



Healthcare Risk Professionals Impact, Influence, Innovate

Managing Risks Related to Diagnostic Decision Making

Disclaimers

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Please refer to the Presenters' Bios available on the table and online for more information



Objectives

1. Participants will be able to describe the three most significant misdiagnosis-related professional liability claims.
2. Participants will be able to discuss three risk mitigation strategies to improve diagnostic quality and safety.
3. Participants will be able to apply one quality improvement method to evaluate potential causes of diagnostic error events that contribute to patient harm.



Inaccurate or delayed diagnosis is one of the most important safety problems in healthcare today and inflicts the most harm.

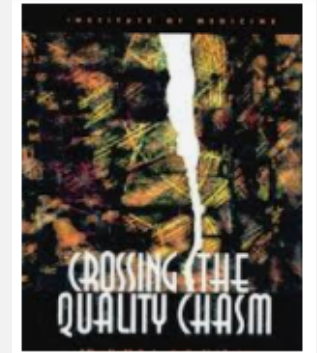
What is “Diagnostic Error”?

The failure to:

- establish an accurate and timely explanation of the patient’s health problem(s); or
- communicate that explanation to the patient.



National Academies of Sciences, Engineering, and Medicine
2015. Improving Diagnosis in Health Care. Washington, DC:
The National Academies Press. <https://doi.org/10.17226/21794>



Other Diagnostic Error Definitions

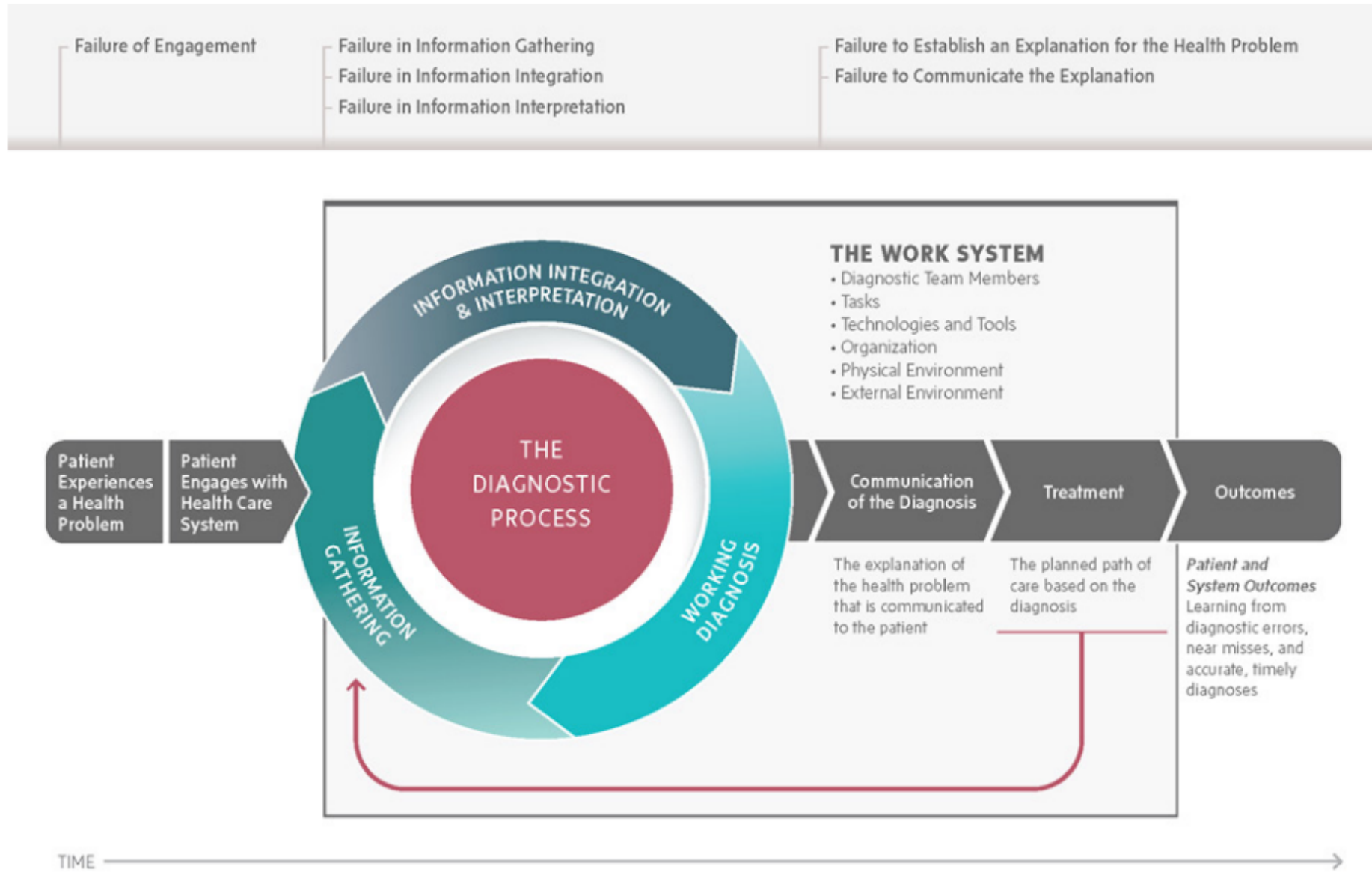
Missed Opportunity

...a failure to make a correct or timely diagnosis resulting from a preventable process failure (omission or commission), given the evolving context at the time, linked to the sociotechnical work system (adapted from Singh, 2014)

Misdiagnosis-related Harm

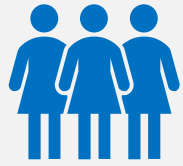
...harm resulting from the delay or failure to treat a condition actually present (when the working diagnosis was wrong or unknown) or from treatment provided for a condition not actually present. (adapted from Newman-Toker, 2009)

FIGURE 2. Places in the diagnostic process where errors can occur



Source: National Academies of Sciences, Engineering, and Medicine. 2015. Improving Diagnosis in Health Care. Washington, DC: The National Academies Press

How
significant
is this
problem in
health
care?



Patient Impact

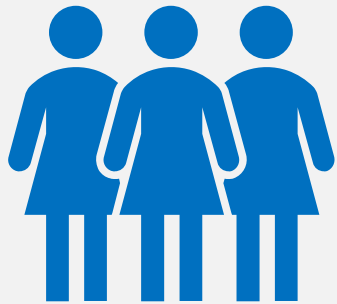


Business Impact



Malpractice Impact

Patient Impact



- Diagnostic errors represent a major public health problem **likely to affect every one of us at least once in our lifetime**, sometimes with devastating consequences.
- Wrong or delayed diagnoses cause more serious harms to patients than any other type of medical error
- 40,000-80,000 people die each year from diagnostic failures in U.S. hospitals alone.
- Diagnostic errors affect more than 12 million Americans each year and may seriously harm one-third of these patients, likely dwarfing all other causes of harm from medical errors combined.
- *Most common cause of medical errors reported by patients.*

Open Notes

JAMA Network Open: Frequency and Types of Patient-Reported Errors in Electronic Health Record Ambulatory Care Notes, June 2020

29,656 respondents, and 1 in 5 patients who read a note reported finding a mistake and 40% perceived the mistake as serious.

Among patient-reported **very serious errors**, the most common characterizations were **mistakes in diagnoses**, medical history, medications, physical examination, test results, notes on the wrong patient, and sidedness.

Bell SK, Delbanco T, Elmore JG, et al. Frequency and Types of Patient-Reported Errors in Electronic Health Record Ambulatory Care Notes. *JAMA Netw Open*. 2020;3(6):e205867. doi:10.1001/jamanetworkopen.2020.5867

Table 3. Categories and Examples of Very Serious Mistakes Reported by Patients

Category	Mistakes, No. (%) (n = 356) ^a	Example of patient-reported mistake
Diagnosis mentioned	98 (27.5)	"The note said I was not BRCA1 when I am BRCA1...My provider, who was surprised, immediately corrected it." "The diagnosis for the visit was incorrect. Although I did receive a referral for physical therapy, it was for the wrong body part. This necessitated two more visits to the clinic...and a significant delay in the treatment of my injury." "It was stated in notes that I had lung cancer. I do not and never have had lung cancer. I did have a spontaneous pneumothorax in 1976, however."
Medical history	85 (23.9)	"Doctor reported that I did not claim to have pain in my hand. I am a pianist and I went specifically because pain was in my hand." "I have been complaining of difficulty breathing [for over 3 mo]. It has been a real and increasing problem for me, but is not mentioned in my notes...in fact, notes saying my breathing is normal, are made for each visit."
Medications or allergies	50 (14.0)	"Not listing my allergy that I have had anaphylaxis with before, prior to being in the operating room." "I found an incorrect dosage on a note that was being used by a referred physician for an infusion. The dosage was incorrect by 10-fold."
Tests, procedures, or results	30 (8.4)	"Pathology report summary stated I had 2 positive lymph nodes but detailed report stated 3 positive lymph nodes. That changes the staging and the treatment options. My physician had only read the summary and didn't realize I had 3 positive lymph nodes." "Was counseled to have an elective abortion for blighted ovum because the sac had reached 25 mm without fetal pole or yolk sac being visible on ultrasound. [I] compared [the] note to my ultrasound report [which] noted it was only 2.5 mm."
Physical examination	24 (6.7)	"The notes reflect exams not done in the exam room. As a medical profession I find this alarming"





A Downward Spiral, Daniel Rodriguez's Story

Long Island, New York

[Read More](#)



Symptom or Side Effect?, Mildred Barker's Story

Davis, CA

[Read More](#)



Running Against the Clock, Alex James' Story

Houston, Texas

[Read More](#)



The Missed Bilirubin Test, Cal Sheridan's Story

Boise, ID

[Read More](#)



From Stage 1 Melanoma to Unexplained Blood Loss, Kellie Schroeder's Story

Atlanta, GA

[Read More](#)



The Overlooked Clot, Yogiraj Charles Bates' Story

Temecula, CA

[Read More](#)



Unbelieved, Jessica Barnett's Story

Greenwich, Nova Scotia, CA

[Read More](#)



The Perfect Storm, Kimberly Rodgers' Story

Chicago, IL

[Read More](#)

Business Impact



- Improving the accuracy and timeliness of diagnoses will reduce costs from inappropriate testing, wrong treatments, and malpractice lawsuits, potentially saving over \$100 billion per year. (NAM)
- In addition to causing physical harm, misdiagnosis also has a significant financial impact on the U.S. economy, individual patients, and businesses.
- Another IOM report estimates that 30% of annual healthcare spending in the United States, approximately \$750 billion, is wasted on unnecessary services and other inefficiencies.

Best Care at Lower Cost: The Path to Continuously Learning Health Care in America. Mark Smith, Robert Saunders, Leigh Stuckhardt, and J. Michael McGinnis, Editors. <http://www.nap.edu/catalog/13444>

Malpractice Impact



- Diagnostic errors—not surgical mistakes or medication overdoses—accounted for the largest fraction of malpractice claims, the most severe patient harm, and the highest total of penalty payouts.
- Of the 350,706 paid claims, diagnostic errors were the leading type (28.6 %) and accounted for the highest proportion of total payments (35.2 %).
- Diagnostic errors resulted in death or disability almost twice as often as other error categories.
- Diagnosis-related payments amounted to \$38.8 billion between 1986 and 2010.

Ali S Saber Tehrani, HeeWon Lee, Simon C Mathews, Andrew Shore, Martin A Makary, Peter J Pronovost, David E Newman-Toker. 25-Year summary of US malpractice claims for diagnostic errors 1986–2010: an analysis from the National Practitioner Data Bank. *BMJ Qual Saf*, 22 April 2013 DOI: [10.1136/bmjqs-2012-001550](https://doi.org/10.1136/bmjqs-2012-001550)



DIAGNOSTIC ERROR

Malpractice Claim Trends

Diagnostic Error Claim Trends

Misdiagnosis-related harm is harm resulting from the **delay** or **failure** to treat a condition *actually present*, when the working diagnosis was wrong or unknown, or from treatment provided for a condition not actually present.

