LEARNING HEALTH SYSTEM FOR DIAGNOSTIC EXCELLENCE

KIM LYNGBY MIKKELSEN

Patienterstatningen
– behandlings- og lægemiddelskader

Danish Patient Compensation

BACKGROUND
DIAGNOSTIC ERRORS HAVE BEEN (AND IS) A MAJOR OVERLOOKED PATIENT SAFETY PROBLEM

- To Err Is Human; Building a Safer Health System (2000)
  - Does not mention diagnostic errors as a separate issue!
    - Simple fault model: Commission (action) – Omission (neglect)
      - Types of errors are, for example, technical errors, medication-related, iatrogenic complications
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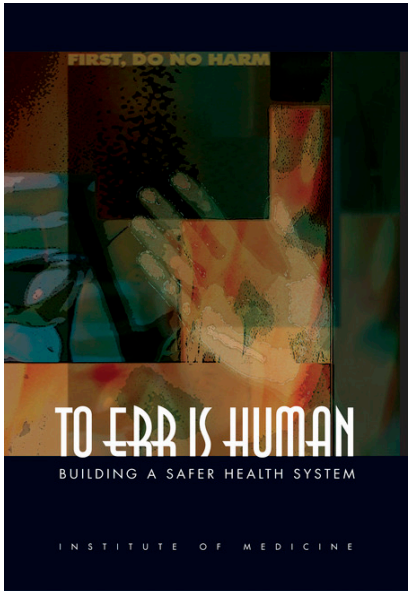

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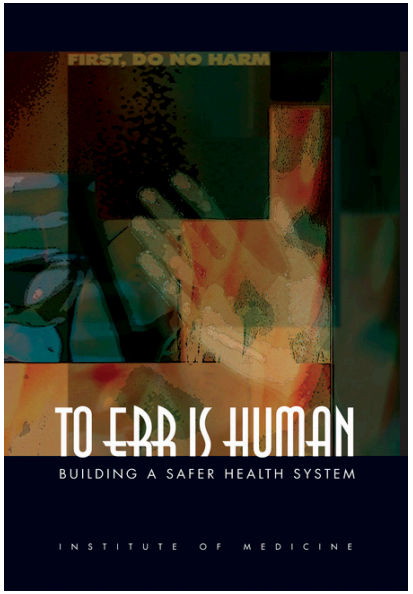

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  - Does not mention diagnostic errors as a separate issue!
    - Simple error model: Commission (action) – Omission (neglect)
      - Types of errors are, for example, technical errors, medication-related, iatrogenic complications
  - But the report focused on patient safety, and that
    - … being a patient (in the USA) is one of the most dangerous things you can be compared to being in the traffic, at work etc.!

BACKGROUND
DIAGNOSTIC ERRORS HAVE BEEN (AND IS) A MAJOR OVERLOOKED PATIENT SAFETY PROBLEM

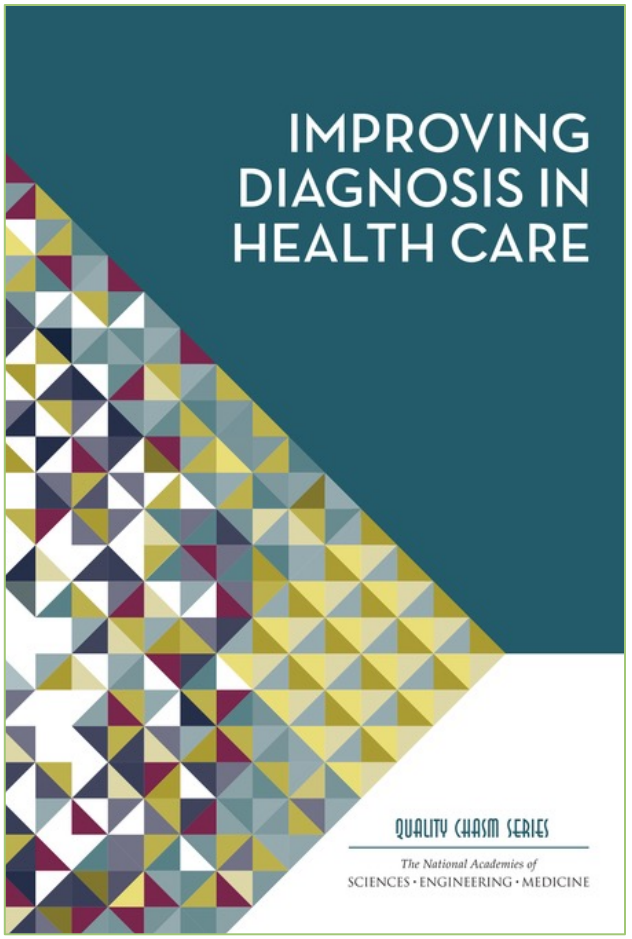
- The classification in Denmark for adverse events (DPSD) does not include the **diagnostic process** from the International Classification for Patient Safety (ICPS) Conceptual Framework, 2007:

Incident Type	Process	Problem
Clinical Process/Procedure	Diagnosis/Assessment	Incomplete/Inadequate

  - (We) simply did not implement it in DK!
  - In DPSD, problems with the diagnostic process are therefore a "blind eye"!

BACKGROUND
DIAGNOSTIC EXCELLENCE

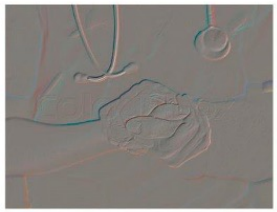
- New milestone report 2015: Improving Diagnosis in Health Care
  - Published by National Academy of Medicine (Insitute of Medicine)



BACKGROUND DIAGNOSTIC EXCELLENCE

Paths to better diagnoses 2019

- Danish Society for Patient Safety (PS!)
- Danish Patient Compensation



VEJE TIL BEDRE DIAGNOSER

Hvor tit sker der fejl?
Hvor går det galt?
Og hvad kan der gøres ved det?

PS!
Dansk Selskab for PatientS!kkerhed

Patienterstatningen
– behandlings- og lægemiddelskader

BACKGROUND
DIAGNOSTIC EXCELLENCE

- **Developing Health Care Organizations That Pursue Learning and Exploration of Diagnostic Excellence (LEDE-organizations)**

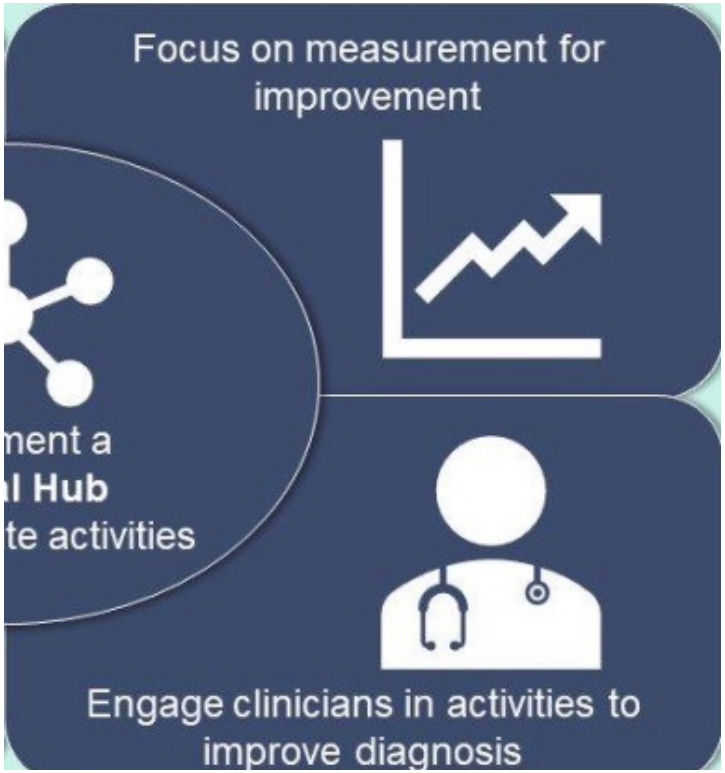
Hardeep Singh, M.D., M.P.H.
Baylor College of Medicine, Houston

GEISINGER; AN INTEGRATED HEALTH CARE SYSTEM IN PENNSYLVANIA
ACADEMIC MEDICINE, VOL. 95, NO. 8 / AUGUST 2020. DOI: 10.1097/ACM.0000000000003062

DEVELOPING LEDE ORGANIZATIONS: LEARNING AND EXPLORATION OF DIAGNOSTIC EXCELLENCE

Singh H, Upadhyay DK, & Torretti D. Developing health care organizations that pursue learning and exploration of diagnostic excellence: An action plan. *Acad Med.*

DEVELOPING LEDE ORGANIZATIONS: LEARNING AND EXPLORATION OF DIAGNOSTIC EXCELLENCE



ONE OF THE CENTRAL INGREDIENCIES IS

MEASUREMENT

AND

FEEDBACK

LEARNING HEALTH SYSTEM FOR DIAGNOSTIC SAFETY

- Why measurement and feedback
- Data sources and methods for learning

DIAGNOSTIC ERROR COMPENSATION CASES

Akut
(40 % af materialet)

Bev
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Insuf. US

Mgl. Rtg./UL

Mgl. opfølg.

