Reducing Clinician Burden Project

New Directions in Alleviating Clinical Workflow and Documentation Burdens

HL7 EHR Workgroup Co-Chairs

- Gary Dickinson FHL7, Lead: gary.dickinson@ehr-standards.com
  CentriHealth/UnitedHealth Group
- Michael Brody DPM: mbrody@tldsystems.com
  TLD Systems
- Stephen Hufnagel PhD: stephen.hufnagel.hl7@gmail.com
  Apprio Inc
- Mark Janczewzki MD: mark.janczewski@gmail.com
  Medical Networks LLC
- John Ritter FHL7: johnritter1@verizon.net
- Pele Yu MD: pele.yu@archildrens.org
  Arkansas Children's Hospital/University of Arkansas

HL7 Reducing Clinician Burden Project
Clinical Workflow and Documentation Focus Team

David Schlossman, MD, PhD, Lead

James Tcheng, MD
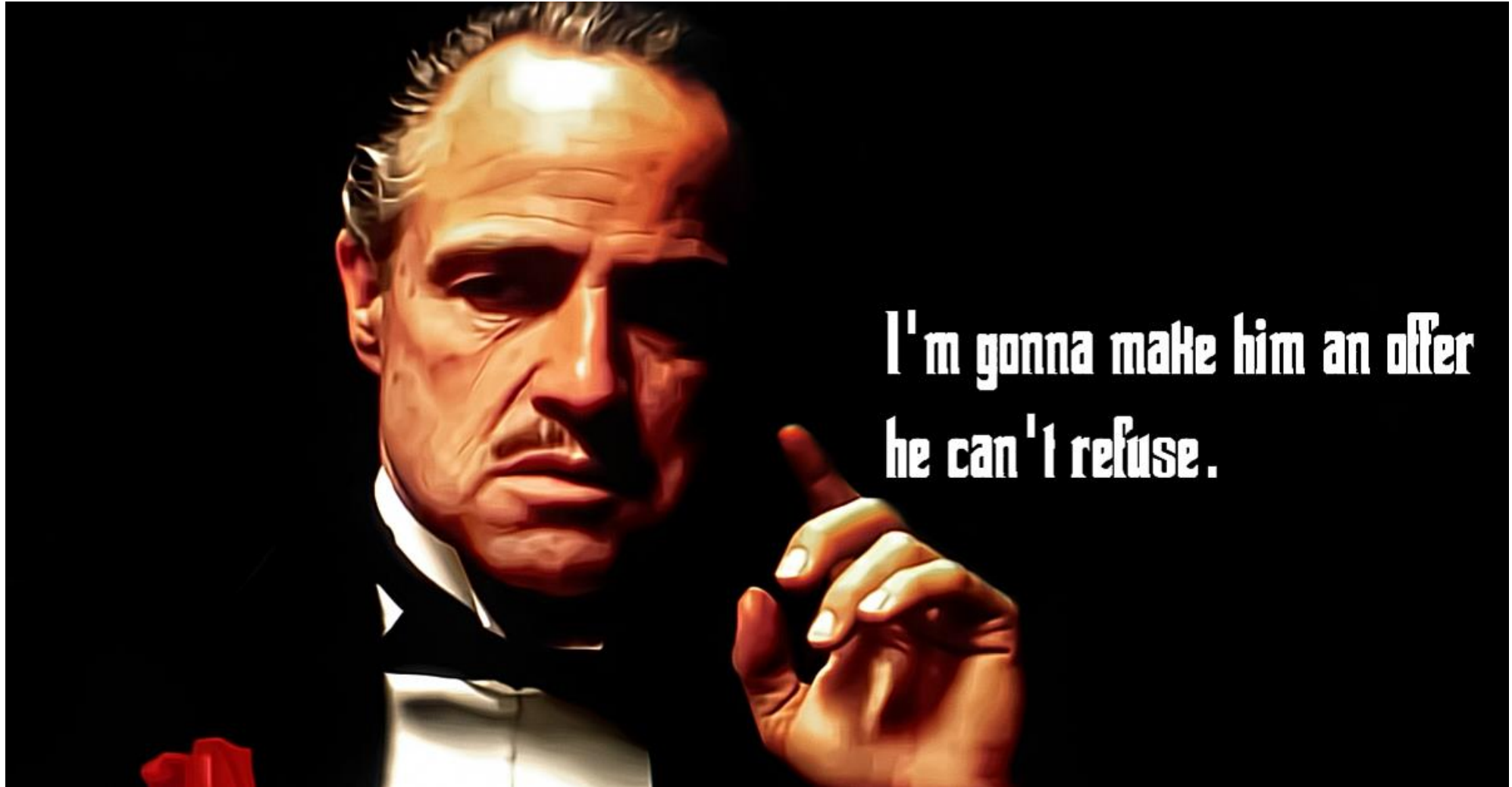
LuAnn Whittenburg, RN, PhD

