Gníomhaireacht Bainistíochta an Chisteáin Náisiúnta
National Treasury Management Agency

An Ghníomhaireacht um Éilimh ar an Stát
State Claims Agency

Diagnostic Excellence

Dr John Fitzsimons
Consultant Paediatrician, Clinical Director for QI, HSE

#SCALearning25

Diagnostic Excellence

DxEx

From Error to Excellence

Dr John Fitzsimons

Consultant Paediatrician, CHI @ Temple Street,

CD for QI with HSE National QPS Directorate & Lead for Quality Improvement Education, RCPI

Learning Outcomes

At the end of this session you will be able to…

Appreciate

- Appreciate the influence of diagnosis on the quality and safety of care

Describe

- Describe the features of *Diagnostic Excellence* and *Diagnostic Stewardship*

Find & apply

- Apply resources that support stewardship for *Diagnostic Excellence* in your workplace

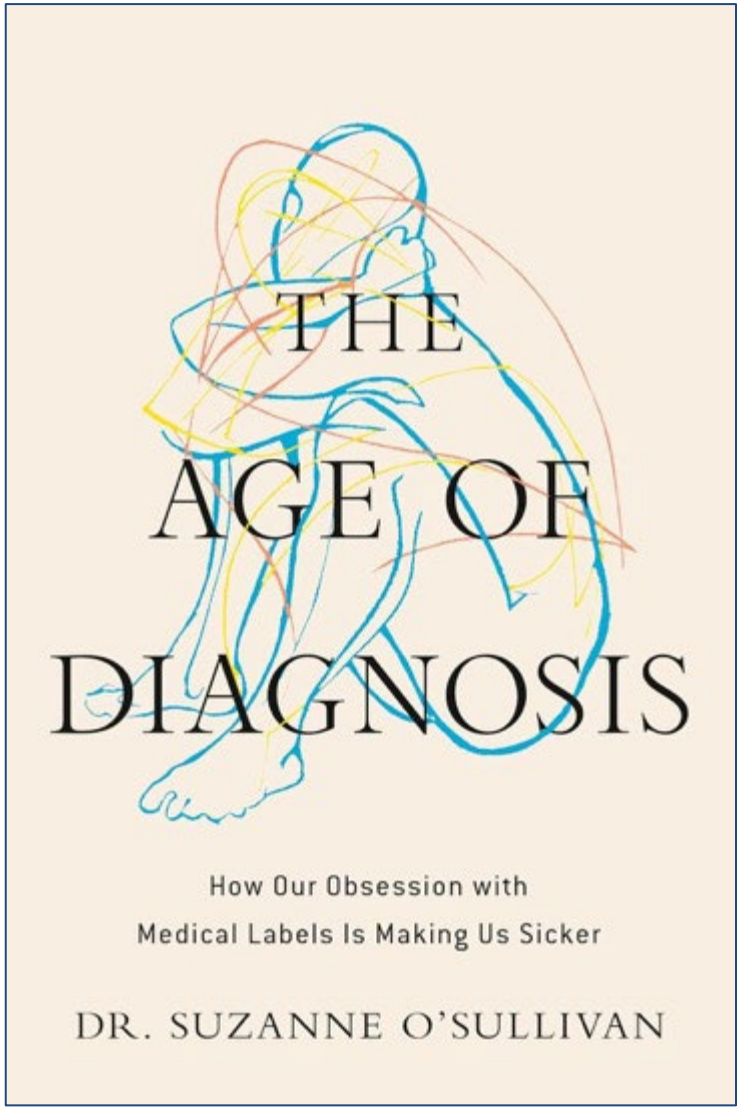
Diagnosis is in the spotlight …

WHO “*World Patient Safety Day*” Theme September 17th **2024**

“Get it right, make it safe!”

Diagnosis has become topical…

Dr Suzanne O’Sullivan




Post-operative
Pre-operative
Screening
Admitting
Initial
Suspected
Billable
Telediagnosis
Working
Genetic
Discharge
Evolving
Internet
Preliminary
Retrospective
Laboratory
Tissue
Final
diagnosis
Pre-natal
Principal
Rule-out
AI-enhanced
Alternate
Clinical
Diagnosis-of-exclusion
Post-mortem
Confirmed
Dr.Google
Self-diagnosis
Mis-diagnosis
Differential

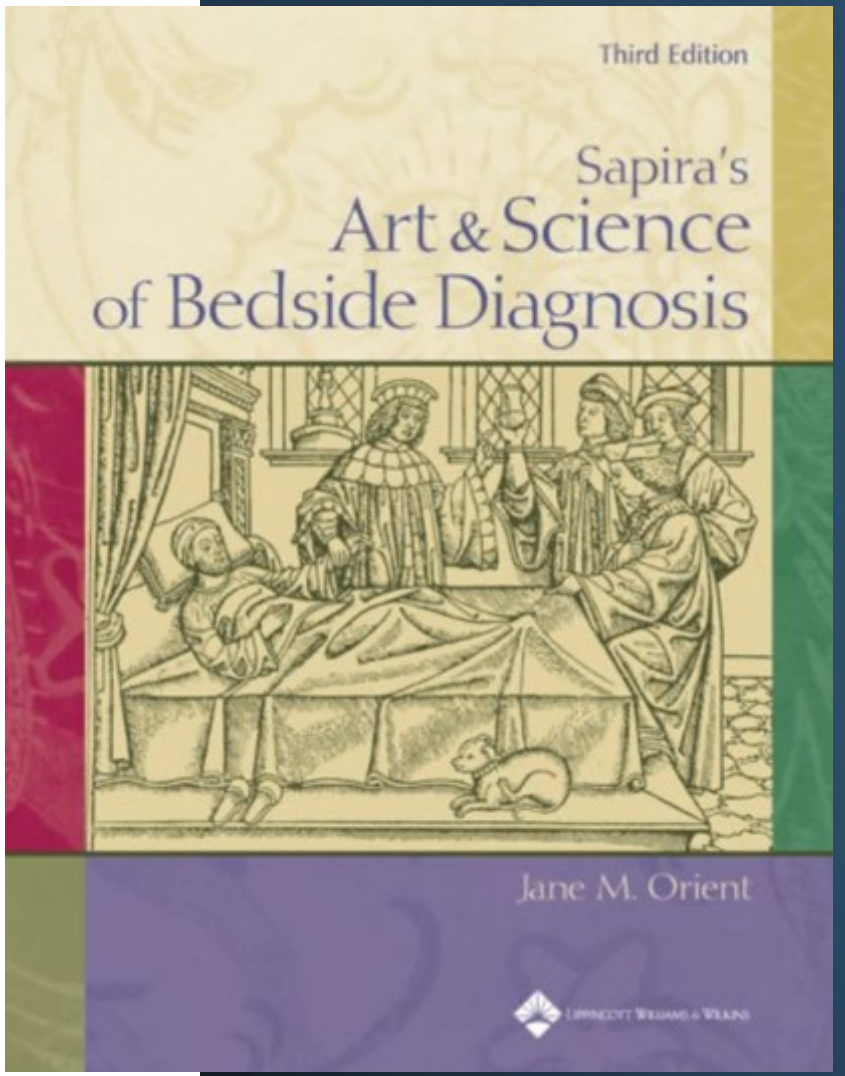
What is Diagnosis?

- The art or act of identifying a disease from its signs and symptoms (Merriam-Webster Dictionary)

- A pre-existing set of categories agreed upon by the medical profession to designate a specific condition

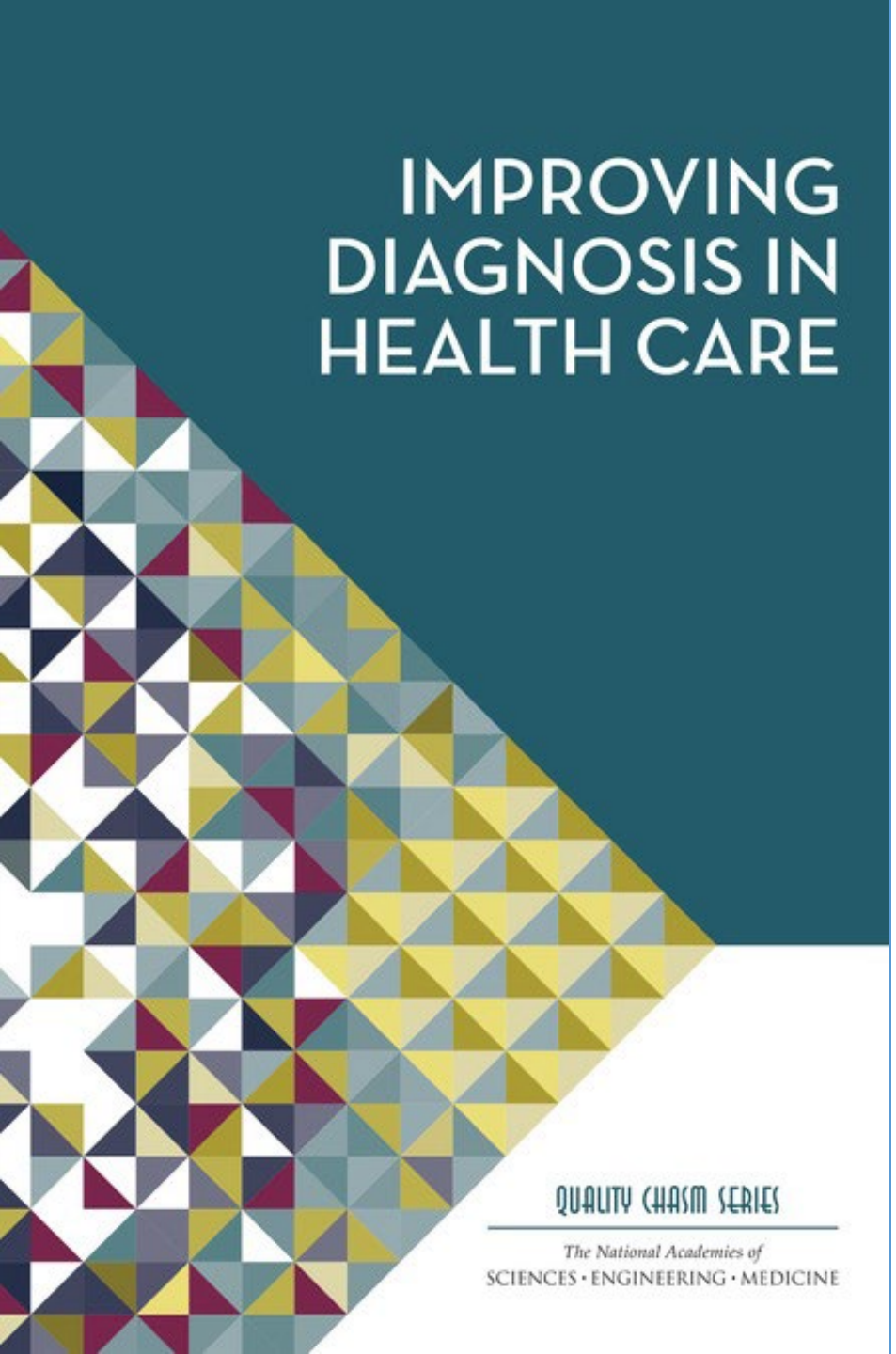
  (Jutel, A. *Sociology of diagnosis*, 2009)

- The process of identifying a disease, condition, or injury from its signs and symptoms. (US National Cancer Institute)