Mgl. henvis.

Insuf. US

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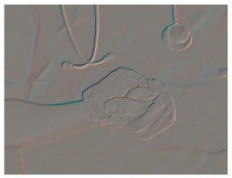

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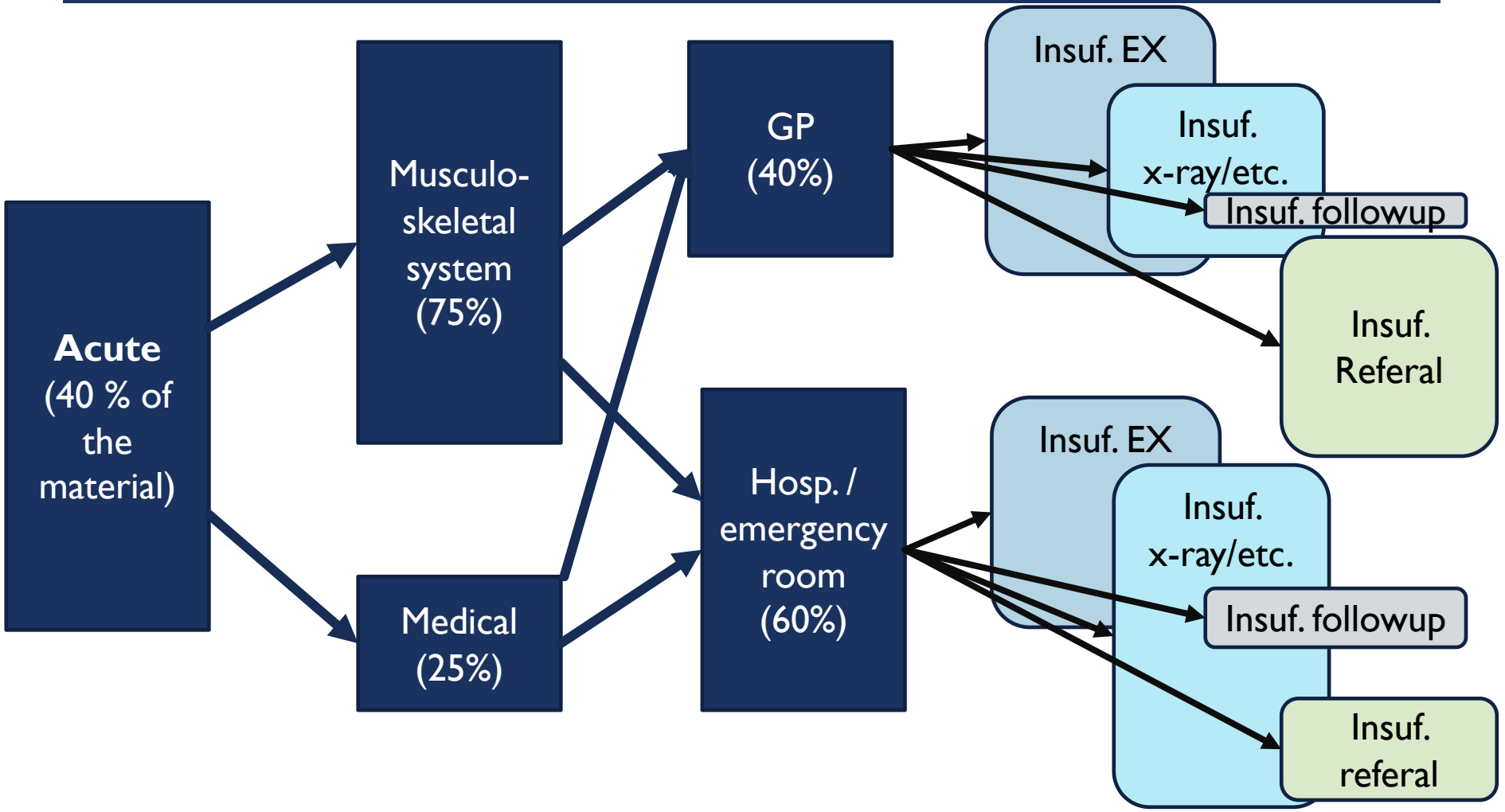
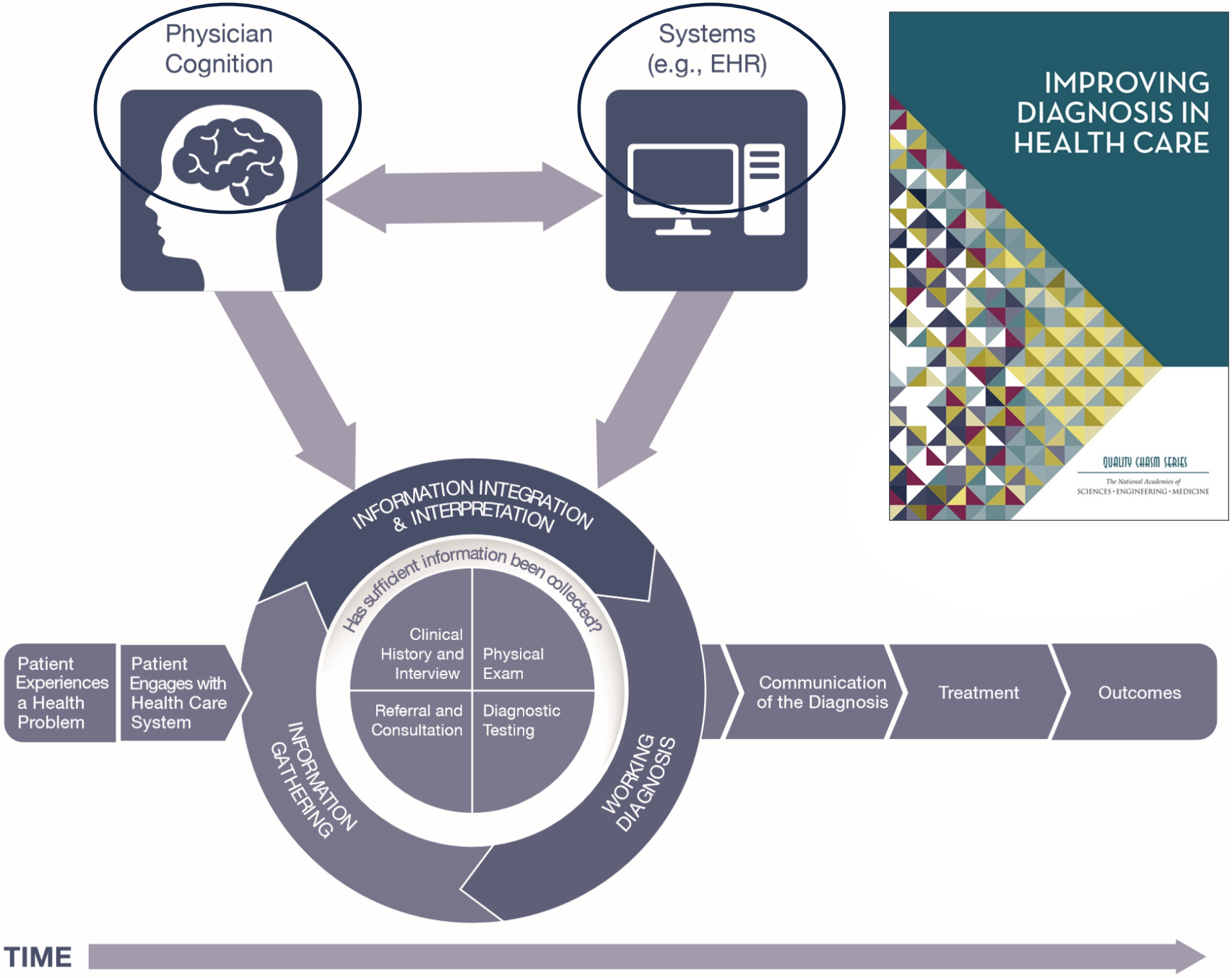
DIAGNOSTIC ERROR COMPENSATION CASES ACUTE CASES





