



Diagnostic Error
Decision Support
Medical Education

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Disclosure

Art Papier MD is Chief Medical Officer
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TV

Each Week:



Exciting and
complex diagnostic
challenges



Reality

Each Year:


Common diagnoses and occasional..... diagnostic "Icebergs"



The Story of Primary Care Practice & Diagnostic Error Would Make For a Boring Television Series


- Common diseases happen commonly
- When they occur, errors in recognition and diagnosis are often accounted for with a predictable choice of words.....

"I've seen plenty of _____ but I never seen it present like that"



Flawed Educational Premise

We teach students with "classic" and "prototypical" cases..... Expecting once they are in practice, miraculous feats of recall, synthesis and generalization from their earlier learning



Difficult patterns: What are the solutions?

- Consult an expert/consult via telemedicine
- Reference an atlas or search Google
- Decision Support
- Automated Pattern Recognition/Vision Science
- Empiric trial and error eg...“Wing it”..the patient will get better on their own, diagnoses often aren't necessary etc...



Then and Now

Then

Memorize it all
Unaided Decisions
Never use references
in front of the patient



Now

Memorize core skills
Decision Support
Smartphones in white coat



Visual Diagnostic Error

- Education focusing on “classic” cases makes it difficult to see and diagnose variants
- What we are piloting:
 - Curriculum redesign to include teaching in “assisted” decision-making with visual decision support
 - Problem Based Learning incorporated diagnostic error cases
 - 2011: Just in time CME incorporating decision support



Visual Diagnostic Error: Variation

Variation of disease due to the following factors is common:

- Immunocompromised patients (HIV, chemotherapy, malignancy, immunosuppressives)
- Temporal (Timeline of disease)
- Severity
- Skin Color (skin exam difficulty in people with deeply pigmented skin)
- Innate causes of variation



Education Strategy: Integrate Decision Support

- Supply and train in the information tools
- Model excellent information seeking and retrieval behavior during medical school during the decision-making moment (for non-emergent problems)
- Connect training in differential diagnosis and decision support to education in diagnostic errors



Piloting Integrated Decision Support

Decision Support and Medical Education



- UCLA
- University of Rochester



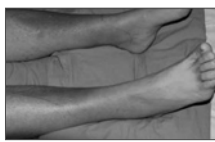
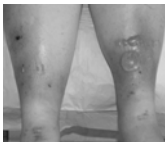
Build Diagnostic Error into Problem- Based Learning

- Developed Problem-Based Learning (PBL) Case highlighted diagnostic error
- Used a mistaken case of cellulitis as a PBL
- Piloted with medical students
- Pilot was well accepted



Case Selection: Common and Predicable Error

- The Red Leg: Cellulitis and Soft tissue infection: One of the leading causes for inpatient admission
 - 240,000 US admissions in 2005.
 - Substantial number of patients received un-necessary IV antibiotics and hospitalizations placing them at risk




Jane Street is a 65 yo female. She is concerned her prior leg infections are recurring.....





PBL: Example Learning Objectives Day #2

- State how diagnostic error occurs and its impact on patient care.
- Explain how premature diagnostic closure can result in misdiagnosis.
- Explain how the sensitivity and specificity of tests can be applied to patient work-up and diagnosis.


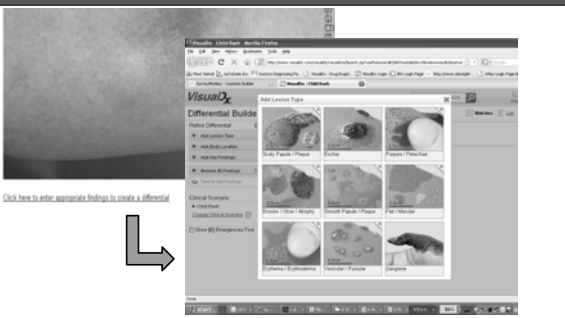


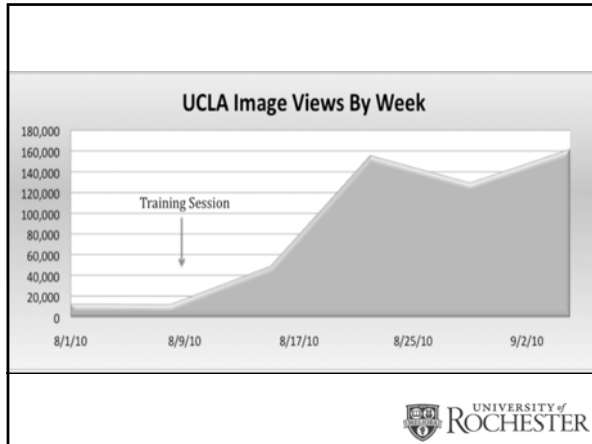
UCLA: Build Diagnostic CDS into Curriculum

- Self-paced online learning
- Using a case approach
- Problem solving using CDS
- Collect data in SurveyMonkey



UCLA: Build Diagnostic CDS into Curriculum






General Challenges: Point of Care Information and Decision Support

- Place into workflow while preserving efficiency of practice
- Alert fatigue
- Doctors, unlike pilots, have many different practice styles.....

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So Let's think about physicians as pilots, does your pilot:

1. use Google and Wikipedia to navigate the plane?
2. memorize the route?
3. use Boeing's technology and content?



747 cockpit

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The 3 Types of HIT users (and non-users)

- Type A Clinician: Poweruser!... Uses the best digital sources available. Doesn't cut corners. Uses evidence and knowledge tools to deliver optimal care on a daily basis, uses tools in front of patient etc....
- Type B Clinician: Goodenough!..... Uses only what is free (Google searches etc.....)
- Type C Clinician: Laggard!..... Does not use information technology ... believe HIT is their brain

Question: How do we educate in "Type A"?



After Medical School: Point of Care CME

- Trend towards point of care CME: Users will receive CME credit for their patient directed searches and use of VisualDx
- VisualDx use is being accredited by a malpractice insurer
- A point of care, time tracked, risk CME program is in development



What we have learned re: InfoTechnology and MD's

KISS: Keep It Simple Stupid

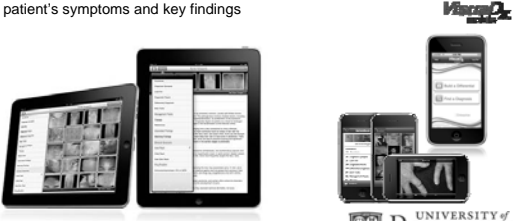
- Google has set expectations and user experience to be FAST and SIMPLE whether the results are good or not
- Not many users have the patience to learn a new application




Mobile is the workflow for many physicians

Lets clinicians search a diagnosis or build a visual differential at the Point of Care


- See the differential as user enters patient's symptoms and key findings



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Medical Education and trends

- PBL's integrating decision support
- Ipads and other new devices in medical students hands
- Mobile Info: Iphone/Droid etc
- CDS integrated into the electronic health record
- Point of Care CME

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