Diagnosis and Patient Safety

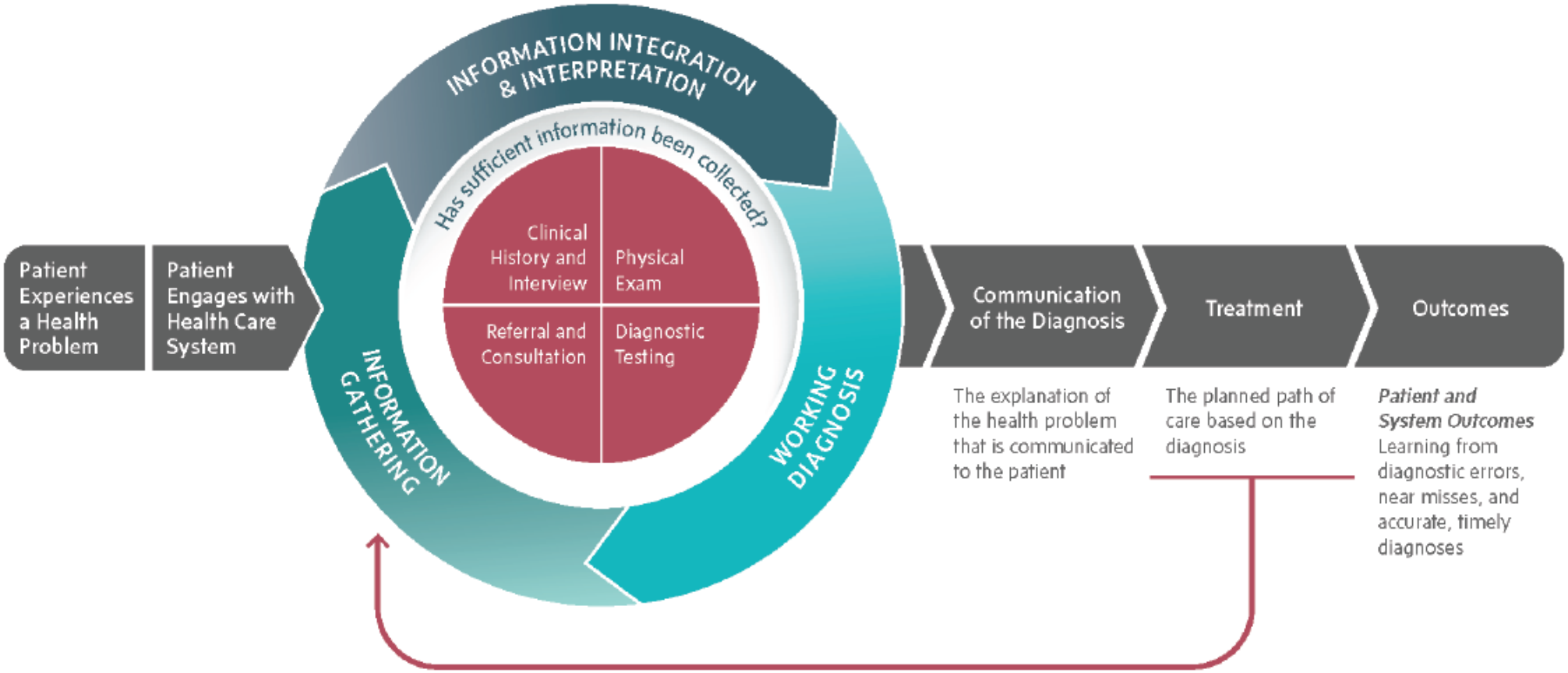
- Studies have shown that 5 % of patients in outpatient care (USA) and 4.3% of patients in primary care (UK) experience a diagnostic error each year
- Medical record reviews suggest that diagnostic errors account for 6-17 percent of hospital adverse events.
- Post-mortem examination research has shown that diagnostic errors contribute to approximately 10 percent of patient deaths.
- Diagnostic errors are the leading type of paid medical malpractice claims in the US.



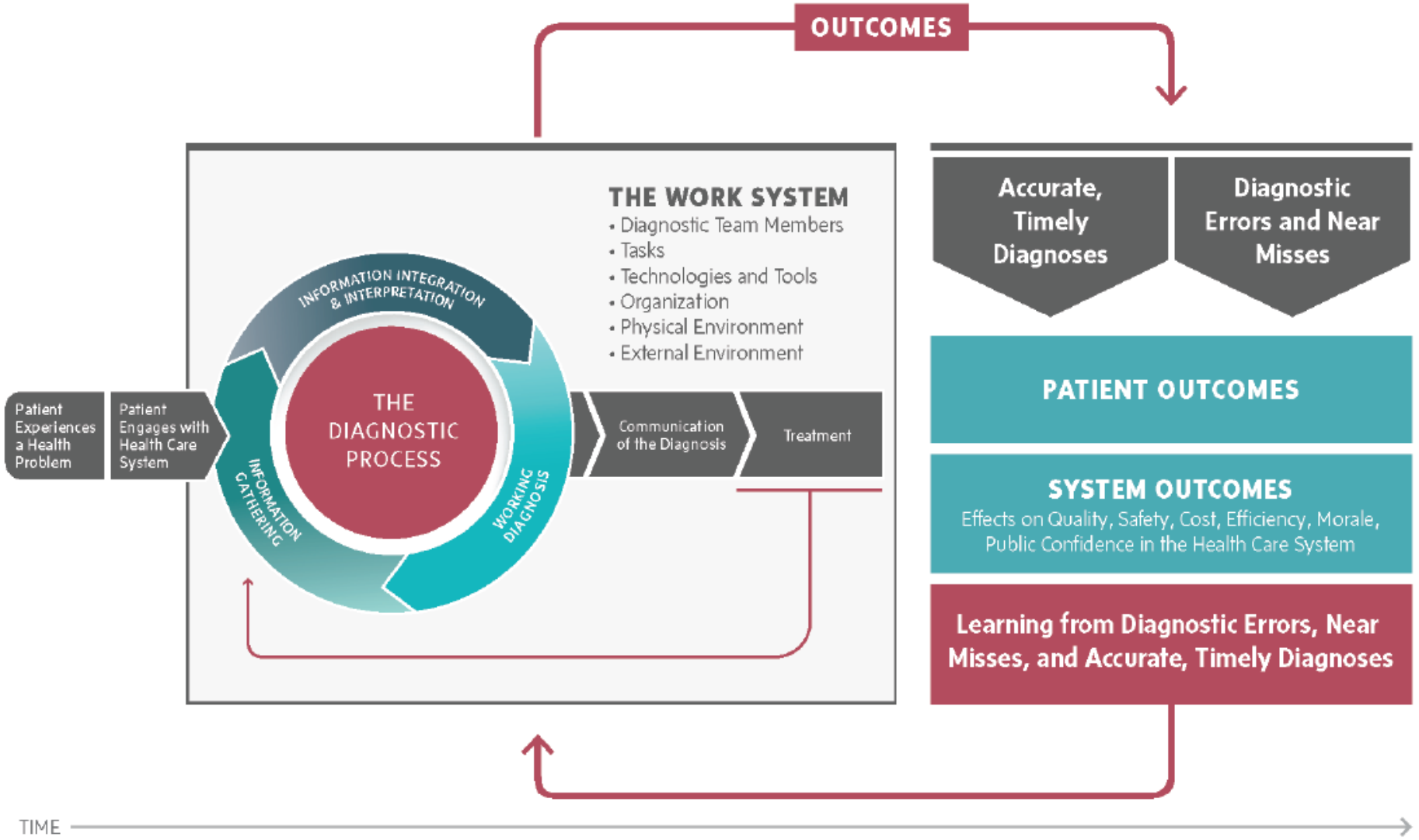
Committee on Diagnostic Error in Health Care; Board on Health Care Services; Institute of Medicine; The National Academies of Sciences, Engineering, and Medicine; **2015**

"The purpose of diagnosis is to achieve a timely and accurate diagnosis and secondly; to communicate that diagnosis in a person centred way"

The Process of Diagnosis



Outcomes come from the Diagnostic Process & the Work System



The Emergence of Diagnostic Excellence (DxEx)

Moving from a focus on Error to Excellence

Where has Diagnostic excellence come from?

- Built on the NAM Model of Diagnostic Process & Work System
- Quality care is Safe And…

  …Person centred, Effective, Efficient, Equitable & Timely

  And…Sustainable!
- Safety II

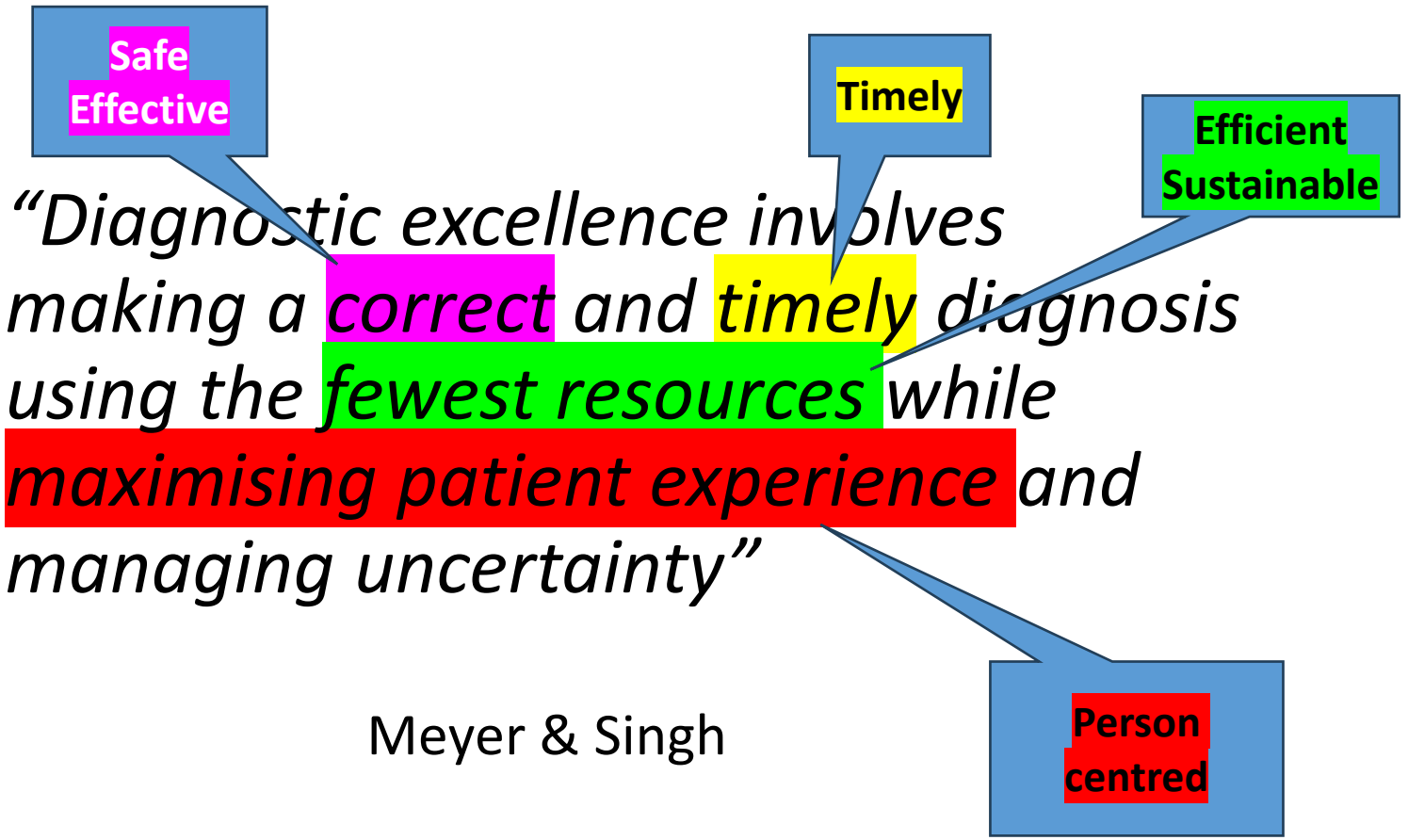
Diagnostic Excellence

"Diagnostic excellence involves making a correct and timely diagnosis using the fewest resources while maximising patient experience and managing uncertainty"

Meyer & Singh

JAMA 2019;321:737-8.

Diagnostic Excellence



"Diagnostic excellence involves making a correct and timely diagnosis using the fewest resources while maximising patient experience and managing uncertainty"

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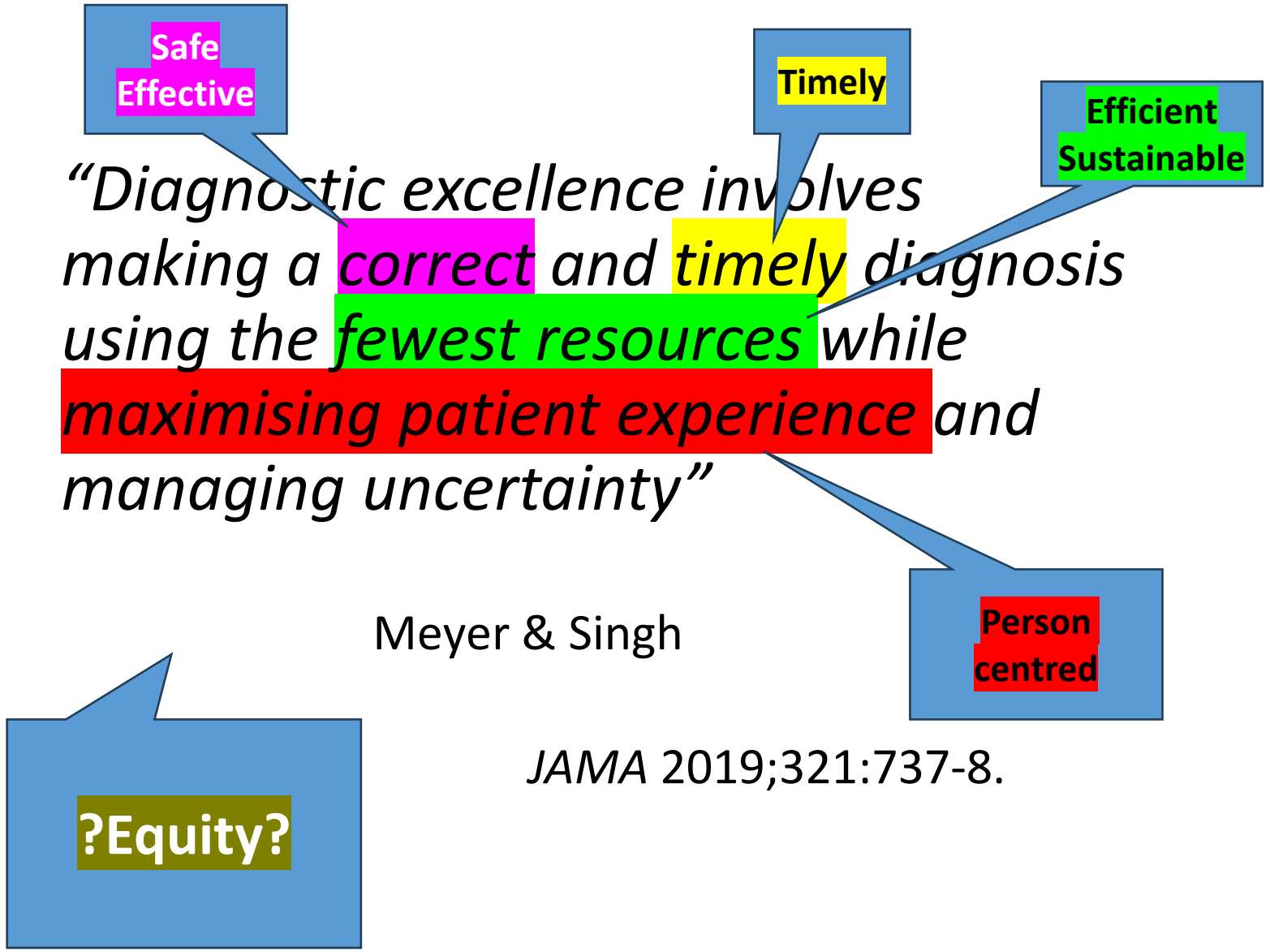
Diagnostic Excellence