Frank Opelka, MD

Lisa Masson, MD, Co-Lead

Barry Newman, MD

James Sorace, MD
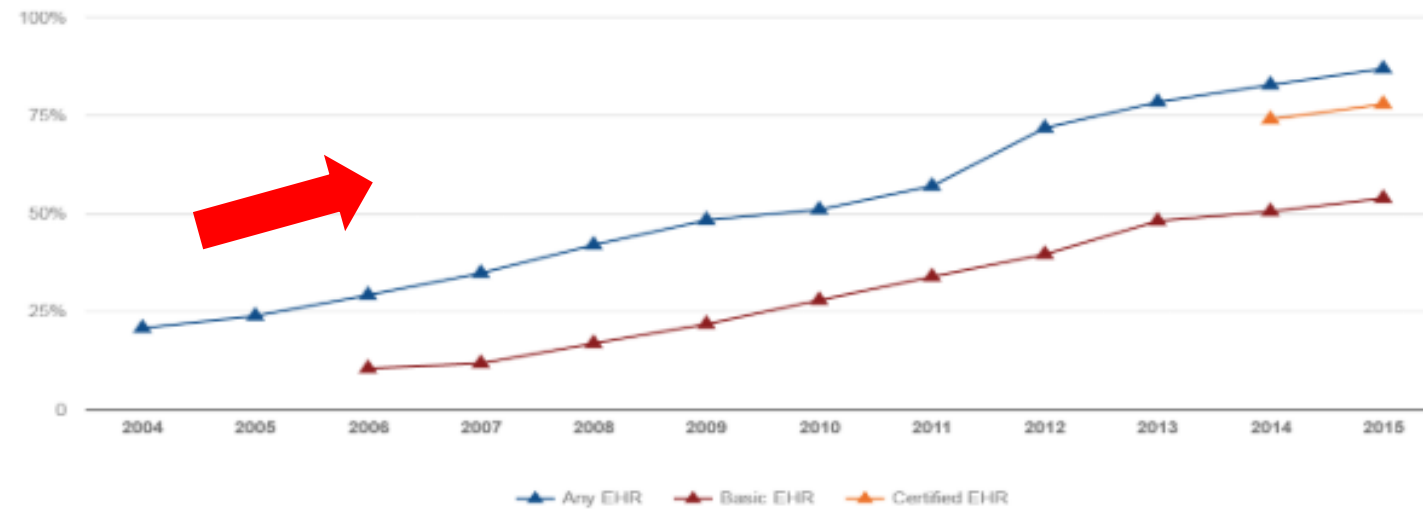
A View From 248 Miles Up

ARRA, HITECH, and Meaningful Use

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

- <u>No</u> 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.
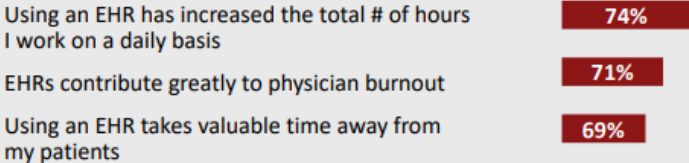
How Doctors Feel About EHRs
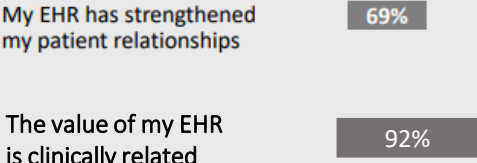## A National Physician Poll by Stanford Medicine and the Harris Organization

Time spent on EHRs effects patients relationships.