Data derived from CRICO claims database (2006-2015), representing about 28.7% of U.S. malpractice claims

- 55,377 closed claims, analyzed 11,592 diagnostic error cases (21% of cases)
- 74.1% of the high-severity cases (n = 7,379) involved the “Big Three.”

Cancers (37.8% of big three): **Lung**

Vascular events (22.8% of big three): **Stroke**

Infections (13.5% of big three): **Sepsis**



David E. Newman-Toker*, Adam C. Schaffer, C. Winnie Yu-Moe, Najlla Nassery, Ali S. Saber Tehrani, Gwendolyn D. Clemens, Zheyu Wang, Yuxin Zhu, Mehdi Fanai and Dana Siegal*

Serious misdiagnosis-related harms in malpractice claims: The “Big Three” – vascular events, infections, and cancers

- 71.2% (n = 5257/7379) of high-severity cases occurred in **EDs or outpatient clinics**
- High-severity cases from EDs and inpatient settings were disproportionately from vascular events and infections.

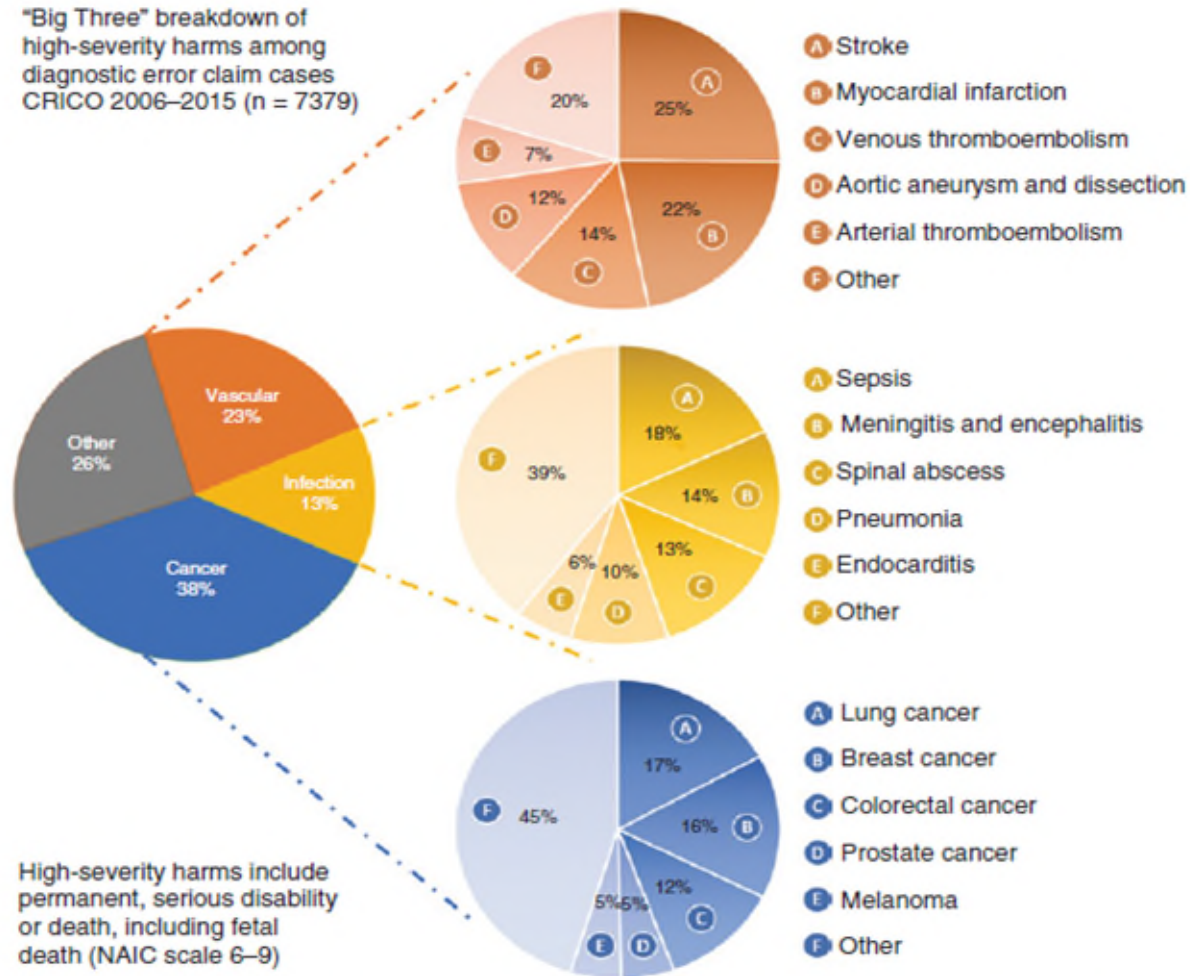


Table 2: Payments in high-severity harm malpractice claims by Big Three category and disease (n=7379).

Big Three category and disease	Cases, n	Cases with paid ^a Claims, n (% ^b)	Total payments, \$	Mean per-claim payout (all), \$	Mean per-claim payout (paid ^a only), \$	Rank ^c
Vascular						
Stroke	424	168 (39.6%)	\$134,278,886	\$316,695	\$799,279	#4
Myocardial infarction	367	172 (46.9%)	\$120,050,269	\$327,112	\$697,967	#7
Venous thromboembolism	239	106 (44.4%)	\$74,219,293	\$310,541	\$700,182	#6
Aortic aneurysm and dissection	191	91 (47.6%)	\$58,621,501	\$306,919	\$644,192	#10
Arterial thromboembolism	123	58 (47.2%)	\$32,543,403	\$264,581	\$561,093	#15
Other vascular	340	129 (37.9%)	\$99,264,302	\$291,954	\$769,491	NA
All vascular	1684	724 (43.0%)	\$518,977,654	\$308,182	\$716,820	NA
Infection						
Sepsis	179	65 (36.3%)	\$51,408,008	\$287,196	\$790,892	#5
Meningitis and encephalitis	136	60 (44.1%)	\$69,149,562	\$508,453	\$1,152,493	#2
Spinal abscess	131	66 (50.4%)	\$95,674,011	\$730,336	\$1,449,606	#1
Pneumonia	97	33 (34.0%)	\$29,108,022	\$300,083	\$882,061	#3
Endocarditis	57	21 (36.8%)	\$12,580,534	\$220,711	\$599,073	#11
Other infection	392	156 (39.8%)	\$144,053,537	\$367,484	\$923,420	NA
All infection	992	401 (40.4%)	\$401,973,674	\$405,215	\$1,002,428	NA
Cancer						
Lung cancer	472	178 (37.7%)	\$104,937,298	\$222,325	\$589,535	#12
Breast cancer	434	188 (43.3%)	\$110,332,523	\$254,222	\$586,875	#13
Colorectal cancer	334	128 (38.3%)	\$85,208,445	\$255,115	\$665,691	#9
Prostate cancer	147	71 (48.3%)	\$41,365,887	\$281,401	\$582,618	#14
Melanoma	142	66 (46.5%)	\$45,704,472	\$321,862	\$692,492	#8
Other cancer	1264	452 (35.8%)	\$328,025,177	\$259,514	\$725,719	NA
All cancer	2793	1083 (38.8%)	\$715,573,803	\$256,203	\$660,733	NA
Aggregate						
Big Three total	5469	2208 (40.4%)	\$1,636,525,131	\$299,237	\$741,180	NA
Total "Top 5" for Big Three ^d	3473	1471 (42.4%)	\$1,065,182,114	\$306,704	\$724,121	NA
Total of "Other" for Big Three ^d	1996	737 (36.9%)	\$571,343,016	\$286,244	\$775,228	NA
Non-Big Three (all others)	1910	818 (42.8%)	\$682,853,806	\$357,515	\$834,785	NA
Grand total	7379	3026 (41.0%)	\$2,319,378,937	\$314,322	\$766,483	NA

^aPaid refers to those cases with a non-zero indemnity payment compensating harms, whether this occurred through settlement, arbitration, or legal judgment. Unpaid claims are those with \$0 indemnity payment, though there may still be an "expenses" payment associated with the claim (i.e. case management cost, including legal fees, which can be substantial, especially for cases going to trial and ending in a defense verdict). ^bPercentage represents the fraction of all claims for that row that were "paid" as per the definition listed in footnote "a". ^cRank represents the rank order from the highest (#1) to the lowest (#15) by mean per-claim payment (paid claims only) for specific diseases. ^d"Other" and total rows are not considered in the payment ranking. ^eThe "Top 5" diseases represent the five most common from each Big Three category (vascular events, infections, and cancers). The "Other" diseases represent the aggregation of all other cases within that Big Three category. Together, "Top 5" and "Other" sum to the Big Three total. NA, not applicable.

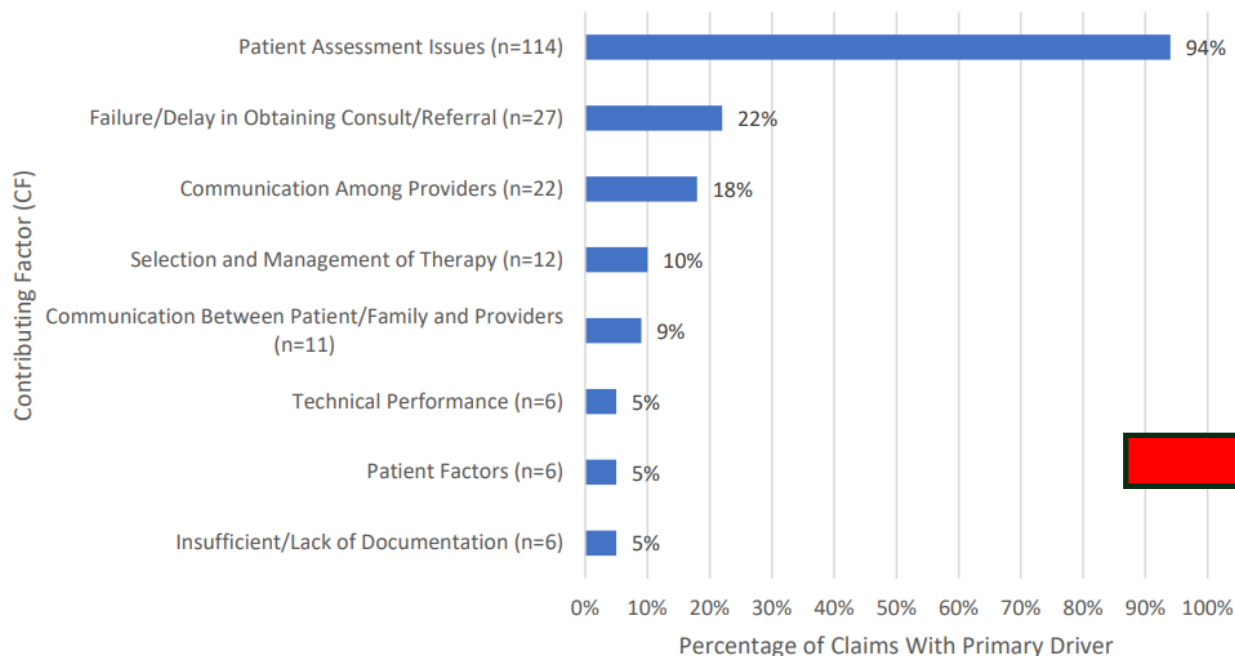


Understanding Diagnosis-Related Medical Malpractice Claims With Indemnities Over \$1 Million

Jacqueline Ross, RN, PhD, Coding Director, and Kathrine Soulsby, RN, BSN, Senior Patient Safety Analyst, Department of Patient Safety and Risk Management, The Doctors Company, Part of TDC Group



The Primary Drivers in Diagnosis-Related Claims With >\$1 Million in Indemnity, Claims 2010–2020 (n=121)



Study found [HERE](#)

MITIGATING HIGH-INDEMNITY MALPRACTICE CLAIMS

From 2010 to 2022, medical malpractice awards greater than \$500,000

INCREASED 100%



41 states have recently reported verdicts greater than

\$10 MILLION



CONTRIBUTING FACTORS TO HIGH-INDEMNITY CLAIMS

Diagnostic errors are a common thread in high-indemnity claims.