Meyer & Singh

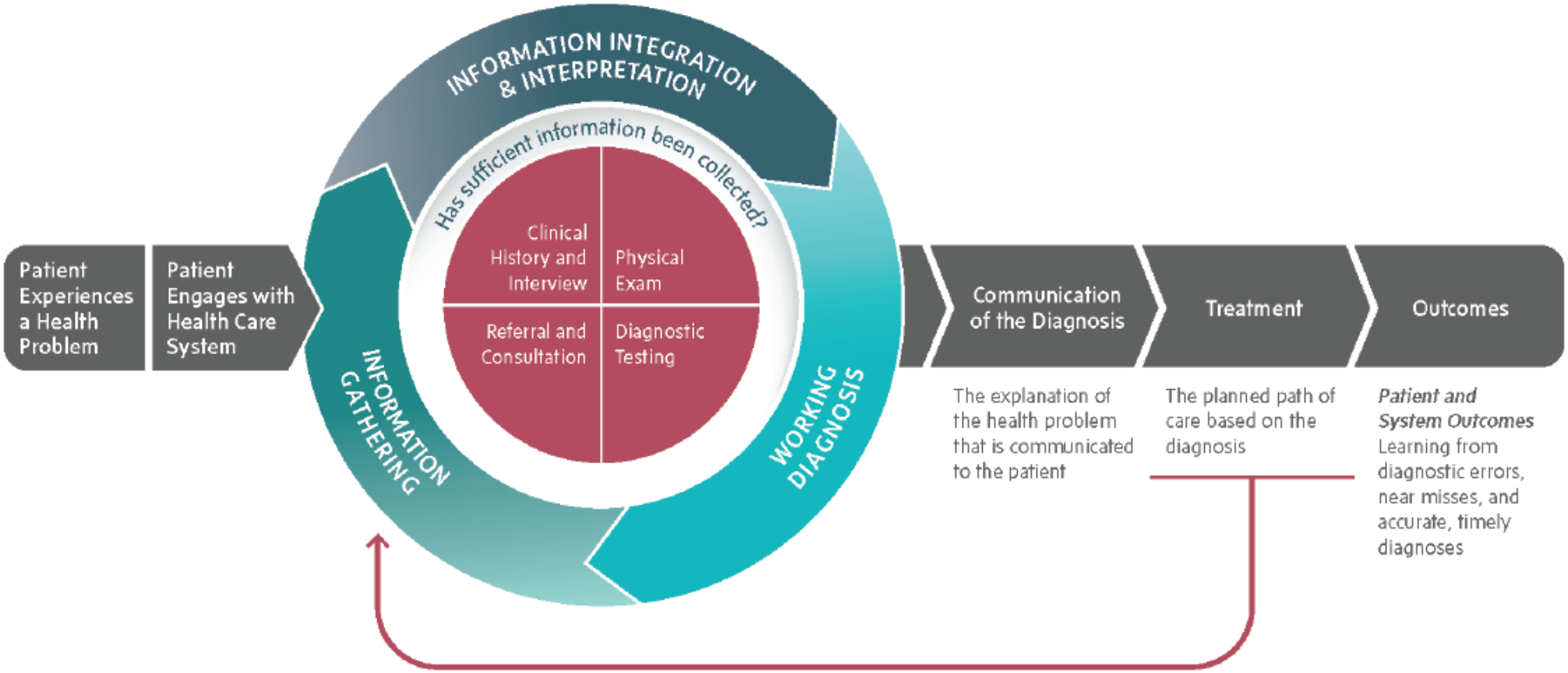
JAMA 2019;321:737-8.

Diagnostic Stewardship

- Clinicians
- The System
- Patient Partnership
- Technology & AI enhanced diagnostic excellence
- Reducing overuse & overdiagnosis
- Special diagnostic situations

THE CLINICIAN

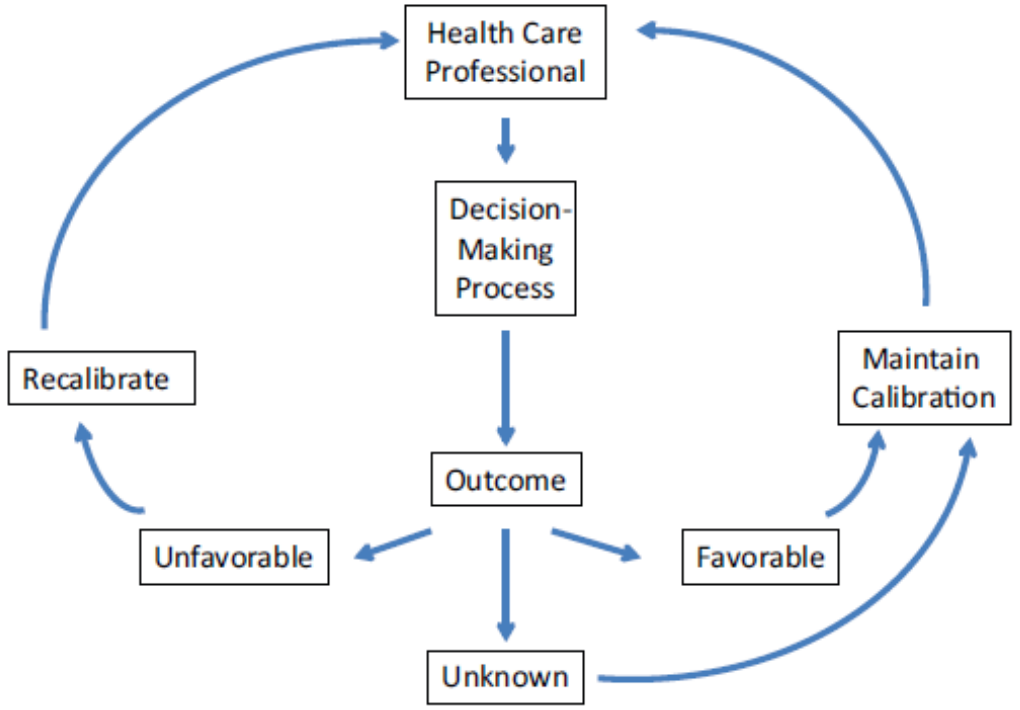
The Process of Diagnosis



Diagnostic Calibration

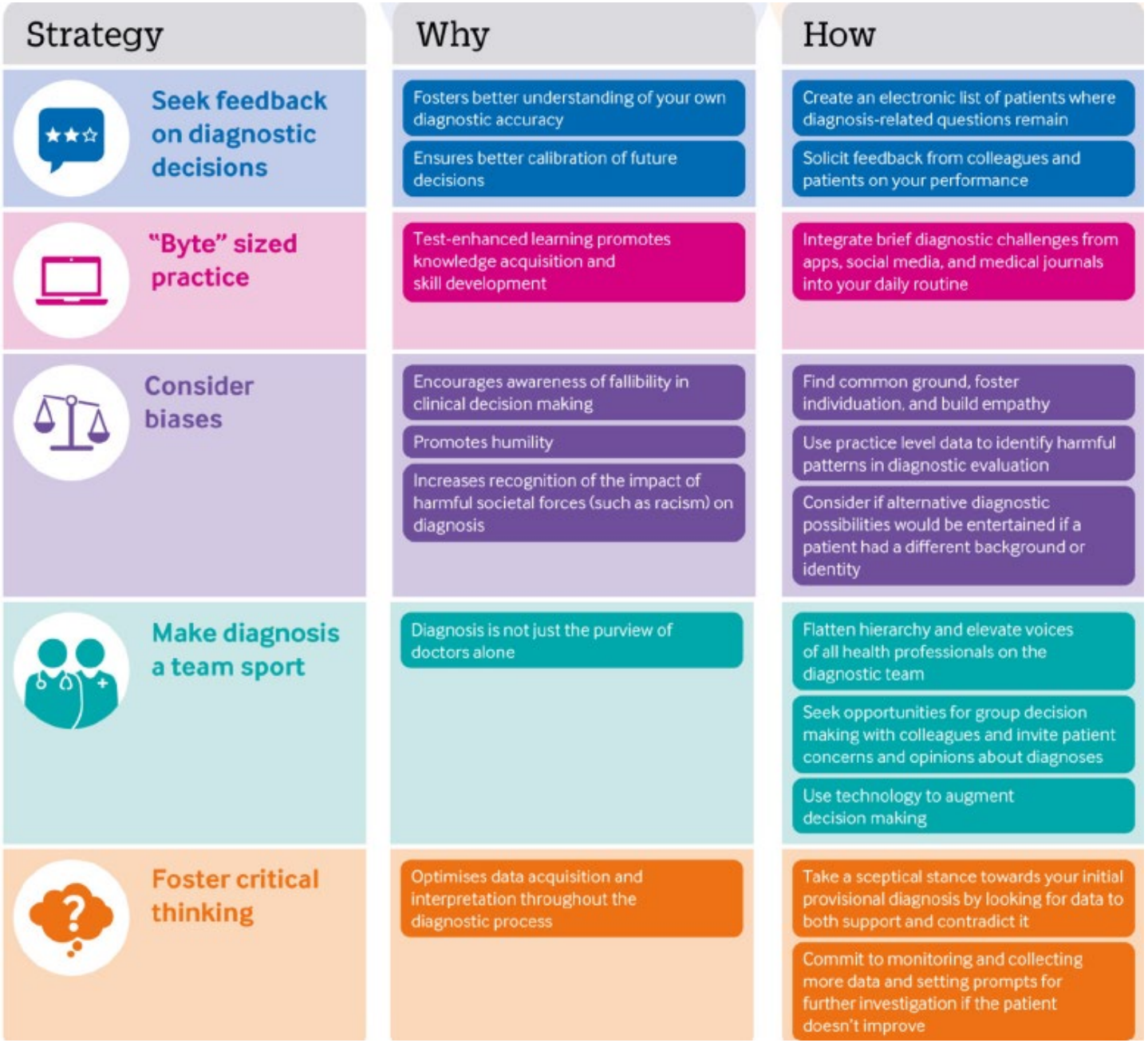
"The balance between accuracy and confidence in diagnosis"

Hardeep Singh



Singh H *et al* BMJ 2022;376:e068044

5 Strategies For Advancing Diagnostic Excellence



Providing Good & Safe Feedback

The Joint Commission Journal on Quality and Patient Safety 2021; 47:120–126

INNOVATION REPORT

A Program to Provide Clinicians with Feedback on Their Diagnostic Performance in a Learning Health System