Stanford MEDICINE

While only 3% of PCPs don't see **any** value in their EHR system, time constraints take a toll and patient relationships suffer:
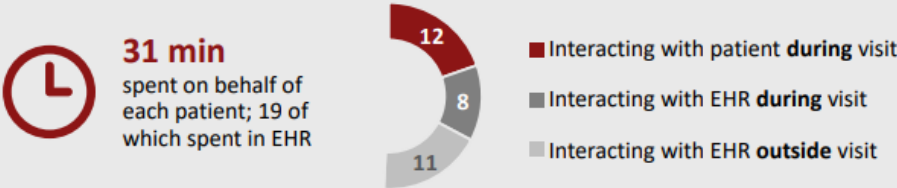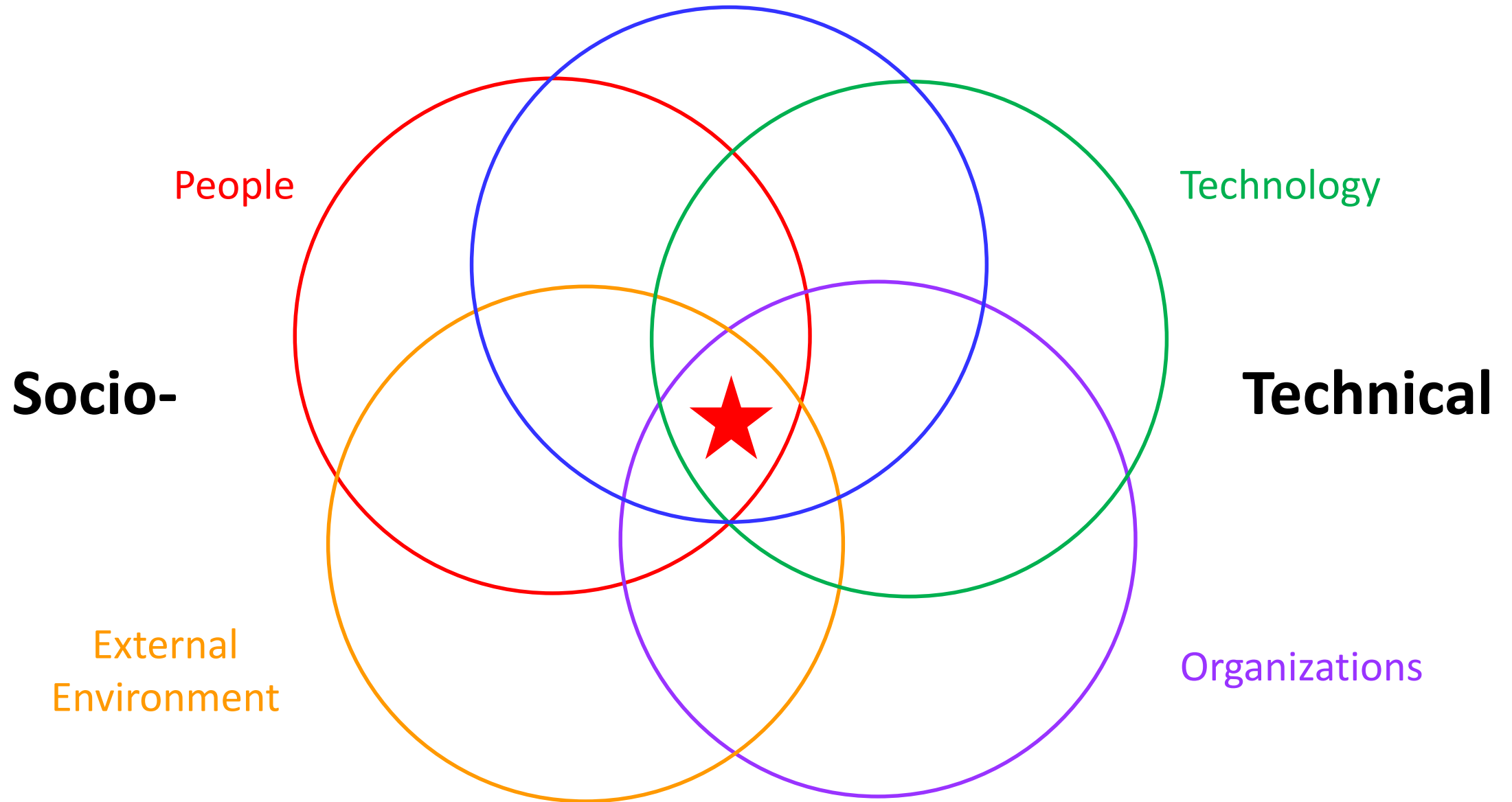
Seven in 10 agree that

