HL7 EHR Work Group Meeting

16 January 2023, Henderson, Nevada

ISO/AWI TR 4419 Health Informatics Reducing Clinician Burden (RCB)

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What is 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
  - Decreased patient connection
Clinician Burden and Burnout

Burnout is a syndrome characterized by

- Emotional exhaustion
- Feelings of cynicism and detachment from work
- Sense of low personal accomplishment

- 54% of US physicians report at least one symptom of burnout (twice the rate of the general population)
- 70% of US physicians report symptoms of health IT-related stress
- Annual US healthcare costs attributable to physician burnout = $2.6 – 6.3 billion
- 121,000 US physicians left the profession in 2021

Clinician Burnout Is A Worldwide Problem

'It's like juggling fire daily': Well-being, workload and burnout in the British NHS - A survey of 721 physicians
Catherine Dominic, Dipesh P Gopal, Amandip Sidhu

Burnout Syndrome Among Medical Practitioners Across India: A Questionnaire-Based Survey
Deepak Langade, Pranav D. Modi, Yazad F. Sidhwa, Namita A. Hishikar, Amit S. Gharpure, Kalpana Wankhade, Jayshree Langade, Kedar Joshi

A systematic review of burnout among doctors in China: a cultural perspective
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The consequences of burnout syndrome among healthcare professionals in Spain and Spanish speaking Latin American countries
Rosa Suñer-Soler, Armand Grau-Martín, Daniel Flichtentrei, Maria Prats, Florencia Braga, Silvia Font-Mayolas, Mª Eugenia Gras
Commonwealth Fund Primary Care Physician Survey

Munira Z. Gunja, Evan D. Gumas, Reginald D. Williams II, Michelle M. Doty, Arnav Shah, and Katharine Fields

Stressed Out and Burned Out: The Global Primary Care Crisis

Findings from the 2022 International Health Policy Survey of Primary Care Physicians

- 9500 Participants from 10 high income countries
- February – September 2022
- Sample sizes 321 – 2092 per country
- Response rates 6 – 40 percent

Commonwealth Fund Survey: Burnout Rate

Younger primary care physicians were generally more likely to report burnout than older physicians; physicians in the Netherlands and Switzerland were least likely to report burnout.

Percentage of primary care physicians who said they were burned out*

- NETH
- SWIZ*
- FRA
- SWE*
- GER*
- AUS*
- UK*
- US*
- CAN*
- NZ*

Under age 55
Age 55 and older

Primary care physicians experiencing stress, emotional distress, or burnout were more likely to report the quality of care they provided declined during the pandemic.

*Percentage of primary care physicians who said quality of medical care they were able to provide worsened “somewhat” or “a lot” compared to before the COVID-19 pandemic began*

[Diagram showing percentage of physicians experiencing stress by country]
Nearly half of older primary care physicians in most countries say they intend to stop seeing patients in the near future.

Percentage of primary care physicians who said they plan to stop seeing patients in the next one to three years:

- **NETH**: 4\% (Under age 55), 31\% (Age 55 and older)
- **SWIZ**: 4\% (Under age 55), 47\% (Age 55 and older)
- **GER**: 4\% (Under age 55), 40\% (Age 55 and older)
- **AUS**: 4\% (Under age 55), 37\% (Age 55 and older)
- **CAN**: 8\% (Under age 55), 52\% (Age 55 and older)
- **SWE**: 11\% (Under age 55), 48\% (Age 55 and older)
- **US**: 14\% (Under age 55), 45\% (Age 55 and older)
- **FRA**: 16\% (Under age 55), 55\% (Age 55 and older)
- **NZ**: 18\% (Under age 55), 59\% (Age 55 and older)
- **UK**: 20\% (Under age 55), 67\% (Age 55 and older)

Sociotechnical Systems

People

Processes

Technology

Organizations

Social and Regulatory Environment

Socio-

Technical
Technical Clinician Stressors

Death By 1,000 Clicks: Where Electronic Health Records Went Wrong

Why doctors hate their computers

Stanford’s Lloyd Minor: EHRs need a ‘major revamp’ to solve physician burnout

These doctors think electronic health records are hurting their relationships with patients
ARRA, HITECH, and Meaningful Use

I'm gonna make him an offer he can't refuse.
Broken Promises of Healthcare IT

- Modest improvement in process metrics
- No change in large scale health outcomes
- Continued rise in healthcare costs

1. Decreased clinician efficiency due to
   a. Required nonclinical activities
   b. Unnecessary alerts and reminders and low value CDS
   c. Data obfuscation, obscure navigation, and redundant notes

