Researching Diagnostic Error in Medicine: Concepts, Lessons, and Tools

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Financial Conflicts/Disclosures

- Diagnosis Errors/Safety
  - **No commercial conflicts**
  - Gordon and Betty Moore Foundation
    - Primary-care Research Diagnostic Error (PRIDE) Network
  - CRICO –Harvard Malpractice Insurer
    - Ambulatory Diagnostic Error Pitfalls/Tools
- Other Work (Meds Error, Medical Humanism
  - **Medaware CDS med error project (BD)**
  - Arnold P. Gold Foundation Medical Humanism Lucian Leape Family Foundation-
    - Boundaries, Pt Termination Issues

Today's Diagnostic Journey

- Recent reports: NAM, ABMS, AHRQ, NQF
- Scope and Examples of problem
  - Sharing your own diagnostic errors
- Key concepts:
  - Cognitive vs. system error?
  - Venn diagram (process error, misdiagnosis, harm)
  - Situational Awareness; Safety Nets
- Diagnostic Pitfalls
- Role of HIT, Patients

IMPROVING DIAGNOSIS IN HEALTH CARE

QUALITY CHASM SERIES

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IOM Report September 2015

8 IOM Goals to Improve Diagnosis and Reduce Diagnostic Error

GOAL 1 Facilitate more effective teamwork in the diagnostic process among health care professionals, patients, and their families

GOAL 2 Enhance health care professional education and training in the diagnostic process

GOAL 3 Ensure that health information technologies support patients and health care professionals in the diagnostic process

GOAL 4 Develop and deploy approaches to identify, learn from, and reduce diagnostic errors and near misses in clinical practice

8 IOM Goals to Improve Diagnosis and Reduce Diagnostic Error

GOAL 5   Establish a work system and culture that supports the diagnostic process and improvements in diagnostic performance

GOAL 6   Develop a reporting environment and medical liability system that facilitates improved diagnosis through learning from diagnostic errors and near misses

GOAL 7   Design a payment and care delivery environment that supports the diagnostic process

GOAL 8   Provide dedicated funding for research on the diagnostic process and diagnostic errors

Improving Diagnostic Quality and Safety

FINAL REPORT

SEPTEMBER 19, 2017

NATIONAL
QUALITY FORUM

TABLE 1. DIAGNOSTIC QUALITY AND SAFETY MEASUREMENT FRAMEWORK

Domain	Subdomain
Patients, Families, and Caregivers	Patient Experience
	Patient Engagement
The Diagnostic Process	Information Gathering and Documentation
	Information Integration
	Information Interpretation
	Diagnostic Efficiency
	Diagnostic Accuracy
	Follow-Up
Organizational and Policy Opportunities	Diagnostic Quality Improvement Activities
	Access to Care and Diagnostic Services
	Workforce

National Quality Forum (NQF)

September 2017

Diagnostic Error in Medicine

Analysis of 583 Physician-Reported Errors

Gordon D. Schiff, MD; Omar Hasan, MD; Seijeoung Kim, RN, PhD; Richard Abrams, MD; Karen Cosby, MD;
Bruce L. Lambert, PhD; Arthur S. Elstein, PhD; Scott Hasler, MD; Martin L. Kabongo, MD; Nela Krosnjar;
Richard Odwazny, MBA; Mary F. Wisniewski, RN; Robert A. McNutt, MD

Background: Missed or delayed diagnoses are a common but understudied area in patient safety research. To better understand the types, causes, and prevention of such errors, we surveyed clinicians to solicit perceived cases of missed and delayed diagnoses.

Methods: A 6-item written survey was administered at 20 grand rounds presentations across the United States and by mail at 2 collaborating institutions. Respondents were asked to report 3 cases of diagnostic errors and to describe their perceived causes, seriousness, and frequency.

Results: A total of 669 cases were reported by 310 clinicians from 22 institutions. After cases without diagnostic errors or lacking sufficient details were excluded, 583 remained. Of these, 162 errors (28%) were rated as major, 241 (41%) as moderate, and 180 (31%) as minor or insignificant. The most common missed or delayed diagnoses were pulmonary embolism (26 cases [4.5% of total]), drug

reactions or overdose (26 cases [4.5%]), lung cancer (23 cases [3.9%]), colorectal cancer (19 cases [3.3%]), acute coronary syndrome (18 cases [3.1%]), breast cancer (18 cases [3.1%]), and stroke (15 cases [2.6%]). Errors occurred most frequently in the testing phase (failure to order, report, and follow-up laboratory results) (44%), followed by clinician assessment errors (failure to consider and overweighing competing diagnosis) (32%), history taking (10%), physical examination (10%), and referral or consultation errors and delays (3%).

Conclusions: Physicians readily recalled multiple cases of diagnostic errors and were willing to share their experiences. Using a new taxonomy tool and aggregating cases by diagnosis and error type revealed patterns of diagnostic failures that suggested areas for improvement. Systematic solicitation and analysis of such errors can identify potential preventive strategies.

Arch Intern Med. 2009;169(20):1881-1887

Safer practice can only come about from acknowledging the potential for error and building in error reduction strategies at each stage of clinical practice

Lucian Leape

DEER Taxonomy

Diagnostic Error Evaluation and Research Taxonomy:

"It identifies *what* went wrong, and situates *where* in the diagnostic process the failure occurred"

1. Access/Presentation

2. History

3. Physical Exam

4. Labs

5. Assessment

6. Referral/Consultation

7. Follow-up

Schiff et al. <u>Arch Intern Med</u> 2009

DEER Dx Error Taxonomy

1. Access/Presentation	☐	Denied care		
	☐	Delayed presentation		
2. History	☐	Failure/delay in *eliciting c*ritical piece of history data		
	☐	Inaccurate/misinterpretation "		
	☐	Suboptimal weighing "		
	☐	Failure/delay to follow-up "		
3. Physical Exam	☐	Failure/delay in eliciting critical physical exam finding		
	☐	Inaccurate/misinterpreted "		
	☐	Suboptimal weighing "		
	☐	Failure/delay to follow-up "		
4. Tests (Lab/Radiology)	☐	***Ordering***		
	☐	Failure/delay in ordering needed test(s)		
		Failure/delay in performing ordered test(s)		

DEER Dx Error Taxonomy

4. Tests (Lab/Radiology)			
	Ordering		
	Failure/delay in ordering needed test(s)		
	Failure/delay in performing ordered test(s)		
	Suboptimal test sequencing		
	Ordering of unnecessary test(s)		
	Performance		
	Sample mixup/mislabeled (eg wrong patient)		
	Technical errors/poor processing of specimen/test		
	Erroneous lab/radiol reading of test		
	Failed/delayed communication of test		
	Clinician processing		
	Failed/delayed follow-up of test		
	Erroneous clinician interpretation of test		

DEER Dx Error Taxonomy

5. Assessment				
		Hypothesis Generation		
	☐	Failure/delay in *considering* important diagnosis		
		Suboptimal weighing/prioritizing		
	☐	Too much weight to low(er) probability/priority dx		
	☐	Too little consideration of high(er) probability/priority dx		
	☐	Too much weight on *competing* diagnosis		
		Recognizing Urgency/Complications		
	☐	Failure to appreciate urgency/acuity of illness		
	☐	Failure/delay in recognizing complication(s)		
6. Referral/Consultation	☐	Failed/Delayed in needed referral		
	☐	Inappropriate/unneeded referral		
	☐	Suboptimal consultation diagnostic performance		
	☐	Failed/delayed communication/followup of consultation		
7. Followup	☐	Failure to refer patient to close/safe setting/monitoring		
	☐	Failure/delay in timely follow-up/rechecking of patient		

What went wrong: DEER Taxonomy Localization

Category	Value
Failure/delay considering dx	110
Failure/delay ordering needed test(s)	63
Erroneous lab/radiol test reading	61
Too much weight competing dx	44
Failed/deay f/up of test result	42
Failure eliciting history data	40
Failure eliciting P.Exam data	37
Failure/delay reporting result	30
Error clinician test interpreation	25
Technical error processing specimen/test	17
Inaccurate interpretration history data	15
Inaccurate interpretation P Exam	14
Failure in preforming ordered test	11
To little weight give to dx	11
Faiure to recognize urgency	11
Failure to recognize complication	11

15

Failure to Consider:
Cognitive vs. **System** Problem?

Why did clinician fail to consider?

- Lack knowledge, memory recall
- Inadequate time
- Failure to elect key hx or physical
- Competing diagnoses, symptoms
- Rare, atypical
- Tests threw off
- Distractions
- Biases; heuristic

What are the causes?
What are the remedies?

Primary Care Closed Claims Experience of Massachusetts Malpractice Insurers

Gordon D. Schiff, MD; Ann Louise Puopolo, RN, BSN; Anne Huben-Kearney, RN, BSN, MPA; Winnie Yu, MA, MBA; Carol Keohane, RN, BSN; Peggy McDonough, RN, BSN; Bonnie R. Ellis, RN, BSN; David W. Bates, MD; Madeleine Biondolillo, MD

IMPORTANCE Despite prior focus on high-impact inpatient cases, there are increasing data and awareness that malpractice in the outpatient setting, particularly in primary care, is a leading contributor to malpractice risk and claims.

OBJECTIVE To study patterns of primary care malpractice types, causes, and outcomes as part of a Massachusetts ambulatory malpractice risk and safety improvement project.

DESIGN, SETTING, AND PARTICIPANTS Retrospective review of pooled closed claims data of 2 malpractice carriers covering most Massachusetts physicians during a 5-year period (January 1, 2005, through December 31, 2009). Data were harmonized between the 2 insurers using a standardized taxonomy. Primary care practices in Massachusetts. All malpractice claims that involved primary care practices insured by the 2 largest insurers in the state were screened. A total of 551 claims from primary care practices were identified for the analysis.

MAIN OUTCOMES AND MEASURES Numbers and types of claims, including whether claims involved primary care physicians or practices; classification of alleged malpractice (eg, misdiagnosis or medication error); patient diagnosis; breakdown in care process; and claim outcome (dismissed, settled, verdict for plaintiff, or verdict for defendant).