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

- 12 ■ Interacting with patient **during** visit
- 8 ■ Interacting with EHR **during** visit
- 11 ■ Interacting with EHR **outside** visit

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

Sociotechnical Systems

Sociotechnical Imbalance

Processes

People

Technology

Socio-

Technical

External
Environment

Organizations
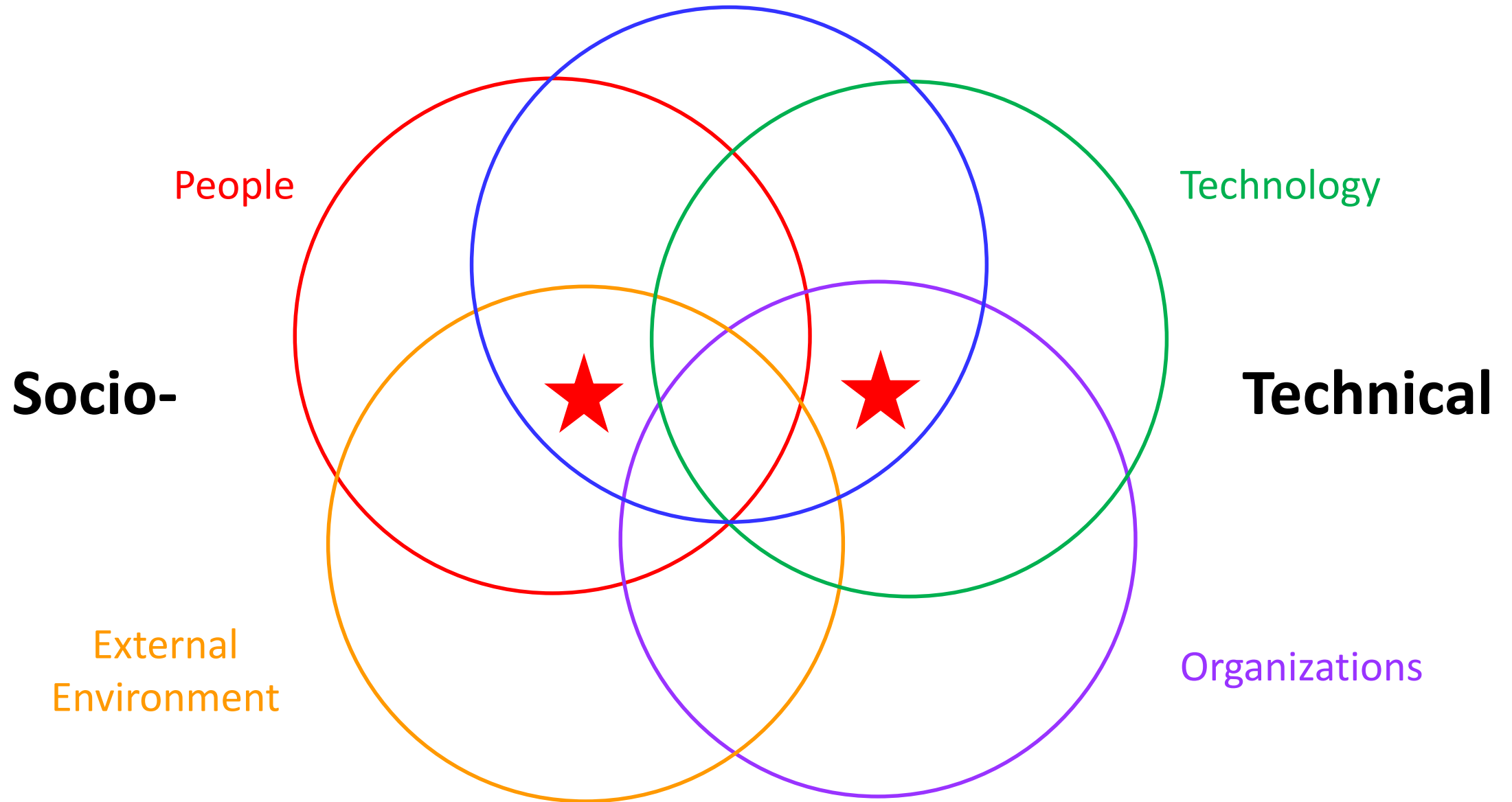
Clinician Burden

- 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

http://bit.ly/reducing_burden

RCB Project Focus Team: Topics and Categories

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

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
34.1) 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;
http://www.clinicalworkflowcenter.com/resources/workflow-process-definitions.

