“Reducing Clinician Burden” Project

Health Level Seven (HL7) Electronic Health Record Work Group (EHR WG)

HL7 37th Annual Plenary and Work Group Meeting
11 September 2023
“In the United States, 86 percent of office-based and 94 percent of hospital-based physicians currently use an electronic health record (EHR), incentivized by the 2009 Health Information Technology for Economic and Clinical Health Act [HITECH].”

HL7 EHR WG developed the EHR System Functional Model (EHR-S FM, aka ISO/HL7 10781)

EHR-S FM quick history, updated multiple times
- 2004 – Draft Standard – Prospective view, early market, ~15% hospital adoption
- 2009 – Release 1.1 – Jointly balloted between HL7 and ISO
- 2014 – Release 2 – Major Revision
- 2020 – Release 2.1 – Update Revision
- Now – Release 3 – Concurrent/retrospective view, >95% hospital adoption, what have we learned?

How do key EHR-S Users (e.g., clinicians) view the “solutions” now available?
Moral Injury?
Clash of Clinical and Business Models?

- “[Clinicians know] how best to care for their patients but [are] blocked from doing so by systemic barriers related to the business side of health care.”
  – Washington Post: “Too many tests, too little time: Doctors say they face ‘moral injury’ because of a business model that interferes with patient care” – 1 February 2020

- “The increasingly complex web of providers’ highly conflicted allegiances – to patients, to self, and to employers – and its attendant moral injury may be driving the health care ecosystem to a tipping point. …”
  – Wendy Dean MD, President/Co-Founder, Moral Injury of Healthcare, a non-profit organization
 Statements Heard from Clinicians...

- “The joy of practicing medicine is gone.
- “I hate being a doctor… I can’t wait to get out.
- “I can’t tell you how defeated I feel… The feeling of being punished for delivering good care is nerve-racking.
- “I am no longer a physician but the data manager, data entry clerk and steno girl… I became a doctor to take care of patients. I have become the typist.”

– Annals of Family Medicine: “From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider”, Thomas Bodenheimer MD, Christine Sinsky MD
Quantifying the EHR Burden

Surveys Say...

- “3 out of 4 physicians believe that EHRs increase practice costs, outweighing any efficiency savings” — Deloitte Survey of US Physicians, 2016
- “7 out of 10 physicians think that EHRs reduce their productivity” — Deloitte
- “4 in 10 primary care physicians (40%) believe there are more challenges with EHRs than benefits” — Stanford Medicine/Harris Poll, 2018
- “6 out of 10 physicians (59%) think EHRs need a complete overhaul” — Stanford/Harris
- “Only 8% say the primary value of their EHR is clinically related” — Stanford/Harris
- “[Physicians express that EHR] systems had detracted from professional satisfaction (54%) as well as from their clinical effectiveness (49%)” — Stanford/Harris
- “Almost 40 percent of surveyed outpatient providers are looking to replace their EHR and other IT tools with solutions that offer better ease of use, more functionality and increased interoperability with other IT systems” — Health Data Management - Why EHRs are flawed, and how they can be fixed, 13 Jun 2019
"No other industry... has been under a universal mandate to adopt a new technology before its effects are fully understood, and before the technology has reached a level of usability that is acceptable to its core users.” — New England Journal of Medicine, Transitional Chaos or Enduring Harm? The EHR and the Disruption of Medicine, 22 Oct 2015

"Many clinicians know what they want — but haven't been asked... Our biggest mistake lies not in adopting clunky systems but in dismissing the concerns of the people who must use them." — Ibid.

“Few physicians and nurses were involved in the decision-making process of which EHR to implement in their workplace. Of physician participants, 66 percent said they had no input, 28 percent had input... Of nurse and [advanced practice nurse/APRN] participants, 80 percent said they had no input, 18 percent had input...” — Becker's Healthcare - [Survey finds] Nearly half of physicians think EHRs have decreased quality of care, 1 May 2019

"Of the physician and nurse/APRN participants who had input in choosing their workplace's EHR system, just 2 percent said the system they wanted was chosen." — Ibid.
“Although the original intent behind the design of EHRs was to facilitate patient management and care, the technology largely has been co-opted for other purposes.