Adapted from National Academy of Medicine Report, Improving Diagnosis in Health Care, 2015.

QUEST FOR CALIBRATION

JAMA Internal Medicine

Original Investigation

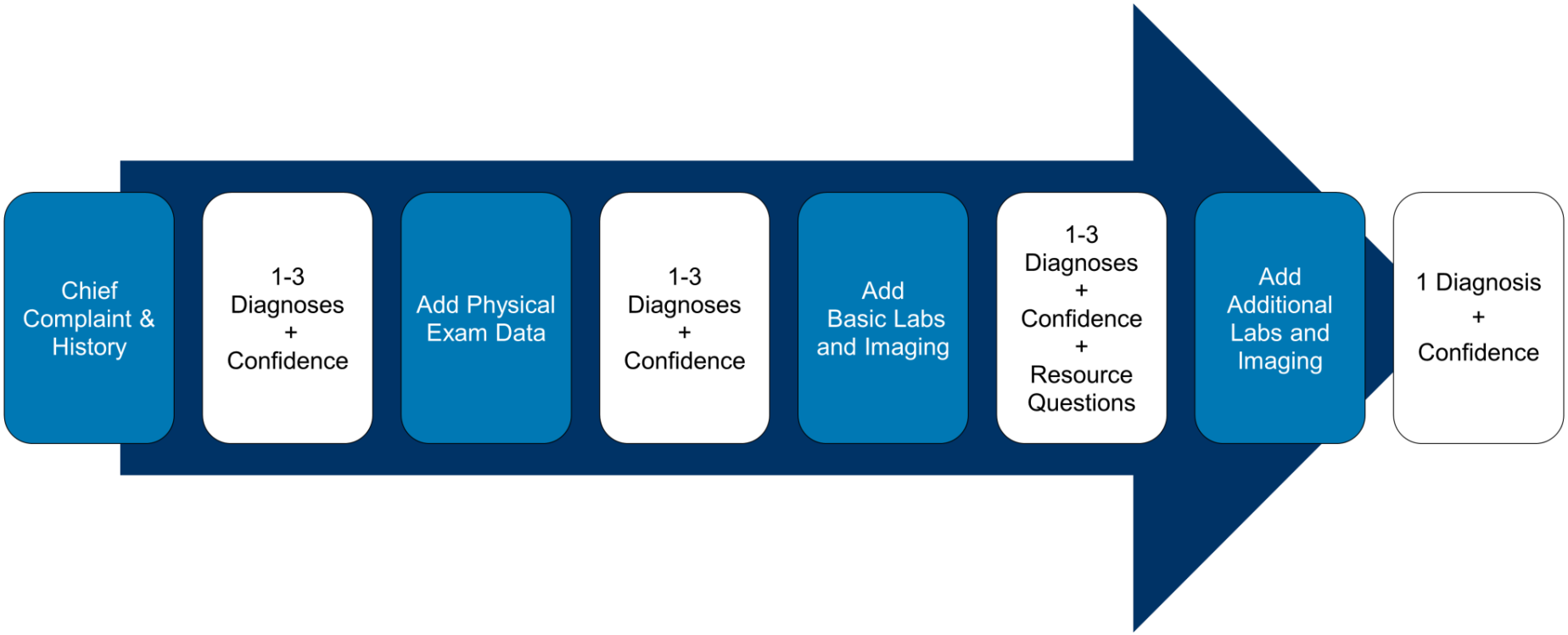
Physicians' Diagnostic Accuracy, Confidence, and Resource Requests

A Vignette Study

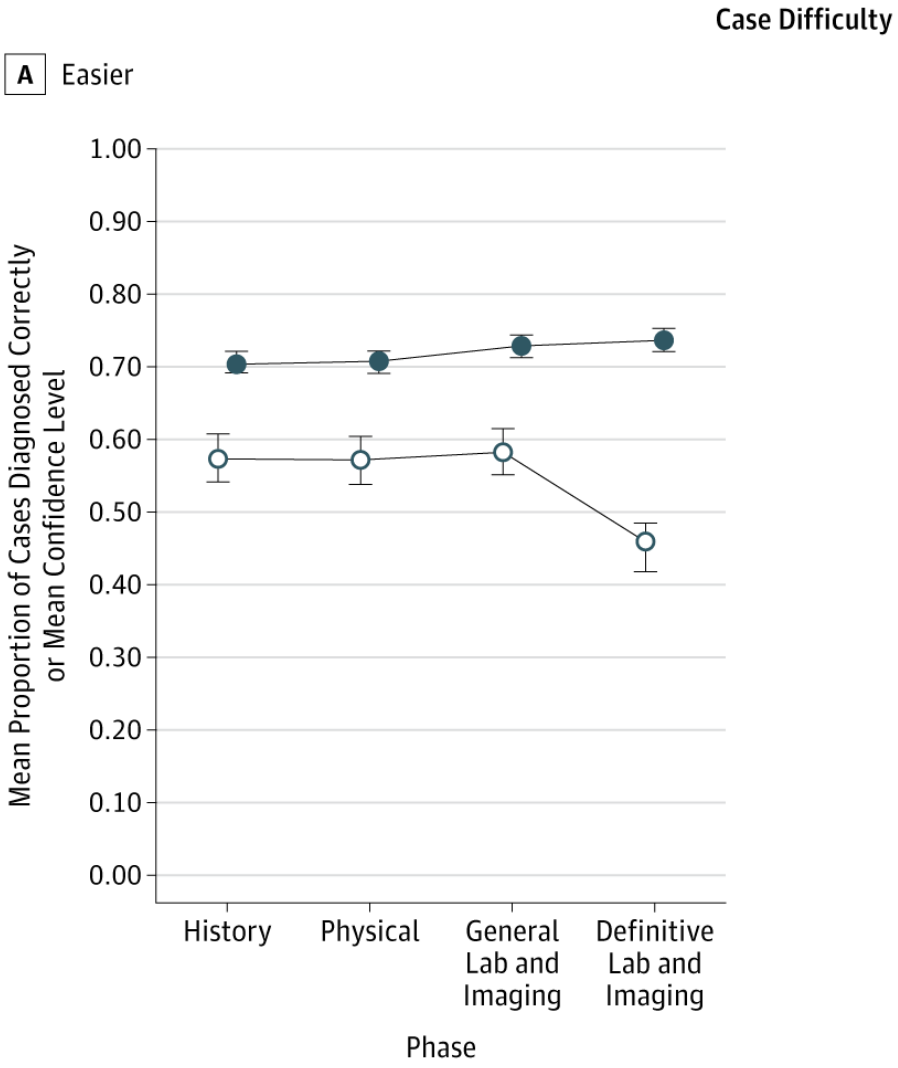
Ashley N. D. Meyer, PhD; Velma L. Payne, PhD, MBA; Derek W. Meeks, MD; Radha Rao, MD; Hardeep Singh, MD, MPH