94%

of high-indemnity claims involving diagnostic errors had **patient assessment issues** as primary drivers of the claim

MOST COMMON PATIENT ASSESSMENT ISSUES

80%

of claims involved **initial diagnostic assessment**

Top primary driver:
Failure to or a delay in ordering a diagnostic test

45%

of claims involved **testing and results processing**

Top primary driver:
Misinterpretation of diagnostic studies, such as x-rays, slides, etc.

50%

of claims involved **follow-up and coordination**

Top primary driver:
Failure to or a delay in obtaining a consult

CONDITIONS INVOLVED IN DIAGNOSTIC ERROR CLAIMS

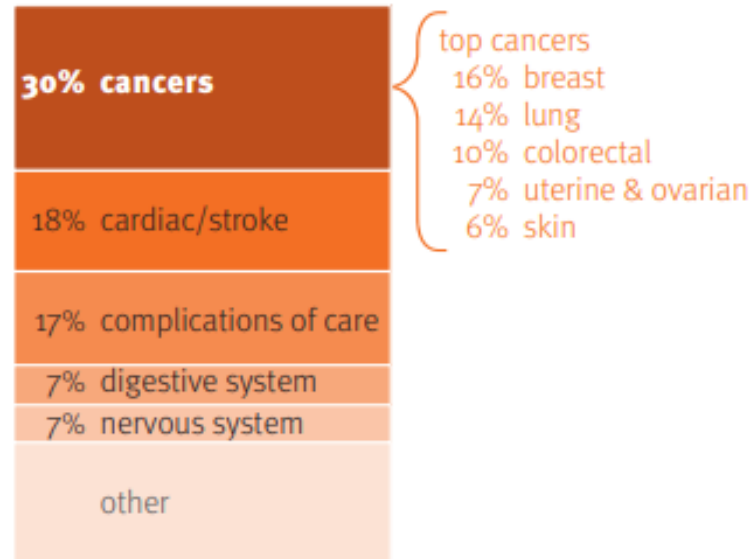
23% Malignancies
12% Infection
8% Embolism/thrombosis



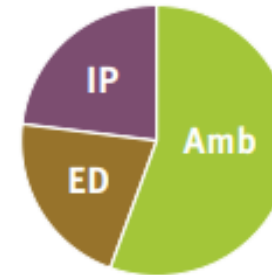
Diagnosis Cases

Among a wide range of missed or delayed diagnoses, cancers were consistently most prevalent.

FINAL DIAGNOSES IN MISSED/DELAYED DIAGNOSIS CASES



CARE SETTING



DIAGNOSIS CASES

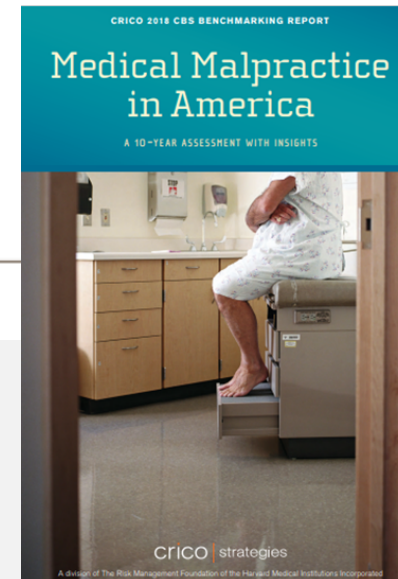
21%	of all cases
28%	of all losses
35%	closed with payment
\$472K	average indemnity
\$213K	median indemnity

ODDS RATIO FOR DIAGNOSIS CASES

compared to non-diagnosis cases

3.43	to involve a high-severity injury
1.16	to close with payment
1.72	to close with payment \$1M+

Care settings are Ambulatory, Inpatient, and Emergency Department



CRICO 2018 CBS Benchmarking Report: Medical Malpractice in America – A Ten-Year Assessment with Insights

DIAGNOSTIC PROCESS OF CARE

% DIAGNOSIS CASES*

PHASE 1: INITIAL DIAGNOSTIC ASSESSMENT

1. Problem Noted, Care Sought Access issues impede the patient from seeking care.	1%
2. History and Physical Conducted Patient's history is not updated; physical examination is absent or inadequate.	10%
3. Patient Assessed and Symptoms Evaluated Patient's complaints or symptoms are not thoroughly addressed.	35%
4. Differential Diagnosis Established Narrow diagnostic focus, failure to establish a differential diagnosis.	39%
5. Diagnostic Test(s) Ordered Ordering of appropriate tests/imaging is impeded by an incomplete or biased assessment.	36%

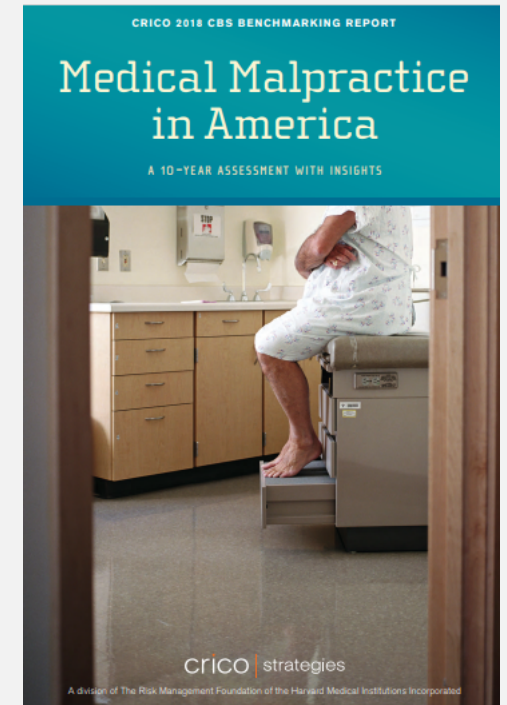
PHASE 2: TESTING AND RESULTS PROCESSING

6. Test Performed Ordered test/imaging not performed, performed incorrectly, or mislabeled/mishandled.	4%
7. Test Interpreted Incomplete or inaccurate reports; abnormal findings not ruled out.	26%
8. Test Results Transmitted to/Received by Ordering Physician Receipt/review of test result by ordering clinician incomplete or delayed.	5%

PHASE 3: FOLLOW UP AND COORDINATION

9. Physician Follows Up with Patient Findings not communicated to patient, follow up not arranged or not documented.	21%
10. Referrals/Consults Appropriate referrals not made or adequately managed.	24%
11. Patient Information Communicated Among Care Team Failure to fully review/share information that influences ongoing diagnostic process.	16%
12. Patient and Providers Establish Follow-up Plan Patient fails to adhere to the follow-up plan, appointments, or treatment regimen.	17%

*Diagnosis cases in the ambulatory care setting. Cases may have multiple issues.



**The majority of
(ambulatory care)
patients in diagnosis-
related cases
encountered problems
at multiple points
along the diagnostic
process**

CRICO 2018 CBS Benchmarking Report: Medical Malpractice in America
– A Ten-Year Assessment with Insights



Healthcare Risk Professionals Impact, Influence, Innovate

Risk Management Issues Identified

26,506 specific causal factors identified in high-severity harm cases

- Only 2.5% of cases with no RM issue identified

Clinical judgment factors dominated:

- Failure or delay in ordering a diagnostic test
- Narrow diagnostic focus with failure to establish a differential diagnosis
- Failure to appreciate and reconcile relevant symptoms, signs or test results
- Failure or delay in obtaining consultation or referral
- Misinterpretation of diagnostic studies (imaging, pathology, etc.)

Distant second and third causal factors:

- Communication factors and clinical systems factors

Aon/ASHRM Hospital and Physician Professional Liability Benchmark Analysis, October 2020

Top Allegations by Type - All APPs

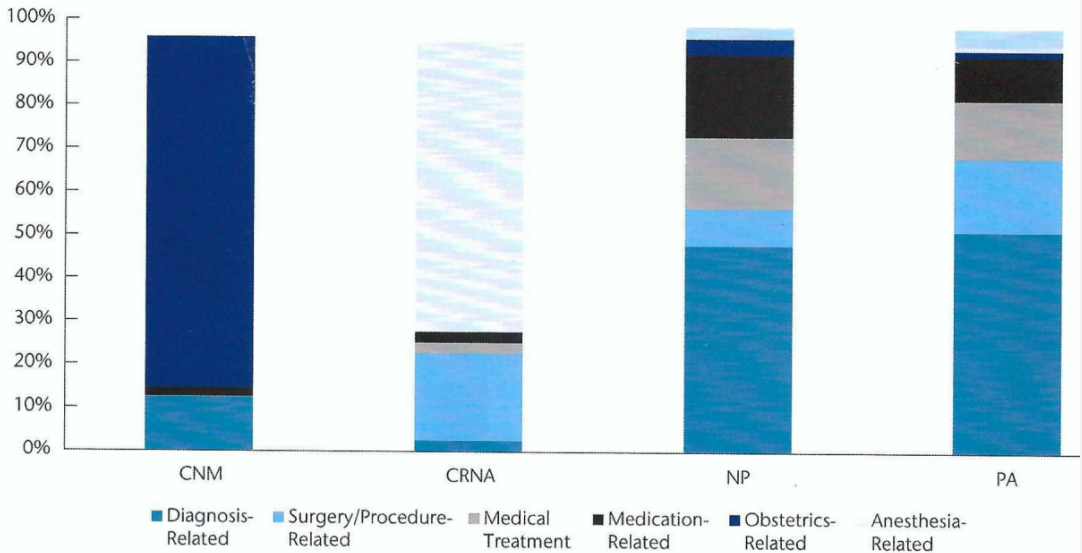


Figure 2.
N=400 closed claims from 2015-2019 with a named Advanced Practice Provider

400 closed claims involving 400 APP defendants, across 5-year period 2015-2019

Diagnosis Related Allegations - All APPs

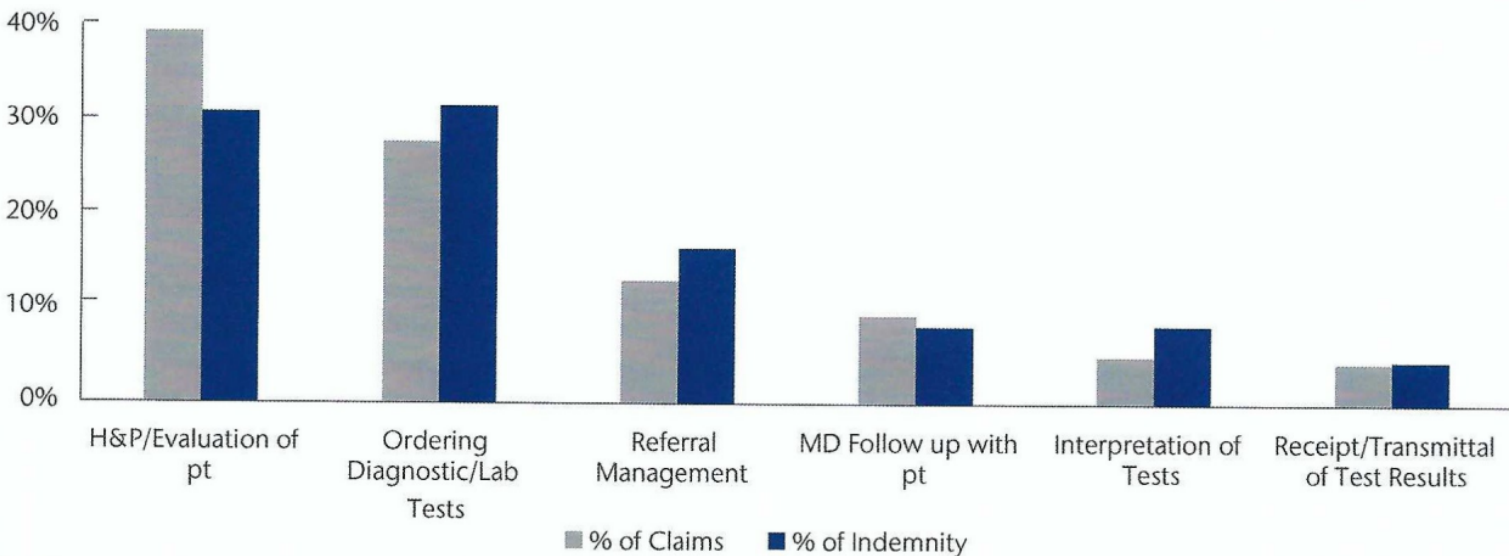


Figure 3.
N=162 closed claims from 2015-2019 with a named Advanced Practice Provider and a Diagnosis related Allegation



Nurse Practitioner Professional Liability Exposure Claim Report: 5th Edition

Minimizing Risk, Achieving Excellence

Analysis of Diagnosis-related Allegations

Diagnosis-related allegations have represented the most frequent allegation in the 2012, 2017 and 2022 datasets.