RESULTS During a 5-year period there were 7224 malpractice claims of which 551 (7.7%) were from primary care practices. Allegations were related to diagnosis in 397 (72.1%), medications

Cases Closed: Allegations by Close Year

	2005	2006	2007	2008	2009	TOTAL
Diagnosis-related	72	82	79	83	81	397
Medication-related	11	13	14	14	16	68
Medical Treatment	14	4	10	8	5	41
Communication	2	4	1	5	3	15
Violation of Rights	5	0	2	3	1	11
Safety & Security	0	2	1	2	3	8
OB-related Treatment	2	2	0	0	2	6
Surgical Treatment	1	1	0	1	0	3
Breach of Confidentiality	1	1	0	0	0	2
Total Number of Cases	**108**	**109**	**107**	**116**	**111**	**551**

N=551 CRICO and Coverys outpatient PL cases closed 2005–2009 naming General Medicine staff/fellow physicians (excl. Hospitalists) and excluding ED locations.

Schiff et al JAMA Intern Med 2013

Cases Closed: Top Final Diagnoses

FINAL DIAGNOSES	NUMBER OF CASES
Cancer	190
Diseases of the heart	43
Diseases of blood vessels	27
Infection	22
Cerebrovascular disease	16
Lower gastrointestinal disorders	9
Orthopedic injuries	7
Pneumonia	6

TOP CANCERS	NUMBER OF CASES
Colorectal	56
Lung	29
Prostate	26
Breast	18
Other GI	10
Benign neoplasm	8
Urinary organs	8
Lymphatic and hematopoietic tissue	8
Head and neck	6
Uterus and cervix	5

N=551 CRICO and Coverys outpatient PL cases closed 2005–2009 naming General Medicine staff/fellow physicians (excl. Hospitalists) and excluding ED locations.

Four Major Cancers: Colorectal, Lung, Prostate and Breast
Breakdowns in the Process of Care

STEP	PERCENT OF COLORECTAL CANCER CASES* (N=56)	PERCENT OF LUNG CANCER CASES* (N=29)	PERCENT OF PROSTATE CANCER CASES* (N=26)	PERCENT OF BREAST CANCER CASES* (N=18)
1. Patient notes problem and seeks care	2%	0%	0%	0%
2. History/physical & evaluation of symptoms	55%	24%	23%	94%
3. Order of diagnostic/lab tests	29%	24%	38%	11%
4. Performance of tests	9%	14%	4%	0%
5. Interpretation of tests	5%	21%	0%	6%
6. Receipt/transmittal of test results	0%	10%	15%	0%
7. Physician follow up with patient	21%	0%	27%	11%
8. Referral management	5%	7%	4%	6%
9. Patient compliance with follow-up plan	7%	3%	8%	0%

*One case often will have multiple factors identified.

N=397 CRICO and Coverys outpatient PL cases closed 2005–2009 naming General Medicine staff/fellow physicians (excl. Hospitalists), excluding ED locations, with a diagnosis-related major allegation. 129 of the 397 cases have a final diagnosis of colorectal, lung, prostate or breast cancer.

Disposition of Closed Cases
GM Dx Cases More Frequently Settled or Plaintiff Verdict
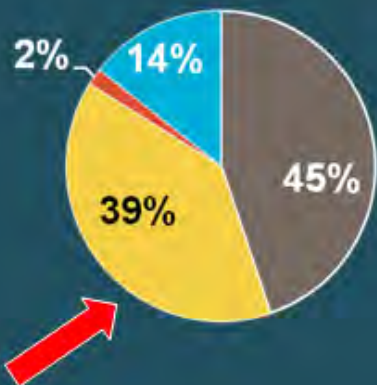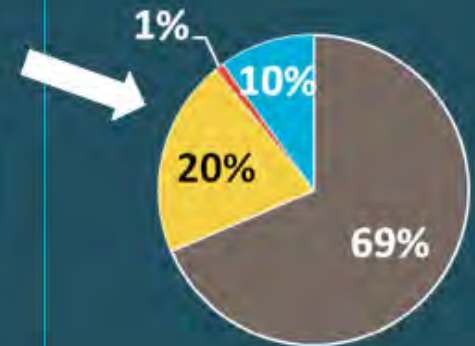
DIAGNOSIS CASES (N=397)	MEDICATION CASES (N=68)	ALL GM CASES (N=551)	ALL NON-GM CASES (N=6,673)
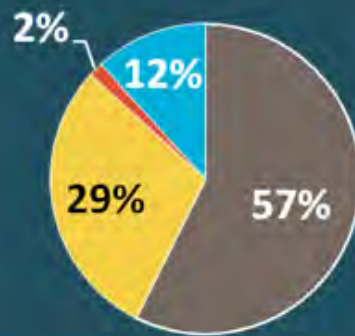
DIAGNOSIS CASES (N=397): 2%, 14%, 45%, 39%

MEDICATION CASES (N=68): 2%, 12%, 57%, 29%

ALL GM CASES (N=551): 2%, 14%, 49%, 35%
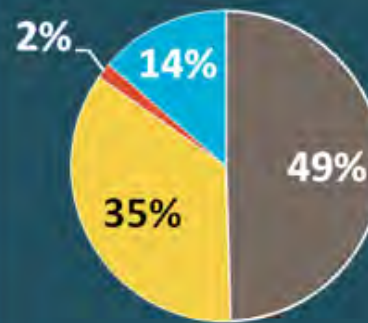
ALL NON-GM CASES (N=6,673): 1%, 10%, 69%, 20%

● Dropped/denied/dismissed ● Settled ● Defense Verdict ● Plaintiff Verdict

N=551 CRICO and Coverys outpatient PL cases closed 2005–2009 naming General Medicine staff/fellow physicians (excl. Hospitalists) and excluding ED locations.

Schiff et al JAMA Internal Med 9/29/13

Your Own Examples

- Cases you have seen, cared for, or even errors you have made

- Diagnostic errors or delays you or your family have experienced as patients

MA Residents Involved in a Medical Error Situation

% saying personally involved in a situation where a preventable medical error was made in their own care or in the care of someone close to them
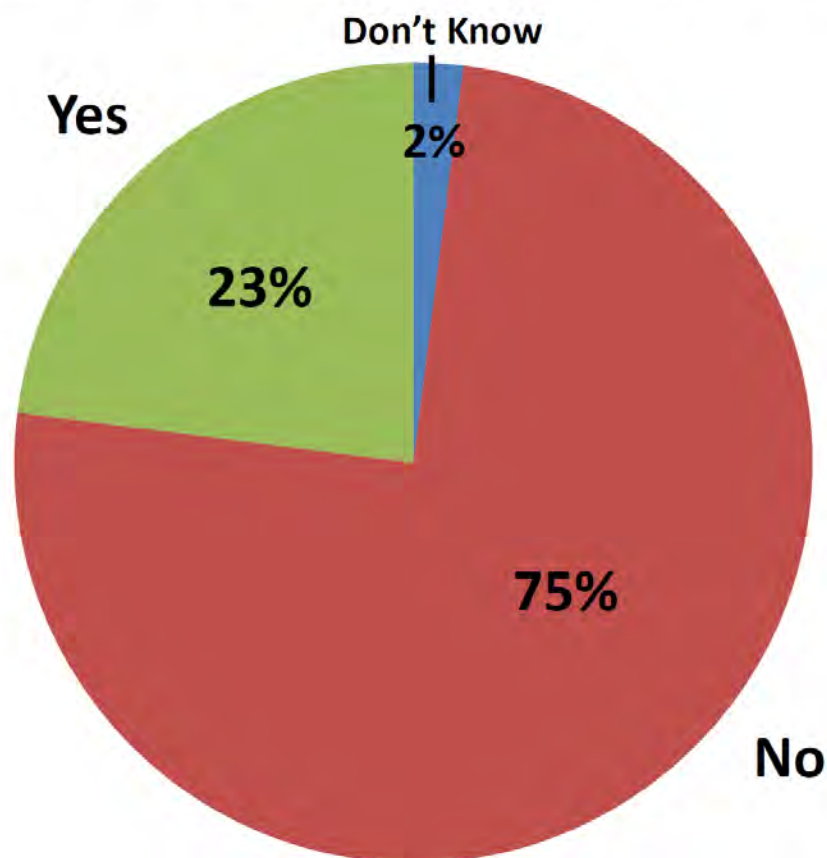
Most Common Types of Medical Error Experienced by MA Residents

% saying...
(Among the 23% who said they or a person close to them experienced a medical error)

Your/their medical problem was misdiagnosed
51%

You/they were given the wrong test, surgery, or treatment
38%

You were given wrong or unclear instructions about your follow-up care
34%

You/they were given an incorrect medication, meaning the wrong dose or wrong drug
32%

You/they got an infection as a result of your/their test, surgery, or treatment
32%

What is a Diagnosis Error?