Meyer et al., JAMA Intern Med 2013

DIAGNOSTIC ACCURACY AND CONFIDENCE



DIAGNOSTIC ACCURACY VERSUS CONFIDENCE



Meyer et al., JAMA Intern Med 2013

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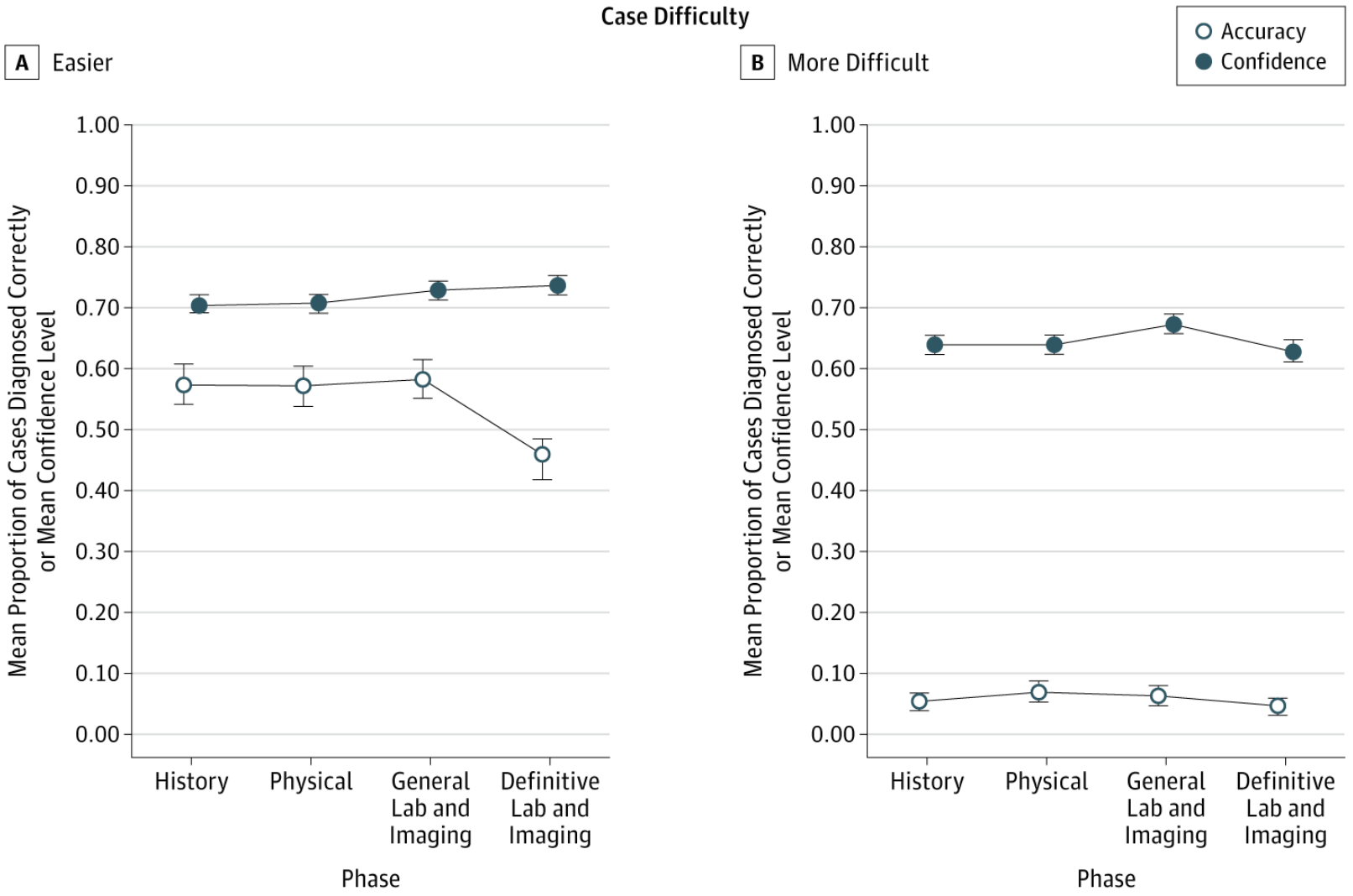

Meyer et al., JAMA Intern Med 2013

Physicians' diagnostic accuracy and confidence not aligned

= Miscalibration

Physicians may not seek help (either from humans or decision support systems) when they most need it

IMPLICATIONS: FEEDBACK IS ESSENTIAL

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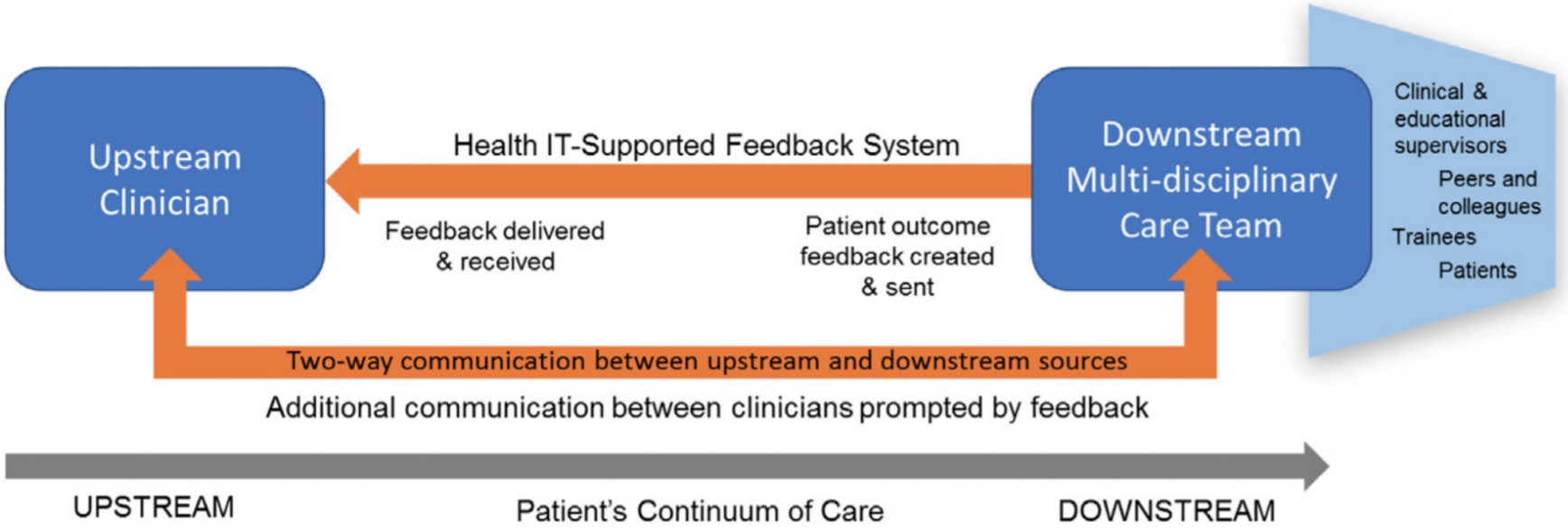
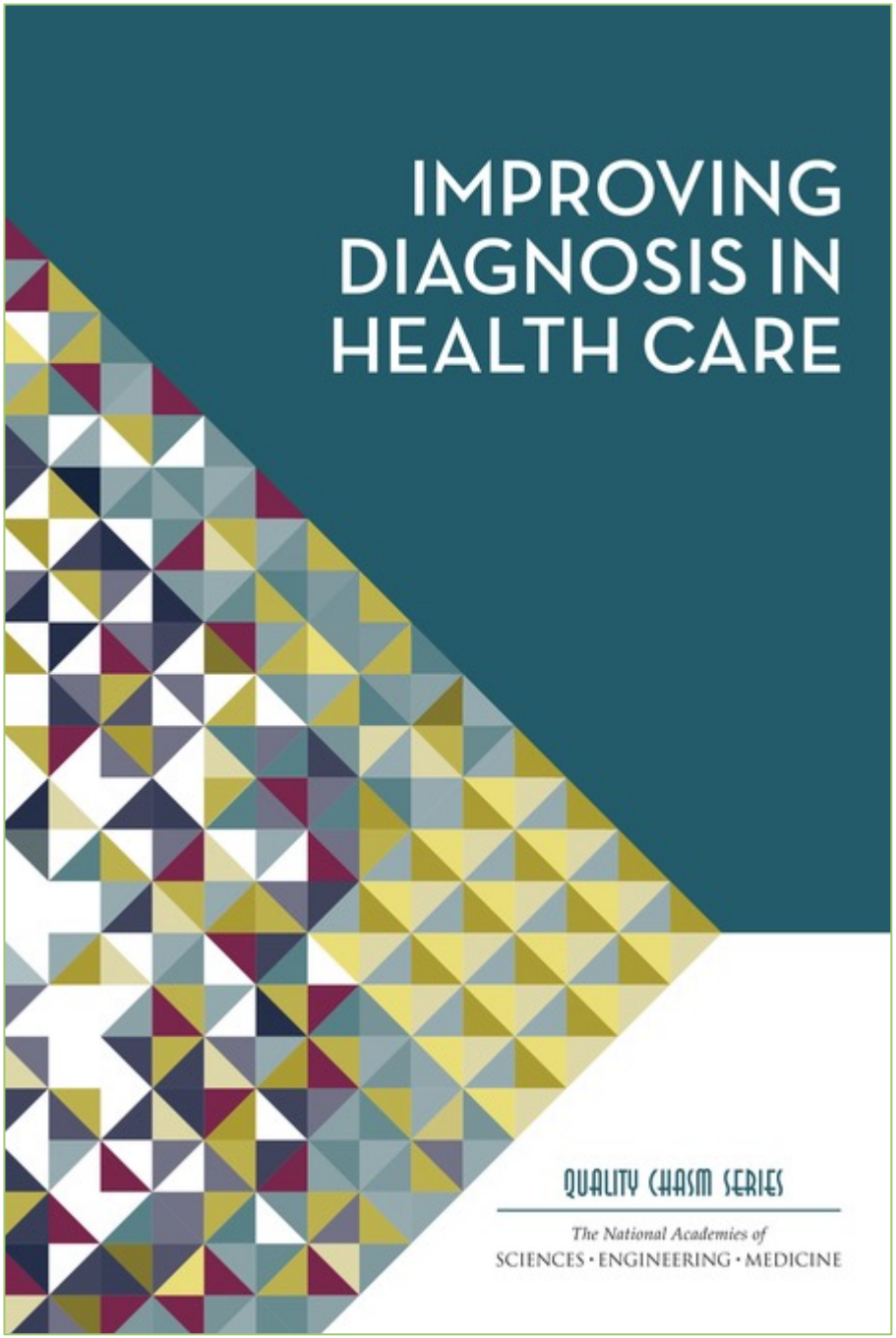