- “Payers see the EHR as the source of billing documentation.
- “Health care enterprises see it as a tool for enforcing compliance with organizational directives...
- “Public health entities see it as a way to use clinicians to collect their data at drastically reduced costs.
- “Measurement entities see the EHR as a way to automate the collection of measure data, reducing their reliance on chart abstraction.
- “Governmental entities see it as a way to observe and enforce compliance with regulations.

“All these impositions on EHR systems have created distractions from their potential value in supporting care delivery... The ability of these systems to support care delivery will not improve unless physicians and others who deliver care insist that the functions needed by clinicians and their patients take priority over non-clinical requirements.”

— American College of Physicians, Putting Patients First by Reducing Administrative Tasks... 2 May 2017  [Emphasis added]
THE MODERN MEDICAL TEAM

CASE MANAGER

UTILIZATION REVIEWER

BILLING SUPERVISOR

INSURANCE

DISCHARGE PLANNER

DOCTOR

NURSE

WASSERMAN

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DICT. @ L.A. TIMES SYND.
### Mandate of External Entities

<table>
<thead>
<tr>
<th>WHO - Entity</th>
<th>Legislative bodies</th>
<th>Federal, state, regional agencies</th>
<th>Public and private payers</th>
<th>Public health agencies</th>
<th>Accreditation, licensing bodies</th>
<th>Various entities</th>
<th>Professional societies, others</th>
<th>HIT standards development</th>
<th>Organizations</th>
<th>Software developers</th>
</tr>
</thead>
</table>

### Mandate of Internal Entities

<table>
<thead>
<tr>
<th>Administration/CEO/COO</th>
<th>Administration/CEO/COO/CIO</th>
<th>Finance/CFO</th>
<th>Department, service, specialty</th>
<th>Information technology (IT)/CIO/CMIO</th>
<th>Health information management (HIM)</th>
<th>Security management/CISO</th>
</tr>
</thead>
</table>

### WHAT – Mandate

<table>
<thead>
<tr>
<th>Mandate</th>
<th>Law</th>
<th>Regulation</th>
<th>Prior authorization, claims, payment policy</th>
<th>Public health reporting policy</th>
<th>Accreditation, licensing policy</th>
<th>Quality/performance measurement/reporting</th>
<th>Practice guidelines</th>
<th>HIT standards</th>
<th>Software design, development, deployment</th>
<th>Organizational practice/policy</th>
<th>Software procurement practice/policy</th>
<th>Financial, billing practice/policy</th>
<th>Unit practice/policy</th>
<th>Software management, support, implementation practice/policy</th>
<th>HIM practice/policy</th>
<th>Privacy, security practice/policy</th>
</tr>
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</table>

### Weighing Considerable Burden and Constraint on...

Figure 2. Distribution of Total Electronic Health Record (EHR) Time per Day Between US and Non-US Clinicians From 371 Health Systems

The brown color represents the overlap between the US and non-US health systems in this overlaid histogram.

Source: Journal of the American Medical Association (JAMA), Assessment of Electronic Health Record Use Between US and Non-US Health Systems, A Jay Holmgren MHI, N Lance Downing, MD David W. Bates MD, MSc 14 Dec 2020
Average characters per ambulatory progress note in U.S. and international health systems.

Source: Annals of Internal Medicine – Physician Burnout in the Electronic Health Record Era: Are We Ignoring the Real Cause? N Lance Downing MD, David W Bates MD MSc, Christopher A Longhurst MD MS, 8 May 2018
“‘Physician burnout’ has skyrocketed to the top of the agenda in medicine. A 2018 Merritt Hawkins survey found a staggering 78% of doctors suffered symptoms of burnout... the Harvard School of Public Health and other institutions deemed it a ‘public health crisis.’” – Fortune and Kaiser Health News: “Death by a Thousand Clicks: Where Electronic Health Records Went Wrong”, Erika Fry and Fred Schulte, 18 Mar 2019

“The U.S. government claimed that turning American medical charts into electronic records would make health care better, safer, and cheaper. Ten years and $36 billion later, the system is an unholy mess... a digital revolution gone wrong.” – Ibid.

