Reducing Clinician Burden Project

New Directions in Alleviating Clinical Workflow and Documentation Burdens
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HL7 Reducing Clinician Burden Project
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A View From 248 Miles Up
ARRA, HITECH, and Meaningful Use

I'm gonna make him an offer he can't refuse.
The Incentives Were Very Effective

Office-based Physician Electronic Health Record Adoption

As of 2017, nearly 9 in 10 (86%) of office-based physicians had adopted any EHR, and nearly 4 in 5 (80%) had adopted a certified EHR. View Quick Stat.

https://dashboard.healthit.gov/quickstats/quickstats.php
EHRs’ Unfulfilled Promises

- Decreased efficiency: EHRs add 1-2 hours to the average MD workday
- Disconnect from patients: spending 50% or more of time in the EHR
- Disruption of clinician work-life balance and an epidemic of burnout
- Modest improvement in care process metrics and guideline adherence
- No significant change in large scale health outcomes
  - Hospital length of stay, inpatient mortality,
  - 30-day readmission rates, patient safety incidents
  - Population health metrics: Life expectancy, infant mortality, etc.
- Annual US healthcare expenditures increased from $2 trillion in 2005 to over $3.4 trillion in 2017
Why Do So Many Promises Remain Unfulfilled?

- Poor usability and poor support for clinical workflow are major factors—possibly the most important factors—preventing health IT from achieving its goals.
- Suboptimal human factors engineering and a challenging user experience have a strong, often direct connection to decreased clinical productivity, increased cognitive load, increased error rates, increased user fatigue, and decreased user satisfaction.
The value of my EHR is clinically related: 92%

Time spent on EHRs affects patient relationships.

While only 3% of PCPs don't see any value in their EHR system, time constraints take a toll and patient relationships suffer:

Seven in 10 agree that:
- Using an EHR has increased the total # of hours I work on a daily basis: 74%
- EHRs contribute greatly to physician burnout: 71%
- Using an EHR takes valuable time away from my patients: 69%

Seven in 10 disagree that:
- My EHR has strengthened my patient relationships: 69%
- The value of my EHR is clinically related: 92%

More time spent in EHR than with patient:
- 31 min spent on behalf of each patient; 19 of which spent in EHR

https://med.stanford.edu/content/dam/sm/ehr/documents/EHR-Poll-Presentation.pdf
Sociotechnical Systems

- People
- Processes
- Technology
- Organizations
- External Environment
Sociotechnical Imbalance

People

Processes

Technology

Organizations

Socio-

External Environment

Technical

Organizations
Clinician Burden

- Clinician: A health professional whose practice is based on direct observation and treatment of patients
- Burden
  - Increased stress
  - Increased physical workload
  - Increased cognitive workload
  - Unproductive time requirements
  - Decreased Efficiency
HL7 Reducing Clinician Burden (RCB) Project

• Gather details from environmental scans and literature review
• Define and assess specific clinician burdens
• Understand the history, substance and extent of the burdens
• Determine root causes of burdens
• Propose novel, innovative solutions to alleviate burdens
• Recognize success stories and share best practices

1.1) Clinician Burden – In General
1.2) Clinician Burnout – Sometimes the Result
2) Patient Safety (and Clinical Integrity)
3) Administrative tasks
4) Data entry requirements
5) Data entry scribes and proxies
6) Clinical documentation: quality and usability
7) Prior authorization, coverage verification, eligibility tasks
8) Provider/patient face to face interaction
9) Provider/patient communication
10) Care coordination, team-based care
11) Clinical work flow
12) Disease management, care and treatment plans
13) Clinical decision support, medical logic, artificial intelligence
14) Alerts, reminders, notifications, inbox management
15) Information overload
16) Transitions of care
17) Health information exchange, claimed “interoperability”
18) Medical/personal device integration
19) Orders for equipment and supplies
20) Support for payment, claims and reimbursement
21) Support for cost review
22) Support for measures: administrative, operations, quality, performance, productivity, cost, utilization
23) Support for public and population health
24) Legal aspects and risks
25) User training, user proficiency
26) Common function, information and process models
27) Software development and improvement
28) Product transparency
29) Product modularity
30) Lock-in, data liquidity, switching costs
31) Financial burden
32) Security
33) Professional credentialing
34.1) Identity matching
34.2) Identity and credential management
35) Data quality and integrity
36) Process integrity
37.1) Problem list
37.2) Medication list
37.3) Allergy list
37.4) Immunization list
37.5) Surgery, intervention and procedure list
What Is Clinical Workflow?

• “Clinical workflow” encompasses the physical and mental activities, processes, technologies, tools, teams and environments involved in providing health care

• Clinical workflows are sequences of actions performed over time and through space which
  • Are performed by clinicians
  • Consume, transform, and/or produce information
  • Are performed to assess, maintain, or change the health of a patient.

• Producing effective EHRs requires a deep understanding of how front-line clinicians conduct their cognitive and task oriented work

Carter J. Workflow & Process Definitions. 2018;
Workflow Burden Topics

- Impact of reimbursement regulations
- Non-clinical administrative requirements
- Clumsy navigation
- Rigid hard-coded workflows
- Simplistic algorithm-based system logic
- Lack of context specific information preprocessing
- Document (rather than data) exchange
- Poor Interoperability
- Ineffective clinical decision support
- Insufficient support for nursing workflows
Workflow Burden: Today’s Focus

• Impact of reimbursement and administrative regulations on workflows and documentation
• Clumsy Navigation: EHRs are just electronic filing cabinets
• Simplistic algorithmic logic and hard-coded pathways dictate clinician workflows
• Lack of context-specific information preprocessing
Reimbursement and Administrative Burden

What is it?