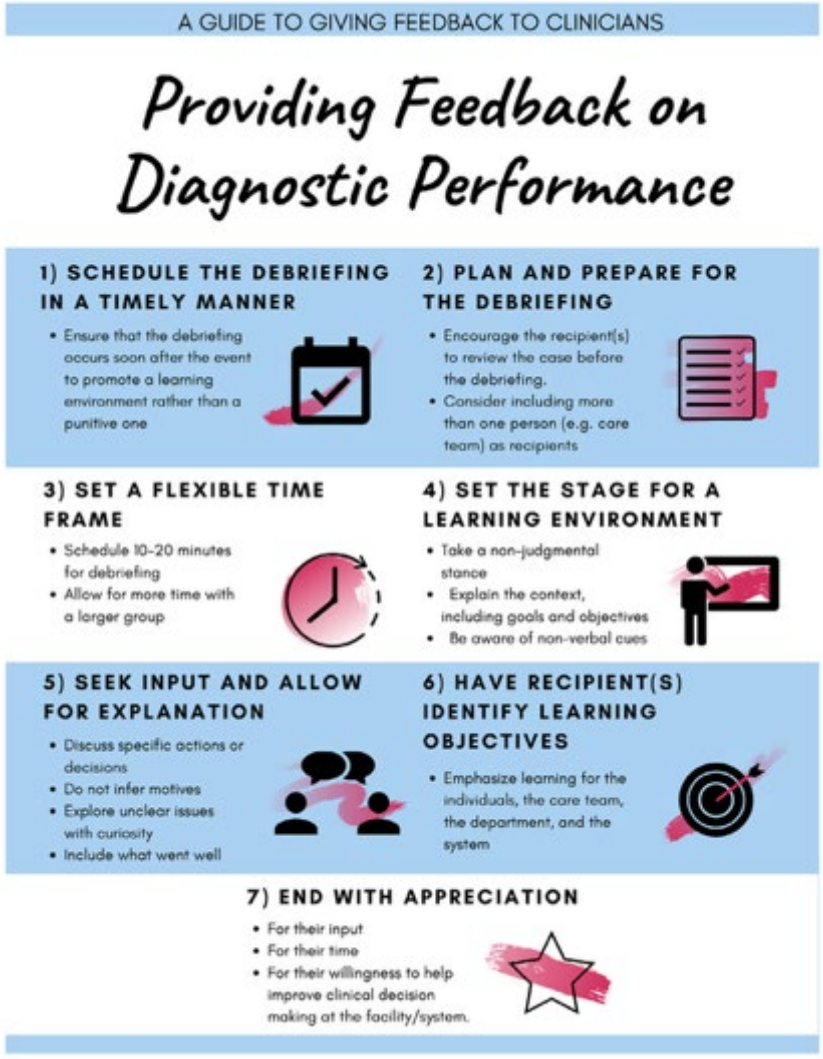
Ashley N.D. Meyer, PhD; Divvy K. Upadhyay, MD, MPH; Charlotte A. Collins, PhD; Michael H. Fitzpatrick, MD; Maria Kobylinski, MD; Amit B. Bansal, MD, MBA; Dennis Torretti, MD; Hardeep Singh, MD, MPH

Problem: Reducing diagnostic errors requires improving both systems and individual clinical reasoning. One strategy to achieve diagnostic excellence is learning from feedback. However, clinicians remain uncomfortable receiving feedback on their diagnostic performance. Thus, a team of researchers and clinical leaders aimed to develop and implement a diagnostic performance feedback program for learning that mitigates potential clinician discomfort.

Approach: The program was developed as part of a larger project to create a learning health system around diagnostic safety at Geisinger, a large, integrated health care system in rural Pennsylvania. Steps included identifying potential missed opportunities in diagnosis (MODs) from various sources (for example, risk management, clinician reports, patient complaints); confirming MODs through chart review; and having trained facilitators provide feedback to clinicians about MODs as learning opportunities. The team developed a guide for facilitators to conduct effective diagnostic feedback sessions and surveyed facilitators and recipients about their experiences and perceptions of the feedback sessions.

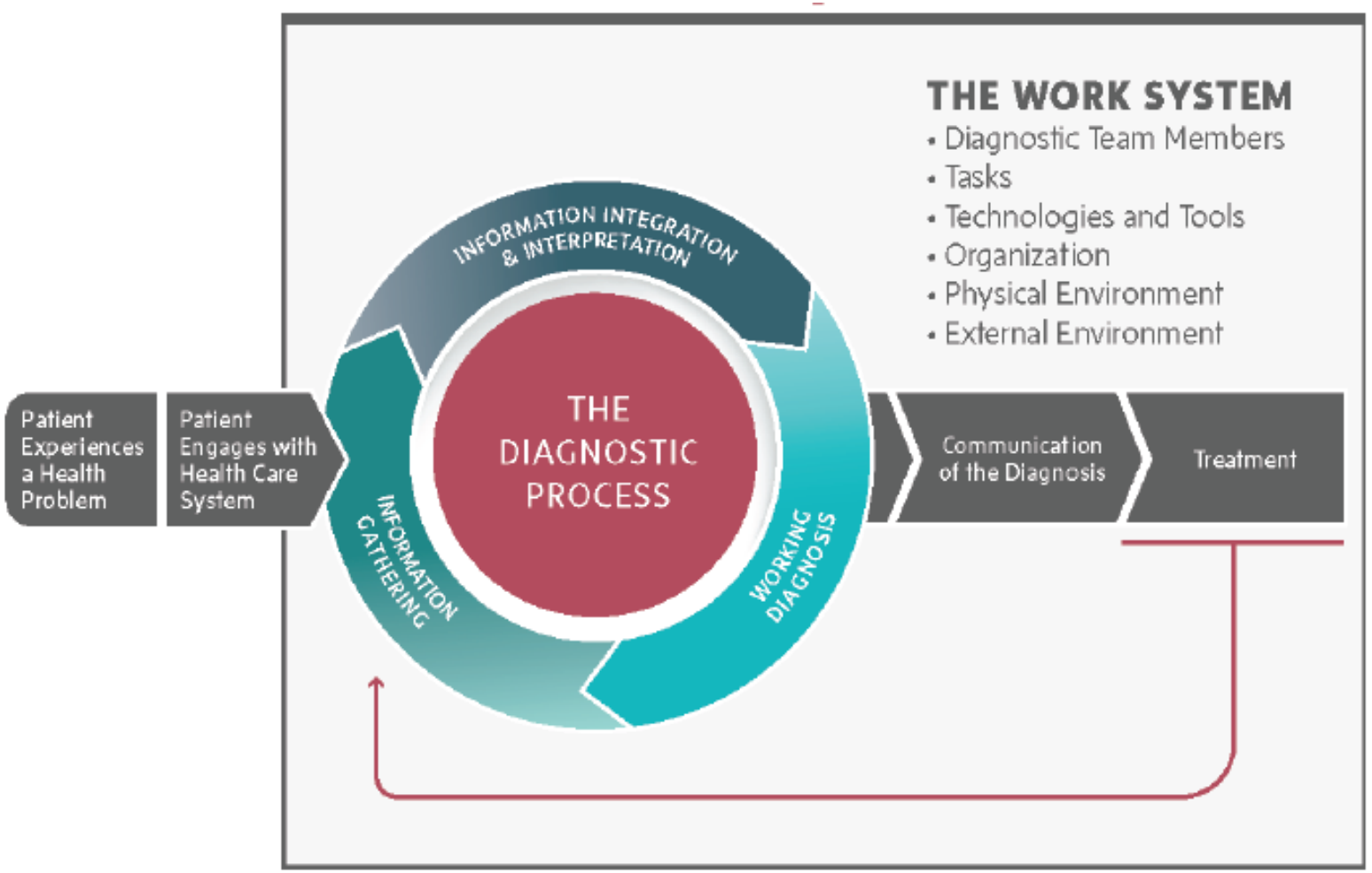
Outcomes: 28 feedback sessions occurred from January 2019 to June 2020, involving MODs from emergency medicine, primary care, and hospital medicine. Most facilitators (90.6% [29/32]) reported that recipients were receptive to learning and discussing MODs. Most recipients reported that conversations were constructive and nonpunitive (83.3% [25/30]) and allowed them to take concrete steps toward improving diagnosis (76.7% [23/30]). Both groups believed discussions would improve future diagnostic safety (93.8% [30/32] and 70.0% [21/30], respectively).

Key Insights and Next Steps: An institutional program was developed and implemented to deliver diagnostic performance feedback. Such a program may facilitate learning and improvement to reduce MODs. Future efforts should assess long-term effects on diagnostic performance and patient outcomes.



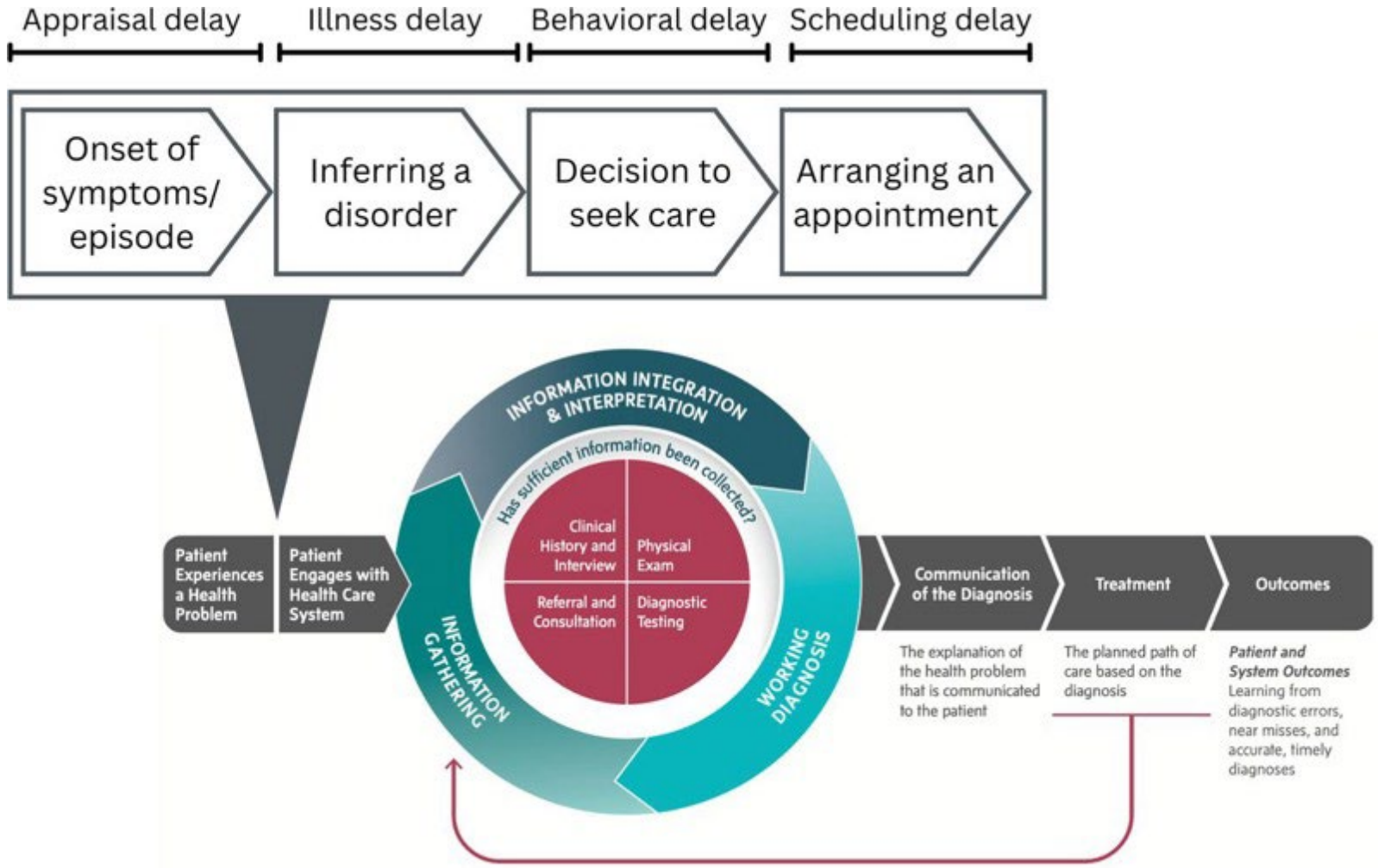
THE SYSTEM

The Diagnostic Process exists in System



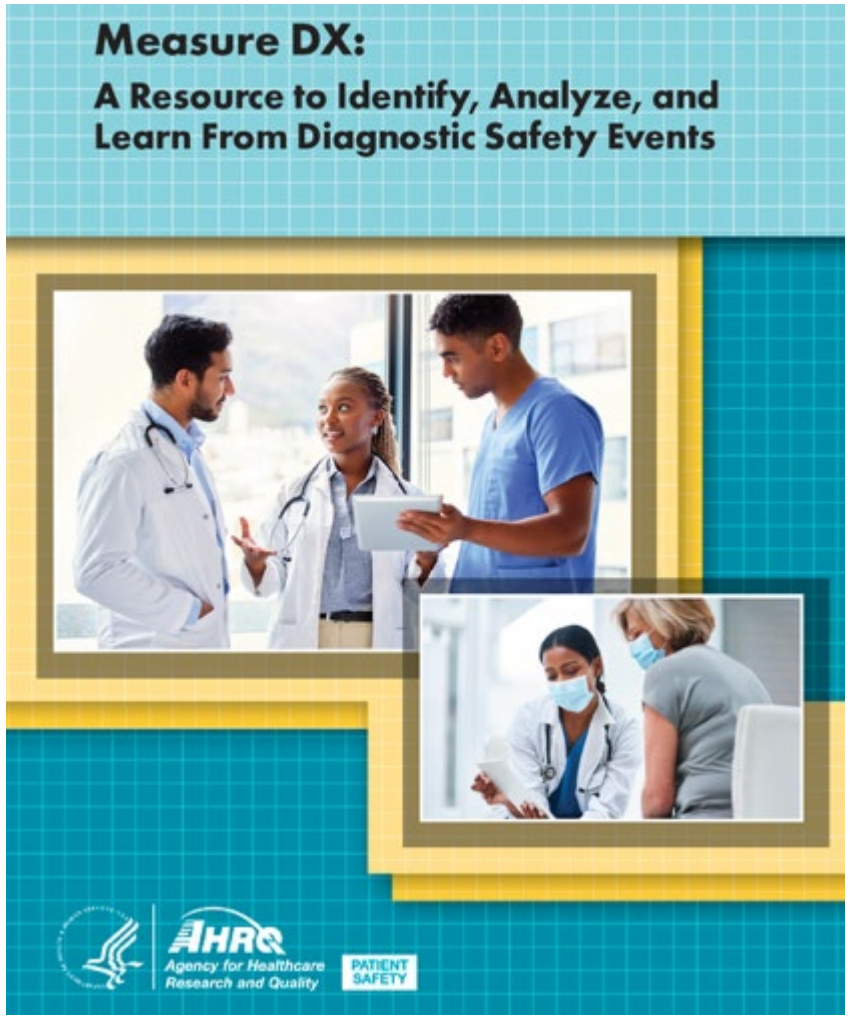
Diagnostic Challenges in Mental Health

Bradford A,
Meyer AND, Khan S, et al.
BMJ Qual Saf
doi:10.1136/bmjqs-2023-016996



Measure Dx

www.ahrq.gov/diagnostic-safety/tools/measure-dx.html



- Learning Health System
- Enabled by IT and EHRs
- Using Audit, data and QI to improve
- Operational definitions, taxonomy and language of diagnostic process
- Improving feedback and calibration
- Relies on a Just Safety culture & Psychological safety