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
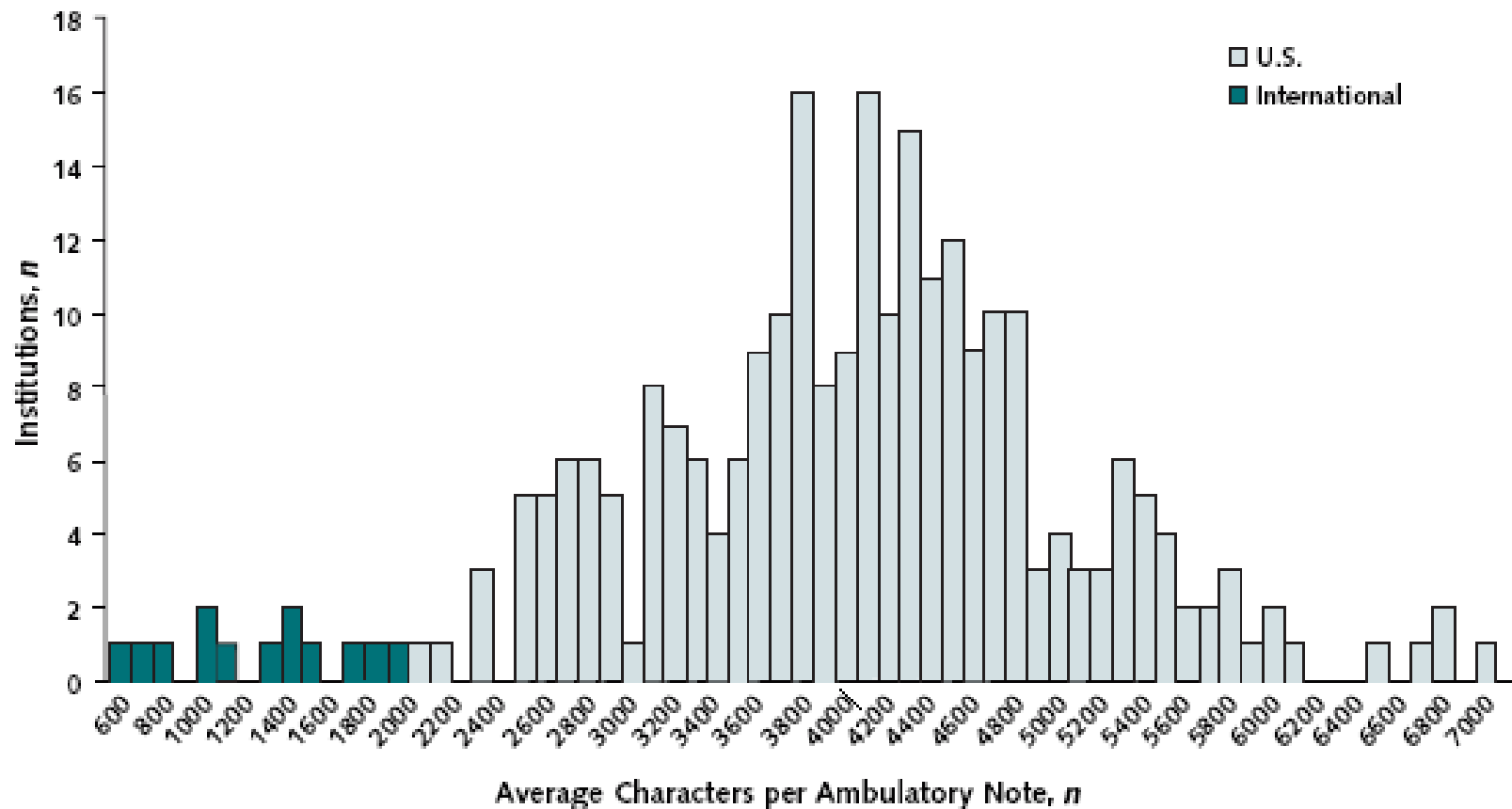- Lack of transparency in EHR certification and developer regulation

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.

