

Component 2: The Culture of Health Care

Unit 4: Health care processes and decision making Lecture 3

This material was developed by Oregon Health & Science University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number H240C000015.

Diagnostic Thinking

- weight gain + edema
- exertional dyspnea but clear lungs
- pallor
- high BP + Hx HTN
- tachycardia
- S4 gallop
- RFs for CAD
- ex smoker
- Edema – entire DDx
 - Heart- HTN, but lungs clear
 - Liver – no stigmata
 - Kidneys – not anasarca
 - Nutrition – rare in US
- Dyspnea
 - Heart (HTN? Pericardium?)
 - Lungs (smoker)
 - Anemia (pallor)
 - Restriction (abdomen)
 - Deconditioning
- Tachycardia

Component 2/Unit 4-3

Health IT Workforce Curriculum
Version 2.0/Spring 2011

2

Some Techniques for Diagnosis

- Systematic
 - e.g. VINDICATE, organ system
- Anatomic
 - e.g. chest anatomy
- Pathophysiologic
 - e.g. bilirubin metabolism
- Pattern recognition
 - e.g. NDM
- Mnemonic
 - PT Barnum Loves Kids
- Heuristics
 - when you hear hoofbeats, look for horses, not zebras
- Mathematics
 - Baye's Theorem
 - SpIN, SnOUT
- Temporal patterns
 - acute, subacute, etc

Component 2/Unit 4-3

Health IT Workforce Curriculum
Version 2.0/Spring 2011

3

Systematic Approach Brainstorming To Expand Differential

VINDICATE (processes)

- vascular
- infectious
- neoplastic
- drugs
- inflammatory/ idiopathic,
- congenital
- autoimmune
- trauma
- endocrine/metabolic)

Organ (systems)

- Neuro
- CV
- Pulmonary
- Renal
- Heme
- GI
- Bones
- Joints
- Skin

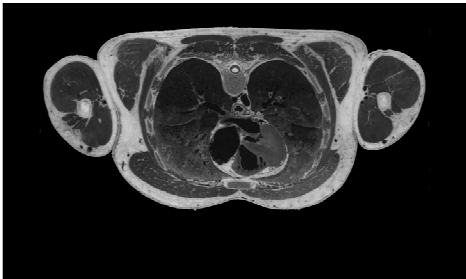
Component 2/Unit 4-3

Health IT Workforce Curriculum
Version 2.0/Spring 2011

4

Anatomic Approach

The structure provides structure for DDx

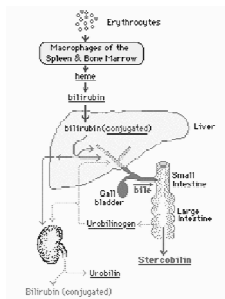


Component 2/Unit 4-3

Health IT Workforce Curriculum
Version 2.0/Spring 2011

5

Pathophysiologic Approach All the causes of jaundice



- Erythrocyte
 - erythropoiesis
 - hemolysis
- Liver
 - uptake- Gilbert's
 - conjugate- Crigler-Najer
 - secretion: Dubin-Johnson
- Biliary obstruction
 - intrahepatic cholestasis
 - bile duct - clonorchis
 - pancreas - cancer

Component 2/Unit 4-3

Health IT Workforce Curriculum
Version 2.0/Spring 2011

6

Patterns of Data in Diagnosis Especially Neurologic Diagnosis

- Topographic pattern
 - locate lesion in nervous system
 - peripheral nerves, plexus, spine, brain
- Temporal pattern
 - pace of appearance and resolution of symptoms
 - pathophysiologic process
- Clinical context - the company it keeps
 - other symptoms (e.g. fever)
 - comorbidities (e.g. valvular heart disease)
 - past Hx (e.g. smoking)

Component 2/Unit 4-3

Health IT Workforce Curriculum
Version 2.0/Spring 2011

7

Topography and Neurologic Diagnosis

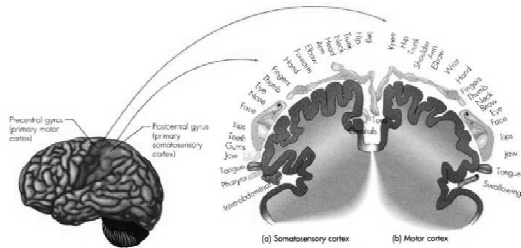


Figure 4-21 Approximate representation of sensory and motor information in the cortex. (a) Each location in the somatosensory cortex represents sensation from a different body part. (b) Each location in the motor cortex regulates movement of a different body part. (Source: After Penfield & Rasmussen, 1950)

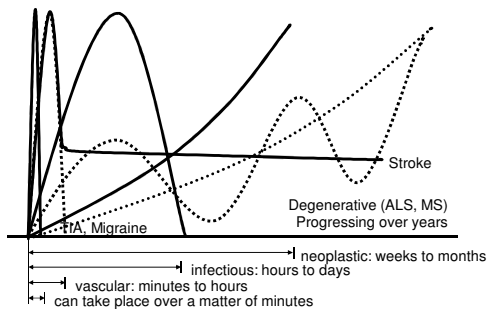
<http://connect.in.com/homunculus/photos-homunculus-3b60c2543e819c20.html>

Component 2/Unit 4-3

Health IT Workforce Curriculum
Version 2.0/Spring 2011

8

Temporal Pattern and Neurologic Dx



Component 2/Unit 4-3

Health IT Workforce Curriculum
Version 2.0/Spring 2011

9

Heuristics: Rules of Thumb

- Err on the side of life
- When you hear hoofbeats, think of horses, not zebras (unless you're at the zoo...)
- You are more likely to see an uncommon case of a common disease than an uncommon disease
- Weaknesses
 - cognitive errors
 - heuristics and biases
- Strength:
 - “fast and frugal heuristics”

Component 2/Unit 4-3

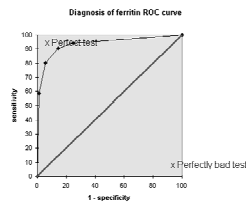
Health IT Workforce Curriculum
Version 2.0/Spring 2011

10

Mathematical Approaches

- Bayes' theorem
 - SpIN & SnOUT
 - PPV and LR+
 - ROC curves
- Decision Rules
 - Well's criteria for PE
 - strep throat, sinusitis
- Decision Analysis
 - Utility of Dx/Tx

$$P(H|d) = \frac{P(d|H) P(H)}{P(d)}$$



Component 2/Unit 4-3

Health IT Workforce Curriculum
Version 2.0/Spring 2011

11