In the 2022 dataset, **diagnosis-related claims** represent the **highest percentage of claims at 37.1 percent** and have an **average total incurred of \$385,947**, which is greater than the overall average total incurred of \$332,137.

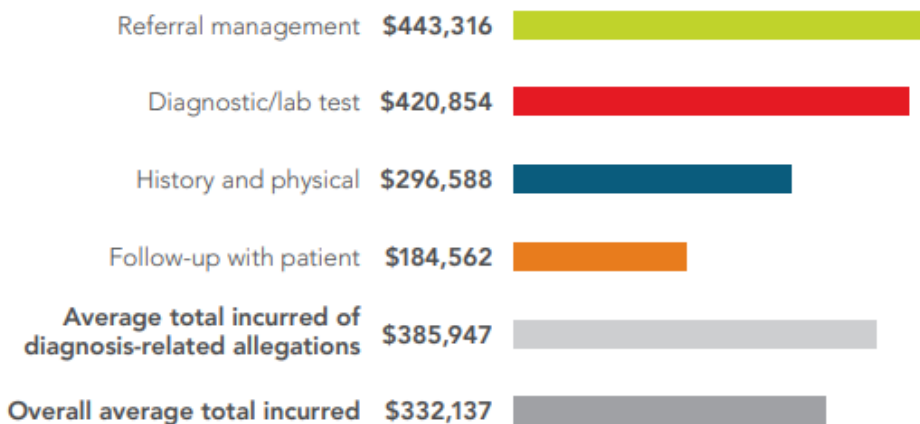
KEY FINDING



13 Severity of Diagnosis-related Allegations

Closed Claims with Paid Indemnity of $\geq$ \$10,000

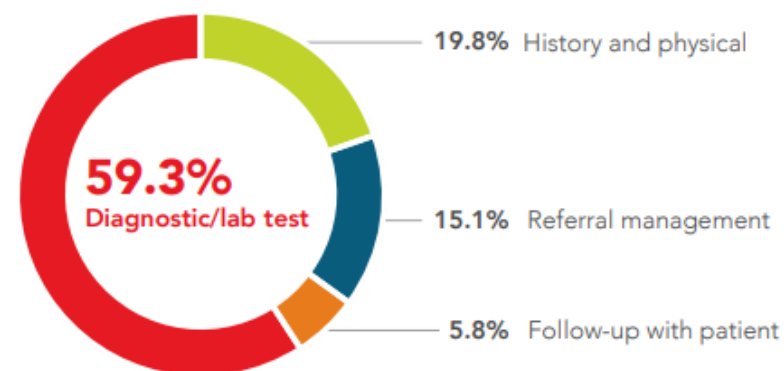
This figure highlights only those causes of death with the highest distribution.



14 Distribution of Diagnosis-related Allegations

Closed Claims with Paid Indemnity of $\geq$ \$10,000

This figure highlights only diagnosis-related allegations.



A Start to Risk Mitigation Activities:

- Conduct a detailed risk assessment of the process to reconcile lab and test results, particularly in outpatient settings.
 - Assess from the order of a test all the way through to documented patient notification.
- Use “diagnostic huddles” to discuss challenging cases with symptoms that are unusual or not improving as expected, or for determining whether anything has been missed.
- Engage in teamwork and communication training.

The Safer Dx Checklist: 10 High-Priority Practices for Diagnostic Excellence

(Scenarios are examples of actions to improve the practices)

Implementation Status
(Current state of
organization's practices)

Full Partial Not
Implemented

1	Health care organization leadership builds a “board-to-bedside” accountability framework that includes structure, capacity, transparency, time, and resources to measure and improve diagnostic safety. Scenario 1: Senior leadership/C-suite establish a multidisciplinary team (e.g., diagnostic safety committee) charged with identifying and addressing opportunities to reduce errors at the institutional level. The team includes department leaders and clinical champions. Scenario 2: Senior leadership/C-suite consistently share diagnostic safety data with the governance board. This includes quantitative data to measure and track diagnostic safety as well as narrative patient stories, patterns, and action plans.	☐ ☐ ☐
2	Health care organization promotes a just culture and creates a psychologically safe environment that encourages clinicians and staff to share opportunities to improve diagnostic safety without fear of retribution. Scenario: Ensure non-punitive conditions that encourage clinical and non-clinical staff to report missed opportunities, harms, “good catches,” tips, and lessons related to diagnostic safety. Close the loop and share information on corrective actions or steps taken to prevent recurrence in a timely and effective manner.	☐ ☐ ☐
3	Health care organization creates feedback loops to increase information flow about patients’ diagnostic and treatment-related outcomes. These loops, which include clinicians and external organizations, establish mechanisms for capturing, measuring, and providing feedback to the diagnostic team about patients’ subsequent diagnoses and clinical outcomes. Scenario: Implement systems that allow clinicians (e.g., emergency or primary care physicians, advanced practice providers, trainees) to efficiently and reliably follow up on patients they cared for (e.g., follow up on admitted patients to learn if diagnosis changed or evolved).	☐ ☐ ☐



RECOGNIZING EXCELLENCE IN DIAGNOSIS Recommended Practices for Hospitals July 2022

Leapfrog Report found [HERE](#)

Institute for Healthcare Improvement, found [HERE](#)

8

Health care organization has in place standardized systems and processes to encourage direct, collaborative interactions between treating clinical teams and diagnostic specialties (e.g., laboratory, pathology, radiology) in cases that pose diagnostic challenges.

Scenario 1: Encourage [regular diagnostic planning huddles](#) or [synchronous communication](#), such as direct face-to-face [interaction](#) or electronic group collaboration.

Scenario 2: Encourage regular review of diagnostic errors jointly with diagnostic specialties and treating clinical groups, such as through [interdepartmental morbidity and mortality rounds](#). Such activities should lead to joint ownership of improvement efforts.

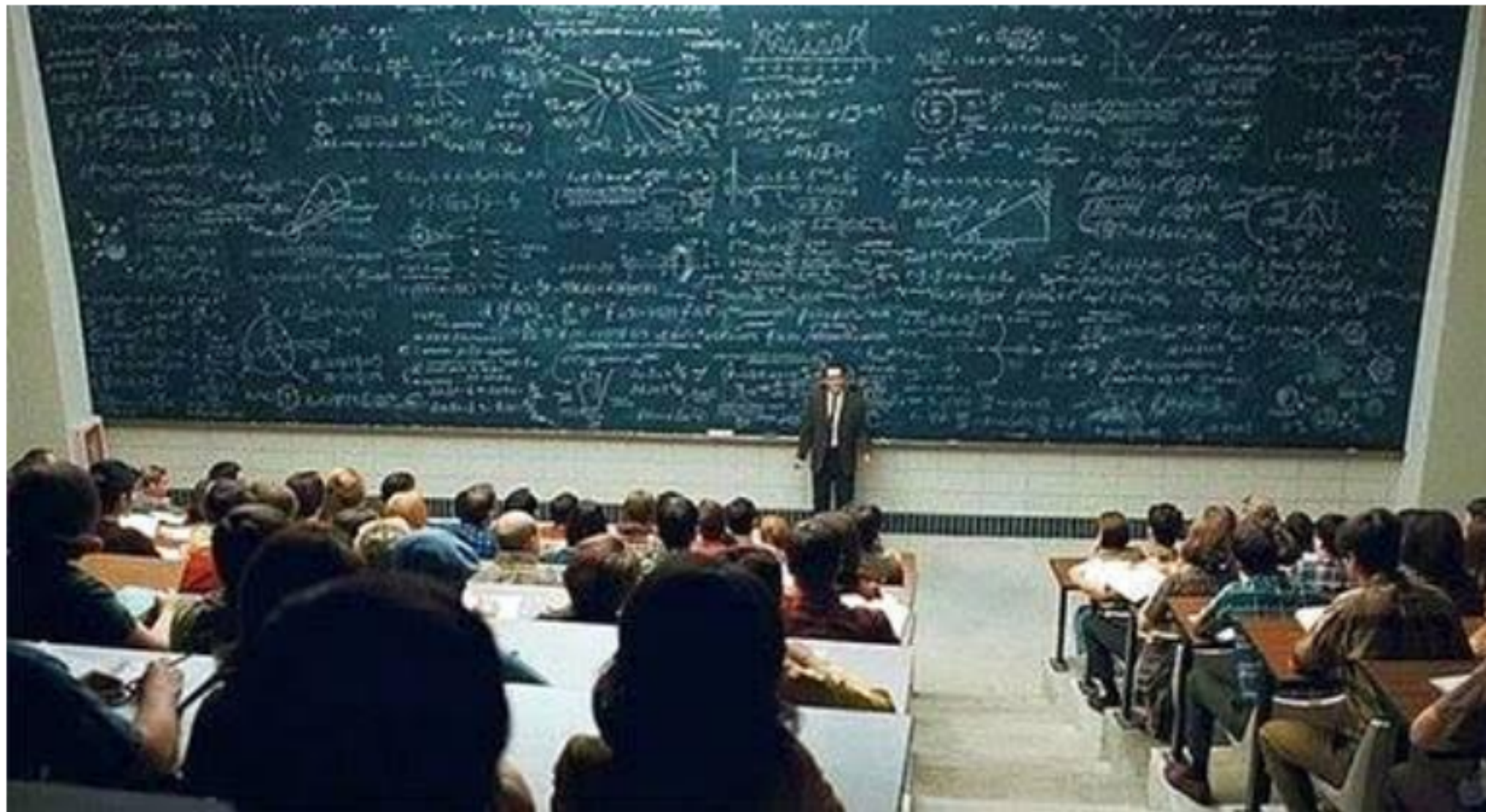


How do we find these events before they find us in litigation?

- Refine event reporting categories.
- Follow-up with patients recently discharged or recently seen in the ER, and those returning to an outpatient setting with continuing complaints.
 - Partner with Patient Experience:
I don't want to pay my ED bill because they missed my arm fracture!
- Ask the physicians who can be your diagnostic “champion” to receive reports.
- Use “trigger tools” to identify cases at high risk for error from the electronic medical records.

**How do we
untangle
these events?**





Safer Dx Instrument

Screening tool to help determine the presence or absence of a diagnostic error for a specific episode of care.

The tool helps the reviewer think through the five main aspects of the diagnostic process described in the Safer Dx Framework:

1. The patient-provider encounter (H&PE, ordering tests/referrals based on assessment);
2. performance and interpretation of diagnostic tests;
3. follow-up and tracking of diagnostic information over time;
4. subspecialty and referral-specific factors; and
5. patient-related factors.

