BACK TO THE FUTURE – WITH APOLOGIES TO SIR WILLIAM OSLER

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The Technology Age

- Palm Pilots, iPhones, iPads, computers, CT scans, MRI, MRA, Pet scans
- Serologic tests
- Genetic testing
- Therapy – transplantation, gene therapy

Technology and Healthcare

- 33% of Americans, 27% Canadians, 11% Germans believe:

"Modern medicine can cure any illness with access to advanced technology"

Iatrogenic Illness in the US

- 12,000 deaths from unnecessary surgery
- 80,000 deaths from infections
- 106,000 deaths from adverse effects of medications*

What role has the misuse of technology played in these adverse effects?

*Starfield BA. JAMA 2000; 284; 483-85

Cascade Effect

- A chain of events initiated by an unnecessary test, an unexpected result or patient or physician anxiety, which results in Ill-advised tests or treatments that may cause avoidable adverse effects and/or morbidity

Dangers of Shotgun Testing

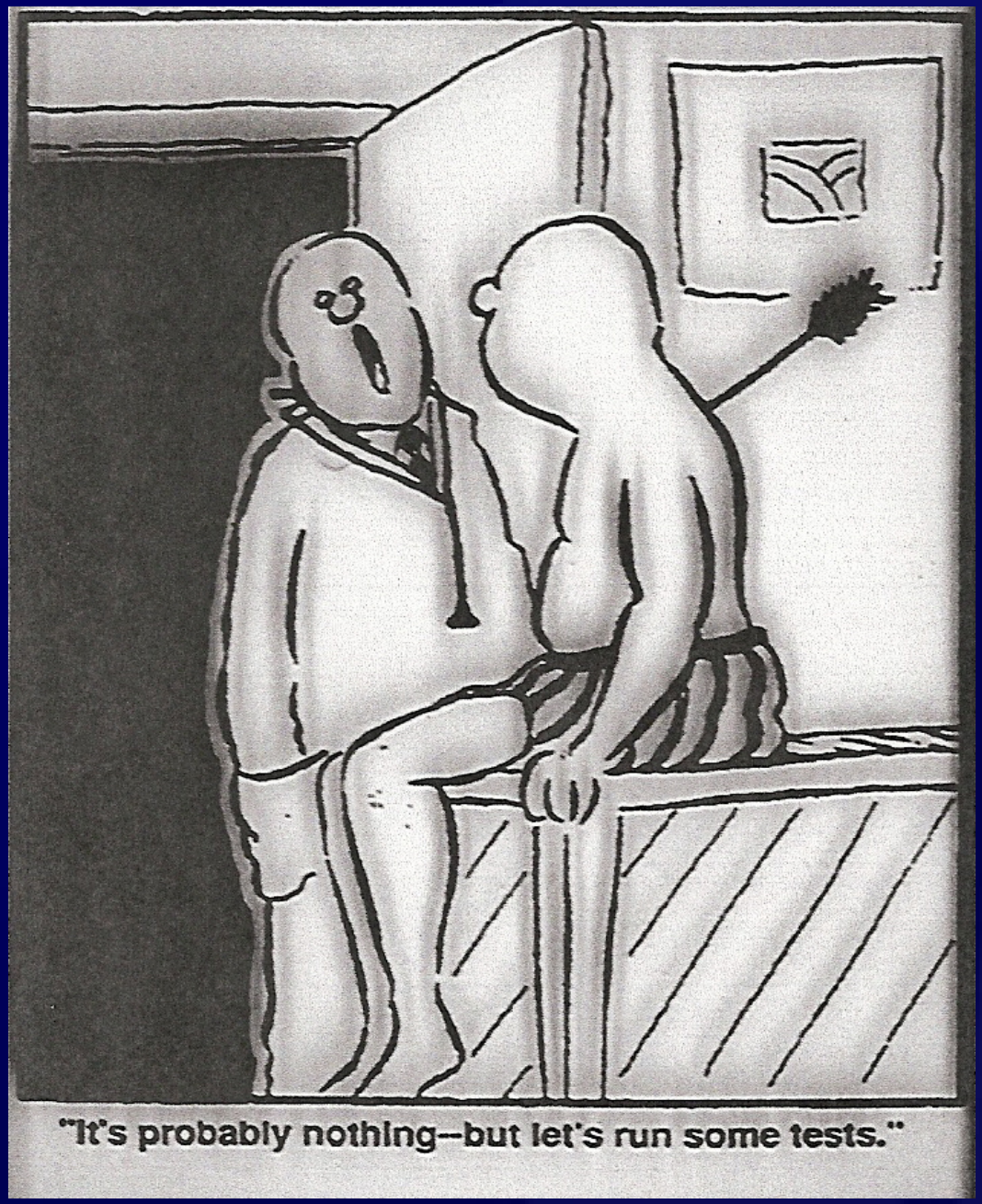
- Norms defined as ± 2 SD in a healthy population – 5% (1/20) of normals will be labeled as abnormal

