Application of Electronic Health Records to the Joint Commission’s 2011 National Patient Safety Goals

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Since publication of To Err Is Human, electronic health records (EHRs) and related health information technologies have been promoted as means to improve patient safety. This promise remains largely unfulfilled. For instance, whereas EHRs with clinical decision support (CDS) interventions integrated into computerized physician order entry (CPOE) have measurably improved clinicians’ performance on process metrics, their effect on patient outcomes remains unconfirmed. Recently, the US Department of Health and Human Services (DHHS) launched “Partnership for Patients: Better Care, Lower Costs” by committing $1 billion to improve safety. Meanwhile, EHR vendors and health care organizations have focused considerable effort on meeting standards for “meaningful use” of EHRs as required by the DHHS for incentive payments.

Each year, the Joint Commission issues a concise National Patient Safety Goal (NPSG) advisory identifying the highest-priority topics for quality care. Ideally, addressing the NPSGs should be incorporated into the EHR certification process, requiring each vendor to specifically engineer targeted solutions and each organization to carefully implement and use these systems to improve safety. For 2011, the NPSG priorities for hospital quality improvement initiatives are patient identification, staff communication, medication labeling, infection control practices, medication reconciliation and interactions, and mitigation of suicide risks. Electronic health records, along with CPOE, CDS, and bar code medication administration (BCMA), if designed, developed, implemented, and used correctly, potentially play critical roles in addressing these safety goals. In this Commentary, we provide an overview of these goals, current EHR solutions and shortcomings, and potential for improvement.

Patient Identification

Wrong-patient errors occur in virtually all stages of diagnosis and treatment. Reliably identifying individual patients is especially challenging in high-volume practice environments with limited continuity of care. A study of emergency department physicians using eye tracking showed that physicians frequently failed to adequately confirm the identity of patients prior to order entry. A goal of EHRs and CPOE should be to enable clinicians to reliably identify patients when accessing records and entering orders. To increase the likelihood of correct identification, multiple contextual cues should be prominent within the EHR. Examples include visual reminders, such as displays of patient name, sex, date of birth, and a photograph, and clinical reminders, such as a concise summary of the patient’s active problem list. The EHR should highlight patients with sound-alike or look-alike names and require reentry of the patient’s initials or date of birth before order completion. In addition, BCMA systems should be used in the pharmacy and at the point of care to ensure that the correct patient receives the correct medication or blood product.

Staff Communication

Timely, reliable notification of abnormal test results is essential for follow-up evaluation and treatment in life-threatening situations. Often, abnormal test results are communicated directly between laboratory staff and clinicians. However, this process frequently involves multiple intermediaries, may be resource intensive, and can result in task disruption at each step in the notification chain. Additionally, each step introduces potential for inaccurate communication. Electronic health records can enhance test result communication by automatically notifying the responsible clinicians about abnormal test values. However, this alone does not constitute a fail-safe system. Alert mechanisms require appropriate scrutiny and refinement to avoid errors resulting from interruptions caused by notifications and to set appropriate alerting and escalation thresholds to reduce alert fatigue. A fail-safe strategy might require that clinicians acknowledge abnormal test values within a certain time frame (ie, depending on severity), after which laboratory staff use direct notification.

Safe Use of Medications

Electronic health records with CDS and BCMA integrated into the medication order-verification-administration work-
flow can significantly improve patient safety. Electronic health records with well-designed contextual CDS integrated into CPOE can help ensure appropriate renal-, age-, or weight-based medication dosing, remind clinicians about additional required actions (eg, ordering laboratory tests), and warn of clinically relevant drug interactions. In surgical care, sterile containers may be prepped prior to operations with preprinted drug information—including bar codes—that facilitate standardized protocols for preventing medication identification and concentration errors. Electronic verification of medications immediately prior to administration via bar code scanners at the bedside provides an additional verification step in high-risk scenarios (eg, administration of weight-based anticoagulation to neonates). Care must be taken to ensure that all of these interventions fit within clinicians’ workflow; otherwise, they will develop “workarounds” that often increase the potential for error.

Infection Prevention

Health care–associated infections and emerging multidrug-resistant organisms pose significant challenges for hospitals and communities. Electronic health records may facilitate community-wide infection surveillance through identification of patients who are carriers of methicillin-resistant Staphylococcus aureus (eg, enhance the ability to monitor guideline-compliant antibiotic use and target specific infection control interventions to individual patients).7 Prompt notification of bacterial culture sensitivities contributes to improved outcomes through ensuring appropriate antibiotic coverage.8

The use of checklists has been shown to improve compliance with infection control behaviors and reduce postprocedure complications.9 Electronic health records, when appropriately configured with easy-to-use targeted checklists, may provide an electronic delivery mechanism. Virtually any device can be fitted with software and transmission capability—even hand sanitizers—enabling real-time communication to the EHR for automatic checklist monitoring and compliance.

Medication Reconciliation

When accurate medication lists are not available during transitions of care, patients are at increased risk of duplicate medications and drug interactions. This NPSG is perhaps the best example of how current and planned EHR meaningful use criteria can be aligned. However, the most important innovation for applying EHRs to this NPSG will be improved interoperability of medication lists across organizations and EHRs. Even though any system will depend on human verification of medications to update current prescriptions at each health care encounter, information interchange services will facilitate progress toward this goal. When these services are functioning as intended, patients and clinicians will benefit from having accurate, up-to-date medication lists.

**Suicide Risk**

Identification and treatment of patients at high risk of suicide is a significant ongoing challenge. Electronic health record–based checklists, similar to those deployed for infection control, may help clinicians assess a patient’s imminent risk of self-harm according to evidence-based guidelines.10 The EHR may also facilitate more effective routine screening for depression and prompt reassessment of patients who are already determined to be at elevated risk. Moreover, large EHR databases may be mined to identify suicide risk “red flags” for future risk assessment protocols.

**Conclusion**

The 2011 NPSGs provide high-yield guidance to EHR certification and oversight bodies who should refine their criteria for meaningful use to include incentives for development and use of tools to enhance safety. As with all computer-based interventions, incorporation of EHRs into routine clinical workflow is critical; their effectiveness depends on appropriate maintenance, effective user training, periodic institutional self-assessment of EHR safety and effectiveness, and clinically focused policies to support their use. Although EHRs by no means represent all necessary mechanisms to address critical safety problems, they can provide tools to help organizations improve their performance.

REFERENCES


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