Adverse Outcomes

Diagnostic Process Failures

Delayed, Missed, Misdiagnosis
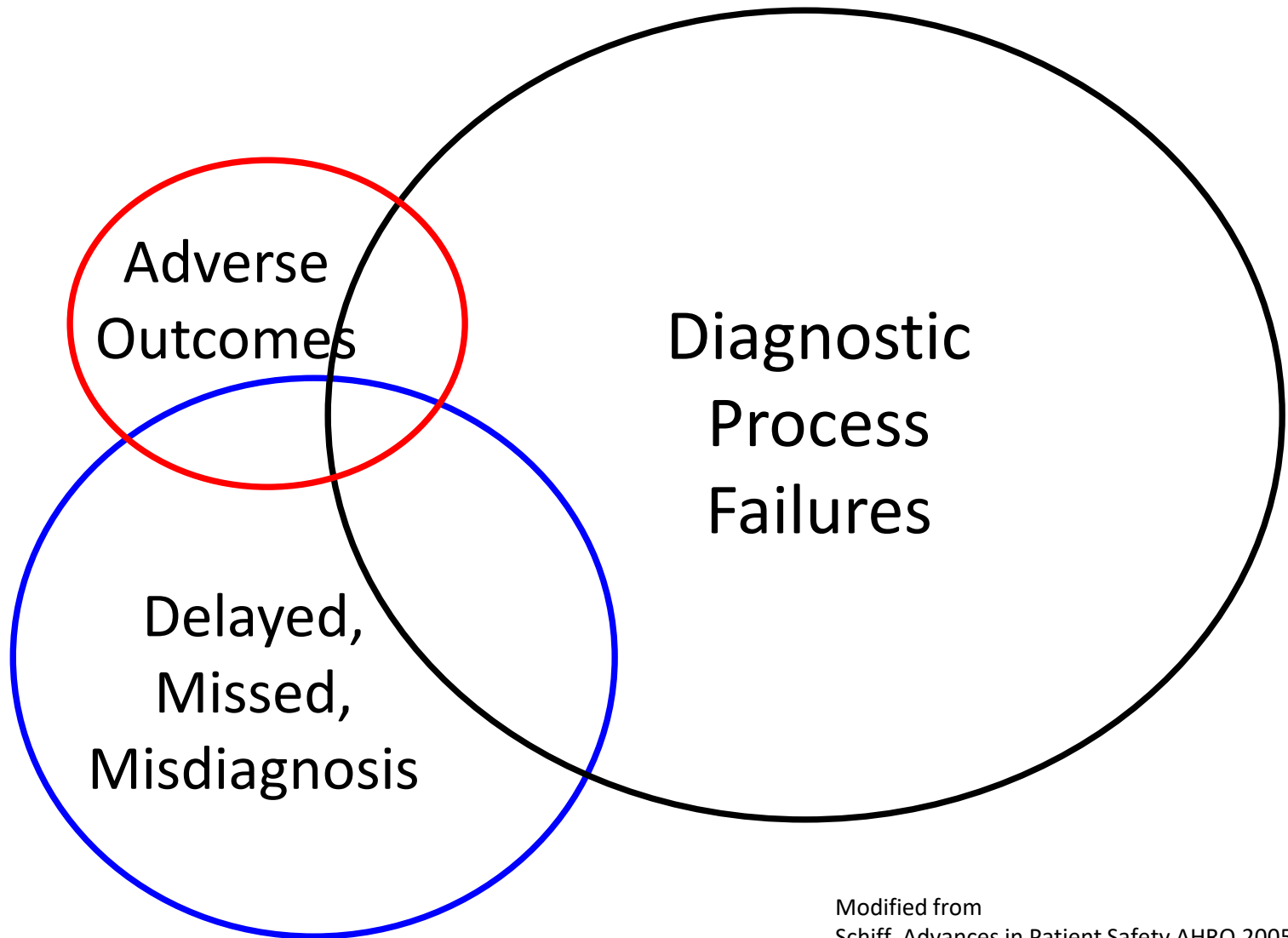
Modified from
Schiff Advances in Patient Safety AHRQ 2005,
Schiff & Leape Acad Med 2012

Don Berwick

Formerly –
President and CEO
Institute for Healthcare
Improvement (IHI)

Director Centers for Medicare
& Medicaid Services

MA Governor Candidate

The Boston Globe

Genius diagnosticians make great stories, but they don't make great health care.

The idea is to make accuracy reliable, not heroic

Don Berwick
Boston Globe 7/14/2002

2 Key Improvement Concepts

- Situational Awareness

- Safety Nets

Diagnostic Risk Situational Awareness

- Specialized type of situational awareness
- High reliability organizations/theory
  - High worry anticipation of what can go wrong
  - Preoccupied w/ risks recognizing/preventing
- Appreciation diagnosis uncertainty, limitations
  - Limitations of tests, systems' vulnerabilities
  - Knowing when "over head" need for help
- Making failures visible
- Don't miss diagnoses, red flag symptoms
- Diagnostic pitfalls – potentially useful construct

- Perhaps the most important distinguishing feature of high-reliability organizations is their collective preoccupation with the possibility of failure. They expect to make errors and train their workforce to recognize and recover them. They continually rehearse familiar scenarios of failure and strive hard to imagine novel ones. Instead of isolating failures, they generalize them. Instead of making local repairs, they look for system reforms

What is a **Diagnostic Pitfall**?

Clinical situations where patterns of, or vulnerabilities to errors leading to missed, delayed or wrong diagnosis

Results

Literature search	Patient safety event reports (n=4,352)	Morbidity & Mortality reports (n=24)	Closed malpractice claims (n=403)	Specialist focus groups (n=6)
155 diagnostic pitfall-related articles	75 diagnostic pitfall-related reports	10 diagnostic pitfall-related reports	396 diagnostic pitfall-related claims	355 focus group responses
201 DEER / 204 RDC	106 DEER / 101 RDC	15 DEER / 15 RDC	711 DEER / 625 RDC	175 DEER / 96 RDC

TOTAL DEER = 1208   TOTAL RDC = 1041

Results: Top 10 Missed or Delayed Diagnoses

Diagnosis by disease	Frequency
Colorectal cancer	38
Lung cancer	36
Breast cancer	20
Myocardial infarction	20
Prostate cancer	18
Stroke	15
Sepsis	13
Bladder cancer	10
Pulmonary embolism	9
Brain Hemorrhage	8

Diagnosis by system	Frequency
Oncology	225
Neurology	89
Cardiology	50
Infectious disease	46
Other	40
Dermatology	37
Gastroenterology	35
Pulmonology	33
Rheumatology	29
Orthopedics	16

Results: Most common DEER errors (n=971)

DEER Taxonomy Subcategory	Frequency % (N)
Failure in ordering needed test(s)	17% (164)
Failure to consider correct diagnosis	12% (112)
Failed/delayed follow-up of abnormal test result	9% (83)
Failure in weighing critical piece of history data	8% (75)
Failure/delay in ordering referral	6% (62)

GENERIC TYPES of PITFALLS

- **Disease A repeatedly mistaken for Disease B**
  - Bipolar disease mistaken for depression
- **Failure to appreciate test/exam limitations**
  - Pt w/ breast lump and negative mammogram and/or ultrasound
- **Atypical presentation**
  - Addison's disease presenting with cognitive difficulties
- **Presuming chronic disease accounts for new symptoms**
  - Lung cancer: failure to pursue new/unresolving pulmonary sx in patient with pre-existing COPD
- **Overlooking drug, other environmental cause**
  - Pancreatitis from drug; carbon monoxide toxicity fail to consider
- **Failure to monitor evolving symptom**
  - Normal imagining shortly after head injury, but chronic subdural hematoma later develops

Results: Most common RDC barriers (n=854)

RDC Taxonomy Subcategory	Frequency
Test Follow-Up Issues	12% (103)
Recognition of Acuity/Severity	9% (73)
Test Performance/Interpretation	7% (62)
Diagnosis of Underlying Cause	6% (51)
Fragmentation of Care	6% (48)

Results – DEER Taxonomy Errors (n = 1208)
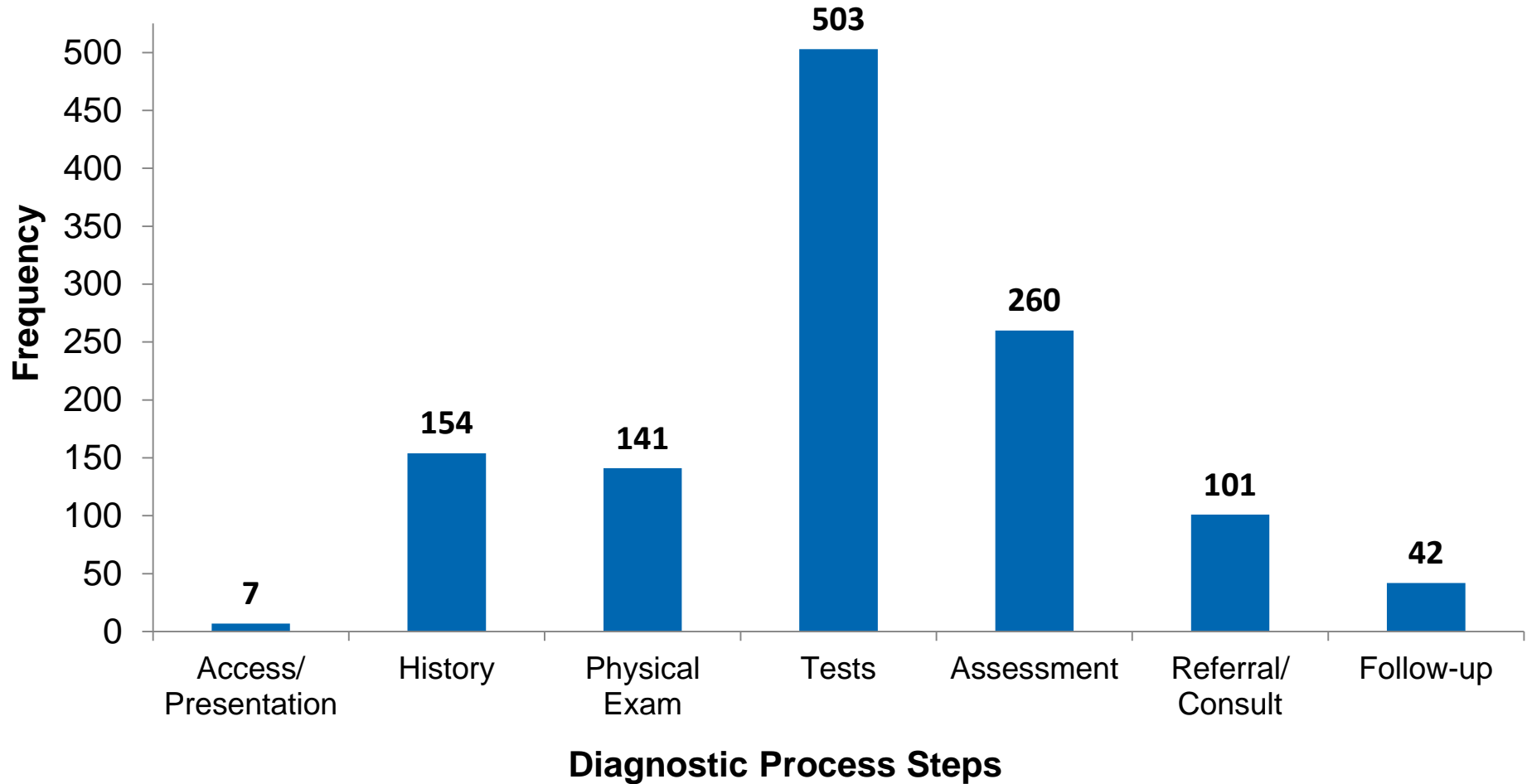
Results - RDC Taxonomy Issues (n = 1041)

BREAST CANCER PITFALLS: MALPRACTICE CASES

Pitfall	N	Example
1. Family History Issues	4	- Failure to obtain family history of breast cancer - Under-weighing family history of breast cancer
2. Atypical Presentation/ Cognitive Challenges	6	- Underestimating risk of BC in young symptomatic patients - Fast-growing cancers arising during MMG interval - Under-weighing complaints of patients with psychiatric diagnoses - Prioritizing chronic medical or social issues over screenings in complex patients
3. False Negative Physical Exam	2	- Lump felt to be benign on physical exam - Bias in wanting to reassure patient, due to low likelihood of BC
4. Fibrocystic/Dense Breast Dilemmas	9	- Fibrocystic breast tissue can obscure underlying BC in MMG - Not recognizing changes in breast density over time - Failure to investigate unilateral fibrocystic changes - Failure to investigate breast lump with FNA in patient with dense breasts and negative U/S

