Sharpening Our Procedure: 
Fostering Expertise in Clinical Reasoning

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Disclosures

• I have no actual or potential conflicts of interest to report in relation to this presentation.

Objectives

• Describe System I/II, Problem Representation, & Illness Scripts

• Appreciate the role of cognitive error in missed diagnoses

• Recognize opportunities to hone dx skills amidst busy clinical practice
“The role of a GP is to tolerate uncertainty, explore probability & marginalize danger; while the role of the hospital specialist is to reduce uncertainty, explore possibility & marginalize error.”

Marinker M. General practice and the social market. Social Market Foundation, 1989

Consider an experience with a missed or delayed diagnosis.
– what factors were at play?

A previously healthy 24yo woman presents with acute dysuria, frequency, urgency & a positive UA.

1. UTI
2. UTI
3. UTI

A previously healthy 24yo woman presents with acute dysuria, frequency, urgency and a positive UA.

SYSTEM 1
A 67yo man with cirrhosis 2/2 HCV, & ESRD on HD presents with chronic fevers, unintentional weight loss, & bloody diarrhea.

1. ?
2. ?
3. ?

A Case
52yo woman seen in clinic with suprapubic abdominal pain

- **PMH:** HTN, HLD, GERD, Constipation
- **Meds:** Hydrochlorothiazide, Simvastatin
- **Exam:** Mild suprapubic TTP
- **UA:** 52 WBC, + LE

**Course**

- Trimethoprim/sulfa prescribed
- After course: on-going suprapubic pain; now fevers; no dysuria
- Prescribed cipro
- Persistent pain, abd U/S ordered

**Course**

- **ED:** tachycardic, peritoneal signs
- **CT:** perf of sigmoid colon
- **Emergent OR:** resection & colostomy
- **Dx:** Sigmoid Perforation 2/2 Stercoral ulceration

**The One-Liner:**

Problem Representation
52yo woman with DM, COPD on prednisone, hypertension, depression, chronic back pain, & GERD here for follow-up, requesting refill of pain meds.

52yo immunosuppressed woman with acute on chronic back pain, unrelieved by rest & accompanied by severe point tenderness @ L2-3.

**Ingredients**

- **Who is this patient?**
  – Epidemiology/Risk factors

- **What is the clinical syndrome?**
  – Signs/Symptoms

- **What is the time course?**
Community Acquired Pneumonia

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Age, chronic illness (COPD, Heart dz), immunosuppression, smokers</th>
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<tbody>
<tr>
<td>Signs/Sx</td>
<td>Productive cough, SOB/DOE, Fevers, Pleuritic CP, Elderly present atypically*</td>
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<tr>
<td>Time course</td>
<td>Acute</td>
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<tr>
<td>Pathophys</td>
<td>Strep Pneumo, Mycoplasma, Viruses, H flu, Chlamydia, Legionella</td>
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<td>Dx</td>
<td>PA/Lat CXR, may miss if patient dry*</td>
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<td>Rx</td>
<td>Outpt: Doxy or Azithro; recent abx → quinolone; CURB-65 for triage</td>
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Cognitive Error

- Hundreds described…

- 56yo diabetic man in clinic with a red, hot, swollen LE
- Diagnosed with cellulitis, prescribed amoxicillin
- Returns after completing course with increased pain, reduced exercise tolerance
- Exercise tolerance thought to relate to painful cellulitis, switched to clindamycin for MRSA coverage
- Ultimately, seen in ED, found to have an O2 sat of 88%, diagnosed with a PE

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• 34yo man with headaches
• No clear alarm symptoms
• Diagnosed with migraine
• 6 months later, he has head imaging & is found to have Glioblastoma Multiforme

Availability Bias
• 34yo man with headaches
• Diagnosed with migraine
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Building Expertise Vertically

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<th>Risk</th>
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<th>Pathophys</th>
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<tr>
<td><strong>CAP</strong></td>
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<tr>
<td><strong>Acute Interstitial Pneumonia</strong></td>
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<td><strong>Sarcoidosis</strong></td>
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Ericsson A. Acad Med 2004
Follow-Up Enables Deliberate Practice

- Identify & fill gaps in illness scripts
  - +UA with adjacent inflammation
    (diverticulitis, other inflammatory GI processes)
  - Stercoral ulceration in chronic constipation

Follow-Up Enables Deliberate Practice

- Review PR
  - Stated?
  - Did it evolve appropriately?
  - Did it contain key info?
  - Did it over-emphasize the wrong info?

Follow-Up Enables Deliberate Practice

- Did cognitive bias impact decision-making?
  - Diagnostic momentum?

Strategies for Diagnostic Follow-up?
Strategies

• Flag provisional dx for diagnostic verification
• Track via EMR (pt lists)
• Track on secure server (spreadsheet)
• Mini clinic M&M conferences
  – Normalize & share

Take Home Points

• System I/II, Problem Representation & Illness Scripts offer opportunities for deliberate practice
  – Pause to state a one-liner
  – Pause to expand your illness scripts
  – Flag provisional dx to enable follow-up

References & Additional Reading

• http://www.improvediagnosis.org/?ClinicalOverview