Measure Dx - Diagnostic Error Index

THE JOURNAL OF PEDIATRICS • www.jpeds.com ORIGINAL ARTICLES

The Diagnostic Error Index: A Quality Improvement Initiative to Identify and Measure Diagnostic Errors

Michael F. Perry, MD[1,2], Jennifer E. Melvin, MD[2,3], Rena T. Kasick, MD[1,2], Kelly E. Kersey, BS, CPHQ[4], Daniel J. Scherzer, MD[2,3], Manmohan K. Kamboj, MD[2,5], Robert J. Gajarski, MD[2,6], Garey H. Noritz, MD[2,7], Ryan S. Bode, MD[1,2], Kimberly J. Novak, PharmD[8], Berkeley L. Bennett, MD[2,3], Ivor D. Hill, MD[2,9], Jeffrey M. Hoffman, MD[2,10], and Richard E. McClead, MD[2]

Objective To develop a diagnostic error index (DEI) aimed at providing a practical method to identify and measure serious diagnostic errors.

Study design A quality improvement (QI) study at a quaternary pediatric medical center. Five well-defined domains identified cases of potential diagnostic errors. Identified cases underwent an adjudication process by a multidisciplinary QI team to determine if a diagnostic error occurred. Confirmed diagnostic errors were then aggregated on the DEI. The primary outcome measure was the number of monthly diagnostic errors.

Results From January 2017 through June 2019, 105 cases of diagnostic error were identified. Morbidity and mortality conferences, institutional root cause analyses, and an abdominal pain trigger tool were the most frequent domains for detecting diagnostic errors. Appendicitis, fractures, and nonaccidental trauma were the 3 most common diagnoses that were missed or had delayed identification.

Conclusions A QI initiative successfully created a pragmatic approach to identify and measure diagnostic errors by utilizing a DEI. The DEI established a framework to help guide future initiatives to reduce diagnostic errors.
(J Pediatr 2021;232:257-63).

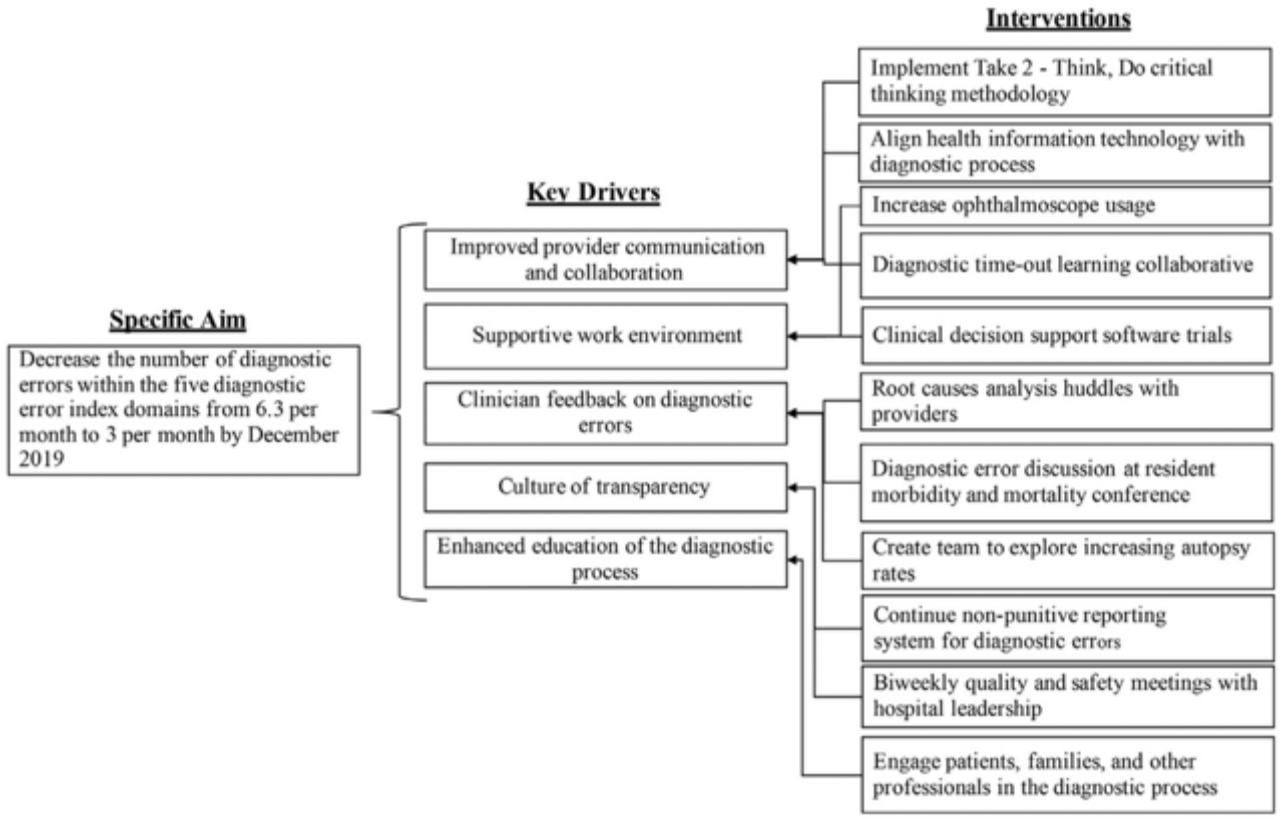
5 sources for Measuring Diagnostic Error

- Autopsy findings according (Class-1 Goldman classification)
- Institutional root cause analyses
- Voluntary reporting through an electronic risk management system
- Morbidity and mortality (M&M) conferences
- Institutionally developed abdominal pain EHR trigger

Accompanying Editorial Comment:

*"Even more important than the measure developed by Perry et al, however, is the fact that they are measuring diagnostic errors - **and talking about it**"*

Using QI to achieve Diagnostic Excellence



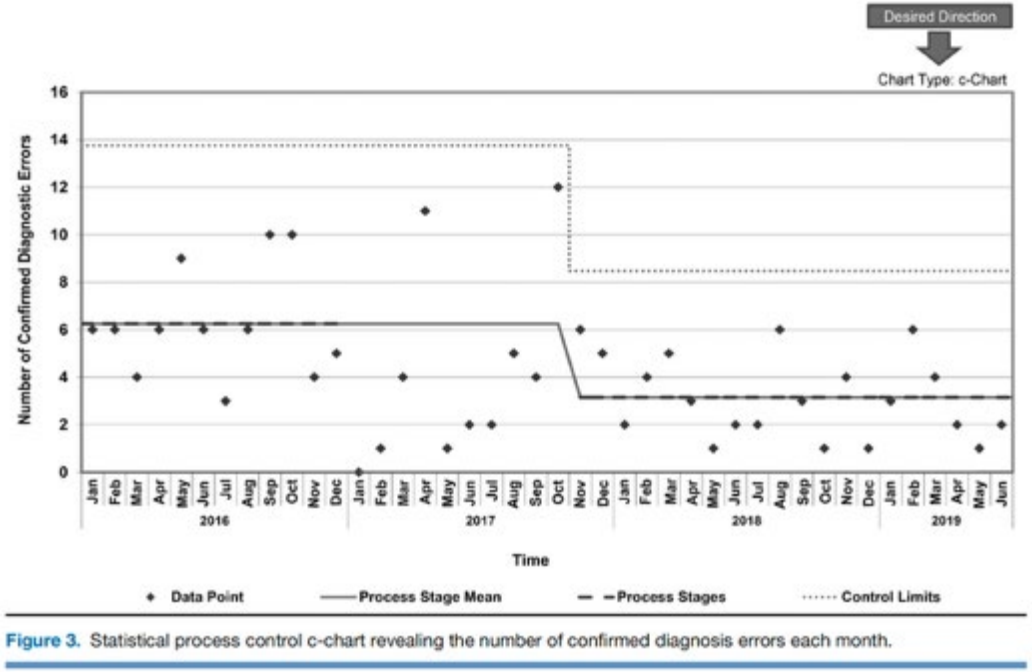


Figure 3. Statistical process control c-chart revealing the number of confirmed diagnosis errors each month.

Perry MF *et al.* The Diagnostic Error Index: A Quality Improvement Initiative to Identify and Measure Diagnostic Errors. J Pediatr. 2021 May;232:257-263. doi: 10.1016/j.jpeds.2020.11.065.

Educational and Organisational Resources

TeamSTEPPS Diagnosis Improvement Course


TeamSTEPPS Course Guide

Module 1: Introduction — est. 60 min module
This module provides an overview of the evidence on diagnostic error and how improved communication among all members of the care team can lead to a safe, accurate, and timely diagnosis in all healthcare settings. It also provides an overview of the TeamSTEPPS framework, competencies, and key principles.

Module 2: Team Structure — est. 45 min module
Who is on the diagnostic team? This module explores the diagnostic teams and the benefits of teamwork and structure. Exercises will help you and your team identify their roles in achieving a safe, accurate, and timely diagnosis.

Module 3: Communications — est. 30 min module
Breakdowns in communication result in significant errors in diagnosis. This module provides diagnostic teams with structured communication tools and approaches to helping achieve a safe, accurate, timely, and communicated diagnosis.

Module 4: Leadership — est. 30 min module
Strong leadership is crucial for diagnostic safety. This module defines effective team leadership and provides guidance and tools for healthcare leaders to lead and coach diagnostic teams.

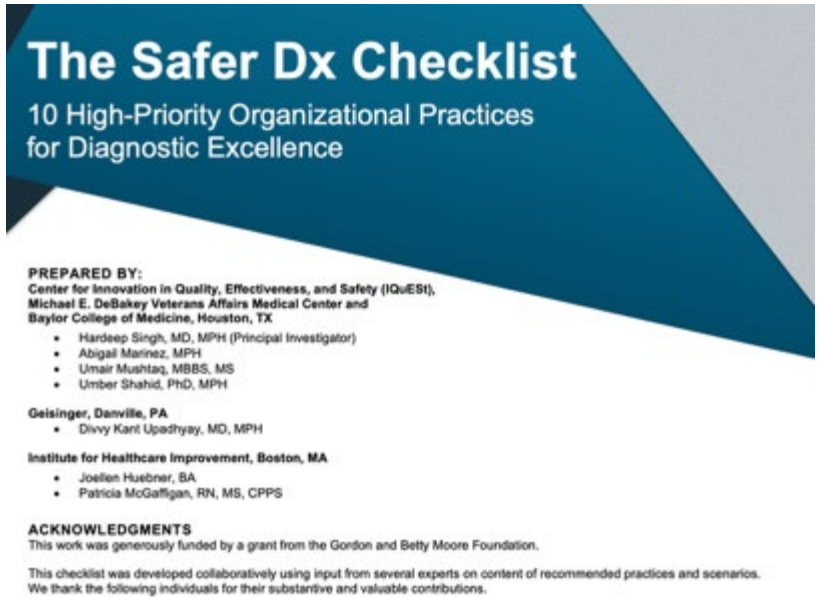
Module 5: Situation Monitoring — est. 30 min module
Situation monitoring is the process of continually scanning and assessing a situation to gain and maintain an understanding of what is going on around you. This module describes how situation monitoring can affect diagnostic outcomes and provides tools to improve diagnostic safety.

Module 6: Mutual Support — est. 30 min module
The members of a diagnostic team must be mutually supportive to optimize diagnostic outcomes. This module defines mutual support and its role in enhancing diagnostic safety.