Singh, Hardeep, Khanna, Arushi, Spitzmueller, Christiane and Meyer, Ashley N.D..
"Recommendations for using the Revised Safer Dx Instrument to help measure and improve diagnostic safety" *Diagnosis*, vol. 6, no. 4, 2019, pp. 315-323. <https://doi.org/10.1515/dx-2019-0012>



The Safer Dx Instrument: Items for Determining Presence or Absence of a Diagnostic Missed Opportunity

Rate the following items for the episode of care under review:

1—2—3—4—5—6—7

1 = Strongly Disagree

7 = Strongly Agree

	Item	Score
1.	The documented history was suggestive of an alternate diagnosis, which was not considered in the diagnostic process.	
2.	The documented physical exam was suggestive of an alternate diagnosis, which was not considered in the diagnostic process.*	
3.	Data gathering through history, physical exam, and review of prior documentation (including prior laboratory, radiology, pathology or other results) was incomplete, given the patient's medical history and clinical presentation.	
4.	Alarm symptoms or "Red Flags" (i.e. features in the clinical presentation that are considered to predict serious disease) were not acted upon.	
5.	The diagnostic process was affected by incomplete or incorrect clinical information given to the care team by the patient or their primary caregiver.	
6.	The clinical information (i.e. history, physical exam or diagnostic data) should have prompted additional diagnostic evaluation through tests or consults.	
7.	The diagnostic reasoning was not appropriate, given the patient's medical history and clinical presentation.	
8.	Diagnostic data (laboratory, radiology, pathology or other results) available or documented were misinterpreted in relation to the subsequent final diagnosis.	
9.	There was missed follow-up of available or documented diagnostic data (laboratory, radiology, pathology or other results) in relation to the subsequent final diagnosis.	
10.	The differential diagnosis was not documented OR The documented differential diagnosis did not include the subsequent final diagnosis.	
11.	The final diagnosis was not an evolution of the care team's initial presumed diagnosis (or working diagnosis).	
12.	The clinical presentation at the initial or subsequent presentation was mostly typical of the final diagnosis.	
13.	In conclusion, based on all the above questions, the episode of care under review has a missed opportunity to make a correct and timely diagnosis.	

* Physical exam includes vital signs

Additional information, please check "Yes" if applicable:

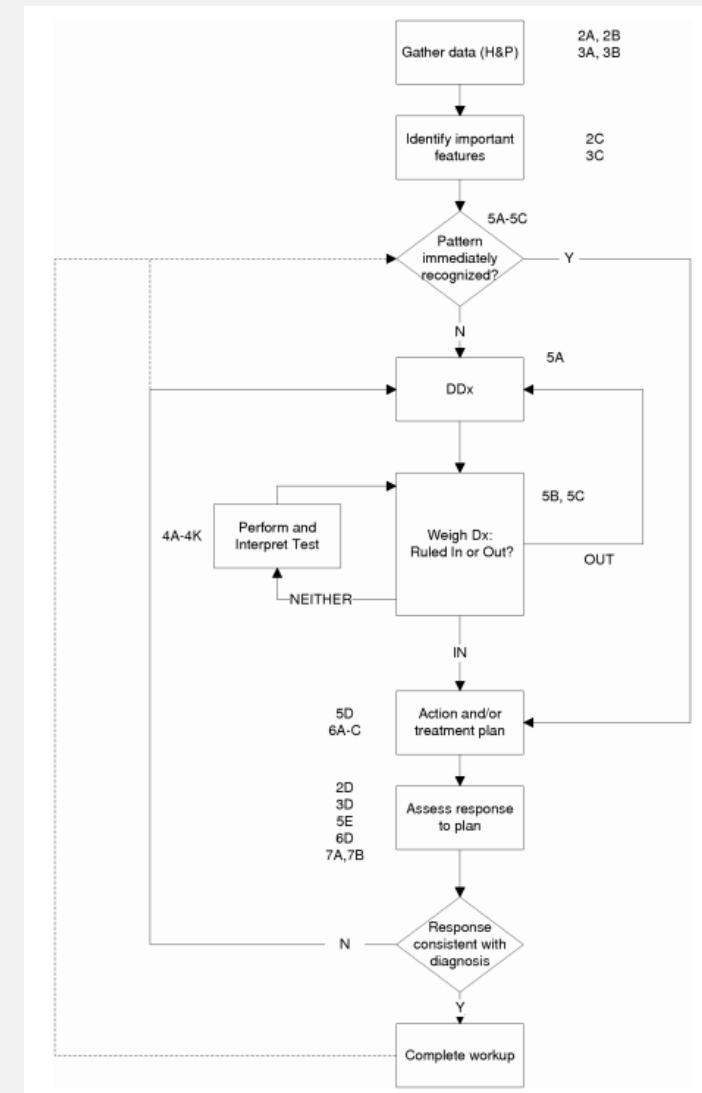
1. Care episode involves a management error. ☐ Yes
2. Care escalation (e.g. hospitalization at subsequent visit) was related to worsening of an original correctly diagnosed condition that the patient initially presented with (rather than from something being missed initially) ☐ Yes
3. Patient initially refused admission or additional evaluation. ☐ Yes

Brief description of missed diagnostic opportunity or management error and any relevant thoughts and observations

Where in Diagnostic Process (~Anatomic localization)		What Went Wrong (~Lesion)
1. Access/Presentation	A	Failure/Delay in <i>presentation</i>
	B	Failure/denied care access
2. History	A	Failure/delay in <i>eliciting</i> critical piece of history data
	B	Inaccurate/misinterpretation "
	C	Failure in weighing "
	D	Failure/delay to follow-up "
3. Physical Exam	A	Failure/delay in eliciting critical physical exam finding
	B	Inaccurate/misinterpreted "
	C	Failure in weighing "
	D	Failure/delay to follow-up *
4. Tests (Lab/Radiology)	Ordering	
	A	Failure/delay in ordering needed test(s)
	B	Failure/delay in performing ordered test(s)
	C	Error in test sequencing
	D	Ordering of wrong test(s)
	E	Test ordered wrong way
	Performance	
	F	Sample mixup/mislabeled (eg wrong patient/test)
	G	Technical errors/poor processing of specimen/test
	H	Erroneous lab/radiol reading of test
	I	Failed/delayed reporting of result to clinician
	Clinician processing	
	J	Failed/delayed follow-up of (abnl) test result
	K	Error in clinician interpretation of test
5. Assessment	Hypothesis Generation	
	A	Failure/delay in <i>considering</i> the diagnosis
	Suboptimal weighing/prioritizing	
	B	Too little consideration/weight given to the diagnosis
	C	Too much weight on <i>competing/coexisting</i> diagnosis
	Recognizing Urgency/Complications	
	D	Failure/delay to recognize/weigh <i>urgency</i>
	E	Failure/delay to recognize/weigh <i>complication(s)</i>
6. Referral/Consultation	A	Failure/Delay in <i>ordering referral</i>
	B	Failure/delay obtaining/scheduling ordered referral
	C	Error in diagnostic consultation performance
	D	Failed/delayed communication/follow-up of consultation
7. Follow-up	A	Failure to refer patient to close/safe setting/monitoring
	B	Failure/delay in timely follow-up/rechecking of patient

Figure 2 Diagnosis Error Evaluation and Research (DEER) taxonomy.

Diagnosis Error Evaluation and Research (DEER) taxonomy



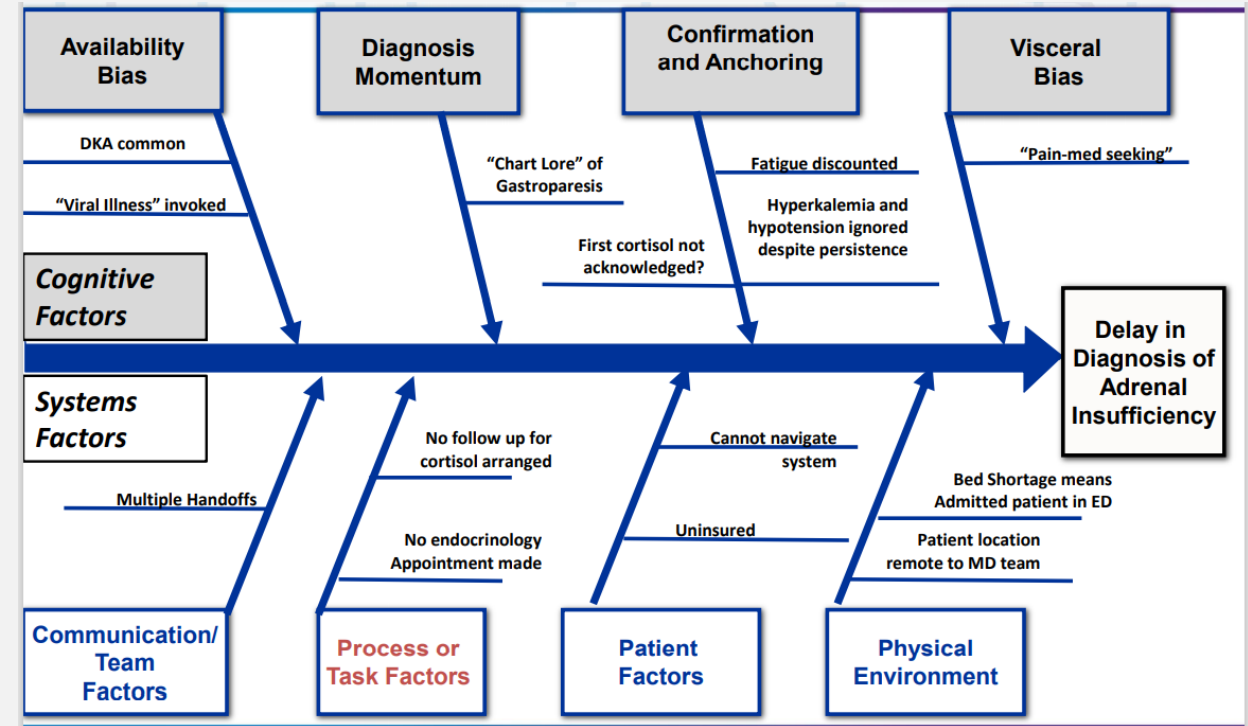
El-Kareh, Robert & Hasan, Omar & Schiff, Gordon. (2013). Use of health information technology to reduce diagnostic errors. BMJ quality & safety. 22. 10.1136/bmjqs-2013-001884.

Root Cause Analysis Specific to Diagnostic Events

	Traditional RCA	Dx Error RCA
Fishbone diagram	Yes	Yes
Systems analysis	Critical	Critical
Cognitive analysis	No	Critical
Clinician involvement	Variable	Mandatory
Clear action steps	Often	Sometimes
Proven effective	No	No
Recommendations implemented	70%	?

Who should be there

- The involved clinicians
- Nurses
- Expert RCA facilitators
- Cognitive specialists
- Error experts
- Librarians



From "How to Do a Root Cause Analysis of Diagnostic Error," NPSF Patient Safety Awareness Week Diagnostic Error Webcast Series. (2014). Graber, M., Reilly, J. and Trowbridge, R. Found at: [PowerPoint Presentation \(ymaws.com\)](http://PowerPointPresentation(ymaws.com))