Probability of False Positive Tests*

*Deyo RA Annu Rev Public Health 2002; 23: 23-44

Number of Tests	Probability of at least one abnormal test, %
1	5
6	26
12	46
20	64
100	99.4

“The only normal person is someone who hasn’t had enough tests.”



"It's probably nothing--but let's run some tests."

- Institute of Medicine
  - *To Err is Human* (1999)
    - **Estimated 44,000 – 98,000 deaths/yr from medical errors**
    - **Estimated 7,000 deaths/yr from medication errors**

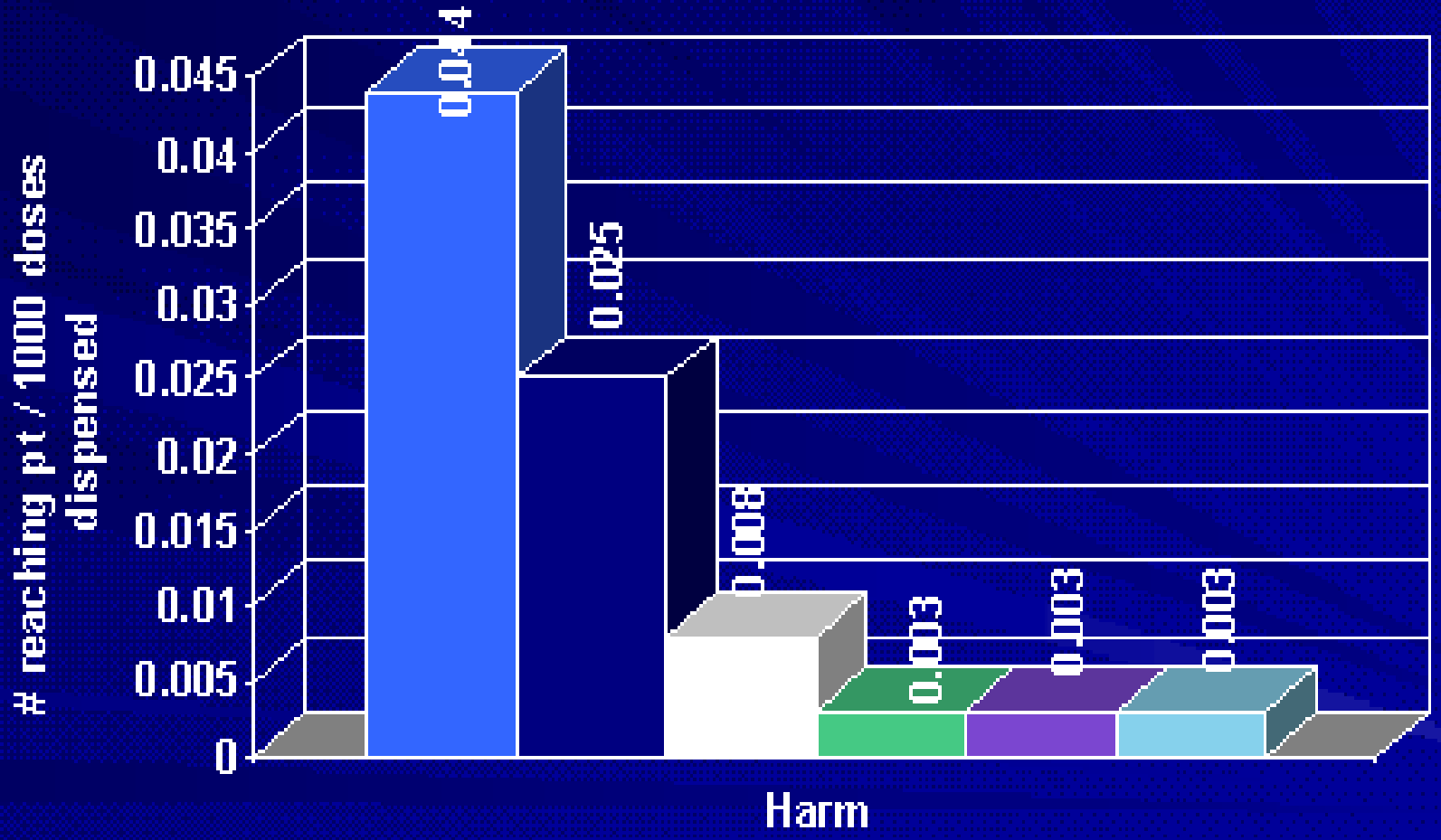
Enter… CPOE

Computerized Physician Order Entry

Brigham and Women's Hospital

- **Initial CPOE (Bates 1998)**
  - Reduction of "nonintercepted serious medication errors" by 55%
  - Serious Adverse Drug Events (ADEs) decreased 17%
- **Followup Study (Bates 1999)**
  - Introduced decision support tools and refinement of system
  - Reduction of "nonintercepted potential ADEs" by 86%
  - Increase of "intercepted potential life-threatening ADEs" in the initial phase of CPOE
    - Potassium Infusions

Medication Errors
CHP Main



*FY07 through 2/07

National Recognition: Patient Safety

The Leapfrog Group named Children's Hospital one of only seven pediatric hospitals to achieve a Top Hospital ranking in 2010 in patient safety.

Creation of New Errors?

- **Lost in Cyberspace**
  - Cultures
  - Send-Out Labs
  - Pathology reports
  - Hard Stop Medications
  - Cancelled by System
- **Technology as a Crutch**
  - Hardware issues
  - Poor communication
    - Not calling stat orders