BREAST CANCER PITFALLS: MALPRACTICE CASES

Pitfall	N	Example
5. Screening vs. Diagnostic Mammogram Order	2	- Ordering/performing a screening MMG, rather than a diagnostic MMG
6. False Negative Mammogram	9	- False negative MMG in pt with fibrocystic breasts - Failure to reevaluate breast complaints in light of previously negative MMG - Misreading of MMG by radiologists - Failure to follow-up on nipple retraction observed on MMG, attributing it to imaging technique - Falsely reassuring negative "additional views"
7. False Negative Ultrasound	2	- Falsely reassuring negative U/S in pts with breast lump
8. Surgical Referral	4	- Failure to refer to breast surgeon - Breast lump appearing benign to surgeon palpation - Patient failure to follow-up on referral

BREAST CANCER PITFALLS: MALPRACTICE CASES

Pitfall	N	Example
9. Biopsy Performance/ Interpretation	1	- Inability to recognize missed sampling due to bleeding/complications and failure to repeat biopsy
10. Failure to Order Further Studies	2	- Failure to order diagnostic imaging studies (MMG and U/S) - Failure to recommend excisional biopsy
11. Diffusion of Responsibility/ Coordination Issues	4	- Failure to document/ensure pt was receiving screening MMGS and breast exams - Failed coordination/communication between PCP and GYN
12. Other Symptoms	8	- Failure to follow-up on resolution of mastitis - Failure to pursue etiology of persistent galactorrhea - Pursuing lymphoma as cause of lymphadenopathy - Axillar lymphadenopathy lost due to fact that not incorporated into BIRADS coding (revised now) - Failure to work up persistent painful cyst

Diagnostic Risk Safety Nets

- Recognizing inherent uncertainties/risks, build in mitigation, protections, recovery structures and processes

- Proactive, systematic follow-up, feedback via closed loop systems

- Major role for HIT to hard-wire
  - To automate, ensure reliability, ease burden on staff/memory, ensure loops closed and outliers visible

Use of health information technology to reduce diagnostic errors

Robert El-Kareh,[1,2] Omar Hasan,[3] Gordon D Schiff[4,5]

ABSTRACT

Background Health information technology (HIT) systems have the potential to reduce delayed, missed or incorrect diagnoses. We describe and classify the current state of diagnostic HIT and identify future research directions.

Methods A multi-pronged literature search was conducted using PubMed, Web of Science, backwards and forwards reference searches and contributions from domain experts. We included HIT systems evaluated in clinical and experimental settings as well as previous reviews, and excluded radiology computer-aided diagnosis, monitor alerts and alarms, and studies

INTRODUCTION

Unaided clinicians often make diagnostic errors. Vulnerable to fallible human memory, variable disease presentation, clinical processes plagued by communication lapses, and a series of well-documented 'heuristics', biases and disease-specific pitfalls, ensuring reliable and timely diagnosis represents a major challenge.[1-3] Health information technology (HIT) tools and systems have the potential to enable physicians to overcome—or at least minimise—these human limitations.

Despite substantial progress during the 1970s and 1980s in modelling and simulating the diagnostic process, these

Box 1 Condensed set of categories describing different steps in diagnosis targeted by diagnostic health information technology (HIT) tools

▶ Tools that assist in information gathering
▶ Cognition facilitation by enhanced organisation and display of information
▶ Aids to generation of a differential diagnosis
▶ Tools and calculators to assist in weighing diagnoses
▶ Support for intelligent selection of diagnostic tests/ plan
▶ Enhanced access to diagnostic reference information and guidelines
▶ Tools to facilitate reliable follow-up, assessment of patient course and response
▶ Tools/alerts that support screening for early detection of disease in asymptomatic patients
▶ Tools that facilitate diagnostic collaboration, particularly with specialists
▶ Systems that facilitate feedback and insight into diagnostic performance

El-Kareh
Schiff

BMJ QS 2013

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Can Electronic Clinical Documentation Help Prevent Diagnostic Errors?

Gordon D. Schiff, M.D., and David W. Bates, M.D.

The United States is about to invest nearly $50 billion in health information technology (HIT) in an attempt to push the country to a tipping point with respect to the adoption of computerized records, which are expected to improve the quality and reduce the costs of care.[1] A fundamental question is how best to design electronic health records (EHRs) to enhance clinicians' workflow and the quality of care. Although clinical documentation plays a central role in EHRs and occupies a substantial proportion of physicians' time, documenta-

many questions about it persist. For example, can it be leveraged to improve quality without adversely affecting clinicians' efficiency? Will the quality of electronic notes be better than that of paper notes, or will it be degraded by the widespread use of templates and copied-and-pasted information?

A fundamental part of delivering good medical care is getting the diagnosis right. Unfortunately, diagnostic errors are common, outnumbering medication and surgical errors as causes of outpatient malpractice claims and settlements.[3] EHRs promise

ing physicians from the patient, discouraging independent data gathering and assessment, and perpetuating errors.[4] But we envision a redesigned documentation function that anticipates new approaches to improving diagnosis, not one that relies on the putative "master diagnosticians" of past eras. The diagnostic process must be made reliable, not heroic, and electronic documentation will be key to this effort. Systems developers and clinicians will need to reconceptualize documentation workflow as part of the next generation of EHRs, and policymak-

Role for Electronic Documentation	Goals and Features of Redesigned Systems
Providing access to information	Ensure ease, speed, and selectivity of information searches; aid cognition through aggregation, trending, contextual relevance, and minimizing of superfluous data.
Recording and sharing assessments	Provide a space for recording thoughtful, succinct assessments, differential diagnoses, contingencies, and unanswered questions; facilitate sharing and review of assessments by both patient and other clinicians.
Maintaining dynamic patient history	Carry forward information for recall, avoiding repetitive pt querying and recording while minimizing erroneous copying and pasting
Maintaining problem lists	Ensure that problem lists are integrated into workflow to allow for continuous updating.
Tracking medications	Record medications patient is actually taking, patient responses to medications, and adverse effects to avert misdiagnoses and ensure timely recognition of medication problems.
Tracking tests	Integrate management of diagnostic test results into note workflow to facilitate review, assessment, and responsive action as well as documentation of these steps.

Role for Electronic Documentation	Goals and Features of Redesigned Systems
Ensuring coordination and continuity	Aggregate and integrate data from all care episodes and fragmented encounters to permit thoughtful synthesis.
Enabling follow-up	Facilitate patient education about potential red-flag symptoms; track follow-up.
Providing feedback	Automatically provide feedback to clinicians upstream, facilitating learning from outcomes of diagnostic decisions.
Providing prompts	Provide checklists to minimize reliance on memory and directed questioning to aid in diagnostic thoroughness and problem solving.
Providing placeholder for resumption of work	Delineate clearly in the record where clinician should resume work after interruption, preventing lapses in data collection and thought process.

Schiff & Bates NEJM 2010

Role for Electronic Documentation	Goals and Features of Redesigned Systems
Calculating Bayesian probabilities	Embed calculator into notes to reduce errors and minimize biases in subjective estimation of diagnostic probabilities.
Providing access to information sources	Provide instant access to knowledge resources through context-specific "info buttons" triggered by keywords in notes that link user to relevant textbooks and guidelines.
Offering second opinion or consultation	Integrate immediate online or telephone access to consultants to answer questions related to referral triage, testing strategies, or definitive diagnostic assessments.
Increasing efficiency	More thoughtful design, workflow integration, easing and distribution of documentation burden could speed up charting, freeing time for communication and cognition.

Schiff & Bates NEJM 2010

Clinical Documentation

CYA

Canvass for Your Assessment

-Differential Diagnosis
-Weighing Likelihoods
-Etiology
-Urgency
-Degree of certainty

Canvass for Your Assessment

3rd generation Dx support

Cerner with Isabel integration

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Differential Diagnosis   ⚑

Lyme Disease
Rickettsialpox
Anthrax
Tularemia
Spider Bites
Tsutsugamushi Disease
⚑ Acute Appendicitis
Viral Hepatitis
Urinary Lithiasis /
Nephrolithiasis
Human Granulocytic
Anaplasmosis

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Open Loop System

Water goes on the same time each day, regardless of whether it is raining or lawn is flooded

Schiff A J Med 2008

ELSEVIER

Minimizing Diagnostic Error: The Importance of Follow-up and Feedback

An open-loop system (also called a "nonfeedback controlled" system) is one that makes decisions based solely on preprogrammed criteria and the preexisting model of the system. This approach does not use feedback to calibrate its output or determine if the desired goal is achieved. Because open-loop systems do not observe the output of the processes they are controlling, they cannot engage in learning. They are unable to correct any errors they make or compensate for any disturbances to the process. A commonly cited example of the open-loop system is a lawn sprinkler that goes on automatically at a certain hour each day, regardless of whether it is raining or the grass is already flooded.[1]

To an unacceptably large extent, clinical diagnosis is an open-loop system. Typically, clinicians learn about their diagnostic successes or failures in various ad hoc ways (eg, a knock on the door from a server with a malpractice subpoena; a medical resident learning, upon bumping into a surgical resident in the hospital hallway that a patient he/she

improve diagnosis. Whereas their emphasis centers around the question of physician overconfidence regarding their own cognitive abilities and diagnostic decisions, I suspect many physicians feel more beleaguered and distracted than overconfident and complacent. There simply is not enough time in their rushed outpatient encounters, and too much "noise" in the nonspecified undifferentiated complaints that patients bring to them, for physicians, particularly primary care physicians, to feel overly secure. Both physicians and patients know this. Thus, we hear frequent complaints from both parties about brief appointments lacking sufficient time for full and proper evaluation. We also hear physicians' confessions about excessive numbers of tests being done, "overordered" as a way to compensate for these constraints that often are conflated with and complicated by "defensive medicine"—usually tests and consults ordered solely to block malpractice attorneys.

