described her as behaving strangely and "talking nonsense," with ongoing laughter without apparent reason, confusion, and tiredness.
- Headaches a few days prior, not unusual for her.
- On exam, somnolent, without fever or stiff neck.
- Disoriented, inattentive, incoherent speech without signs of aphasia. Affect- flat and with inappropriate laughter. Behavior suggested visual hallucinations. Px, CT, CSF were normal.
- Dx: c/w ICD-10: Hebephrenic schizophrenia.

(Paus. Arch Neurol; 2005:1312-3)
Three-dimensional phase-contrast magnetic resonance venography showing recanalization of the internal cerebral veins, the vein of Galen, and the straight sinus (arrows)


The General Neurological Exam
- **Mental Status**
  - arousal, speech, language, appearance, affect
- **Cranial Nerves** – II-XII
- **Motor** – bulk, tone, strength, tremor
- **Muscle Stretch Reflexes** – hyper/hypo/sym
- **Sensory** – LT, PP, Temp, vibr, propr, DSSE
- **Coordination** – RAM, FTN, HTS
- **Gait** – station, tandem
- **Other** – Babinski, Romberg

The Extended Neurological Exam
- **Frontal Release Signs**
  - glabellar, root, snout, palmo-mental, grasp
- **Executive Functioning** – EXIT interview
- **CLOX**
- **Luria** – 3 step, figures
- **Praxis** – constructional, ideational, ideomotor
- **Examination for Minor Neurological Dysfunction**
  - continuous perform tasks; competing stimuli
The diagnosis of “hysteria”

1. **History**  
   – psychosocial hx / abuse

2. **Physical Examination**  
   – non-anatomic pattern

3. **Negative Laboratory Data**  
   – kept to a minimum

4. **Intravenous sodium amytal hypnosis**  
   (the successful removal of defect)  
   establishes the diagnosis beyond equivocation.

(Stevens H. Mayo Clin Proc 1968;43(1):54-64.)

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**Hoover’s Sign**

(Stone et al. J Neurol Neurosurg Psychiatry 2002)

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**Hoover’s Sign**

(Stone et al. J Neurol Neurosurg Psychiatry 2002)
Abductor Sign

Spinal Injuries Center Test

Lower Extremity Weakness - unilateral

Right Lower Extremity Weakness
Spinal Injuries Center Test Negative

(LaFrance, Neurology, 2008;71:e57)

(Yugue et al. Spine 2004;29:1910)

(Resting position, unable to lift knees)

(Sonoo. J Neurol Neurosurg Psychiatry. 2004)
Lower Extremity Weakness - bilateral

Bilateral Lower Extremity Weakness
Spinal Injuries Center Test Negative

(LaFrance, Neurology. 2008;71:e57)

Lower Extremity Weakness – bilateral with +SIC test

Bilateral Lower Extremity Weakness
Spinal Injuries Center Test Positive

(LaFrance, Neurology. 2008;71:e57)

Trunk Thigh test, for differentiation of hysterical hemiplegia
Joseph Babinski

### Previous techniques for understanding the brain/behavior relationship

- *In vitro* neurochemical assays
- Animal models of pathophysiology
- Neuroendocrine window strategy
- Post-mortem studies
- Static/structural neuroimaging
- Neurophysiologic techniques (EEG, EPs)
- other

(Nemeroff, *AJP*, 1999)

### Multidisciplinary techniques for understanding the brain/behavior relationship

- **Functional neuroimaging**, including
  - Single photon emission computed tomography
  - Positron emission tomography
  - Functional magnetic resonance imaging
  - Magnetic resonance spectroscopy
  - Event related potentials
  - other

(Nemeroff, *AJP*, 1999)

### Collaborative research in neuropsychiatry

Three central research questions.

1. How do biologic processes of the brain give rise to mental events?

2. How do environmental factors modulate the biological structure of the brain?

3. How can these forces be harnessed to promote mental health and recovery from brain injury?