  - Improper use of order sentences
  - Decreased Efficiency
    - How do I order?
      - Synonyms
    - More computer time, decreased

      patient time?
- **Information Overload**

CPOE

- **CPOE decreases ADEs and medication order errors**
- **CPOE can also create new types of error**
- **Requires evaluation and refinement of system**

Avoiding the Cascade Effect

- Perform a complete history and physical to identify conditions or lab results to avoid unnecessary duplication of tests
- Perform a complete evaluation to provide an appropriate clinical suspicion for a subsequent diagnostic test

Misuse of Technology

Increasing dependence on technology may lead to its use to *formulate* rather than to *verify* a clinical impression

The Tyranny of Technology

- **The tyranny of technology leads to "technologic tenesmus"***

- **Uncontrollable urge to rely on sophisticated gadgetry for diagnosis**
- **Preys upon Ill-trained or Ill-informed**
- **Misuse of technology provides an imposturing of good medicine**

*Fred HL. Hosp Prac 1997 (Off Ed); 32:17-18,21

The Tyranny of Technology

- May delay diagnosis when technology is not available
- May lead to diagnostic paralysis when technology gives normal or inconclusive data
- Inconclusive or abnormal results may lead to the cascade effect

Treating “Technologic Tenesmus”

- Return to the basics – utilize basic skills of history taking and physical examination to formulate a diagnosis and use technology to verify it.