The issue is not so much that physicians lack an awareness of the thin ice on which they often are skating, but that

Feedback –Key Role in Safety

- Structural commitment patient role to play
- Embodies/conveys message: uncertainty, caring, reassurance, access if needed
- Allows deployment of test of time, more conservative diagnosis
- Enables differential diagnosis
- Emphasizes that disease is dynamic
- Reinforces culture of learning & improvement
- Illustrates how much disease is self limited
- Makes invisible missed diagnoses visible

Examples of Feedback Learning

Feeding back to upstream hospital

- spinal epidural abscess

IVR follow-up post urgent care visit

- UAB Berner project

Dedicated Dx Error M&M

Autopsy Feedback

- 7/32 MDs aware disseminated CMV

ED residents post admission tracking

Feedback to previous service

Tracking persistent mysteries

Chart correction by patients

Radiology/pathology

- systematic second reviews

2nd opinion cases

- Best Doctors dx changed

Linking lab and pharmacy data

- to find signal of errors (missed ↑ TSH)

Urgent care

- call back f/up systems

Malpractice

- knock on the door

Exploration of an Automated Approach for Receiving Patient Feedback After Outpatient Acute Care Visits

Eta S. Berner, EdD[1], Midge N. Ray, RN, MSN[1], Anantachai Panjamapirom, PhD[2],
Richard S. Maisiak, PhD[3], James H. Willig, MD[1], Thomas M. English, PhD[4], Marc Krawitz, MBA[5],
Christa R. Nevin, MSPH[1], Shannon Houser, PhD[1], Mark P. Cohen, MD[6], and Gordon D. Schiff, MD[7]

[1]University of Alabama at Birmingham (UAB), Birmingham, AL, USA; [2]The Advisory Board Company, Washington, DC, USA; [3]Maisiak Consulting, Scottsdale, AZ, USA; [4]University of Massachusetts Medical School, Worcester, MA, USA; [5]Physician Innovations, LLC, Birmingham, AL, USA; [6]United Cerebral Palsy of Greater Birmingham, Birmingham, AL, USA; [7]Brigham and Women's Hospital, Boston, MA, USA.

BACKGROUND: To improve and learn from patient outcomes, particularly under new care models such as Accountable Care Organizations and Patient-Centered Medical Homes, requires establishing systems for follow-up and feedback.

OBJECTIVE: To provide post-visit feedback to physicians on patient outcomes following acute care visits.

DESIGN: A three-phase cross-sectional study [live follow-up call three weeks after acute care visits (baseline), one week post-visit live call, and one week post-visit interactive voice response system (IVRS) call] with three patient cohorts was conducted. A family medicine clinic and an HIV clinic participated in all

anisms can potentially identify and connect such patients to needed care.

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BAC ... such outc ... Acco ... Medi ... low- ... comes;

OBJ ... cians ...

DESIGN: A three-phase cross-sectional study [live follow-up call three weeks after acute care visits (baseline), one week post-visit live call, and one week post-visit interactive voice response system (IVRS) call]

55/338 (16%) → not improved
of whom only 21 (38%)
had contacted any clinician

Feedback- Challenges

- Effort, time, support required
- Discontinuities
- Can convey non-reassuring message
- Feedback fatigue
- Non-response not always good predictor of misdiagnosis as multiple confounders
- Tampering – form of availability bias

How to Truly Improve Diagnosis

- Harness HIT to prevent/mitigate errors and delays
  - Especially clinical documentation, test/referral f/up
- Work with patients as partners to co-produce Dx
  - "Making" the diagnosis; meaningful/safer follow-up
- Learn from, share mis-takes
  - Need safer mechanisms and forums
  - Open communication; Open Notes
- Becoming more skilled dealing with uncertainty

Role for Patient

In Minimizing and Preventing Diagnosis Error and Delay

- Push for timely access
- Reliable follow-up, continuity
- Keen observer, reporter sx
- Proactive on test results
- Sharing hunches
- Curiously reading on own
- Meticulously adhering w/ empiric trial regimens
- Active as co-investigator

- Being patient: time & tests
- Recruiting family for support
- Respecting limits on staff time, society resources
- Agreeing to disagree
- Help in building, maintaining trust and communication
- Getting involved with patient organizations

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Key question is:
What will it take at the provider and institutional end to support these roles and help them flourish?

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Ricardo Levins Morales Art Studio

Supplemental Slides

Culture of Diagnostic Safety & Improvement

1. Driving out fear so no one afraid to ask questions, question a diagnosis, share when things go wrong
   - Dealing w/ adverse events replacing blame & fear, w/ learning & improvement

2. Organization-wide commitment to improving diagnosis, learning from diagnosis delays, diagnostic process errors
   - Leadership/organizational recognition that misdiagnosis is the #1 top cause of patient-reported errors
   - Aggressive reporting, appreciative investigation, of adverse events
   - Relentless curiosity/worry/conferencing: what is wrong with patient; what might be missing, what can go wrong in system?
   - Obsession w/ details of dx process: what can go wrong, limitations of tests

Culture of Diagnostic Safety & Improvement

3. Recognition uncertainty inherent in diagnoses, tests, illness presentation and evolution; anticipation of common pitfalls
   - Situational awareness local, disease specific, literature reported vulnerabilities/pitfalls.
   - Reliable, proactive, follow-up safety nets & feedback systems to detect and protect
   - Conservative approaches to testing, imaging
     - Enabled by shared decision-making and reliable follow-up

4. Respect human limitations, need for cognitive, process support
   - Decreased reliance on human memory, minimizing negative effects of stress, fatigue, fear, recognizing limited ability to truly multitask.
   - Redesign EMRs & communication systems to support cognition, collaborative diagnosis, and follow-up

5. Enhanced role for patient in co-producing diagnosis
   - Working collaboratively to formulate history, diagnosis, monitor course, raise and research questions

PCP PITFALLS --NEUROLOGY

NEUROLGY FOCUS GROUP

LISTING OF DIAGNOSTIC PITFALLS
 SEEN BEING COMMONLY MADE
  BY PCPS

Correct Diagnosis	Incorrect/Initial Dx	Pitfall; Comments
Significant Missed Neurologic Diagnoses		
Cerebellar hemorrhage, infarct	Viral GI illness	Cerebellar infarct missed because nausea and vomiting (even without constipation and/or diarrhea) was dismissed as viral GI illness.
"	Other headache	Pt with headache, nausea, vomiting and missed cerebella stroke until patient becomes somnolent
CVA	vertigo, labyrinthitis	not recognizing stroke symptoms, diagnosing as vertigo or labyrinthitis
"	peripheral dizziness	dizziness thought to be peripheral but actually stoke
"	peripheral nervous system diseases	foot drop, wrist drop for peripheral -- stroke
"	diabetic neuropathy	acute onset limb weakness referred for diabetic neuropathy, diagnosis = stroke
VB disease, TIA, stroke	benign vestibulopathy	dizzy, vestibulopathy when it is VB disease, TIA/stroke
Subdural hematoma	benign headache	headache thought to be benign but was a subdural hematoma
Brain Tumor	Migraine	missing severe headache etiologies and labeling migraines (tumor and temporal arteritis)
"	trigeminal neuralgia	confusion with unilateral jaw/face pain confused with trigeminal neuralgia but ultimately malignancy

Temporal Arteritis	Migraine	missing severe headache etiologies and labeling migraines (tumor and temporal arteritis)
Guillain-Barre Syndrome	benign paresthesia	Guillain-Barre syndrome subtle tingling dismissed and pt represents when more obvious weakness manifests
Autoimmute necrotizing myopathy	toxic myopathy	Rare patients on statins develop pan autoimmune necrotizing myopathy, not typical toxic myopathy. Patients do not get better with discontinuation of statins but only after treating with immunotherapy
MS		early signs of multiple sclerosis such as optic neuritis not recognized
optic neuritis	decreased vision	misdiagnosing optic neuritis for decreased vision
Parkinsonisn	chronic fatigue syndrome	misdiagnosis
Parkinson's Disease		not recognizing parkinsonism, thinking it is weakness, fatigue, tiredness, etc
Parkinson's Disease	tremor 2/2 shoulder surgery	tremor related to shoulder surgery, diagnosis = Parkinson's disease
Medication induced Parkinson's		missing medication induced Parkinson's
Ulnar neuropathy		not recognizing common entrapment syndromes and doing unnecessary tests/referrals (eg ulnar neuropathy)
thorocadorsal radiculopathy	surgical cause abdom pain	abdominal pain in DM - abdominal w/u [surgery?]

Misdiagnoses/Overdiagnosis of other diagnoses as more serious Neurologic Disease		
Overdiagnosis CIPD	chronic inflammatory demyelinating polyneuropathy	not warming up limbs before nerve conduction study and mislabeling as CIPD and treating with IUG
Bell's palsy	stroke	mistaking lower motor neuron facial weakness (Bell's Palsy) thinking it is a stroke
No Seizure disorder	Seizure Disorder	over treating seizures
Non MS	MS	diagnosis of MS based only MRI, non-specific lesion
		MRIs for non-specific systemic symptoms leads to incident [illegible] MRI findings
vasovagal syncope	seizure, stroke	syncopal events (often vasovagal) referred for extensive work-up for seizure, stroke, etc. "answer" often in better history taking
No TIA; nonspecific sx	TIA	making excessive TIA diagnosis
Anemia or Cardiac Arrhythmia	TIA	not looking at CBC and EKG in TIA patients
Mouth infection?	giant cell ateritis	confusion with unilateral jaw/face pain presumed to be giant arteritis, treated with steroids which lead to worsening mouth infection and infective endocarditis
Other neuro non CVA dx	ischemia	assumption all subacute/acute changes in neurologic function are ischemic in etiology
Nonspecific dx	Neuro Lyme	labeling chronic symptoms as neuro lyme
Functional disorder, conversion disorder	peripheral nervous system diseases	misdiagnosis of peripheral nervous system disease in functional or conversion disorder

Generic Neurology Diagnosis Pitfalls		
Neurologic illness	Psych illness	new psychiatric symptoms attributed to psych illness rather than a missed neurologic illness (brain tumor, stroke, encephalitis)
Neuro conditions	psych illness	not considering new overt psych symptoms as potentially neurological
Non NPH causes of dementia	NPH	overdiagnosis of NPH
Dementia	NPH	misdiagnosis of Normal Pressure Hydrocephalus in cases of dementia
Dementia		referrals for dementia evals not early enough
Metabolic dz		congenital states can be misinterpreted as focal abnormalities and potentially not diagnosed for toxic/metabolic abnormalities
Febrile seizures		unnecessary referrals for simple febrile seizures
Ataxia	weakness	confusing ataxia with weakness
Mild cognitive difficulties		missing mild cognitive difficulties which manifest as multiple organic complaints
Bulbar weakness	apetite problem	mistaking poor PO intake for appetite problem instead of bulbar weakness
Serious HA	benign headache	Filtering headache syndromes. In the ED we would commonly see patients whose concerning HA was initially minimized. On the other hand, would see non-concerning HA triaged to the ED.
Benign headache	Serious HA	benign headache
Benign Headache		MRI of the brain is overperformed, particularly in cases of mild headache and lead to a work-up of incidentally found tumors particularly meningiomas
Benign; unrelated, incidentaloma	Meningioma	attributing symptoms to meningioma that is actually asymptomatic