“7 out of 10 physicians (71%) agree that EHRs greatly contribute to physician burnout” – Stanford Medicine/Harris Poll, 2018
Physician Burnout Costs:
- $4.6 Billion (US) per year
- $7,600 (US) per physician per year

Limited to costs of turnover and reduced clinical effort; Does not include other key costs: ↑ malpractice, ↑ medical error, ↓ satisfaction

- Annals of Internal Medicine, 27 May 2019
Family Medicine (n=140) 35.7%
Dermatology (n=52) 34.6%
Hospital Medicine (n=39) 30.8%
Obstetrics/Gynecology (n=96) 29.2%
Pediatrics (n=163) 28.8%
Internal Medicine (General) (n=257) 28.0%
Radiology (n=66) 27.3%
Physicians in top 15 specialties 26.2%
Psychiatry (n=174) 24.7%
Orthopedic Surgery (n=71) 23.9%
Neurology (n=51) 23.5%
Emergency Medicine (n=82) 23.2%
Cardiology (n=43) 20.9%
Surgery (General and Other) (n=54) 16.7%
Ophthalmology (n=42) 16.7%
Anesthesiology (n=42) 14.3%

Percent of physicians reporting one or more burnout symptoms

Source: Physician stress and burnout: the impact of health information technology
doi:10.1093/jamia/ocy145
Source: Physician stress and burnout: the impact of health information technology
What Contributes Most to Burnout?

- Too many bureaucratic tasks (e.g., charting, paperwork) 55%
- Spending too many hours at work 33%
- Lack of respect from administrators, employers, colleagues, or staff 32%
- Increasing computerization of practice (EHRs) 30%
- Insufficient compensation, reimbursement 29%
- Lack of control, autonomy 24%
- Feeling like a cog in a wheel 22%
- Decreasing reimbursements 19%
- Lack of respect from patients 17%
- Government regulations 16%
- Other 7%

15 Jan 2020
## Reducing Clinician Burden

### Defining Terms

<table>
<thead>
<tr>
<th>Reducing (reduce)</th>
<th>Clinician</th>
<th>Burden</th>
</tr>
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<tbody>
<tr>
<td>• “To bring down, as in extent, amount, or degree; diminish”, and “To gain control of... [to conquer]”, and “To simplify the form of... without changing the value”, also “To restore... to a normal condition or position” – The Free Dictionary</td>
<td>• “A health professional whose practice is based on direct observation and treatment of a patient” – Mosby's Medical Dictionary</td>
<td>• “A source of great worry or stress”, and “[Something that] cause[s] difficulty [or] distress”, also “To load or overload” – The Free Dictionary</td>
</tr>
<tr>
<td>• “To lower in... intensity” – Dictionary.com</td>
<td>• “An expert clinical practitioner and teacher” – Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health</td>
<td>• “Something that is carried, [as in a] duty [or] responsibility”, also “Something oppressive or worrisome” – Merriam-Webster Dictionary</td>
</tr>
<tr>
<td>• “To narrow down”, also “To bring to a specified state or condition” – Merriam-Webster</td>
<td>• “A health professional, such as a physician, psychologist, or nurse, who is directly involved in patient care” – American Heritage Medical Dictionary</td>
<td></td>
</tr>
</tbody>
</table>

11 September 2023
### Clinician Burden

Anything that hinders patient care, either directly or indirectly, such as:

1) Undue cost or loss of revenue,
2) Undue time,
3) Undue effort,
4) Undue complexity of workflow,
5) Undue cognitive burden,
6) Uncertain quality/reliability of data/record content,
7) Anything that contributes to burnout, lack of productivity, inefficiency, etc.,
8) Anything that gets in the way of a productive clinician-patient relationship.

-- Peter Goldschmidt, modified
“Reducing Clinician Burden” Project is an ongoing activity of the HL7 EHR Work Group.

We are open and collaborative – oriented to US and international interests – and including all interested stakeholder: clinicians, providers, vendors, SDOs, payors, public health.

Our primary focus is clinician burden including time & data quality burdens associated with:
  - Use/engagement of EHR/HIT systems
  - Capture, exchange and use of health information

We are considering, in particular, these aspects of burden:
  - Clinical practice – at the point of care
  - Regulatory, accreditation, administrative, payor, public health mandates
  - EHR/HIT system design, functionality, usability and implementation
  - Health information quality and usability

We have undertaken an extensive review of reference sources to document the substance, impact and extent of clinician burden
  - Trade publications, professional society journals, articles, studies, personal experience...
Our continuing work is focused on root causes in each RCB topic area (not just limited to EHR system functionality and usability issues – although that is important)
  - What is the problem and its source?
  - Why did it happen?
  - What will be done to prevent it from happening (now and in the future)?
  - Who (stakeholder(s)) might best address burden?