Bridging the feedback gap: a sociotechnical approach to informing clinicians of patients' subsequent clinical course and outcomes

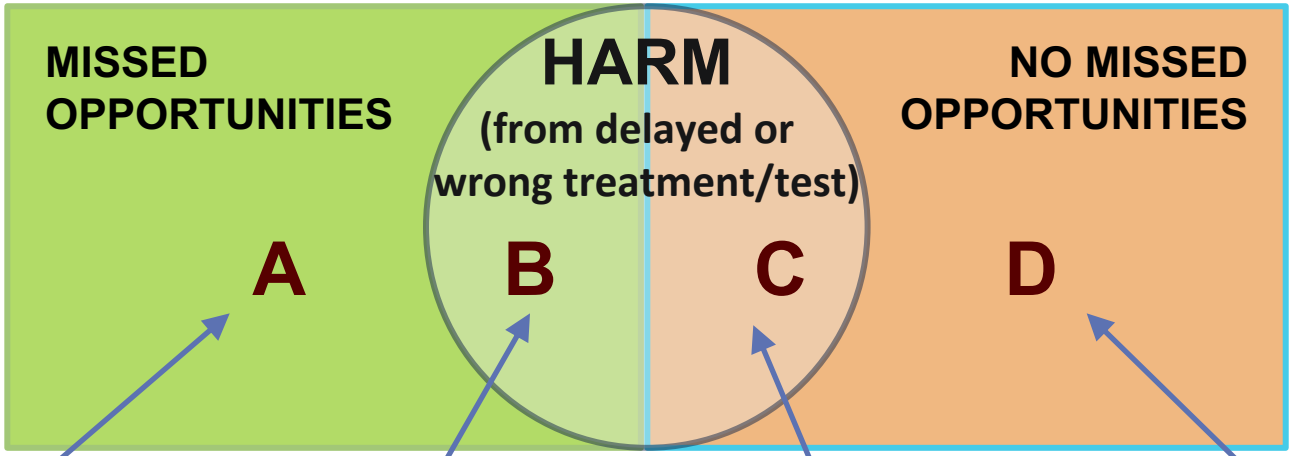
Christina L Cifra [1], Dean F Sittig [2], Hardeep Singh [3]

https://qualitysafety.bmj.com/content/early/2021/05/10/bmjqs-2020-012464



Accrediting organizations and Medicare *"**require** that healthcare organizations have **programs** in place to **monitor the diagnostic process** and identify, learn from, and reduce diagnostic errors and near misses in a timely fashion."*