Unified Model of Diagnostic Situational Awareness
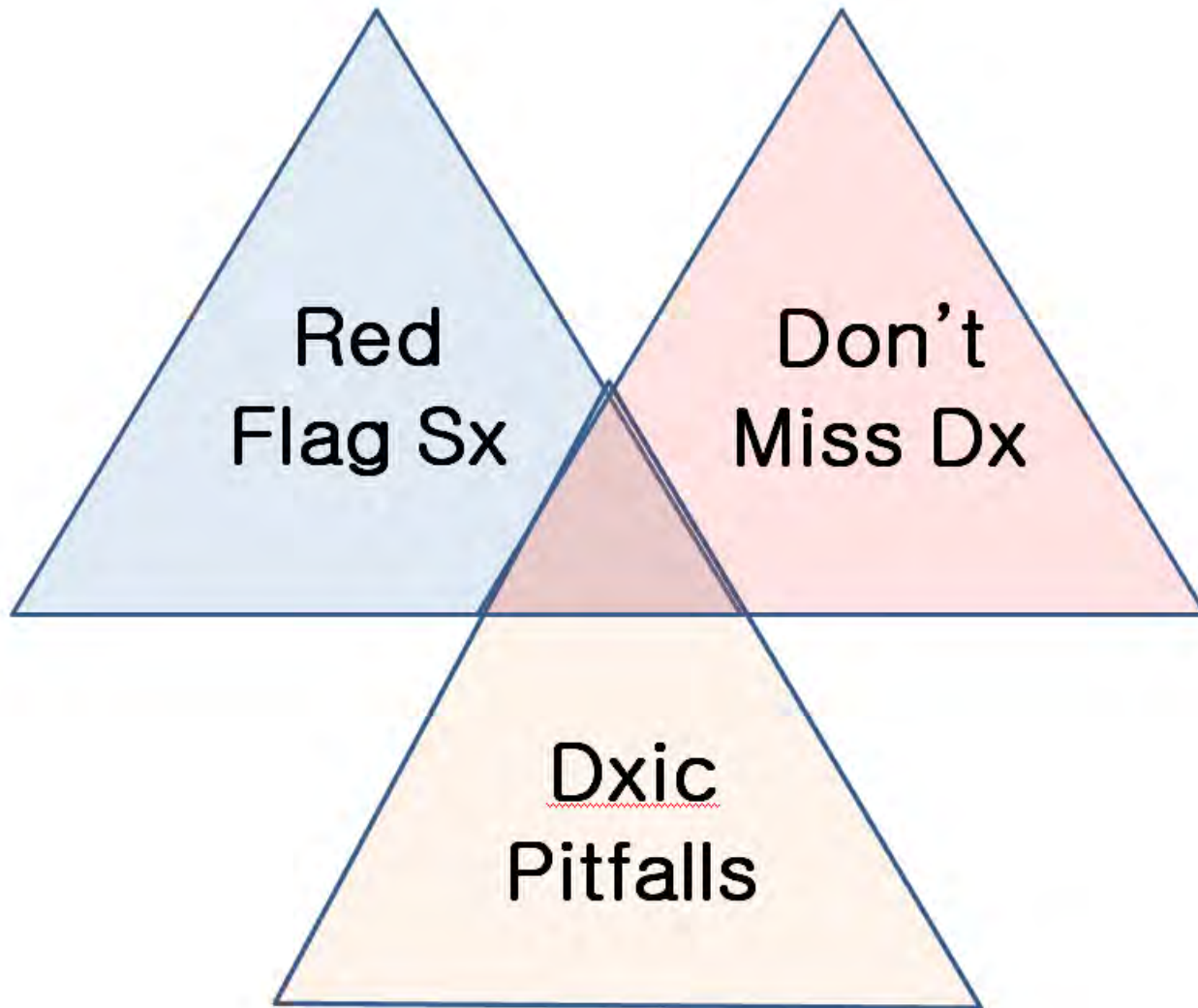
David E. Newman-Toker*, J. Matthew Austin, Jordan Derk, Melissa Danforth and
Mark L. Graber

Are health care provider organizations ready to tackle diagnostic error? A survey of Leapfrog-participating hospitals

Abstract

Background: A 2015 National Academy of Medicine report on improving diagnosis in health care made recommendations for direct action by hospitals and health systems. Little is known about how health care provider organizations are addressing diagnostic safety/quality.
Methods: This study is an anonymous online survey of

on diagnostic performance. The top two tools viewed as critically important for locally tackling the problem were routine feedback on diagnostic performance and culture change to emphasize diagnostic safety.
Conclusions: Although hospitals and health systems appear to be aware of diagnostic errors as a major safety imperative, most organizations (even those that appear to be making a strong commitment to patient safety) are not yet doing much to improve diagnosis. Going forward, efforts to activate health care organizations will be essen-

Awareness of diagnostic error as an important, preventable patient safety concern was high. Almost all participants agreed diagnostic error is a common problem that will affect most of us in our lifetimes (98%).

The vast majority were aware of NAM recommendations on improving diagnosis in health care (88%) and believed that most diagnostic errors were preventable (85%).

Commitment and capability to address diagnostic error was generally low, with relatively few institutions taking action currently or in the near future

BWH BRIGHAM AND WOMEN'S HOSPITAL

SCHIFF, GORDON D MD | My Settings | Report

GI Screening Colonoscopy Indic

Submit

ONLY ~50-50 chance this order results in colonoscopy actually being performed !

PATIENT NAME:	**TEST, TEST**			
ROOM:		SERVICE:		
BIRTH DATE:	10/21/1933 AGE: 80 years	GENDER:	Female PHONE NUMBER:	6172257878
PREGNANCY STATUS:	Unknown	PAYOR:	BWH – Self Pay	
ORDERING PROVIDER:	**SCHIFF, GORDON D MD**			
EXAM:	**GI Screening Colonoscopy**	PERCIPIO ORDER ID:	**30521909**	
CREATED BY:		ORDERING SITE:	The Phyllis Jen Center for Primary Care	

Harvard Center for Primary Care Academic Improvement Collaborative

Colorectal Cancer Driver Diagram

10/2014

To Reduce Missed and Delayed Diagnoses of Colorectal Cancer

| Primary Drivers	Secondary Drivers
Ensure Organizational Alignment	Engage diverse group of institutional leaders and stakeholders across the organization
	Communicate how this work builds on and aligns with other initiatives across the organization
	Create clear organization-wide consensus for CRC screening and guidelines
Patient and Family Engagement	Seek to understand and reduce barriers to scheduling, bowel prep, and day-of-test navigation
	Reduce barriers for patients to communicate with care team around new/concerning symptoms or for help with navigating care system
	Engage patient partners in improvement processes
	Seek regular formal and informal patient feedback on process
Optimized Teamwork	Develop clear protocols and algorithms, integrated into care workflow and HIT
	Clearly define roles, responsibilities and handoffs/interactions within care team
	Engage and partner with specialists
	Promote culture of collaboration and teamwork
At-Risk Patient Identification and Tracking	Empanel patients
	Address risk at office visits
	Identify and manage patient risk factors
	Identify and track patients who are symptomatic, high-risk and/or overdue for screening
Closed Loops for Referrals and Tests	Develop clear care pathways for screening and diagnosis
	Ensure needed referral access and capacity
	Ensure coordinated system for scheduling, tracking referrals and tests through to referral partner
	Develop reliable processes to support patient education around bowel prep
	Track and develop systems to reduce and f/up on no-shows/failure to schedule
	Ensure reliable and timely communication of test results to patients
Leverage Health Information Technology and Population-based Management and Outreach	Develop system for timely, reliable follow-up of abnormal test results
	Ensure structured data capture and reliable update of family history, diagnoses and symptoms.
	Create population-based outreach and tracking systems.
	Develop reports to identify and notify patients due for screening and patients that are hard to reach.
	Identify and provide needed resources for population management

Are Test Results Reliably Acknowledged and Acted on?

TSH	251	16%
Cr	572	37%
K	278	18%
INR	213	14%
PSA	148	10%
Guaiac+	10	1%
Abnl Colonspy	18	1%
Abnl Mamgrm	11	1%
Abnl Pap	4	0%
Pulm Nodule	22	1%
Abdom Mass	17	1%
	1544	

Result Found in Chart	97.1%
Abnormal Acknowledged	90.1%
Action Plan Documented	78.7%
Action Plan Completed	80.0%
Patient Notified	77.4%

