



Published in final edited form as:

Diagnosis (Berl). ; 12(2): 197–200. doi:10.1515/dx-2024-0163.

CDC's Core Elements to promote diagnostic excellence

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Abstract

Nearly a decade after the National Academy of Medicine released the “Improving Diagnosis in Health Care” report, diagnostic errors remain common, often leading to physical, psychological, emotional, and financial harm. Despite a robust body of research on potential solutions and next steps, the translation of these efforts to patient care has been limited. Improvement initiatives are still narrowly focused on selective themes such as diagnostic stewardship, preventing overdiagnosis, and enhancing clinical reasoning without comprehensively addressing vulnerable systems and processes surrounding diagnosis. To close this implementation gap, the US Centers for Disease Control and Prevention (CDC) released the Core Elements of Hospital Diagnostic Excellence programs on September 17, 2024. This initiative aligns with the World Health Organization’s (WHO) 2024 World Patient Safety Day focus on improving diagnosis. These Core Elements provide guidance for the formation of hospital programs to improve diagnosis and aim to integrate various disparate efforts in hospitals. By creating a shared mental model of diagnostic excellence, the Core Elements of Diagnostic Excellence supports actions to break down silos,

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Author contributions: All authors have accepted responsibility for the entire content of this manuscript and approved its submission.

Use of Large Language Models, AI and Machine Learning Tools: Not declared.

guide hospitals toward multidisciplinary diagnostic excellence teams, and provide a foundation for building diagnostic excellence programs in hospitals.

Keywords

diagnostic excellence; diagnosis; core elements

Introduction

Nearly a decade after the National Academy of Medicine released the “Improving Diagnosis in Health Care” report, diagnostic errors remain common, often leading to physical, psychological, emotional, and financial harm [1]. Despite a robust body of research on potential solutions and next steps, the translation of these efforts to patient care has been limited [2]. Improvement initiatives are still narrowly focused on selective themes such as diagnostic stewardship, preventing overdiagnosis, and enhancing clinical reasoning without comprehensively addressing vulnerable systems and processes surrounding diagnosis.

Diagnostic excellence is the optimal process to reach an accurate and precise explanation for a patient’s condition. To close this implementation gap and move towards diagnostic excellence in hospitals, the US Centers for Disease Control and Prevention (CDC) recently released the Core Elements of Hospital Diagnostic Excellence programs [3] (hereon referred to as the DxEx Core Elements; see Figure 1). This initiative aligns with the World Health Organization’s (WHO) 2024 World Patient Safety Day [4] focus on improving diagnosis. The DxEx Core Elements provide guidance for the formation of hospital programs to improve diagnosis and aim to integrate various disparate efforts on diagnosis in hospitals (see Table 1). By creating a shared mental model of diagnostic excellence, the DxEx Core Elements supports actions to break down silos, guide hospitals toward multidisciplinary diagnostic excellence teams, and provide a foundation for building diagnostic excellence programs.

Rationale and approach

The CDC previously developed “Core Elements” for antibiotic stewardship and sepsis [5, 6]. The prescription of antibiotics, recognition and treatment of sepsis, and making accurate diagnoses, are processes that occur throughout the hospital, require support from multiple disciplines, and require collaboration. Implementation of these processes requires coordinated and dedicated efforts by hospital leadership. The antibiotic stewardship core elements provided a framework for improving antibiotic use in hospitals that led to The Joint Commission and Centers for Medicare and Medicaid Services requirements for hospital antimicrobial stewardship programs [7].

DxEx programs should have a broad view of diagnosis and use various methods to improve diagnosis, including diagnostic stewardship, and addressing overdiagnosis and diagnostic safety events. Diagnostic stewardship was developed in infectious disease [3] and optimizes the use of diagnostic testing to minimize the harms of overdiagnosis and misdiagnosis by improving the ordering, laboratory performance, and reporting of diagnostic tests [8]. These

principles have now been used broadly to improve other laboratory tests and radiological studies. Overdiagnosis is the diagnosis of a condition that will not harm a patient (but is usually treated, which can cause harms) [9]. Diagnostic safety events are delayed, wrong, or missed diagnosis or failure to communicate a diagnosis to the patient [10].