We have drafted a White Paper: “Reducing Clinician Burden by Improving Electronic Health Record Usability and Support for Clinical Workflow”
  - Update underway – As a collaborative project with ISO TC215 WG1
  - Led by David Schlossman MD

We have evaluated burden related aspects of US Core Data for Interoperability (USCDI).

We have assessed burden related aspects of the International Patient Summary (IPS), developed jointly by ISO TC215, HL7, CEN TC215, SNOMED and IHE
Reducing Clinician Burden Project
Assessing the Burden

- We are seeking success stories specifically addressing burden reduction and burnout in provider organizations.
- We initiated three new team efforts, including experienced front-line clinicians, to focus on burden reduction opportunities related to:
  - Medication list management and reconciliation
  - Problem-oriented health record (POHR)
  - Artificial Intelligence (AI)
- We have completed a ballot of the HL7 International Community – seeking input, insight and guidance on workable strategies for reducing clinician burden
- We have developed a Burden Impact Statement, in conjunction with the American Medical Association, to assess HL7 projects
- We anticipate that our analysis will influence future objectives of HL7, ISO TC215 and other standards development efforts
- Our goal is not to boil the ocean, but rather to understand the substance, extent and impact of the burden, to recognize root causes and to identify success stories.
Reducing Clinician Burden – Breaking It Down

Topics/Categories

1) Clinician Burden – In General
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 priorities, end-user feedback
28) Product transparency
29) Product modularity
30) Lock-in, data liquidity, switching costs
31) Financial burden
32) Security
33) Professional credentialing
34) Identity matching and management
35) Data quality and integrity
36) Process integrity
37) List Management: problems, medications, immunizations, allergies, surgeries, interventions and procedures

Blue = RCB Focus Teams Formed
Green = HL7 Da Vinci Accelerator Project
Reducing Clinician Burden
Success Stories

1. Reducing Clinician Burden: Cardiovascular Procedure Reporting at Duke
   James Tcheng MD, Duke University

2. "Home for Dinner" - Reducing After Hours Documentation with Focused Training
   Greta Branford MD, University of Michigan

3. Benefits of SNOMED CT from a clinical perspective, The Rotherham experience
   Monica Jones, NHS Rotherham Foundation Trust (UK)

4. Getting Time Back in Your Day! Implementing a Multi-Faceted Approach to Optimizing Epic in the Ambulatory Setting
   Jeff Tokazewski MD, Carole Rosen, Shane Thomas, University of Pennsylvania

5. Well-Being Playbook, A Guide for Hospital and Health System Leaders
   Elisa Arespacochaga, American Hospital Association

6. Understanding the Impact of the EHR on Physician Burnout and Wellness
   Christopher Sharp MD, Lindsay Stevens MD, Stanford University/Stanford Health Care

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Reducing Clinician Burden
Success Stories

7. **SPRINT – An Organizational Strategy that Increases Satisfaction, Improves Teamwork and Reduces Burnout**
   Amber Sieja MD, University of Colorado School of Medicine, UCHealth

8. **Addressing EHR-related burnout at the Centre for Addiction and Mental Health (CAMH),**
   Toronto, Ontario, Canada
   Gillian Strudwick RN PhD FAMIA, Tania Tajirian MD CCFP FCFP DTMPH, Brian Lo MHI

9. **Reducing Clinician Documentation Burden - Nursing Documentation Optimization**
   Seraphine Kapsandoy PhD RN, Perry Gee PhD RN, Intermountain Healthcare (Utah)

10. **Update: University of Michigan - "Home for Dinner" - MiChart Boost**
    Greta Branford MD