Module 7: Pulling it All Together — est. 45 min module
This module puts it all together and provides participants an overview of key concepts covered in the TeamSTEPPS course on communication to improve diagnosis.

TeamSTEPPS® for Diagnosis Improvement

IHI Safer Diagnosis Checklist


The Safer Dx Checklist

10 High-Priority Organizational Practices for Diagnostic Excellence

PREPARED BY:
Center for Innovation in Quality, Effectiveness, and Safety (IQuESt),
Michael E. DeBakey Veterans Affairs Medical Center and
Baylor College of Medicine, Houston, TX

- Hardeep Singh, MD, MPH (Principal Investigator)
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- Umair Mushtaq, MBBS, MS
- Umber Shahid, PhD, MPH

Geisinger, Danville, PA
- Divvy Kant Upadhyay, MD, MPH

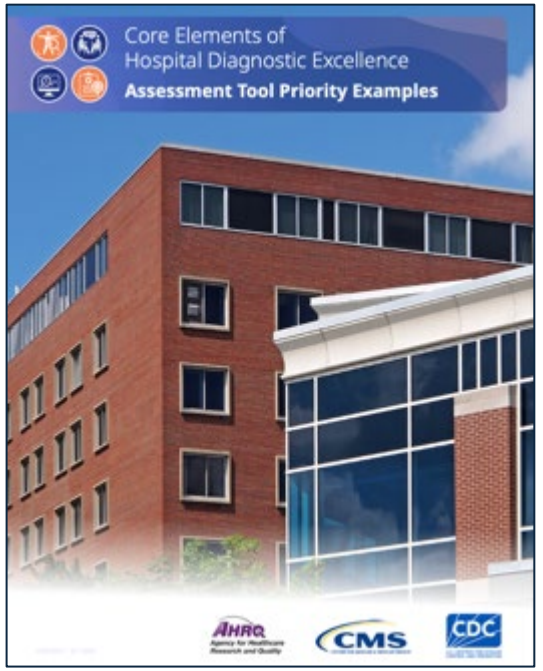
Institute for Healthcare Improvement, Boston, MA
- Joellen Huebner, BA
- Patricia McGaffigan, RN, MS, CPPS

ACKNOWLEDGMENTS
This work was generously funded by a grant from the Gordon and Betty Moore Foundation.

This checklist was developed collaboratively using input from several experts on content of recommended practices and scenarios. We thank the following individuals for their substantive and valuable contributions.

AHRQ/CMS/CDC

Core Elements of Hospital Diagnostic Excellence



www.ahrq.gov/teamstepps-program/diagnosis-improvement/index.html
www.ihi.org/sites/default/files/Safer-Dx-Checklist.pdf
www.cdc.gov/patient-safety/hcp/hospital-dx-excellence/index.html

PATIENT PARTNERSHIP

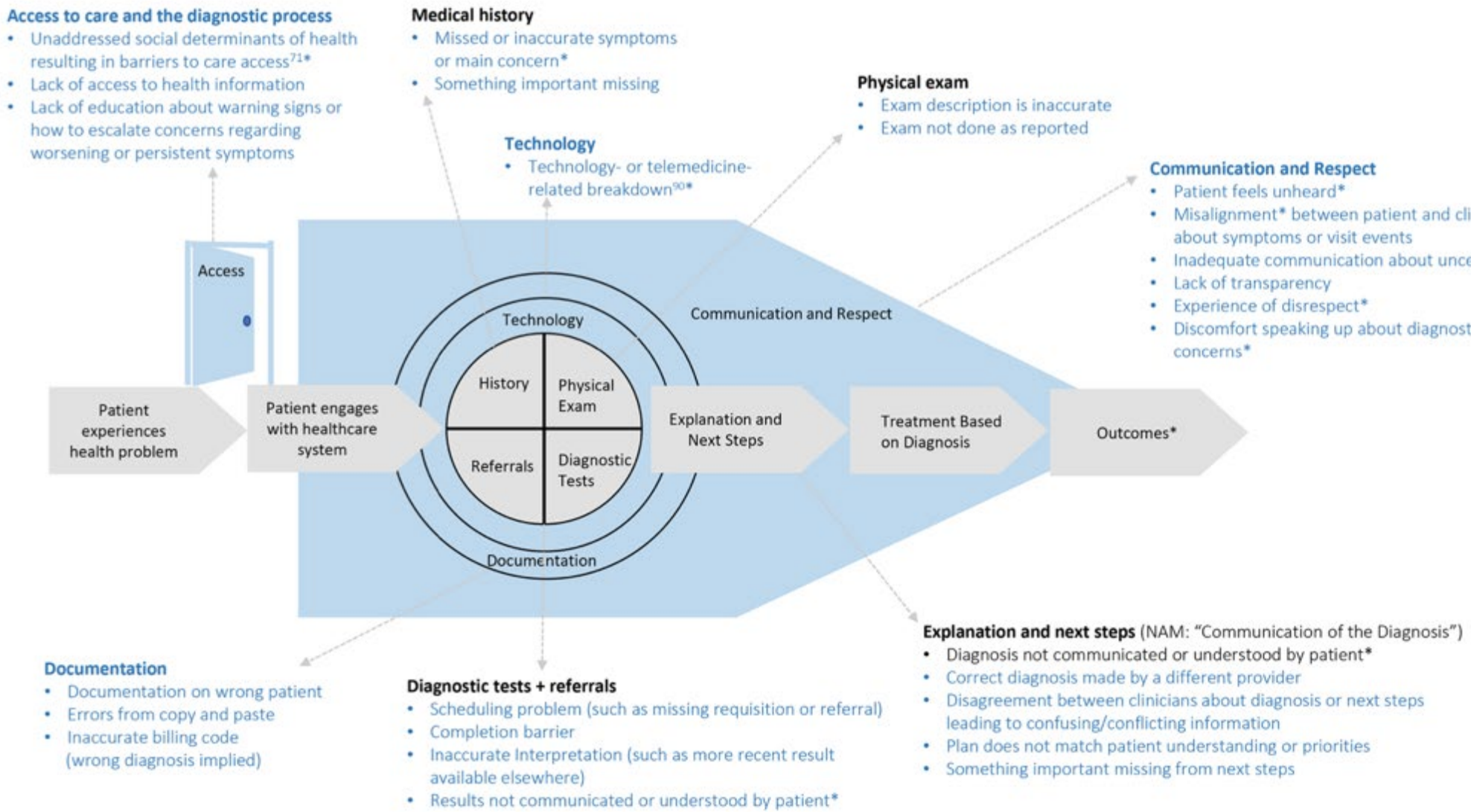
Patient Partnership

”The patient is the single most unused person in healthcare”

Eric Topol

Patient engagement through the Diagnostic Process

Bell SK, Bourgeois F, DesRoches CM, *et al*. *BMJ Qual Saf* 2022;**31**:526–540.



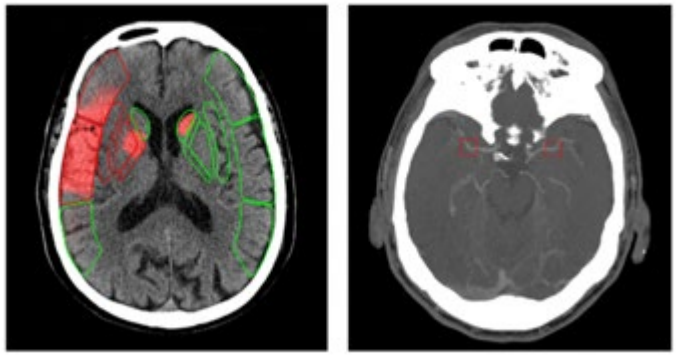
Patient Partnership for Diagnostic Excellence

- Diagnostic System Co-Design
  - Culture of Partnership – humility & mutual respect
  - Education & Awareness for patients and HCPs
  - Improved appreciation of risk & uncertainty
- Questions
  - Tools like *"Ask me 3"* and *"Your health|Your voice"*
  - BRAN (benefits, Risks, Alternatives, {what if we do} Nothing?)
- Communication
  - *Teachback*
  - Co-produced information, risk assessment and shared decision-making tools

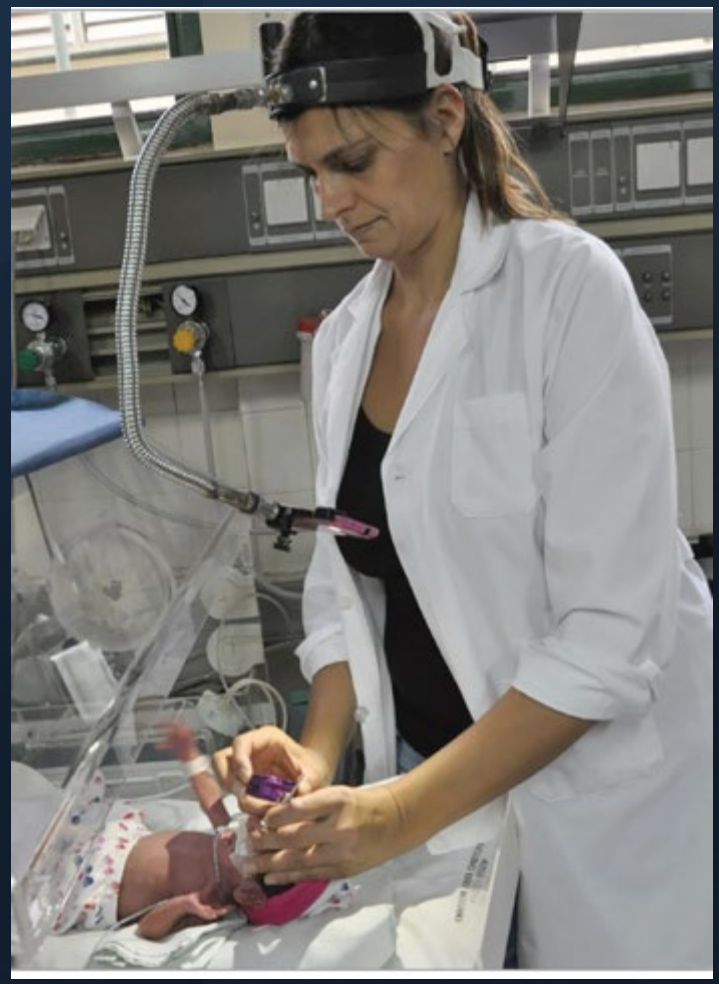
AI & IT ENHANCED DIAGNOSTIC EXCELLENCE

AI Enhanced Healthcare

RAPID STROKE DIAGNOSIS A REALITY IN UK WITH AI-ASSISTED TRIAGE TOOL



CT scan to clinical decision in zero clicks cuts 30-minutes from process, potentially helping to save damage to the brain



NEJM Catalyst

JOURNAL EVENTS INSIGHTS COUNCIL TOPICS ABOUT PUBLICATIONS

COMMENTARY

Ambient Artificial Intelligence Scribes to Alleviate the Burden of Clinical Documentation

Authors: Aaron A. Tierney, PhD, Gregg Gayre, MD, Brian Hoberman, MD, MBA, Britt Mattern, MBA, Manuel Ballesca, MD, Patricia Kipnis, PhD, Vincent Liu, MD, MS, and Kristine Lee, MD Author Info & Affiliations

Published February 21, 2024 | NEJM Catal Innov Care Deliv 2024;5(3) | DOI: 10.1056/CAT.23.0404 | VOL. 5 NO. 3

NEJM AI

NEJM AI 2023; 1 (1)
DOI: 10.1056/AIp2300031

PERSPECTIVE

Use of GPT-4 to Diagnose Complex Clinical Cases

Alexander V. Eriksen, M.D.,[1,2] Sören Möller, M.Sc., Ph.D.,[3,4] and Jesper Ryg, M.D., Ph.D.[1,2]

Received: July 10, 2023; Revised: September 15, 2023; Accepted: September 29, 2023; Published: November 9, 2023

Abstract

We assessed the performance of the newly released AI GPT-4 in diagnosing complex medical case challenges and compared the success rate to that of medical-journal readers. GPT-4 correctly diagnosed 57% of cases, outperforming 99.98% of simulated human readers generated from online answers. We highlight the potential for AI to be a powerful supportive tool for diagnosis; however, further improvements, validation, and addressing of ethical considerations are needed before clinical implementation. (No funding was obtained for this study.)

Reducing Diagnostic Overuse & Overdiagnosis

THE SOLUTION TO BETTER DIAGNOSIS IS NOT MORE DIAGNOSIS!