The DxEx Core Elements guides that programs should be co-led by a physician such as a hospitalist, emergency medicine or infectious disease physician and a laboratory and/or radiology testing expert. Material support from hospital leadership is necessary for these programs to have adequate personnel, time, and resources to achieve their aims. The broader diagnostic excellence team could include personnel from patient safety, informatics, hospital epidemiology, antimicrobial stewardship, and nursing, as well as patients, families, and caregivers.

The DxEx Core Elements encourage hospitals to align their program with local needs and priorities. Several foundational components of DxEx programs include engagement with patients, their families, and caregivers, equipping clinicians with clinical reasoning and communication skills, strengthening the communication and testing process to support diagnostic work, and identifying problems and interventions within the diagnostic process. For example, programs could identify and analyze “diagnostic safety events” and use the findings to improve, make changes to hospital processes, and evaluate the impact of such changes.

Building hospital DxEx programs

A DxEx program’s exact composition and function will vary by hospital size, patient population, and needs. Here is a hypothetical example of how this could work in a community hospital. The chief medical officer appoints and supports a hospitalist and a radiologist to start a program that initially addresses the inappropriate use of computed tomography (CT) scanning. The DxEx program then builds a team, which includes a patient representative. The team reviews the literature and hospital practice, identifying diagnostic safety events such as overuse of head and abdominal CT scans and overnight delays in emergency CT scans. The team develops diagnostic stewardship interventions in the electronic health record and education to reduce unnecessary scans. They facilitate access to the on-call radiologist for emergency CT scans to prevent delays. At the end of the year, the DxEx team reports to the hospital board that they prevented 250 unnecessary CT scans, 37 significant incidental misdiagnoses, and improved emergency room patient flow. They also avoided 15 delayed CT scans, of which five would have delayed diagnosis and patient care. Beyond their primary target, the DxEx program also provided guidance on a number of diagnostic tests and improving communication with patients, their families, and caregivers. Other hospital DxEx programs could focus on laboratory testing or implementing systems-based approaches to improving diagnosis. The most developed DxEx programs will target multiple problems in diagnosis.

Justifying the dedication of resources within a hospital can be challenging, as there is an upfront cost to support staff. Some efforts in diagnostic excellence may ultimately be cost-neutral or cost-saving. Reducing unnecessary tests can save expenses from radiology

or the lab and reduce the length of stay and harm from incorrect diagnosis. For example, an inappropriately ordered CT scan identifies an incidental tumor that is eventually found to be benign on biopsy. Not ordering the test could have reduced radiology costs and prevented an unnecessary biopsy, prolonged hospitalization, and related costs. Preventing delayed or missed diagnoses may decrease malpractice claims. Diagnostic stewardship has reduced incorrect diagnosis of select healthcare-associated infections by 30–60 %, with faster time to targeted antibiotics and reduced unnecessary use [11]. It has also improved the diagnosis of non-infectious diseases, such as pulmonary embolism through rule-out criteria and D-dimer testing [11]. Cost analyses are necessary to fully evaluate diagnostic stewardship interventions and better guide future diagnostic excellence program targets.

Beyond improving patient care, diagnostic excellence is increasingly recognized as an essential goal of several national healthcare organizations and government agencies (many of whom provided input on these Core Elements). They include the Leapfrog Group, which has created a national program recognizing diagnostic excellence [12], the Institute for Healthcare Improvement, and The Joint Commission. The Agency for Healthcare Research and Quality and the Centers for Medicare & Medicaid Services co-sponsored these Core Elements [3].

Conclusions

A hospital-based team focused on diagnostic excellence has the potential to improve diagnosis and patient care. The new CDC DxEx Core Elements directs hospitals to support these programs and provides evidence-based guidance on how hospitals can translate scientific advancements to the frontlines of patient care and improve the diagnostic outcomes of the patients they serve.