Downing NL, Bates DW, Longhurst CA. Physician Burnout in the Electronic Health Record Era: Are We Ignoring the Real Cause? *Ann Intern Med.* 2018;169(1):50-51.

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# Policies That Passively Allow Burdens to Develop

Usability Standards	ONC	FAA	FDA
Rigor of design process used	<u>Required</u>: Apply user-centered design process <u>Compliance</u>: Attestation evaluated by CTB with no requirement for human factors expertise	<u>Required</u>: Apply human-centered design process <u>Compliance</u>: Data-supported internal evaluation including human factors experts	<u>Required</u>: Follow human factors considerations <u>Compliance</u>: Data-supported internal evaluation including human factors experts
Availability of interface level design specifications	No interface level design specifications	Specific interface level design specifications applied across the industry	Interface level design specifications, some industry wide and some device-specific
Certification and evaluation of the final product	Summative testing not requiring representative end users or a realistic testing environment	Summative testing using representative end users in a realistic testing environment	Summative testing using representative end users in a realistic testing environment

Savage EL, Fairbanks RJ, Ratwani RM. Are informed policies in place to promote safe and usable EHRs? A cross-industry comparison. *J Am Med Inform Assoc.* 2017;24(4):769-775.

Another Policy Gap
Hold Harmless Clauses and Gag Clauses
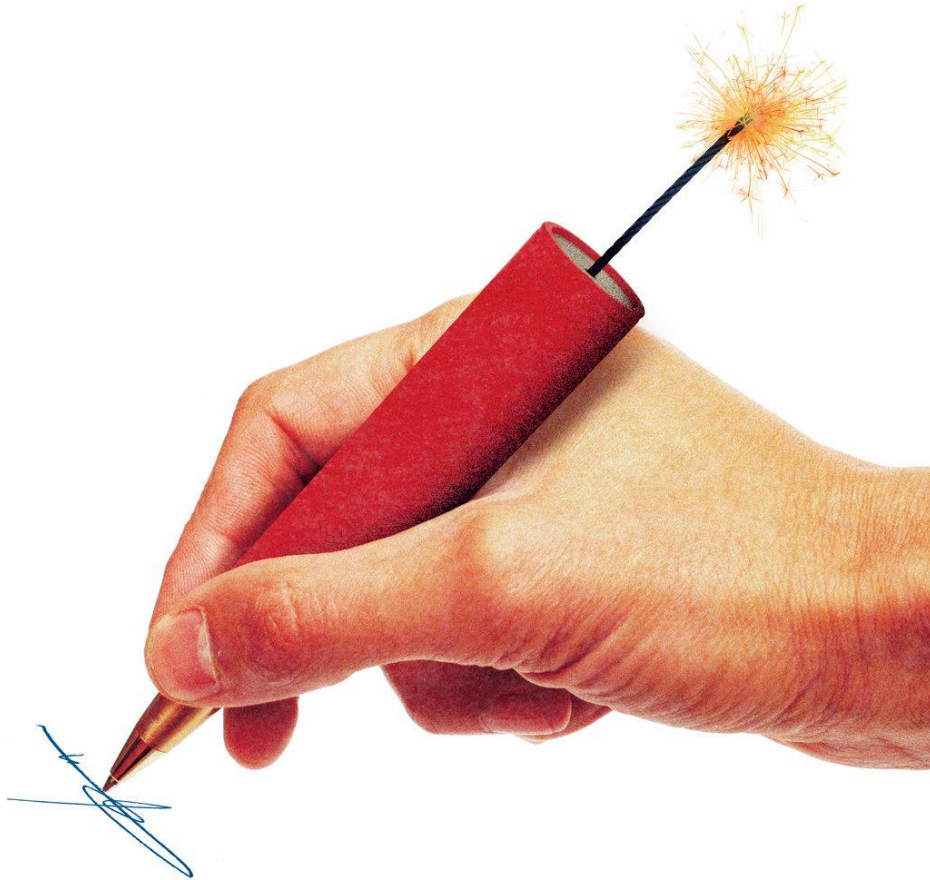
Reimbursement and Administrative Burden