Diagnosis & Uncertainty

"Medicine is a science of uncertainty and an art of probability"

Sir William Osler
(1849-1919)

Overuse

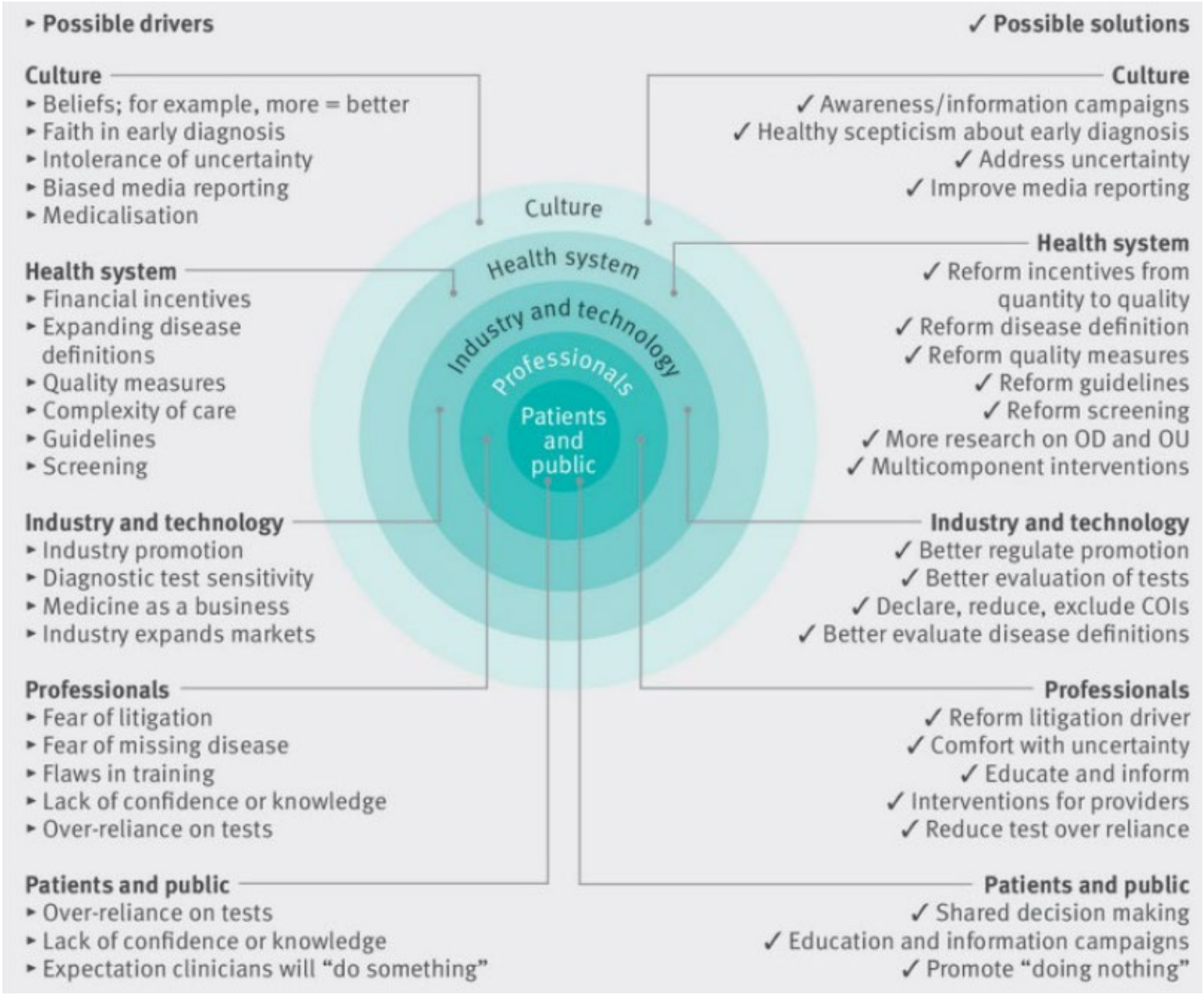
Overuse is the provision of medical services (including investigations) that are more likely to cause harm than good

Overdiagnosis

Overdiagnosis means making people patients unnecessarily, by identifying problems that were never going to cause harm or by medicalising ordinary life experiences through expanded definitions of diseases.

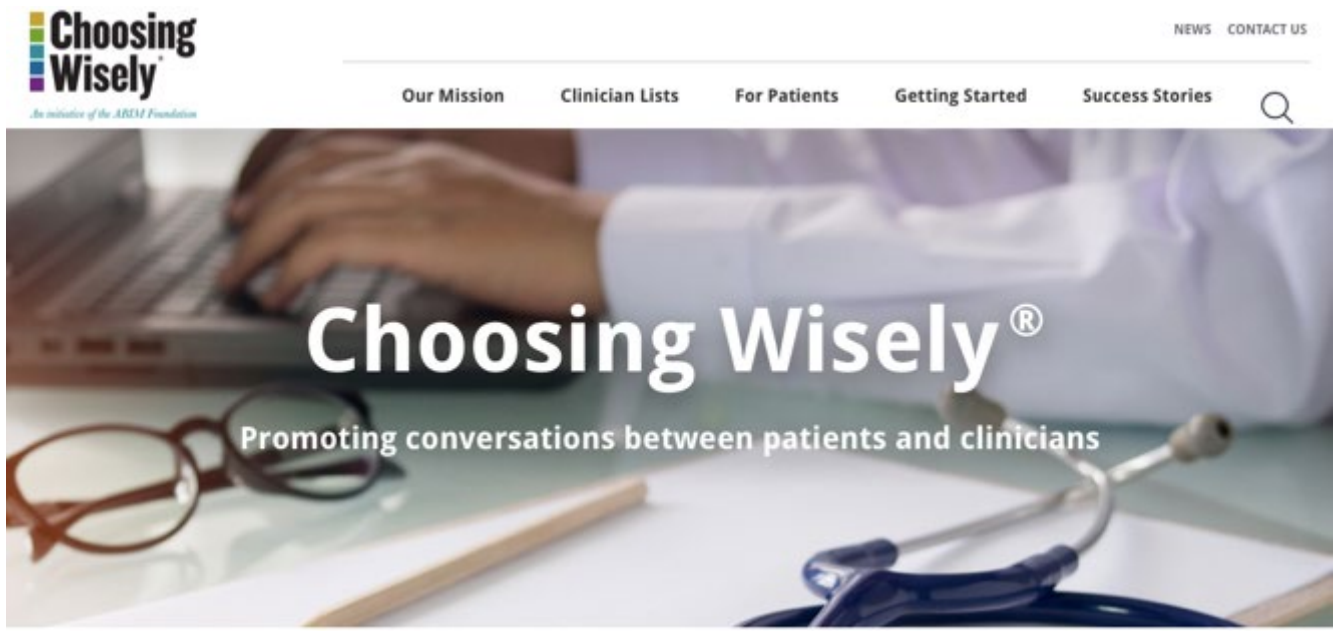
New forms of harm

Reduce Overuse



www.health.gov.au/resources/publications/reducing-overuse-of-diagnostic-imaging-project-report?language=en

Choosing Wisely
www.choosingwisely.org



Choosing Wisely
An initiative of the ABIM Foundation

ABIM FOUNDATION

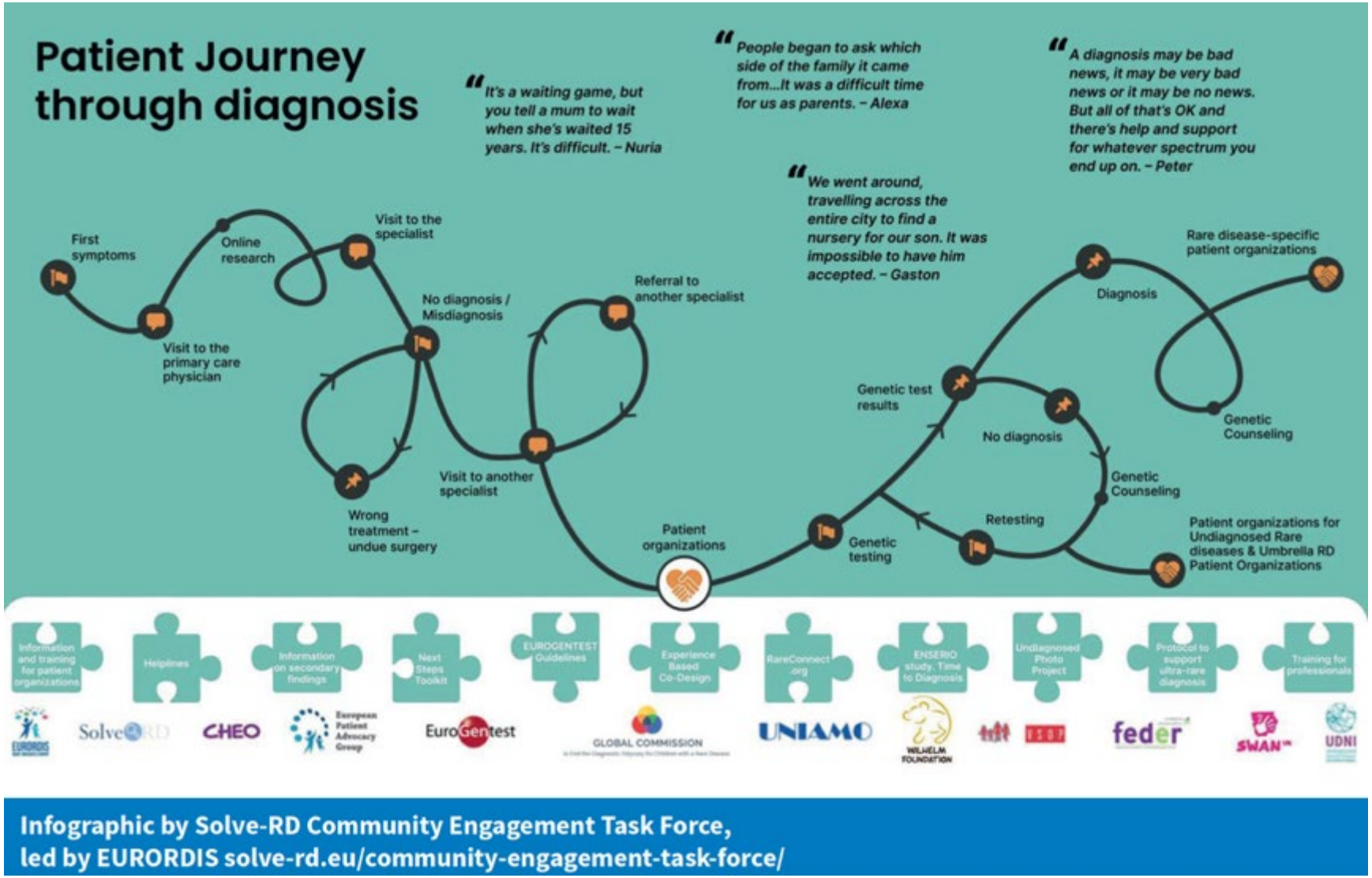
5 QUESTIONS to Ask Your Doctor Before You Get Any Test, Treatment, or Procedure

1. **Do I really need this test or procedure?** Medical tests help you and your doctor or other health provider decide how to treat a problem. And medical procedures help to actually treat it.
2. **What are the risks?** Will there be side effects? What are the chances of getting results that aren't accurate? Could that lead to more testing or another procedure?
3. **Are there simpler, safer options?** Sometimes all you need to do is make lifestyle changes, such as eating healthier food or exercising more.
4. **What happens if I don't do anything?** Ask if your condition might get worse — or better — if you don't have the test or procedure right away.
5. **How much does it cost?** Ask if there are less-expensive tests, treatments or procedures, what your insurance may cover, and about generic drugs instead of brand-name drugs.