Value of the History and Physical

- Increasing demands placed upon the physician which threaten the doctor-patient relationship

- Decreased time for patients
- Little time to “get to know” the patient
- Minimal time for “laying on of the hands”

Value of the History and Physical

- History – the first encounter, sets the tone for the entire relationship
- Begins therapy
- Listening is a form of respect
- Osler: “Listening is unspoken caring.”

Value of the History and Physical

- As we increase dependence on lab test do we move further and further away from clinical examination skills?


A


B

Value of the History and Physical

- US medical school graduates did poorly on a standardized abdominal examination
  - **Less than half used inspection, palpation, percussion and auscultation**
- Another study examining Internal Medicine physicians
  - **Only 25% were able to correctly diagnose Kaposi's sarcoma or hairy leukoplakia as signs of HIV**

Value of the History and Physical

- Survey of 726 pediatricians (academic, community, trainees) 2008-2009
- 54% reported diagnostic errors once or twice per month
- 45% reported making an error that harmed the patient

- DIAGNOSTIC ERROR WAS A FAILURE TO GATHER INFORMATION THROUGH HISTORY, PHYSICAL EXAMINATION, OR CHART REVIEW

Pediatrics DOI:10.1542/peds.2009-3218

The Decline in the H & P

"Medicine is learned at the bedside and not in the classroom"

Osler

The Decline in the H & P

- Decline in bedside teaching
- Students do not feel as confident in their exam skill as they do with objective lab data
- Interns are the main instructors of physical diagnosis
- Failure to test what we teach

The Decline in the H & P

A good history and physical examination seems intuitive, yet….

Primary Care Physician: _____ ☐ Unknown ☐ None Referring Hospital/Physician: _____

Chief Complaint: Stridor, hx of observed apnea / cyanosis
cold

History of Present Illness: above

Value of the History and Physical

- Internal Medicine – 80 medical patients with new or undiagnosed conditions
  - 76% History led to the diagnosis
  - 12% Physical exam led to the diagnosis
  - 11% Lab tests led to the diagnosis

Value of the History and Physical

- Pediatrics – in 181 patients with FTT, 34 had organic disease
  - 17/34 History led to the diagnosis
  - 1/34 Physical exam led to the diagnosis
  - 1.4% lab tests confirmed the history and physical

Value of the History and Physical

- Pediatrics – history and physical exam were the most important tools in diagnosing sinusitis
- Surgery – careful history and physical exam led to decrease in the use of abdominal x-rays in patients with abdominal pain

Value of the History and Physical

- The history and physical examination are noninvasive and are cost effective

Value of the History and Physical

- How do we solve the problems of technologic tenesmus, patient dissatisfaction and inefficient medicine?

RELY ON BASICS

Relying on the Basics

- Back to the Oslerian Tradition of learning to: See, Hear, Feel, Smell
- Go back to the bedside
  - Students enjoy it
  - Families generally like it
- Practice – increases the comfort and confidence

Relying on the Basics

- Teach physical diagnosis
  - Enhance powers of observation
  - Osler: “Don’t touch the patient. State first what you see, cultivate your powers of observation.”
- Generalists and specialists can teach physical diagnosis
- Test what we teach - OSCE

Relying on the Basics

- Commitment by medical schools and hospital administration for teaching
  - Time for education
  - Reimbursement for teaching time
  - Protected time for teaching
  - Academic promotion for excellence in teaching

Summary

- Technology provides magnificent means of verifying diagnoses, but the misuse of technology may lead to errors, cascade effects and patient/physician estrangement
- History and physical examination remain the most efficient and cost effective means of making a diagnosis

Summary

- The history and physical re-establish the needed contact between the physician and patient.
- Accurate physical diagnosis demands enhancing powers of observation through teaching and practice
- Through teaching, we can share the joy of the clinical experience with students and residents

The whole art of medicine is observation, as the old motto goes, but to educate, the eye to see, the ear to hear, and the finger to feel takes time, and to make a beginning, to start (a student) on the right path, is all that we can do.

Osler