- Billing compliance requires multiple extraneous documentation elements
- Administrative data collection diverts clinician focus from patients
- Variability in preauthorization and payment requirements
- Lack of transparency in EHR certification and developer regulation

Why did it happen?

- CMS 1995 and 1997 Evaluation and Management (E&M) guidelines to prevent over billing
- EHRs introduce an additional layer of administrative complexity
- Preauthorization, insurance coverage appeals, coding justifications vary between payers
- Developer user-centered design processes are self-attested and unsupervised
- “Hold harmless” and “gag” clauses in EHR purchase contracts

Result: Note bloat, increased cognitive load, and decreased focus on the patient
Comparison of US and International Documentation

Figure. Average characters per ambulatory progress note in U.S. and international health systems.

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Another Policy Gap

Hold Harmless Clauses and Gag Clauses


Reimbursement and Administrative Burden

What can we do about it?

“The primary purpose of clinical documentation should be to support patient care and improve clinical outcomes through enhanced communication.” — American College of Physicians

- Revise documentation requirements based **primarily** on recommendations from practicing clinicians, medical specialty societies and medical educators
- Simplify and harmonize the regulations for collection of insurance and other non-clinical data, and automate the process of data submission
- Revise EHR certification regulations to require that developers document their user-centered design processes and the qualifications of their user-centered design staff.
- Implement regulations to ban “hold harmless” and “gag” clauses and other types of information blocking
- Create and maintain a national database of EHR usability and safety knowledge and best practices.
EHR Systems as Electronic Filing Cabinets

What is it?

• Information is not organized to fit physicians’ mental model of care
  • Information is not optimized to support clinical decision making
  • Too much clicking, scrolling, switching between paths and screens
  • Counterintuitive data presentations make it challenging to access and process important data
  • Critical information is obscured in a plethora of less important text or values.

Top three improvements PCPs want to see in the short term:

- Improve EHR user interface design to eliminate inefficiencies and reduce screen time
  - 72%
- Shift more EHR data entry to support staff
  - 48%
- Use of highly accurate voice recording technology that acts as a scribe during patient visits
  - 38%

https://med.stanford.edu/content/dam/sm/ehr/documents/EHR-Poll-Presentation.pdf
EHR Systems as Electronic Filing Cabinets

Why did it happen?

• In the rush to implement, designers adopted then current human-computer interface models, which in retrospect are not well suited to clinical processes

What can we do about it?

• More effective data visualization tools
• Systems that adapt to clinicians and context
  • Voice controlled interfaces
  • Context-specific information presentation
• Robust general-purpose APIs and associated development platforms
Simplistic System Logic/Not Context Aware
One Size Does Not Fit All
Simplistic System Logic/Not Context Aware

What is it?

• EHRs dictate rather than adapt to clinician workflow
  • Hard coded workflows consist of generic steps and tasks
  • Reduce wide spectrum of specialties and contexts to common pathways
  • Cannot parse what process is underway or what information is needed
• EHRs assume healthcare delivery can be represented as linear or slightly branched algorithmic sequences of choices
• In reality, clinical care is iterative and variable
  • Physicians constantly reformulate goals, revise tasks, and reorder sequences
  • The resulting workflows are inherently complex, nonlinear, and interruptive

Why did it happen?

• Designers adopted the client-server architectures and algorithmic coding models that were current at the time
Because Every Patient is Unique
Clinician Workflows are Highly Variable

- Comorbidity pattern
- Ethnicity
- Genome
- Metabolome
- Response to treatment
- Socioeconomic status
- Cultural Background
- Personal values
Simplistic System Logic/Lack of Context

What can we do about it?

- EHRs must evolve from data-centric transactional systems (essentially electronic filing cabinets) to process-centric workflow systems.
- EHRs must be designed to parse the ongoing clinical process and collect, sort, and present the most relevant clinical information.
- EHRs must develop new human-computer interaction paradigms such as voice control and more effective use of speech to text functionality.
- Systems must also accommodate the inevitable variability involved in clinical practice and be rapidly adjustable to fit new clinician needs “on the fly.”
Common Patient Data Models
Uncoupling the Data From the Interface

Workflow Manager

Algorithms

Information Manager

Patient Data
Common Patient Data Models

Interface

Lessons From The First Decade

• Clinicians must be allowed to streamline documentation to include only the core essentials and keep their attention focused on their patients

• Requiring physicians to allot ever increasing amounts of time for EHR training in an attempts to modify their thought processes and workflows to predetermined systems will not improve quality of care or decrease burnout

• Real progress will require EHRs to evolve from data-centric transactional systems (electronic filing cabinets) to context-aware, process-centric workflow systems

• Information technology solutions cannot, by themselves, improve the quality of care, especially as they are currently employed to pressure clinicians, enforce narrowly defined productivity goals, and maximize profits
Effective Health IT Requires a Man-Machine Partnership

Only a combination of well-informed, empathetic physicians and sophisticated predictive tools that free them from clinical workflow burdens and help them focus on patients and reason more accurately will enable the high quality, patient-centered, cost-effective healthcare system clinicians desire and society needs.

Reducing Clinician Burden Is a Shared Responsibility

• Academic researchers
• Clinical Informaticians
• Practicing Clinicians
• Software Developers
• UX Professionals
• Regulators/Policy Makers
• IT Administrators (CIOs)
“We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one we intend to win.”
“That’s one small step for [a] man, one giant leap for mankind.”
Unsustainable Rise in Healthcare Costs

Health consumption expenditures as percent of GDP, 1970 - 2017

Notes: U.S. values obtained from National Health Expenditure data. Health consumption does not include investments in structures, equipment, or research.

Source: KFF analysis of OECD and National Health Expenditure (NHE) data • Get the data • PNG

Comments and Questions

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