Special diagnostic situations

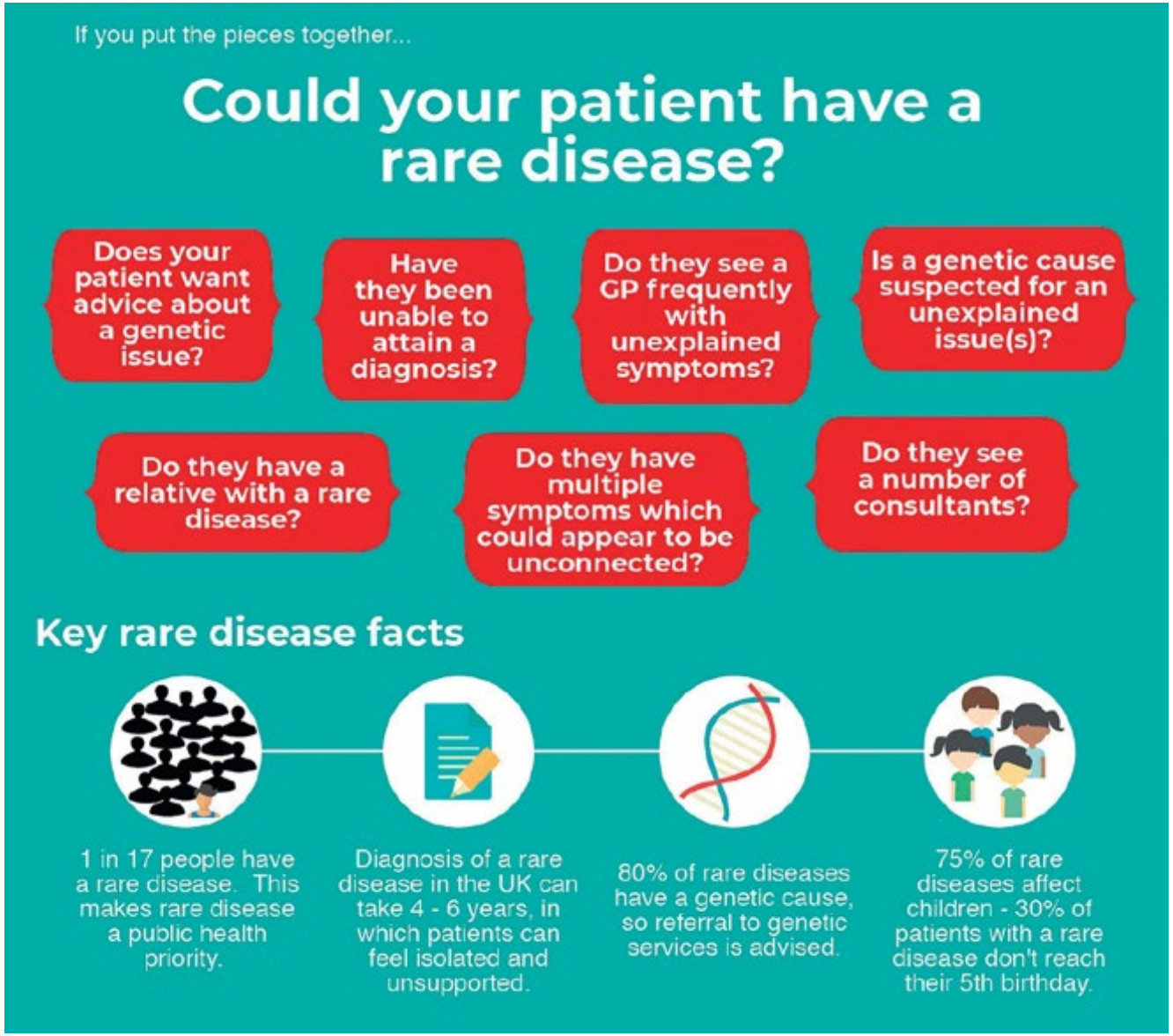
- RARE DISEASES
- CHALLENGING DIAGNOSES - SEPSIS

A Rare Disease Diagnosis

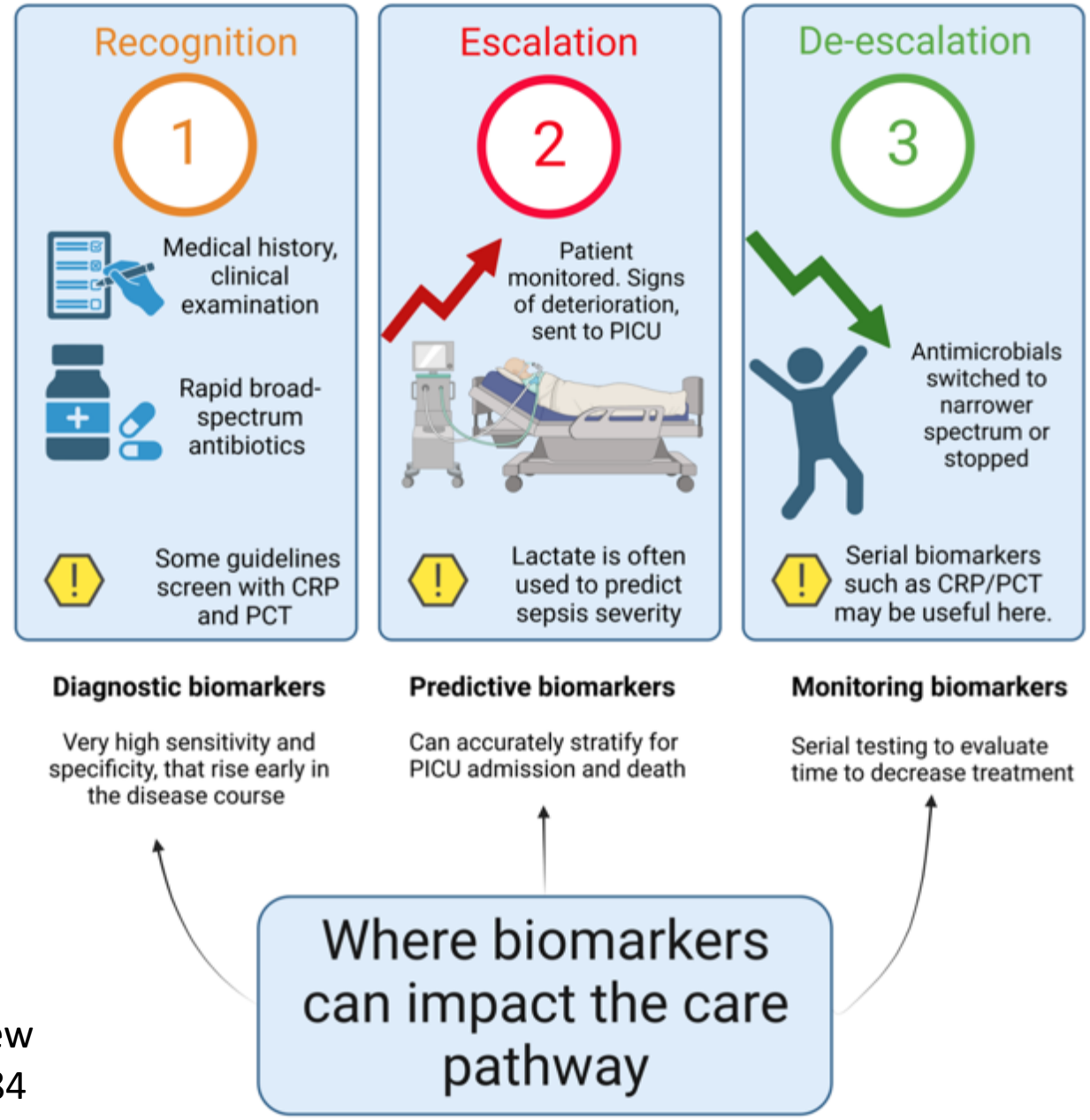


Improving Rare Disease Diagnosis

Questions for Healthcare Professionals



Challenging Diagnosis- Sepsis

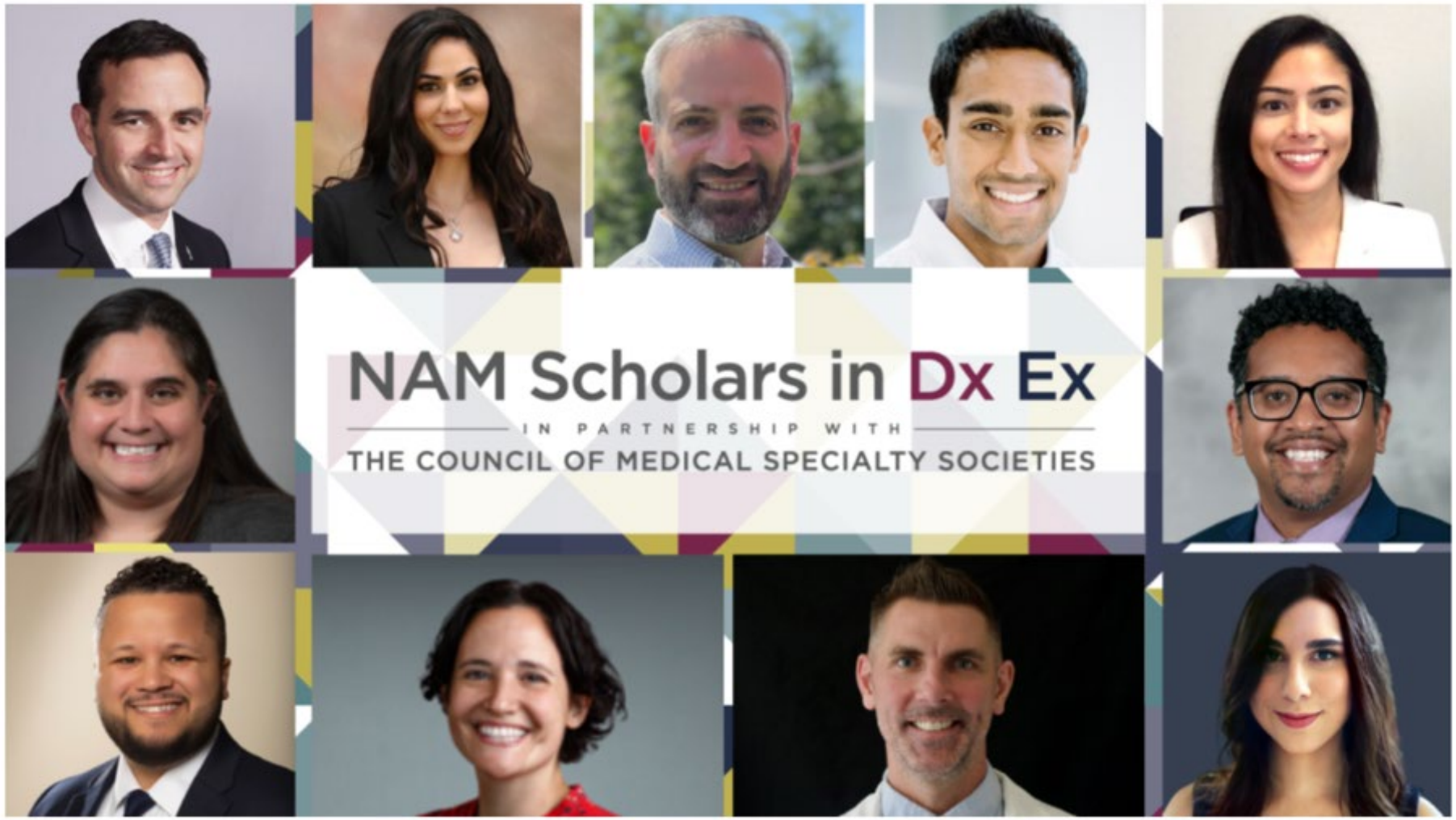


Rodgers O, Mills C, Watson C, *et al*.
Role of diagnostic tests for sepsis in children: a review
Arch Dis Child doi:10.1136/ archdischild-2023-325984

NAM Scholars in Dx Ex

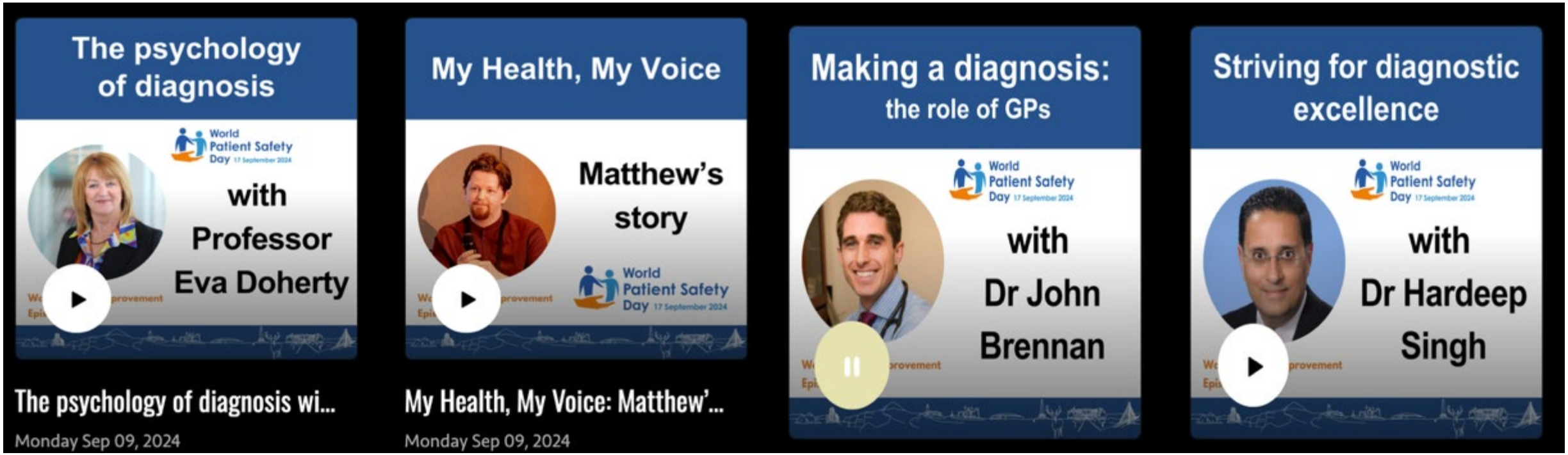
IN PARTNERSHIP WITH

THE COUNCIL OF MEDICAL SPECIALTY SOCIETIES



Walk & Talk Improvement Podcast

Diagnosis mini-series https://hsenqps.podbean.com/



Conclusions

- Diagnosis is a complex and uncertain process which has significant quality implications
- A deep understanding of the diagnostic process can help the development of *Diagnostic Excellence*
- Partnership with all the people involved in diagnosis is needed to provide *Diagnostic Stewardship*
- The ability to Improve *Diagnostic Excellence* will be enhanced by Technology – but depends on a good learning & safety culture

Thank You