Failure Mode Effects Analysis Example

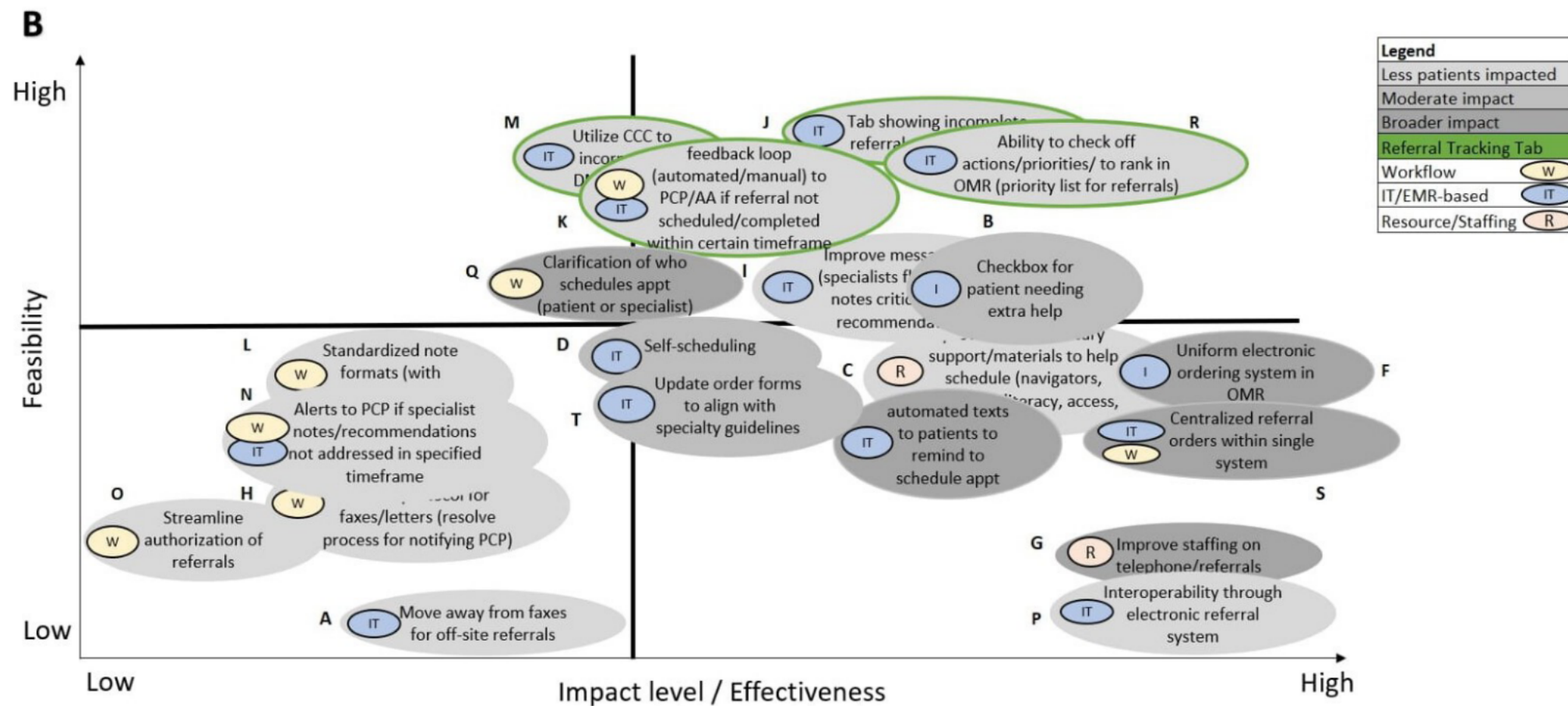


Figure 3 Example of FMEA results for diagnostic referral process and process improvement ideas produced from FMEA.

Nehls N, Yap TS, Salant T, *et al.* Systems engineering analysis of diagnostic referral closed-loop processes. *BMJ Open Quality* 2021;**10**:e001603. doi: 10.1136/bmjopen-2021-001603. Found [HERE](#)

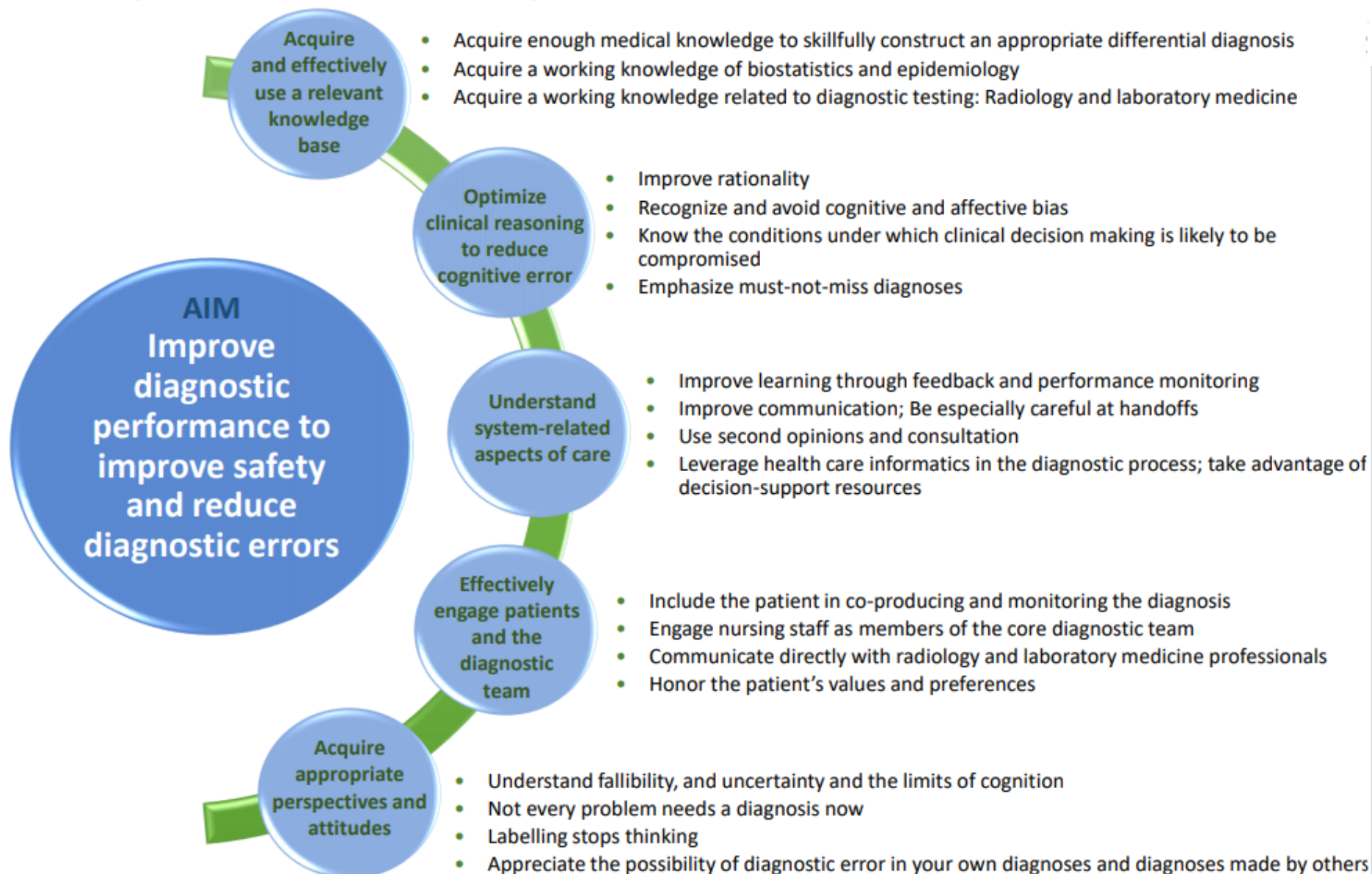
What about the “cognitive” part of this problem?

The “Sharp” End:

Clinical Data + Knowledge → Synthesis = Diagnosis

Primary Drivers

Secondary Drivers

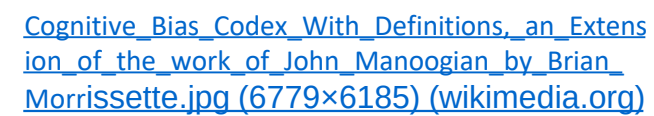


Graber, M.L. et al. Improving Diagnosis by Improving Education. *Diagnosis*, 2018; 5(3): 107-118.



“The world is a set of information that's just too enormous for your brain to handle.”

Buster Benson



Where does “bias” come in?

TABLE 2-2 Examples of Heuristics and Biases That Influence Decision Making

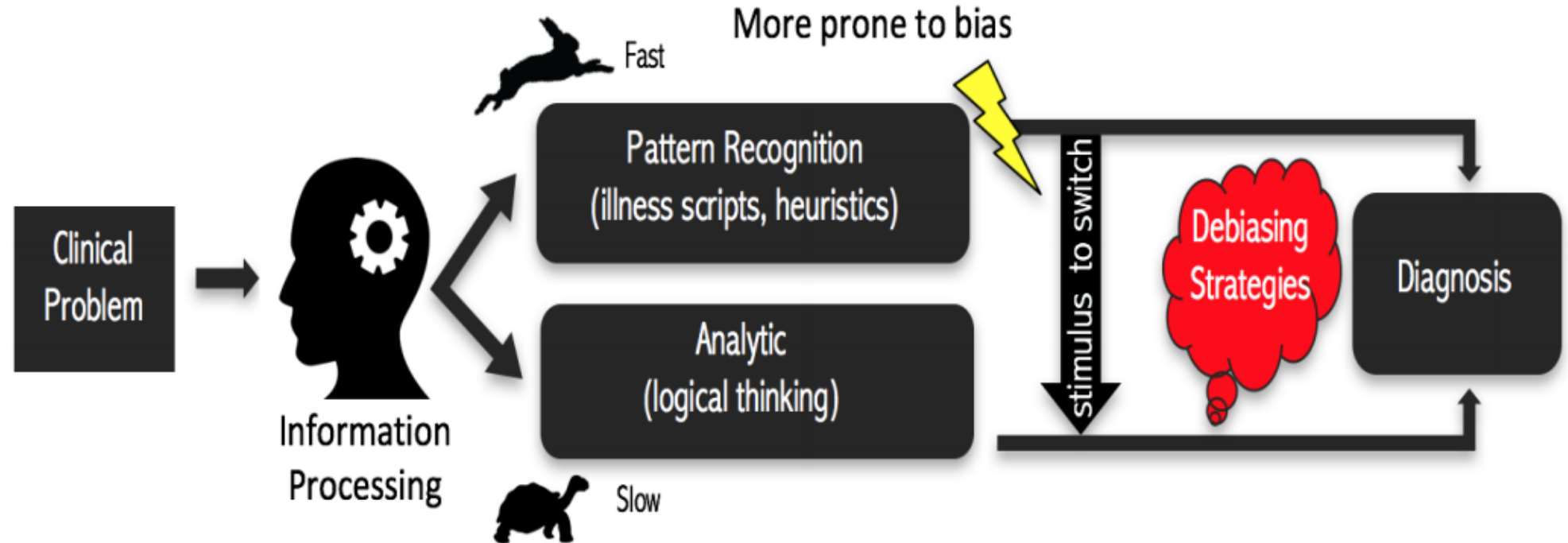
Heuristic or Bias	Medical Example	Nonmedical Example
Anchoring is the tendency to lock onto salient features in the patient's initial presentation and failing to adjust this initial impression in the light of later information.	A patient is admitted from the emergency department with a diagnosis of heart failure. The hospitalists who are taking care of the patient do not pay adequate attention to new findings that suggest another diagnosis.	We buy a new car based on excellent reviews and tend to ignore or downplay negative features that are noticed.
Affective bias refers to the various ways that our emotions, feelings, and biases affect judgment.	New complaints from patients known to be “frequent flyers” in the emergency department are not taken seriously.	We may have the belief that people who are poorly dressed are not articulate or intelligent.
Availability bias refers to our tendency to more easily recall things that we have seen recently or things that are common or that impressed us.	A clinician who just recently read an article on the pain from aortic aneurysm dissection may tend toward diagnosing it in the next few patients he sees who present with nonspecific abdominal pain, even though aortic dissections are rare.	Because of a recent news story on a tourist kidnapping in Country “A,” we change the destination we have chosen for our vacation to Country “B.”
Context errors reflect instances where we misinterpret the situation, leading to an erroneous conclusion.	We tend to interpret that a patient presenting with abdominal pain has a problem involving the gastrointestinal tract, when it may be something else entirely: for example, an endocrine, neurologic or vascular problem.	We see a work colleague picking up two kids from an elementary school and assume he or she has children, when they are instead picking up someone else's children.
Search satisficing , also known as premature closure , is the tendency to accept the first answer that comes along that explains the facts at hand, without considering whether there might be a different or better solution.	The emergency department clinician seeing a patient with recent onset of low back pain immediately settles on a diagnosis of lumbar disc disease without considering other possibilities in the differential diagnosis.	We want a plane ticket that costs no more than \$1,000 and has no more than one connection. We perform an online search and purchase the first ticket that meets these criteria without looking to see if there is a cheaper flight or one with no connections.

Improving Diagnosis in Health Care, Chapter 2: The Diagnostic Process. Committee on Diagnostic Error in Health Care; Board on Health Care Services; Institute of Medicine; The National Academies of Sciences, Engineering, and Medicine; Balogh EP, Miller BT, Ball JR, editors. Washington (DC): [National Academies Press \(US\)](#); 2015 Dec 29.



Cognitive Debiasing Strategies for the Emergency Department

Model of Reasoning and Debiasing:



Modified from: Daniel M, Khandelwal S, Santen SA, Malone M, Croskerry P. Cognitive Debiasing Strategies for the Emergency Department. AEM E&T. 2017; 1:41-42.