Focus on Preventable Diagnostic Harm



A: Missed opportunities in diagnosis due to system and/or cognitive factors

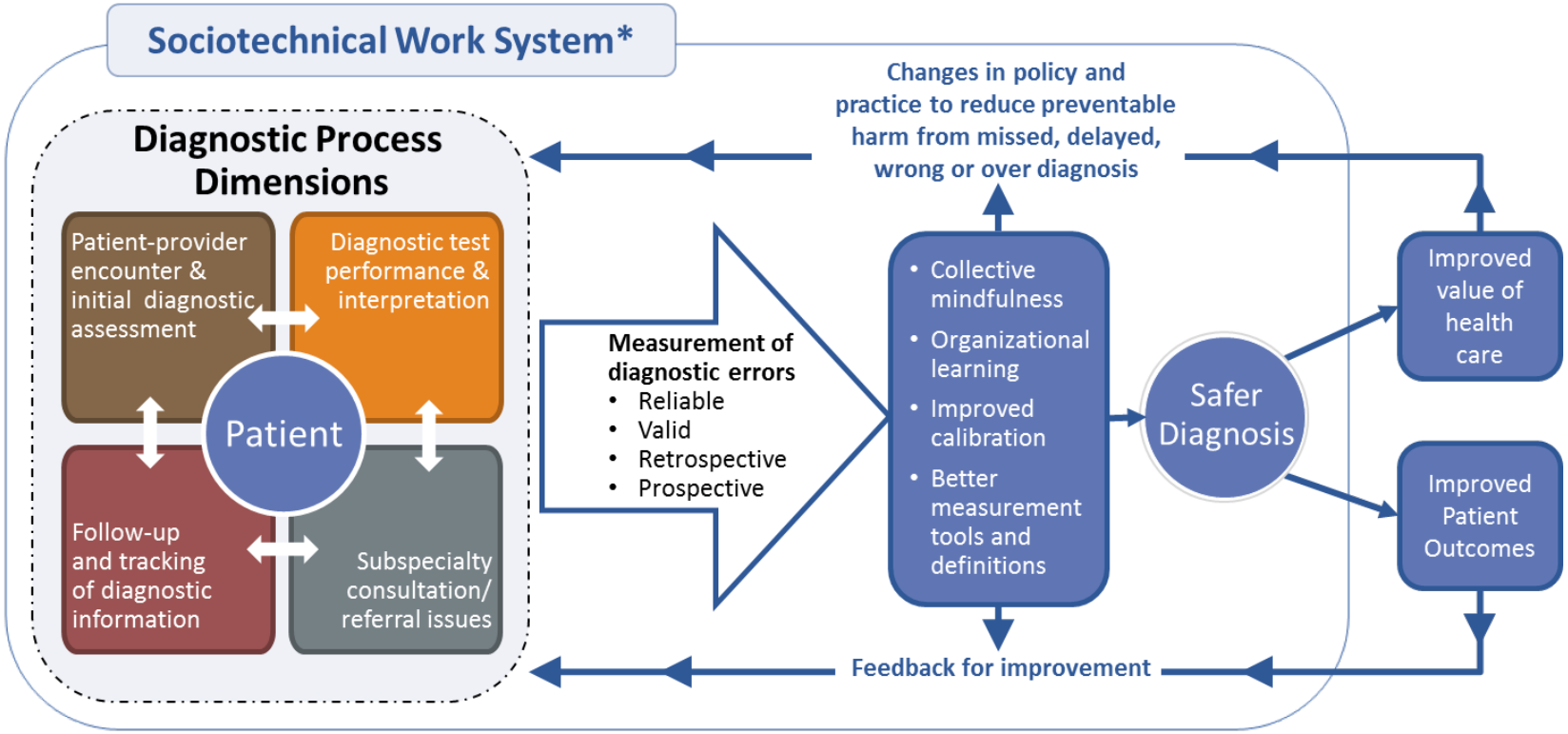
B: Preventable diagnostic harm

C: Delayed/wrong diagnosis associated with patient harm but no clear evidence of missed opportunities

D: Delayed/wrong diagnosis but no clear evidence of missed opportunities

Adapted from Singh, Jt Comm J Qual Patient Saf 2014

SAFER DX FRAMEWORK: MEASUREMENT OF DIAGNOSTIC ERRORS IN HEALTHCARE



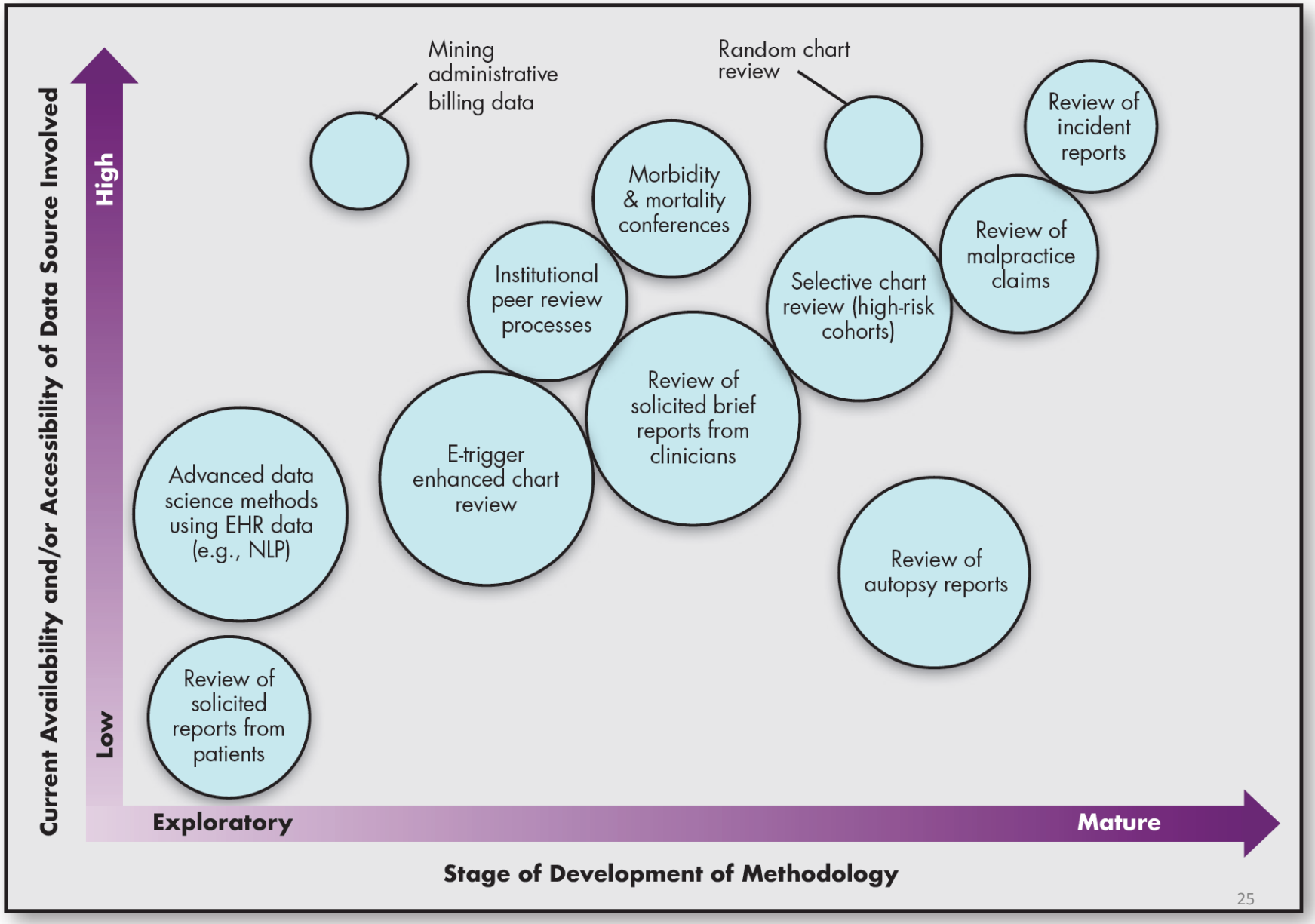
Donabedian's Structure–Process–Outcome model

Singh and Sittig, BMJ Qual Saf 2015

LEARNING HEALTH SYSTEM FOR DIAGNOSTIC SAFETY

- Why measurement and feedback
- Data sources and methods for learning

Figure 2. Implementation Readiness of Diagnostic Safety Measurement Strategies



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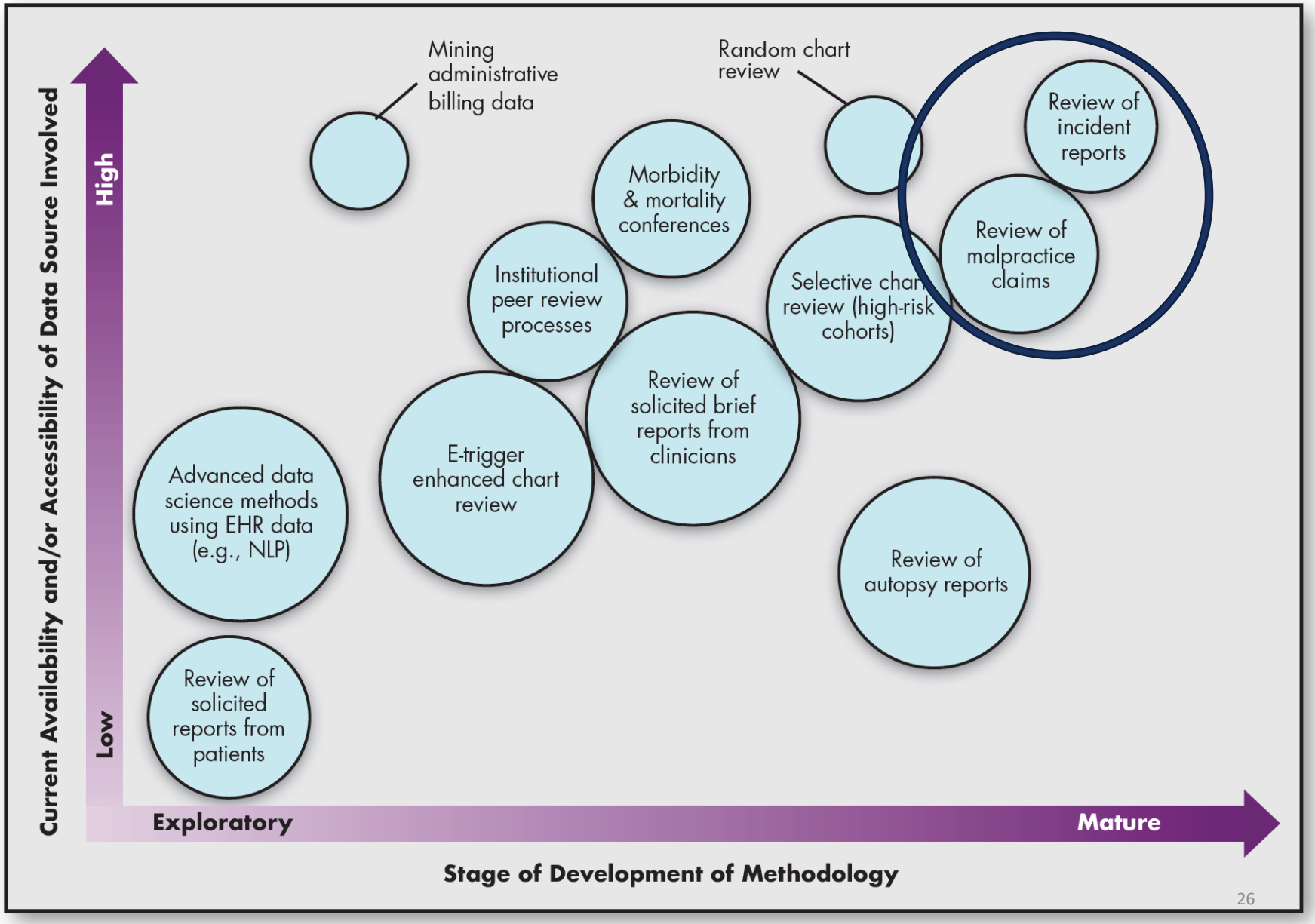