2. Disconnect from patients and burnout
People
Processes
Technology
Organizations
Social and Regulatory Environment
Sociotechnical Imbalances
HL7 International
ISO
Why EHRs Have Not Met Their Design Goals

- Poor usability
  - Poor support for clinical workflow
  - Poor human factors engineering
  - Exacerbate other stressors

- Poor interoperability
  - Poor information exchange
  - Much unstructured data
  - Inadequate consensus on standards
Mayo Clinic Study Of EHR Usability And Burnout

The Association Between Perceived Electronic Health Record Usability and Professional Burnout Among US Physicians

Edward R. Melnick, MD, MHS; Liselotte N. Dyrbye, MD, MHPE; Christine A. Sinsky, MD; Mickey Trockel, MD, PhD; Colin P. West, MD, PhD; Laurence Nedelec, PhD; Michael A. Tutty, PhD; and Tait Shanafelt, MD

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https://doi.org/10.1016/j.mayocp.2019.09.024
Cross Sectional Survey of US Physicians from All Specialty Disciplines

- 30,456 invited physicians from AMA Physician Masterfile
- 5197 (17.1%) completed the survey
- A random 25% of responders received a usability subsurvey
- 870 (69.6%) completed it
- Extensive controls applied to confirm sample was representative at all stages
System Usability Scale

Think about the current electronic health record (EHR) you use most and indicate your response to the following statements.

Strongly Disagree 1 2 3 4 5
Strongly Agree

1. I like to use my EHR.
2. I find my EHR unnecessarily complex.
3. I think my EHR is easy to use.
4. I think that I would need the support of technical personnel to use my EHR better.
5. I find the various functions in my EHR are well integrated.
6. I think there is too much inconsistency in my EHR.
7. I would imagine that most people (in my specialty) would learn to use my EHR quickly.
8. I find my EHR very cumbersome to use.
9. I feel very confident using my EHR.
10. I needed to learn a lot of things before I could get going with my EHR.
SUS of EHRs vs Commercial Products

System usability scale (SUS) score

Product benchmarks

Grade scale

Acceptability ranges

Percentile across other studies

SUS score 45
Excel
SUS score 57

EHR
SUS score 45

Google search
SUS score 93

Microwave
SUS score 87

ATM
SUS score 82

Amazon
SUS score 82

Word
SUS score 76

DVR
SUS score 74

GPS
SUS score 71

0% 10%
10-20%
20-30%
30-40%
40-50%
50-60%
60-70%
70-80%
80-90%
90-100%

A
B
C
D
F
Maslach Burnout Inventory (MBI)

- Leading measure of burnout
- Adapted and optimized for multiple professions
- Designed to assess three aspects of the burnout syndrome: Emotional Exhaustion (EE), Depersonalization (DP) and Feeling of Low Personal Accomplishment (PA)
How The MBI Works

EE - “I feel burned out from my work”
DP - “I don’t really care what happens to some recipients”
PA - “I have accomplished many worthwhile things in this job”

- The frequency with which the respondent experiences feelings related to each subscale statement is assessed using a seven-point response format:
  - 0  Never
  - 1  A few times a year
  - 2  Once a month
  - 3  A few times a month
  - 4  Once a week
  - 5  A few times a week
  - 6  Every Day
Correlation of SUS and Burnout
Burnout vs SUS Score Linear Regression
Conclusions

- The usability of current EHR systems received a grade of F by a representative panel of physician users when evaluated by a well validated standardized metric of technology usability.
- A strong linear regression response relationship was observed between perceived EHR usability and odds of burnout.
348 US health systems and 23 non-US health systems all using Epic
Tracked time spent in the EHR on four key clinical activities
US clinicians vs non-US clinicians:
- Spent substantially more time each day actively using the EHR
- Spent more time on notes, orders, in-basket messages, and clinical review
- Received more system generated messages
- Wrote a higher proportion of automatically generated note text
- Spent more time after hours using the EHR
Distribution of US and Non-US Clinician EHR Time

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

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Clinician Burdens Vary By Location

- Healthcare IT impacts on clinician workflows and well being and on patient experience
- The use and impact of healthcare IT differs between US and Non-US clinicians, but clinician burden and burnout remains a matter of significant national and international concern
- Different countries differ significantly in their:
  - Use of few vs many types of EHRs and information systems
  - Level of structured data, data integration, and interoperability
  - National strategy for implementing EHRS and national patient identifiers
  - Presence of single payer or hybrid health insurance systems
- Widespread use of health IT does not necessarily guarantee effective coordination of care across the continuum
Clinician Burden Not Related to Healthcare IT