Daniel, M., Carney, M., Khandelwal, S., Merritt, C., Cole, M., Malone, M., Hemphill, R. R., Peterson, W., Burkhardt, J., Hopson, L., & Santen, S. A. (2017). Cognitive Debiasing Strategies: A Faculty Development Workshop for Clinical Teachers in Emergency Medicine. *MedEdPORTAL : the journal of teaching and learning resources*, 13, 10646. https://doi.org/10.15766/mep_2374-8265.10646.

Risk Mitigation Activities: Diagnostic Error

**SOCIETY to IMPROVE DIAGNOSIS in MEDICINE**

ProgramsPatient StoriesGet Involved

**Understanding and Reducing Diagnostic Error**

Medscape, in partnership with SIDM, developed a learning module for primary care physicians, emergency medicine physicians, radiologists, and nurses interested in improving diagnostic accuracy. Earn CME/ABIM MOC/CE credit through 9/23/2020.

[Start Activity](#)

**Strategies to Identify Cognitive Biases**

The Society of Hospital Medicine, in partnership with SIDM, has created a learning module to equip hospitalists with actionable risk mitigation strategies and techniques.

[Take the Course](#)

Assessment of Reasoning Tool: Errors in clinical reasoning are central factors in many dx errors. SIDM has developed a straightforward Assessment of Reasoning Tool to support educators in assessing a learner's clinical reasoning skills during patient presentations.

OPEN ACCESS | October 23, 2017

Cognitive Debiasing Strategies: A Faculty Development Workshop for Clinical Teachers in Emergency Medicine

Michelle Daniel, MD, Michele Carney, MD, Sorabh Khandelwal, MD, Chris Merritt, MD, Michael Cole, MD, Matthew Malone, MD, Robin R. Hemphill, MD, Will Peterson, MD, John Burkhardt, MD, Laura Hopson, MD, Sally A. Santen, MD, PhD
https://doi.org/10.15766/mep_2374-8265.10646

Abstract | PDF | Tools | Share

Abstract

Introduction: Medical decision-making is a cornerstone of clinical care and a key contributor to diagnostic accuracy. Medical decision-making occurs via two primary pathways: System 1, pattern recognition, is fast, intuitive, and heuristically driven and occurs largely unconsciously. System 2, analytic

APPENDICESREFERENCESRELATEDDETAILS

APPENDICES

- A. Cognitive Debiasing Strategies for Teachers.pptx
- B. Facilitator Guides for Cognitive Debiasing Cases.docx
- C. Cognitive Debiasing Cases.docx
- D. Pocket Card.pdf
- E. Cognitive Bias Codex.docx
- F. Workshop Evaluation.docx

All appendices are peer reviewed as integral parts of the Original Publication.

DOWNLOAD

ASSESSMENT of REASONING TOOL



Learner: _____ Evaluator: _____

Did the Learner...	Assessment		
	Minimal	Partial	Complete
Collect/report history and examination data in a hypothesis-directed manner?	- Non-directed in questioning and exam - Asked questions without clear focus on potential diagnoses	Questioning and exam generally reflective of potential diagnoses, but some less relevant or tangential questions	Followed clear line of inquiry, directing questioning and exam to specific findings likely to increase or decrease likelihood of specific diagnoses
Articulate a complete problem representation using descriptive medical terminology?	- Included extraneous information - Missed key findings - Did not translate findings into medical terminology	Generally included key clinical findings (both positive and negative) but either missed some key findings or missed important descriptive medical terminology	- Gave clear synopsis of clinical problem - Emphasized important positive and negative findings using descriptive medical terminology
Articulate a prioritized differential diagnosis of most likely, less likely, unlikely, and "can't miss" diagnoses based on the problem representation?	Missed key elements of differential diagnosis, including likely diagnoses or "can't miss" diagnoses	Gave differential diagnosis that included likely and "can't miss" diagnoses but either missed key diagnoses or ranked them inappropriately	Gave accurately ranked differential diagnosis including likely and "can't miss" diagnoses
Direct evaluation/treatment towards high priority diagnoses?	- Directed evaluation and treatment toward unlikely/unimportant diagnoses - Did not evaluate or treat for most likely/"can't miss" diagnoses	Major focus of evaluation and treatment was likely and "can't miss" diagnoses but included non-essential testing	- Efficiently directed evaluation and treatment towards most likely and "can't miss" diagnoses - Deferred tests directed towards less likely or less important diagnoses
Demonstrate the ability to think about their own thinking (metacognition)? Consider asking: Is there anything about the way you are thinking or feeling about this case that may lead to error?	Not able to describe the influence of cognitive tendencies or emotional/situational factors that may have influenced decision-making	Can name one cognitive tendency or emotional/situational factor that may have influenced decision-making	

OVERALL ASSESSMENT NEEDS IMPROVEMENT ☐ MEETS COMPETENCY ☐ EXCELLENCE ☐

Comments:



How do we solve the problem of lack of data?

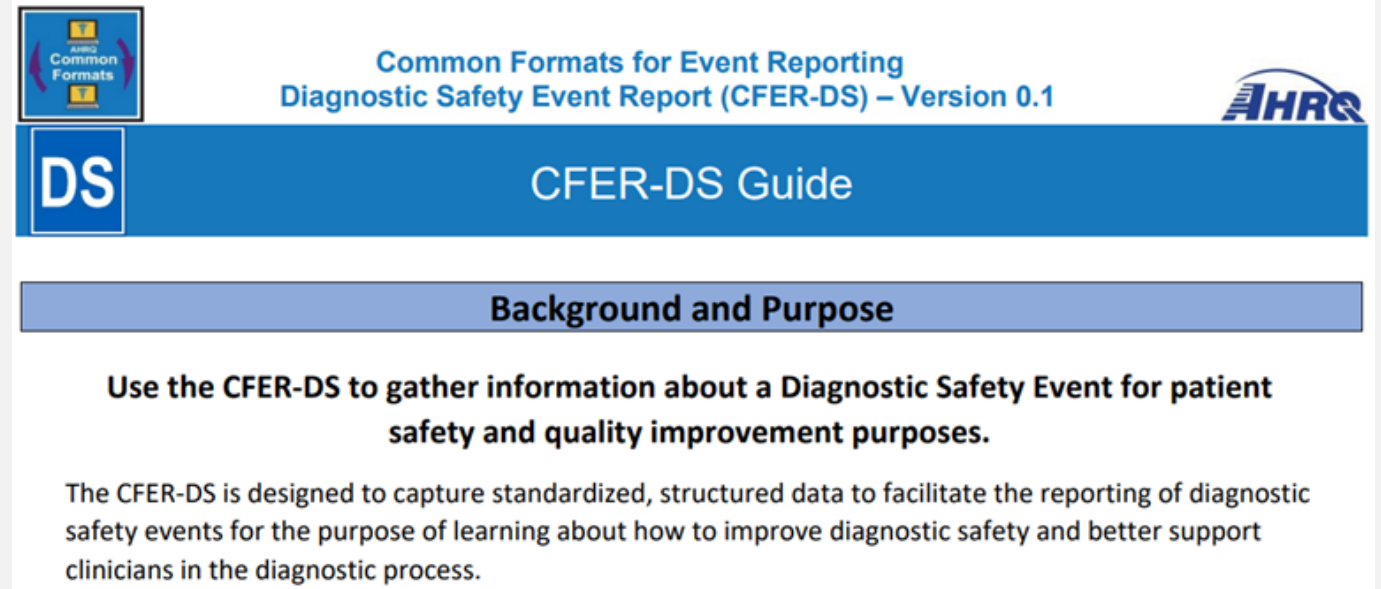


Goal 6: Develop a Reporting Environment and Medical Liability System That Facilitates Improved Diagnosis by Learning from Diagnostic Errors and Near Misses

New Work for Event Reporting Opportunities

AHRQ, NQF and a **Federal Patient Safety Workgroup** developed a national consensus on a structured way to help healthcare providers identify and report missed opportunities in the diagnostic process in a standardized manner across healthcare settings and specialties.

Common Formats are not a reporting system; they are structured data elements. You see the consistency when reporting to a PSO.



The image shows the cover of the 'Common Formats for Event Reporting Diagnostic Safety Event Report (CFER-DS) – Version 0.1' guide. At the top left is the 'Common Formats' logo. To its right is the title 'Common Formats for Event Reporting Diagnostic Safety Event Report (CFER-DS) – Version 0.1'. On the far right is the AHRQ logo. Below the title is a blue horizontal bar with 'DS' in a white box on the left and 'CFER-DS Guide' in white text on the right. Underneath this bar is a light blue box with the heading 'Background and Purpose'. The text inside this box reads: 'Use the CFER-DS to gather information about a Diagnostic Safety Event for patient safety and quality improvement purposes.' and 'The CFER-DS is designed to capture standardized, structured data to facilitate the reporting of diagnostic safety events for the purpose of learning about how to improve diagnostic safety and better support clinicians in the diagnostic process.'



DIAGNOSTIC SAFETY

Use this form to gather information about a Diagnostic Safety Event for patient safety and quality improvement purposes.

The CFER-DS can be used
as part of diagnostic
safety and quality
improvement activities in
any healthcare setting.

It is also potentially useful
to structure analysis of
individual cases!

2.2 In what setting did this Diagnostic Episode with Missed Opportunities occur?

ENTER CDC NHSN LOCATION CODE:

OR

CHECK ONE:

- a. ☐ Virtual care (e.g., video visit, telehealth, email, phone)
- b. ☐ Home care
- c. ☐ Primary care or other general medical outpatient setting (e.g., clinic, office, urgent care)
- d. ☐ Specialty medical care in outpatient setting (e.g., specialty clinic, specialist's office)
- e. ☐ Mental health/psychiatric specialty care in outpatient setting
- f. ☐ Mobile Emergency Services/EMS
- g. ☐ Hospital Emergency Department
- h. ☐ Acute care hospital inpatient area
- i. ☐ Radiology/imaging
- j. ☐ Laboratory, including pathology
- k. ☐ Freestanding ambulatory surgery, procedure or labor/delivery setting
- l. ☐ Inpatient unit in non-acute care hospital (e.g., long-term care hospital, rehabilitation hospital)
- m. ☐ Non-hospital residential facility (e.g., rehabilitation center, long-term care)
- n. ☐ Other setting not listed above. PLEASE SPECIFY:

2.2.1 In what acute care hospital inpatient area did this Diagnostic Episode with Missed Opportunities occur?

CHECK ONE:

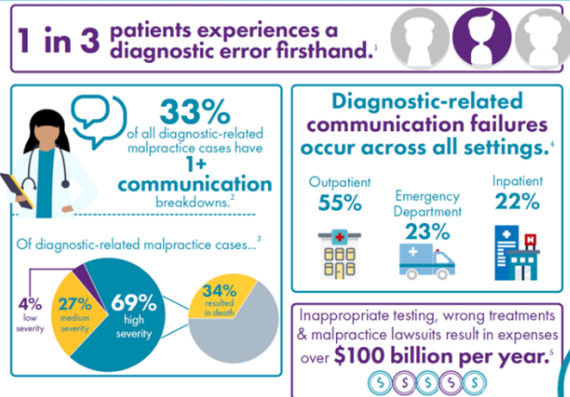
- 1. ☐ Inpatient non-intensive care area (e.g., adult or pediatric medical-surgical, maternity unit)
- 2. ☐ Inpatient mental health/psychiatry unit
- 3. ☐ Special care area (e.g., ICU, CCU, NICU, step-down unit)
- 4. ☐ Labor and delivery
- 5. ☐ Preoperative/pre-procedure area
- 6. ☐ Operating room
- 7. ☐ Procedure room (e.g., cardiac catheter lab, endoscopy area)
- 8. ☐ Interventional radiology procedure room
- 9. ☐ PACU or recovery area

Additional Resources



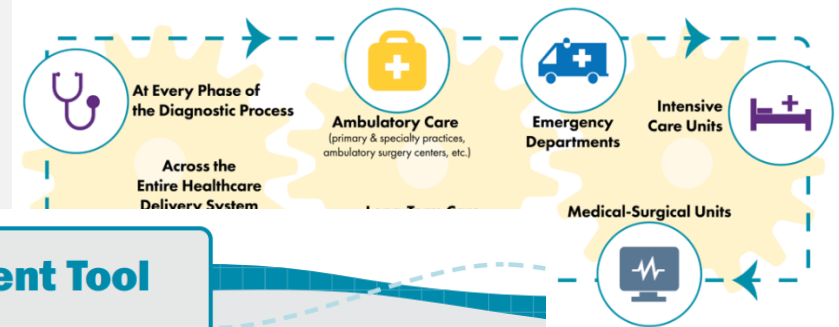
TeamSTEPPS for Diagnosis Improvement

Defining the Need: Why Is Diagnosis Important?