ENGAGE CLINICIANS TO REPORT DATA

Few studies have engaged frontline physicians in reporting

Requires substantial frontline provider engagement, leadership support and physician champion/s

Increasing Physician Reporting of Diagnostic Learning Opportunities

Trisha L. Marshall, MD,[a,b,c] Anna J. Ipsaro, MD, MBE,[a] Matthew Le, MD,[d] Courtney Sump, MD,[d] Heather Darrell, MS, APRN, CPNP-AC,[a] Kathleen G. Mapes, BSN, CPN,[e] Julianne Bick, BA,[f] Sarah A. Ferris, BA,[a] Benjamin S. Bolser, MD,[a] Jeffrey M. Simmons, MD, MSc,[a,b,c] Philip A. Hagedorn, MD, MBI,[a,b,f,g] Patrick W. Brady, MD, MSc[a,b,c]

BMJ Journals

Emergency Medicine Journal

Using voluntary reports from physicians to learn from diagnostic errors in emergency medicine

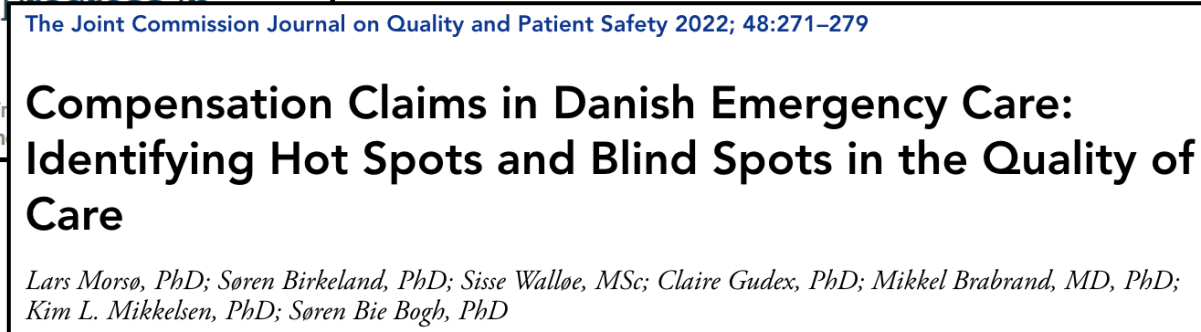
Nnaemeka Okafor,[1] Velma L Payne,[2,3] Yashwant Chathampally,[1] Sara Miller,[1] Pratik Doshi,[1] Hardeep Singh[2,3]

Volume 33, Issue 4

GATHER PATIENT REPORTED DATA

Patients and families identify issues not collected by traditional sources

Patient experiences not gathered



SELECT CHARTS TO REVIEW

- Not possible to find or review everything
- Trigger queries can alert safety personnel of possible adverse event
  - E-trigger algorithm queries for a selective "high-risk" sample in an EHR data warehouse

BMJ Quality & Safety

Application of electronic trigger tools to identify targets for improving diagnostic safety

Murphy DR, Meyer AN, Sittig DF, Meeks DW, Thomas EJ, Singh H.
Online First: 05 October 2018. doi: 10.1136/bmjqs-2018-008086

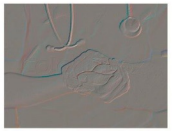
PATHS TO BETTER DIAGNOSES

Danish Patient Compensation

PS!

Dansk Selskab for PatientS!kkerhed

Danish Society for Patient Safety



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PROJECT DESIGN

- A quantitative and a qualitative analysis has been carried out on data from the Danish Patient Compensation
- All cases 2009-2018 (90.000 cases)
- Before Covid-19!

PS! Dansk Selskab for PatientSikkerhed

Patienterstatninger – behandlings- og lægemiddelskade

QUANTITATIVE ANALYSIS

Annually 760 Danish citizens is compensated for injuries caused by diagnostic error.	• 63 citizens die (mean age: 55 years).
Misdiagnosis accounts for 30% of all recognized treatment injury cases	
2,25 billion Danish kroner has been payed in compensation for diagnostic errors over a 10-year period (225.000 mio. pr year)	• ~ 0,13 % of total Danish healthcare expenditures (170 billion Danish kroner pr. year)
Five major diseases account for 75 % of diagnosis-related cases:	• Traumatic lesions, cancer, musculoskeletal conditions, vascular diseases and disease of the alimentary tract.

QUALITATIVE ANALYSIS METHOD

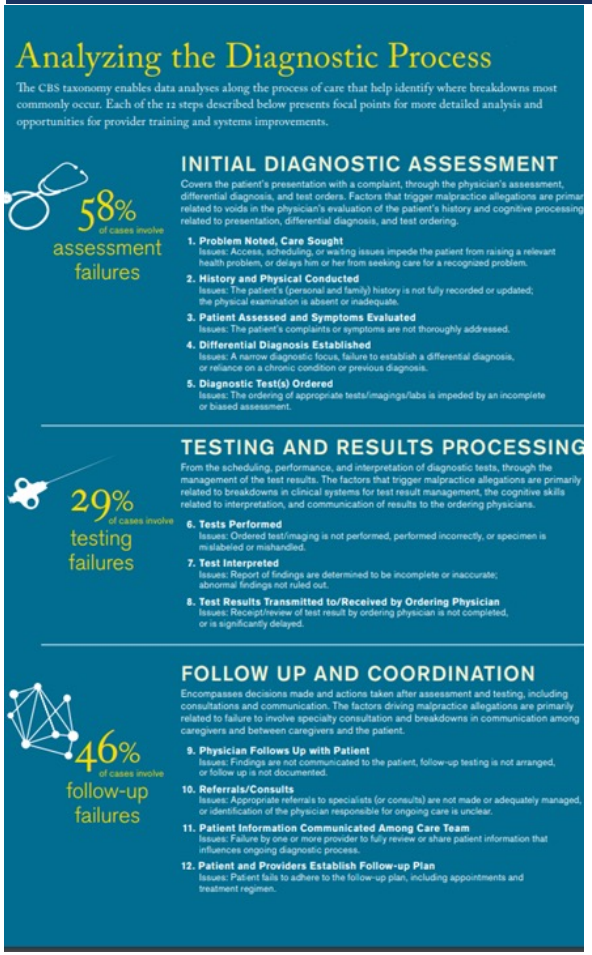
213 cases were audited

The cases were distributed between 3 independent reviewers, all experienced medical specialists.