Preliminary data PROMISES Project Unpublished 2012

PROMISES Chart review preliminary results:
Number of potential adverse events

Intervention practices

Chart with y-axis "Number of events" ranging 0 to 140. Before: 126, After: 41.
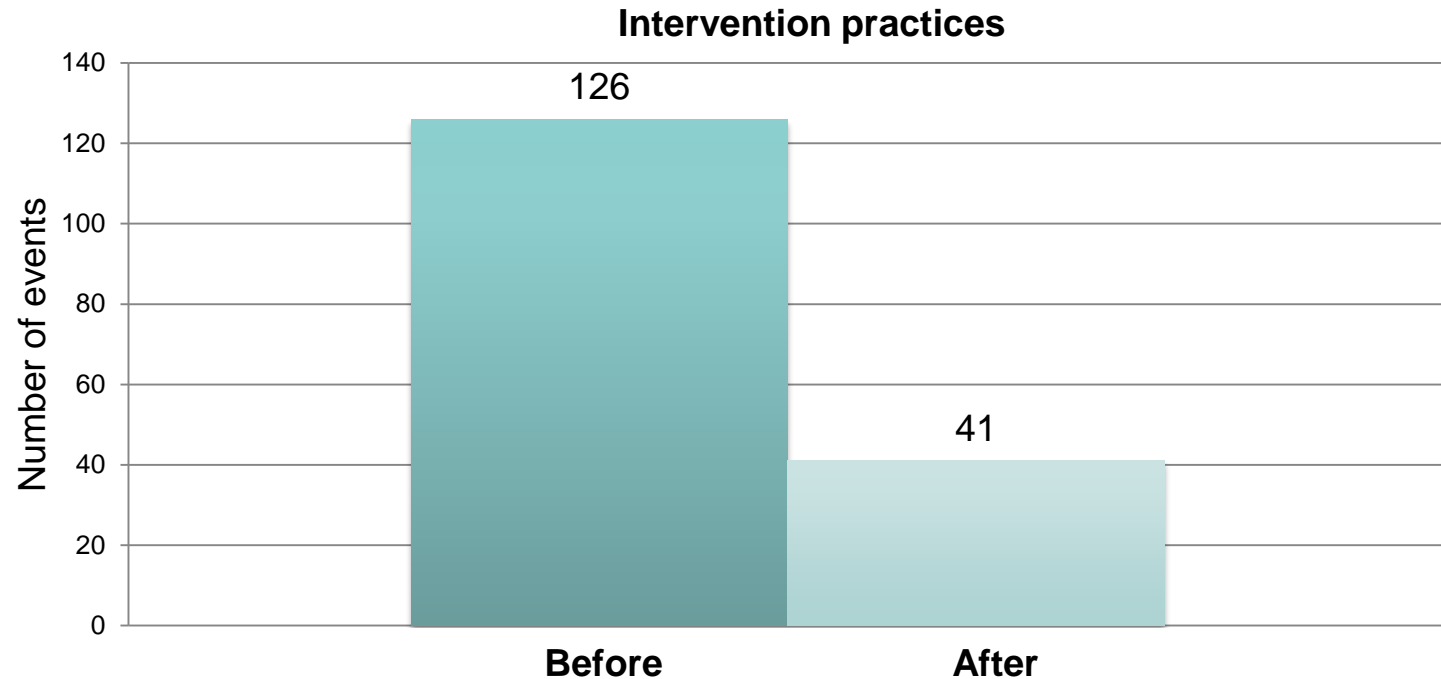
- Potential adverse events in intervention practices declined by almost 70% after participation in the PROMISES program

Number of <u>serious</u> potential adverse events

Intervention practices
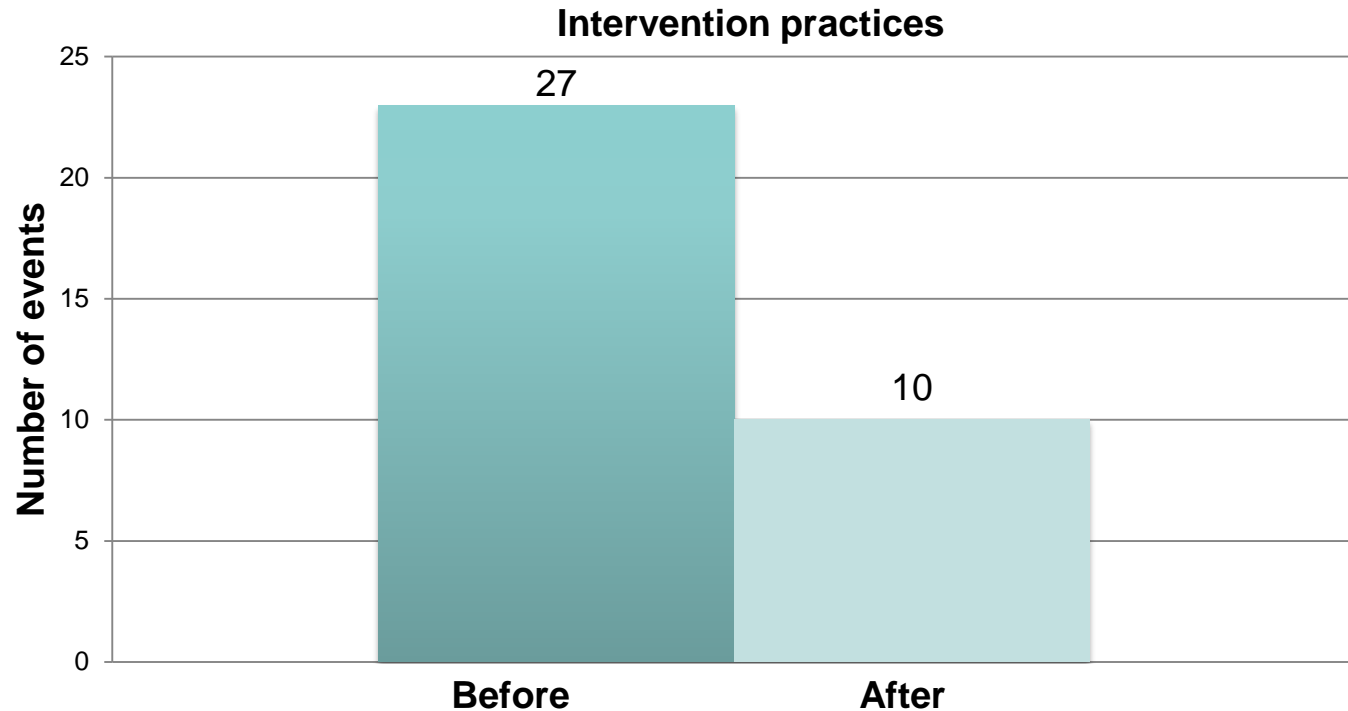
- Serious potential adverse events in intervention practices declined by 57% after participation in the PROMISES program

Tampering

- Reflex actions in response to errors

- Need to understanding/diagnose difference between special cause vs. common cause variation

- Responding to special cause as if it was common cause analogous to availability bias – where fail to weigh true incidence, instead overweigh more vividly recalled event.

Suboptimization
How to recognize and avoid

- Suboptimization refers to the process of optimizing one element of the system at the expense of the other parts of the system and the larger whole.
  - Every lab perfecting own ordering, reporting system
  - Every unit in hospital its own system
  - Ditto every practice and doctor
- Workarounds as both symptoms of and contributor to problems

Workarounds

- Most diagnostic processes developed in an ad hoc fashion over time; filled with workarounds and unnecessary steps and opportunities for error.

- Workaround=bypass problems
  - Often creative, innovative, successful
  - But temporary, suboptimal to fixing problem
  - Can mask embedded problems, inhibit solving
  - Worse yet, may introduce new problems

Redundancy

- Duplication of critical components of a system with the intention of increasing reliability of the system, usually in the case of a backup or fail-safe, or parallel systems

- However to extent redundancy increases complexity, dilutes responsibility and even encourages risk taking, should be questioned as safety strategy.

- Redundant systems can be costly, using valuable resources that could be freed for more reliable, productive system.

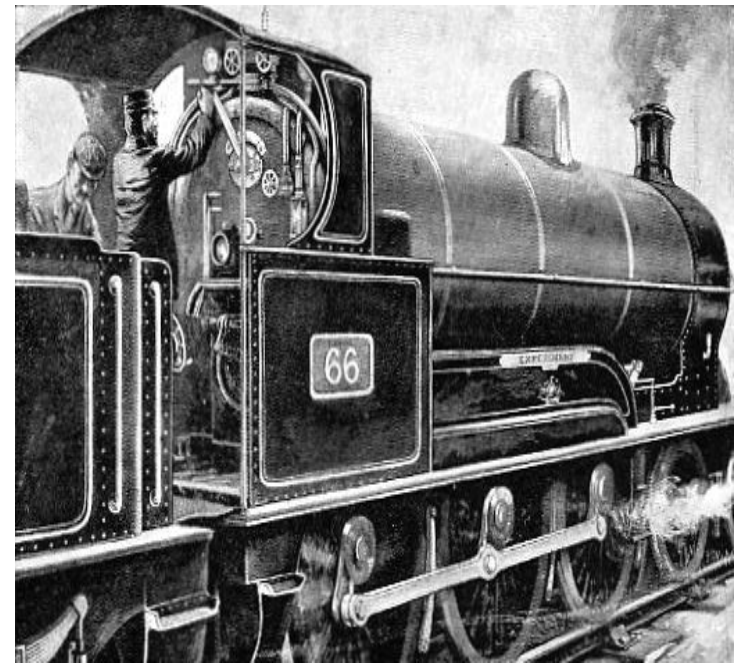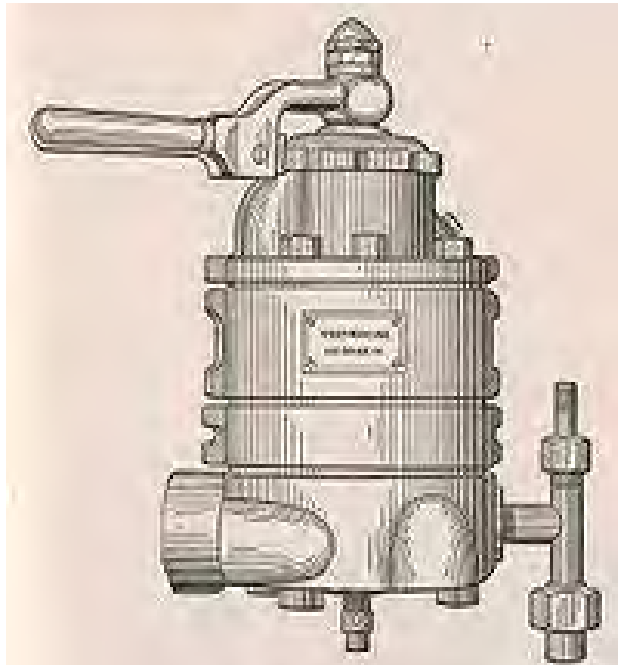PreventingTrain Crashes
with air brakes
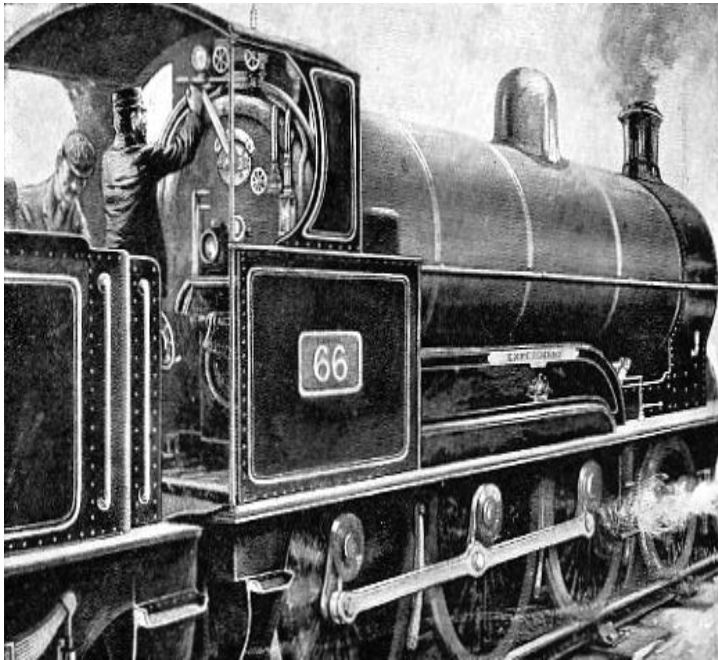
What if air leak?