TeamSTEPPS®

Where Do Diagnostic Errors Occur?



TeamSTEPPS Team Assessment Tool for Improving Diagnosis*

*Adapted from TeamSTEPPS Performance Observation Tool

Rating: Select a number that fits your setting on a scale of **0 = Never** to **5 = Always** for each question.

Overall Rating: Add your Ratings together for each domain.

Summary Score: Add your Overall Rating for each domain into a total score at the end.

Team Structure (understanding the team structures that support a diagnostic team)		Rating
a. Each team member can identify all <i>members of a diagnostic team</i> (e.g., patients, families, providers, radiology and lab personnel, other staff, and support services).		
b. All team members recognize the <i>roles and responsibilities</i> of each member of the diagnostic team.		
c. Team members use <i>defined communication tools</i> (e.g., SBAR, call-outs, check-backs, and		

Internet Citation: TeamSTEPPS® for Diagnosis Improvement. Content last reviewed March 2022. Agency for Healthcare Research and Quality, Rockville, MD. <https://www.ahrq.gov/teamstepps/diagnosis-improvement/index.html>

Healthcare Risk Professionals Impact, Influence, Innovate

Society to Improve Diagnosis in Medicine

(www.improvediagnosis.org)

SOCIETY to IMPROVE DIAGNOSIS in MEDICINE

Programs Patient Stories Get Involved Coalition **Resources** Conferences About

Resources

Find Society to Improve Diagnosis in Medicine (SIDM) resources aimed at improving diagnosis and eliminating harm from diagnostic error.

Webinars and Videos

Watch webinars, videos, and talks delivered by members of the SIDM community, focused on efforts to improve diagnostic quality and safety.

[Watch Now](#)

Reports

Download reports and whitepapers developed by SIDM on the impact of diagnostic error and tactics for improvement.

[Reports](#)

Toolkits

Access toolkits aimed at providing patients, clinical tea and educators with the information and tools to impro diagnostic quality and safety.

[Tools & Toolkits](#)

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Access learning modules, developed by SIDM and its partners, focused on understanding and improving diagnosis.

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Browse publications by SIDM, including our bi-monthly newsletter, patient-centered news column, and peer-reviewed journal.

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SOCIETY to IMPROVE DIAGNOSIS in MEDICINE

Programs Patient Stories Get Involved Coalition Resources Conferences About

Webinars

Abigail Konopasky and Alan Schwartz on Clinical Reasoning and Improving Diagnostic Accuracy

Craig Gunderson on the Prevalence of Harmful Diagnostic Errors in Hospitalised Adults

Vinita Parkash on Communication After a Medical Error

Reducing Harm by Getting Patients the Right Diagnosis at the Right Time

Verity Schaye on Training Medicine Faculty to Teach Clinical Reasoning

SIDM Fellows Present the Top Articles in Diagnostic Quality and Safety of 2019

[More webinars >](#)

Medical Record Review Tools specific to Dx Error

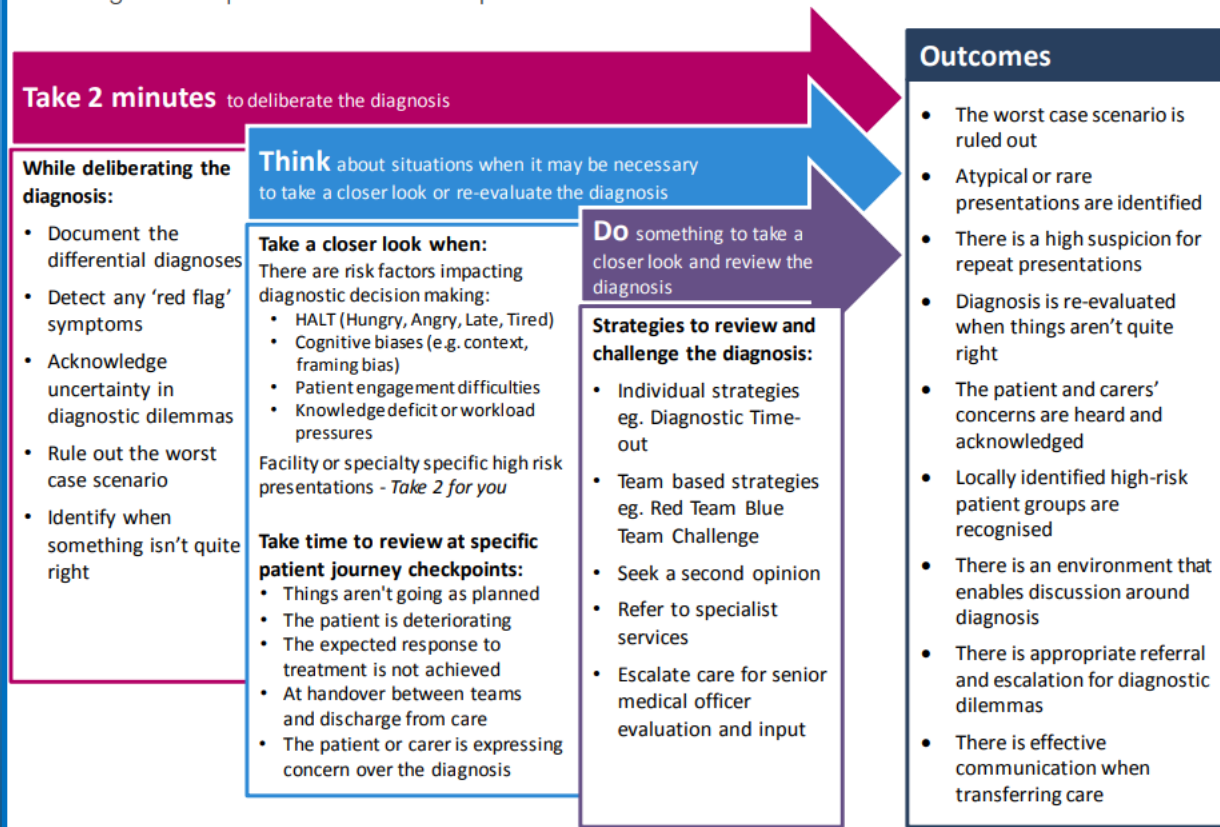
Safer Dx Process Breakdown Supplement			
Study ID: Reviewer: Review Date: Index Visit Date:			
What was the missed diagnosis?			
What was the chief complaint or presenting symptoms at initial presentation?			
Was the chief complaint related to the diagnostic error? ☐ Yes ☐ No			
Provider Characteristics			
Please identify all setting/ personnel involved in the error(s) and rate the importance of their contribution			
Setting Involved (code list, setting code)	Personnel Type (code list, pages 1-2)	Personnel Involved (code list, specialty codes)	Contributory Role Rating (code list, scoring scale)
1.			
2.			
3.			
4.			
What factors prompted the error discovery? (select all that apply)			
☐ Discovered as part of planned follow-up ☐ Fresh eyes looking at the original picture ☐ Failure of original symptom or signs to resolve ☐ Information after patient died (i.e., family alleges diagnostic error) ☐ New symptoms or signs ☐ Text/Other, please describe: _____ ☐ Evolution of the original symptoms or signs ☐ Not able to be determined ☐ Patient insistence/persistence on pursuing another diagnosis ☐ Patient admitted to hospital, please select: Parent facility ☐ New data ☐ Outside facility			
In the episode of care most closely associated with the error, was any differential diagnosis documented?			☐ Yes ☐ No
If "Yes", was the differential diagnosis acted upon?			☐ Yes ☐ No

Outcome	
What was the potential severity of injury associated with delay or missed diagnosis? (select one) Harm Impairment of the physical, emotional, or psychological function or structure of the body or financial distress and/or pain resulting therefrom. Monitoring To observe or record relevant physiological or psychological signs. Intervention May include change in therapy or active medical/surgical treatment. Intervention Necessary to Sustain Life Includes cardiovascular and respiratory support (e.g., CPR, defibrillation, intubation, etc.)	No Harm ☐ Category A- Circumstances or events that have the capacity to cause error Error, No Harm ☐ Category B- An error occurred but the error did not reach the patient (An "error of omission" does reach the patient) ☐ Category C- An error occurred that reached the patient but did not cause patient harm ☐ Category D- An error occurred that reached the patient and required monitoring to confirm that it resulted in no harm to the patient and/or required intervention to preclude harm
	Error, Harm ☐ Category E- An error occurred that may have contributed to or resulted in temporary harm to the patient and required intervention ☐ Category F- An error occurred that may have contributed to or resulted in temporary harm to the patient and required initial or prolonged hospitalization ☐ Category G- An error occurred that may have contributed to or resulted in permanent patient harm ☐ Category H- An error occurred that required intervention necessary to sustain life
	Error, Death ☐ Category I- An error occurred that may have contributed to or resulted in the patient's death
Dimensions (select all that apply)	
1) Patient Related	☐ Delay in seeking care ☐ Lack of adherence to appointments ☐ Other, please specify: _____
2) Patient-Provider Encounter	☐ Problems with history ☐ Problems with physical exam ☐ Problems ordering diagnostic tests for further work up ☐ Failure to review previous documentation

Singh, Hardeep, Khanna, Arushi, Spitzmueller, Christiane and Meyer, Ashley N.D.. "Recommendations for using the Revised Safer Dx Instrument to help measure and improve diagnostic safety" *Diagnosis*, vol. 6, no. 4, 2019, pp. 315-323. <https://doi.org/10.1515/dx-2019-0012>

The Take 2 – Think, Do Framework

The Take 2 – Think, Do framework outlines the key components for enhancing diagnostic decision making, ensuring the best possible outcomes for patients.



HIGH RISK SITUATIONS FOR DIAGNOSTIC ERROR

- ☐ Have I ruled out must-not-miss diagnoses ?
- ☐ Did I just accept the first diagnosis that came to mind?
- ☐ Was the diagnosis suggested to me by the patient, nurse or another MD?
- ☐ Did I consider other organ systems besides the obvious one ?
- ☐ Is there data about this patient I haven't obtained and reviewed ?
Old records? Family? Primary care provider ?
- ☐ Are there any pieces that don't fit ?
- ☐ Did I read the X-ray myself ?
- ☐ Was this patient handed off to me from a previous shift ?
- ☐ Was this patient seen in the ER or clinic recently for the same problem ?
- ☐ Was I interrupted/distracted excessively while evaluating this patient ?
- ☐ Am I feeling fatigued right now, or cognitively overloaded?
- ☐ Is this a patient I don't like for some reason? Or like too much? (a friend, relative)

What to Do in High Risk Situations:

1. Pause to reflect -Take a diagnostic "time out"
2. Consider the universal antidote: What else could this be?
3. Make sure the patient knows when and how to get back to you if necessary: if their symptoms change or worsen or don't resolve

Graber M, Sorensen A, Biswas J, Modi V, Wackett A, Johnson S, et al. Developing checklists to prevent diagnostic error in Emergency Room settings. *Diagnosis*. 2014;1(3):223-31.

Checklist found [HERE](#)



Prepared By:
CEC
A/Prof. Amanda Walker – Clinical Director
Ms Tracy Clarke – Project Lead, Diagnostic Error



Take 2 Information for Clinicians and Checklist found [HERE](#)



Healthcare Risk Professionals Impact, Influence, Innovate

Questions/Discussion

A great question
doesn't simply inform...
it enlightens.