[More to come...]
DRAFT Reducing Clinician Burden White Paper

- “Reducing Clinician Burden by Improving Electronic Health Record Usability and Support for Clinical Workflow”
- Update underway in conjunction with Technical Report under development for ISO TC215 Working Group 1 (ISO 4419)
- Lead: David Schlossman MD PhD FACP MS CPHIMS
- Primary contributors: Lisa Masson MD, James Tcheng MD, Luann Whittenburg RN PhD and Barry Newman MD
- With input from Frank Opelka MD, James Sorace MD and Gary Dickinson FHL7
- Please review and offer comments and suggestions
Reducing Clinician Burden Project

Key Standards Focused on Burden Reduction

- **HL7 Da Vinci Project** – Provider ↔ Payer Communication
  - Coverage Requirements Discovery (published)
  - Documentation Templates and Rules (published)
  - Pre Authorization Support (published)

- **HL7 EHR System Usability Functional Profile**
  - Functions and Conformance Criteria to Enhance System Usability

- **ISO/HL7 10781 EHR System Functional Model, Release 3**
  - Design/development underway
USE CASE & IG READINESS

Clinical Data Exchange
- Payer Coverage Decision Exchange
- Clinical Data Exchange (CDex)
- Payer Data Exchange (PDex)

Coverage, Transparency & Burden Reduction
- Coverage Requirements Discovery (CRD)
- Documentation Templates and Rules (DTR)
- Prior-Authorization Support (PAS)

Foundational Assets
- Member Attribution List
- Notifications
- Health Record Exchange (HRex)
- Remittance Advice (Discovery)

- Formulary
- Plan Network Directory
- Patient Cost Transparency (PCT)

Quality & Risk
- Value Based Performance Reporting (VBPR)
- Data Exchange for Quality Measures/Gaps In Care (DEQM/GIC)
- Risk Adjustment (RA)

* Referenced in or supports Federal Regulation
◆ Aligned with expected Federal Regulation
+ Guide Paused and Core Functionality moved to PDex

Dial denotes progress in current STU Phase


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Reducing Clinician Burden Project

Materials

- Project Documents and Links – Project Website
  - https://confluence.hl7.org/pages/viewpage.action?pageId=104568480
  - Teleconference Schedule
  - Project Overview, Progress Report
  - Presentations
  - Analysis, Derivations and Worksheets
  - Success Stories
  - Reference Sources
Reducing Clinician Burden Project

US Federal Government Initiatives

- **US Office of National Coordination for Health Information Technology** – FINAL "Strategy on Reducing Burden Relating to the Use of Health IT and EHRs", including Findings, Strategies and Recommendations
  - Published 21 Feb 2020

- **US Centers for Medicare and Medicaid Services** – Initiative to Reduce Provider and Clinician Burden and Improve Patient Outcomes
  - Announced 23 Jun 2020

- Also – Your burden reduction suggestions may be directed to:
  - US Centers for Medicare/Medicaid Services (CMS)
    reducingproviderburden@cms.hhs.gov
Reducing Clinician Burden

New ISO TC215 WG1 Work Item

- ISO TC215 – Health Informatics, formed in 1999
  - Chair: Michael Glickman (US)

- TC215 Working Group 1 – Frameworks, Models and Architectures
  - Convenor: Björn-Erik Erlandsson (Sweden)

- ISO 4419 – Work Item – Reducing Clinician Burden
  - Project Lead: David Schlossman MD
  - International Expert Team Assembled

- Candidate Deliverable
  - Technical Report based on Updated HL7 RCB White Paper
Reducing Clinician Burden Project

Schedule

- **Teleconferences**
  - [https://global.gotomeeting.com/join/798931918](https://global.gotomeeting.com/join/798931918)
  - RCB Project Team meets 2nd and 4th Mondays each month, 3-4PM US ET
  - POHR Project Team meets 1st and 3rd Mondays each month, 3-4PM US ET
  - AI Focus Team meets 4th Tuesdays each month, 4-5PM US ET

- [https://unmc.zoom.us/j/99555910370?pwd=cjl5WEJ1Z1IkVXBtaVFIQkRrSWJWdz09](https://unmc.zoom.us/j/99555910370?pwd=cjl5WEJ1Z1IkVXBtaVFIQkRrSWJWdz09)
  - Medication List Management and Reconciliation Focus Team meets 1st Wednesday each month, 5-6PM US ET

→ Special thanks to Michael Brody DPM for GoToMeeting facilities!
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Reducing Clinician Burden Project

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