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Catherine Dominic 1, Dipesh P Gopal 2, Amandip Sidhu 3

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Other Clinical Stressors Contributing to Burnout

- Very high patient workloads and inadequate staffing
- Lack of work-life balance and time with family
- Lack of resources needed to provide best quality care
- Lack of control over workflows and a suboptimal work environment
- Patient aggressiveness or violence (in some countries)
- Judgmental professional culture with negative view of any complaints
- Putting business needs before patient needs (US)
Clinicians are universally committed to a foundational moral principle: The needs of the patient come first. Moral injury occurs when clinicians, in the course of providing care, repeatedly feel they are constrained to provide care that does not meet this longstanding deeply held commitment to healing because of circumstances beyond their control.

Moral Distress/Injury

Reducing Clinician Burden (RCB) Project

- Physicians
- Nurses
- Clinical informaticians
- Software developers
- Standards developers
- EHR implementers
- Academicians
- Policymakers
Support disruptive innovation in healthcare information technology through standards
Assessment

- The impact of healthcare IT on clinician workflows and patient experience remains a matter of great concern.
- Many burden reduction efforts show dedication, energy, and well-reasoned research and interventions.
- But there has been little impact on burden and burnout among healthcare professionals.
- Current efforts by healthcare IT organizations are not coordinated or aligned.

And burden and burnout among clinicians have never been higher.
Plan

- Bring engaged healthcare IT organizations together
- Share research, knowledge, and initiatives
- Identify opportunities to reduce duplication
- Explore synergies and enable collaboration
- Use combined influence to deliver on desired outcomes
National Burden Reduction Collaborative Meeting
Day 1: Tuesday 11.8.22

Sponsored by Epic
ISO/TC 215 circulated ISO/AWI TR 4419 Health informatics — Reducing clinicians burden for comment and requests the committee manager to issue a call for experts for the project by 25 February 2022.
Call for Comments and Experts

ISO Volunteers
- Peter Williams (Australia)
- Dr. Alpo Värri (Finland)
- Dr. S. B. Bhattacharyya (India)
- Anders Thurin (Sweden)
- John Greaves (United States)
- Dr. Randeep Singh (India)
- Dr. Linn Brandt (Norway)
- Dr. Bente Christensen (Norway)

Contributors to HL7 White Paper (All US)
- Dr. Barry Newman
- Dr. Lisa Masson
- Dr. Jimmy Cheng
- Dr. LuAnn Whittenburg
- Gary Dickinson
Utilize well established human factors and usability principles to
  - Suggest **disruptive** innovations in EHR design
  - Improve EHR efficiency and usability
  - Reduce clinician burden

- Revise a draft HL7 white paper into an ISO technical report
- Develop standards to measure whether EHRs conform to user-centered design principles
- Engage with software developers and regulators to measure and prioritize EHR usability and mitigate current problems
- Brainstorm ways standards might be used to address the social component of clinician burden
Discussion Question 1

The EHR landscape in the US is dominated by four or five large vendors, and interoperability standards have been constrained by regulators to focus on SMART on FHIR. The healthcare IT landscape outside the US is much more variable. In many areas there may be hundreds of commercial and homegrown systems with multiple different interoperability standards or even no consensus standards at all.

Is it possible to write a technical standard for user-centered design and usability that fits the ISO model, encompasses the extremely broad range of systems that may be relevant, and is not so prescriptive and confining as to be completely unacceptable to most EHR software developers?
Discussion Question 2

Administrative and regulatory problems that contribute to clinician burden in the United States, such as billing authorization and preauthorization, documentation and MIPS requirements, barriers to sharing usability and safety best practices, etc. do not exist or are not relevant in government healthcare systems in most of the rest of the world. As with the healthcare IT landscape, the regulatory landscape is also fragmented with a different agency regulating the healthcare system in each country.

Is it feasible to propose standard terminologies and vocabularies, uniform interoperability standards, and administrative models that would be accepted and implemented by such a wide spectrum of regulatory bodies?
Discussion Question 3

Although location and specialty specific training programs, HER configuration tweaks, clinician wellness programs, AI supported clinical assistants, and other interventions will be helpful in the short run. But moral distress is not primarily due to lack of resiliency or personal weakness. Definitively addressing many of the issues that underlie clinician burden will require increased resources in an environment where resources to support healthcare are already stretched to the limit in every country.

Is it realistic to think we can convince payers to increase staffing and care resources so clinicians can provide that humane, patient-centered care they envision and achieve at least some improvement in work-life balance?
Comments and Questions?

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