During the review period they met twice to ensure methodological consistency

The records contain all background material, medical charts, hospital records, lab results, x-ray-pictures etc. and the medical expert evaluation

QUALITATIVE ANALYSIS I CHRONOLOGICALLY



- Our tool was translated and adapted from a tool originally designed by the American organization CRICO (The Risk Management Foundation of the Harvard Medical Institutions Incorporated) to analyze and learn from malpractice claims.
- 3 phases with a total of 12 steps

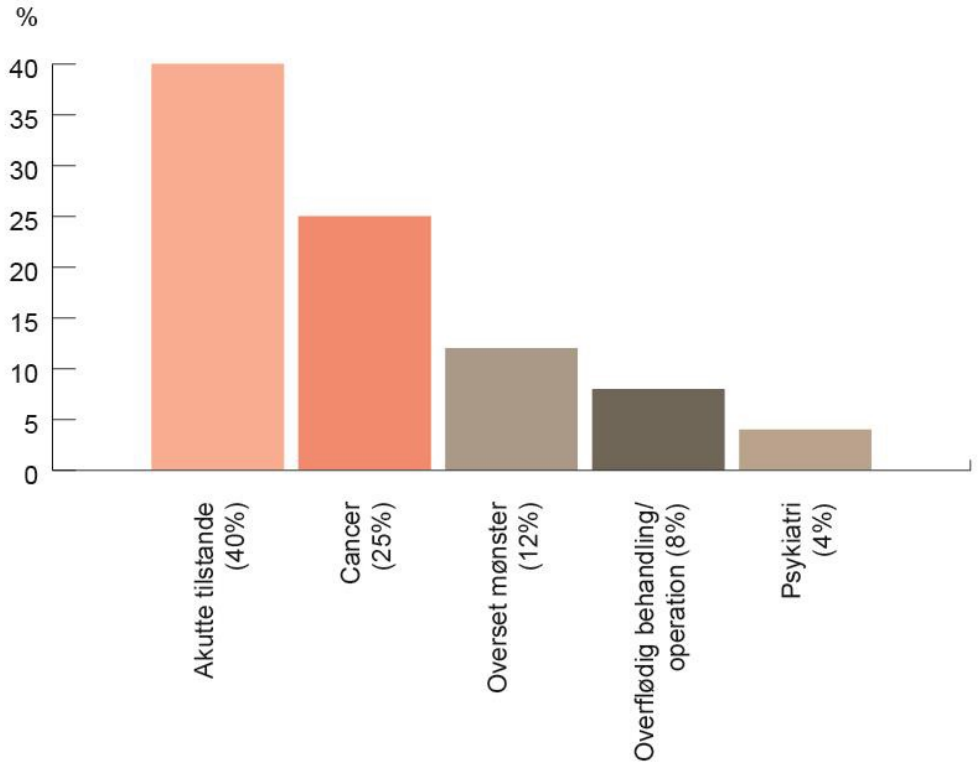
Malpractice Risks in the Diagnostic Process, Annual Benchmarking Report 2014, CRICO

QUALITATIVE ANALYSIS I RESULTS

Initial diagnostic assessment					Testing and results processing			Follow up and coordination			
80 %					27 %			33 %			
1	2	3	4	5	6	7	8	9	10	11	12
Problem noted – Care sought	History and Physical Conducted	Patient Asssessed and Symptoms Evaluated	Differential Diagnosis Established	Diagnostic Test(s) Ordered	Tests Performed	Tests Interpreted	Test Results Transmitted to/ Recieved by Ordering Physician	Physician Follows up with Patient	Referrals/ Consults	Patient Information Communi cated among Care Team	Patient and Providers Establish Follow up Plan
1%	23%	52%	44%	38%	2%	25%	0%	7%	24%	4%	1%

QUALITATIVE ANALYSIS 11 THEMATIC

- Acute symptoms, medical or surgical
- Cancer-suspected symptom or finding
- Errors in the form of overtreatment (operation)
- Overlooked pattern/lack of pattern recognition
- Psychiatric treatment



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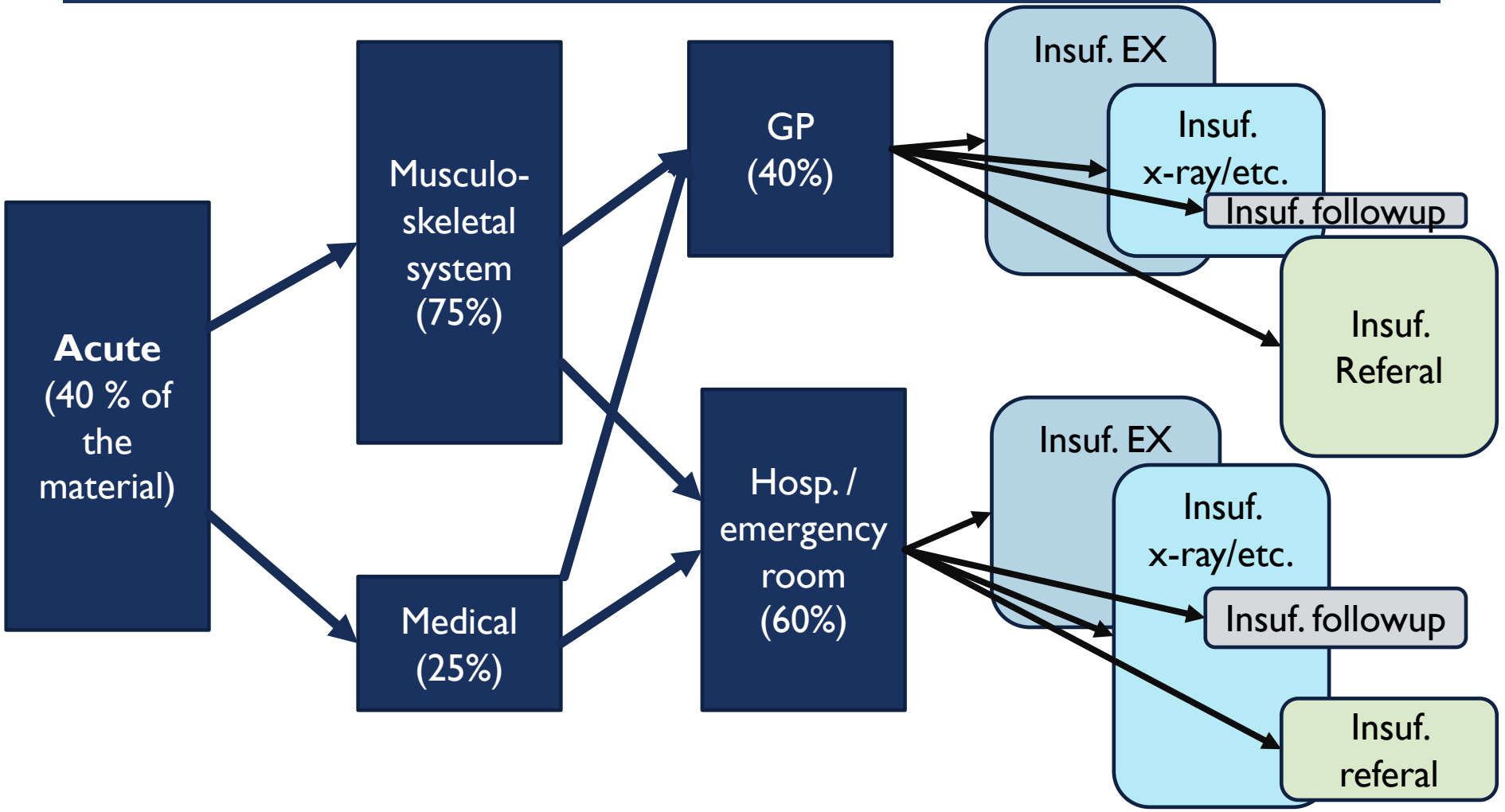

CAUSES OF DIAGNOSTIC ERROR

- Quite easy for reviewers to determine what phase in the diagnostic process was affected
- In the qualitative thematic analysis it was possible to reveal some underlying failure patterns
- Difficult to determine the exact cause of error