Direct Air Brakes
  Initial design: ,
Compressed air to apply
pressure to brake pads
to stop the train

NEED TO
DEFAULT in SAFE MODE

Westinghouse Automatic
(Negative Pressure)
Air Brake

Lifts shoe off of wheel until
pressure released

Air Brake Failure – Safer, Visible Mode

- Applying brake drained the air pressure to let the brake rest on the wheel.

- "Air leak failure" resulted in the train coming to an unplanned stop, doubtless annoying but obviously safer in avoiding crashes inherent in previous design
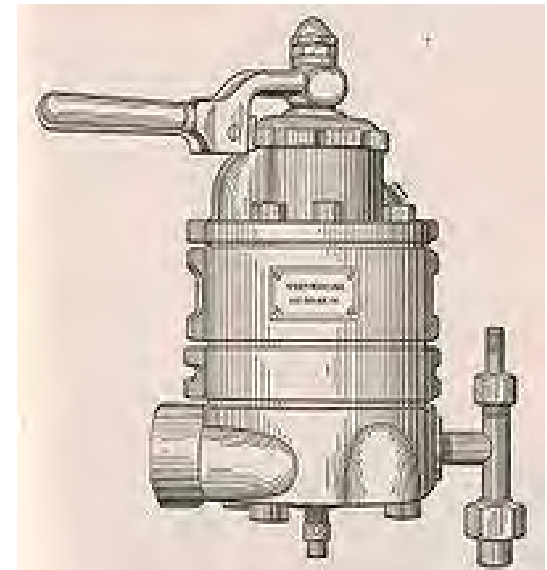
Off the Record — Avoiding the Pitfalls of Going Electronic

Pamela Hartzband, M.D., and Jerome Groopman, M.D.

Many of us remember searching frantically for a lost chart or misfiled laboratory result in the wee hours of the morning as we cared for a sick patient in the emergency ward, or requesting in vain the most recent note from a specialist about a patient who returned to our office after a consultation. The ultimate goal of the electronic medical record — a technological solution being championed by the Bush administration, the presidential candidates, and New York Mayor Michael Bloomberg, as well as Google, Microsoft, and many insurance companies — is to make all patient information immediately accessible and easily transferable and to allow its essential elements to be held by both physician and patient. The history, physical exam findings, medications, laboratory results, and all physicians' opinions will be collected in one place and available at a single keystroke. And there is no doubt that these records offer many benefits. We worry, however, that they are being touted as a panacea for nearly all the ills of modern medicine. Before blindly embracing electronic records, we should consider their current limitations and potential downsides.

As we have increasingly used electronic medical records in our hospital and received them from

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Residents, rushing to complete numerous tasks for large numbers of patients, have sometimes pasted in the medical history and the history of the present illness from someone else's note even before the patient arrives at the clinic. Efficient? Yes. Useful? No.

This capacity to manipulate the electronic record makes it far too easy for trainees to avoid taking their own histories and coming to their own conclusions about what might be wrong. Senior physicians also cut and paste from their own notes, filling each note with the identical medical history, family history, social history, and review of systems.

Writing in a personal and independent way forces us to think and formulate our ideas. Notes that are meant to be focused and selective have become voluminous and templated, distracting from the key cognitive work of providing care.

Such charts may satisfy the demands of third-party payers, but they are the product of a word processor, not of physicians' thoughtful review and analysis. They may be "efficient" for the purpose of documentation but not for creative clinical thinking.

Although the intent may be to ensure thoroughness, in the new electronic sea of results, it becomes difficult to find those that are truly relevant. A colleague at a major cancer center that recently switched to electronic medical records said that chart review during rounds has become nearly worthless. He bemoaned the vain search through meaningless repetition in multiple notes for the single line that represented a new development. "It's like 'Where's Waldo?' " he said bitterly.

Ironically, he has started to handwrite a list of new developments on index cards so that he can refer to them at the bedside.

...we have observed the electronic medical record become a powerful vehicle for perpetuating erroneous information, leading to diagnostic errors that gain momentum when passed on electronically

These problems, we believe, will only worsen, for even as we are pressed to see more patients per hour and to work with greater "efficiency," we must respond to demands for detailed documentation to justify our billing and protect ourselves from lawsuits. Though the electronic medical record serves these exigencies, it simultaneously risks compromising care by fostering a generic approach to diagnosis and treatment.
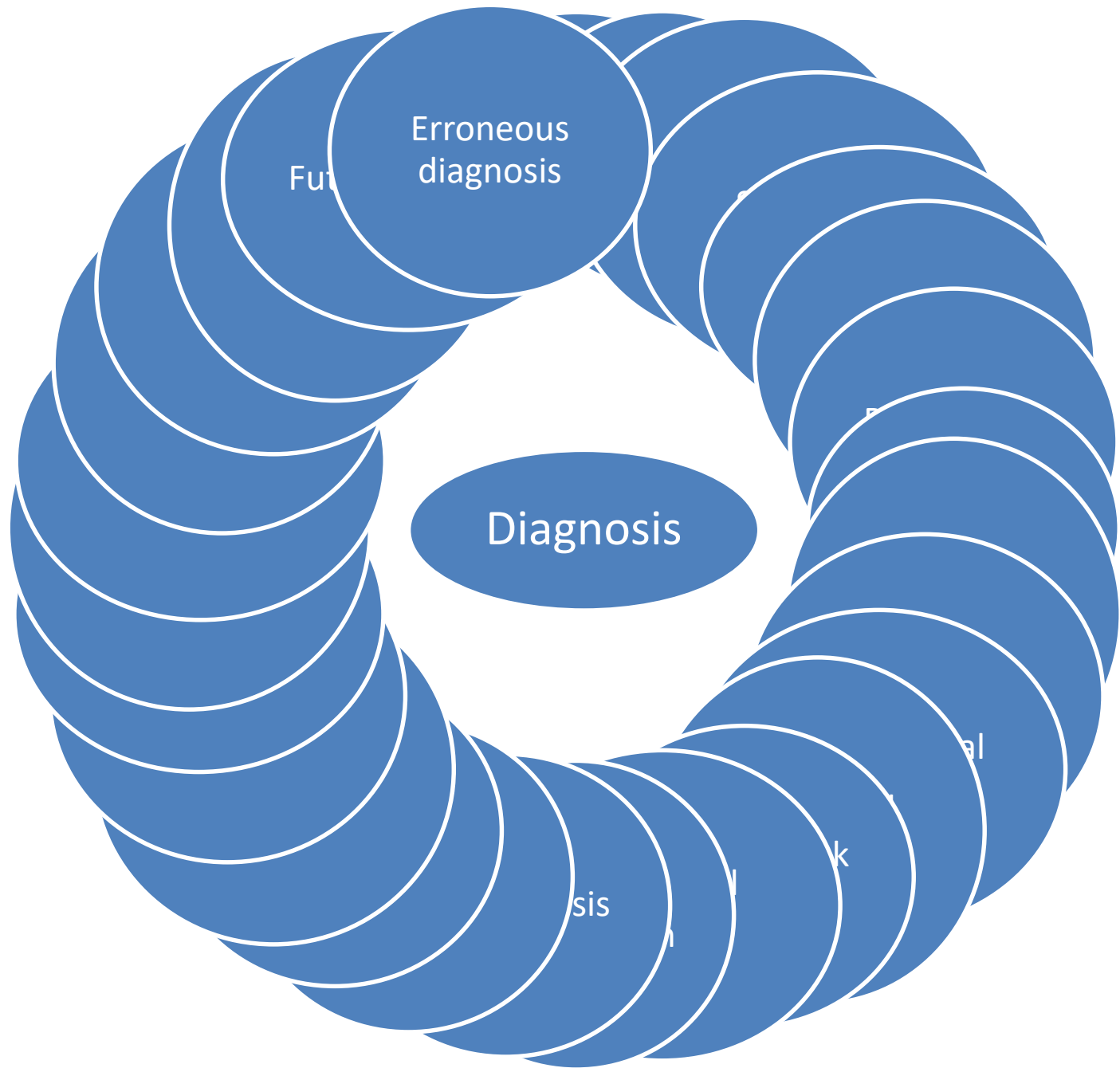
The worst kind of electronic medical record requires filling in boxes with little room for free text. Although completing such templates may help physicians survive a report-card review, it directs them to ask restrictive questions rather than engaging in a narrative-based, open-ended dialogue. Such dialogue can be key to making the correct diagnosis and to understanding which treatment best fits a patient's beliefs and needs.

- **Medscape Primary Care Malpractice Report 2017: Real Physicians. Real Lawsuits.**

- Sandra Levy; Leslie Kane, MA | December 5, 2017 | Contributor Information

- This is PCPS

What Was the Reason for the Lawsuit?

Failure to diagnose/delayed diagnosis	43%
Poor outcome/disease progression	25%
Failure to treat/delayed treatment	20%
Wrongful death	20%
Complications from treatment/surgery	15%
Patient suffered an abnormal injury	8%
Errors in medication administration	6%
Poor documentation of patient instruction and education	2%
Failure to follow safety procedures	1%
Improperly obtaining/lack of informed consent	1%

What is a "Diagnosis" ?

- Preliminary diagnosis
- Working diagnosis
- Differential diagnosis
- Syndromic diagnosis
- Etiologic diagnosis
- Possible diagnosis
- Problem on Problem List
- Tissue diagnosis
- Computer diagnosis (EKG read)
- Deferred diagnosis
- Multiple/dual diagnoses
- Preclinical diagnosis
- Diagnosis/disease risk factor

- Incidental finding
- Diagnosis complication
- Billing diagnosis
- Telephone diagnosis
- Postmortem diagnosis
- Prenatal diagnosis
- Rare diagnosis
- Difficult/challenging diagnosis
- Undiagnosed disease
- Contested diagnoses
- Novel diagnosis
- Futile diagnosis
- **Erroneous diagnosis**