Conflict of interest:

(All outside the submitted work). All authors contributed to the development of the Core Elements. Dr. Morgan is funded by the Veterans Administration (VA) Health Services Research (HSR), the Agency for Healthcare Research and Quality, and the Centers for Disease Control and Prevention. Dr. Singh is funded by the Houston Veterans Administration (VA) Health Services Research and Development (HSR&D) Center for Innovations in Quality, Effectiveness, and Safety (CIN13–413), the VA National Center for Patient Safety, and the Agency for Healthcare Research and Quality (R01HS028595 and R18HS029347). Dr. Bradford is supported by grant no. 1R01HS029318–01A1 from the Agency for Healthcare Research and Quality. Drs. Srinivasan, McDonald, and Kutty – none reported.

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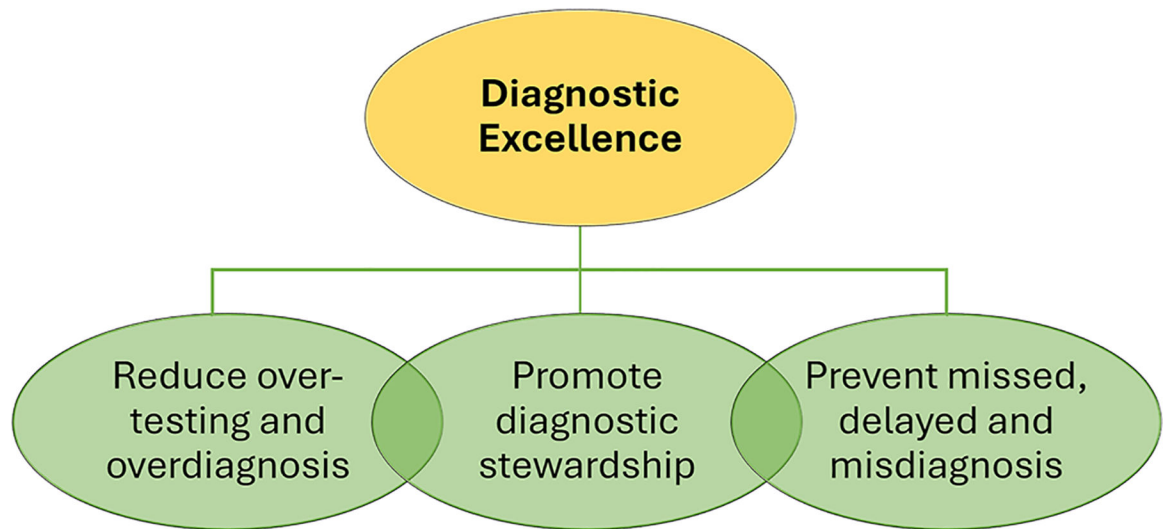


Figure 1:

The components of diagnosis that are part of diagnostic excellence in the centers for disease control and prevention (CDC) core elements of diagnostic excellence.

Table 1:
The Core Elements of hospital diagnostic excellence programs with a description of each element.

Core element	Description
1 Hospital leadership commitment and accountability	Commitment to the staff and board that improving diagnosis is a priority for the hospital and ensuring the entire organization is accountable for progress.
2 Multidisciplinary expertise	Dedicating the necessary human, financial, technological, and information technology resources.
3 Patient, family, and caregiver engagement	Creating inclusive and multidisciplinary diagnostic teams that include laboratory and radiology testing experts. Engaging patients, their families, and caregivers as partners in diagnostic excellence, including identifying effective ways to communicate diagnostic test results and other information.
4 Actions	Improving diagnosis through: 1) diagnostic stewardship, 2) strengthening systems and processes, and 3) identifying, monitoring, and learning from diagnostic safety events.
5 Education	Improving teamwork and coordination within the hospital and across the continuum of care. Educating healthcare personnel, patients, and family/caregivers about diagnosis and testing.
6 Tracking and reporting	Monitoring and reporting the activities of the diagnostic excellence program.