

Five Usability Barriers Preventing Health IT From Supporting Clinician Needs

Challenge #1: Navigation Burden

- The issue: Information is not organized to support clinical workflow and the way clinicians think. Too many clicks are required to access important data and critical information is buried in a mass of unimportant text data.
- Why it persists: Clinician workflows are complex, nonlinear, and dependent on a variety of sources, all of which differ significantly between specialties and individual providers. Health IT is currently designed with generic tasks and steps that impose new workflows that do not support decision making or efficiencies.
- How to fix it: We need to observe and record workflows in a structured form to understand commonalities and best practices. These need to be publicly available to avoid every institution having to recreate them. Then, we need to redesign health IT, particularly EHRs, by giving clinicians flexibility to individualize task sequences to fit their work habits and by partnering with human factors experts to group related information and create data visualizations to speed accurate decision making.

Challenge #2: Data Entry Burden

- The issue: All clinicians are under time pressures. For example, in a 15-minute office visit, a clinician is expected to make eye contact, listen empathetically, process nonverbal cues, keep laboratories, allergies, and medication lists in mind, and formulate differential diagnoses. The same clinician is also required to document granularly enough to support an ICD-10 code, enter hundreds of items of structured data to comply with multiple quality and value programs, and avoid committing malpractice. The connection with the patient is easily lost.
- Why it persists: Data entry is assigned to the busiest, most highly trained members of the health care team – front-line clinicians. In fact, the resulting increased cognitive load and decreased situational awareness impair their ability to focus, comprehend, and solve the patient's problems.
- How to fix it: Standardize, simplify, automate, and delegate. Harmonize and decrease data entry requirements to focus only on the most meaningful data. Require EHR technology, as a condition of certification, to collect and populate appropriate quantitative data automatically. Expand data entry capabilities to help prioritize tasks among members of the care team and allow for the use of appropriately trained ancillary (technician level) data entry professionals.

Challenge #3: Structured Documentation Burden

- The issue: Structured documentation tools make it difficult to communicate the complex details of patients' care and nuanced clinical reasoning. The current emphasis on billing

produces disorganized, bloated clinical notes. Documentation requirements have expanded significantly over recent years.

- Why it persists: Available tools do not efficiently incorporate complicated data into notes, track multiple high complexity problems, and maintain continuity of medical decision making. Regulators and executives implemented documentation requirements without pruning old requirements or rethinking the process. For example, every clinic note does not need the patient's entire medical history, and use of the 1997 CMS bullet point system does not produce quality documentation
- How to fix it: The documentation process needs to be re-envisioned and redesigned. Certain sections of a patient's medical record change very slowly over time (specialty specific problem list, allergies, past medical history, family history, and social history) and do not need to be explicitly repeated in each progress note. Flexible specialty templates should emphasize the interval history, clinical reasoning, and recommendations most important to the current visit. EHRs should aggregate information pertinent to the problem at hand and be designed using data visualization techniques for optimal display.

Challenge #4: Interoperability Burden

- The issue: Disparate, non-integration health IT impedes care across the continuum. Manual reconciliation is persistent. Due to lack of interoperability across vendors, care transitions can lead to errors, gaps in care and delays in decision making.
- Why it persists: Differing platforms, clinical vocabularies, and information architecture make it difficult and expensive to effect interoperability or for clinicians to switch away from stand-alone EHRs. Our economic model of competition (versus collaboration) and maximizing profit (versus healthcare for the common good) has led to resistance and the preservation of market share for current IT vendors. Until very recently, regulatory incentives have been insufficient to overcome this economic barrier.
- How to fix it: Stronger regulatory incentives are needed to mandate technical and semantic interoperability, require the use of standard clinical terminologies, data structures, data exchange and information flow methodologies, such as the HL7 FHIR and RESTful architecture standards. Strong research support is needed for innovative technologies that improve care across the continuum.

Challenge #5: Clinical Decision Support (CDS) Burden

- The issue: Many current CDS tools are interruptive and fail to integrate key pieces of data in the context of workflow. This can lead to alert fatigue and actually hinder the decision-making process with increased cognitive loads.
- Why it persists: Experienced clinicians employ extraordinarily complex thought processes which may differ between practitioners. This makes it extremely difficult to design tools which provide the *right* information to the *right* person in the *right* CDS format through the *right* channel at the *right* point in workflow (Osheroff et al. <http://ebooks.himss.org/product/improving-outcomes-clinical-decision-support>).

- How to fix it: Strong support is needed to better understand clinical workflows and clinician conceptual models. Strong regulatory incentives for extensive formative user-centered design testing to achieve better balance of clarity, scope, and prominence in CDS interventions.

David Schlossman, M.D., Ph.D., FACP, M.S. (Informatics), CPHIMS
Nancy Stagers, Ph.D., R.N. FAAN