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

- Comorbity 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"
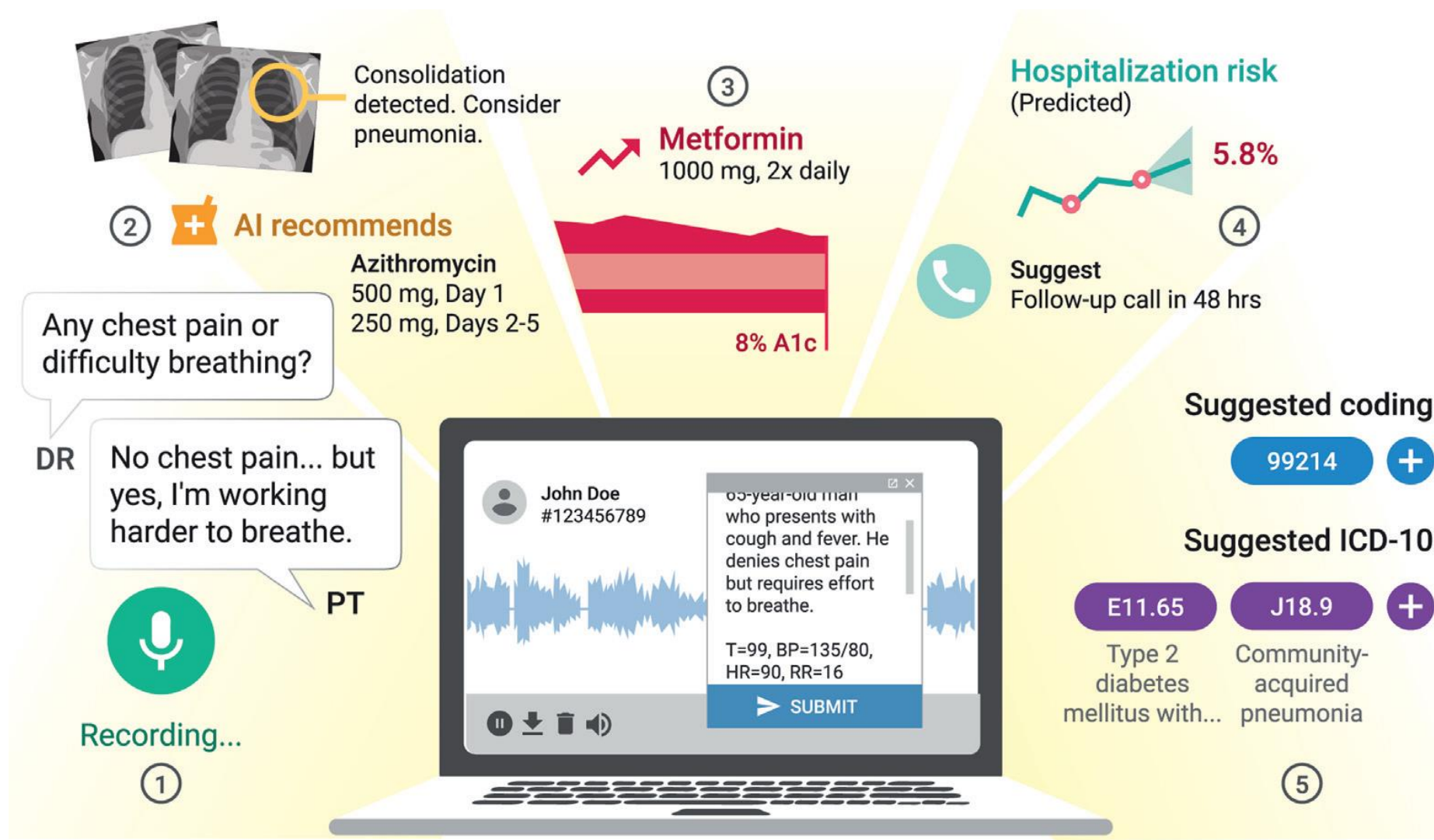
Common Patient Data Models
Uncoupling the Data From the Interface
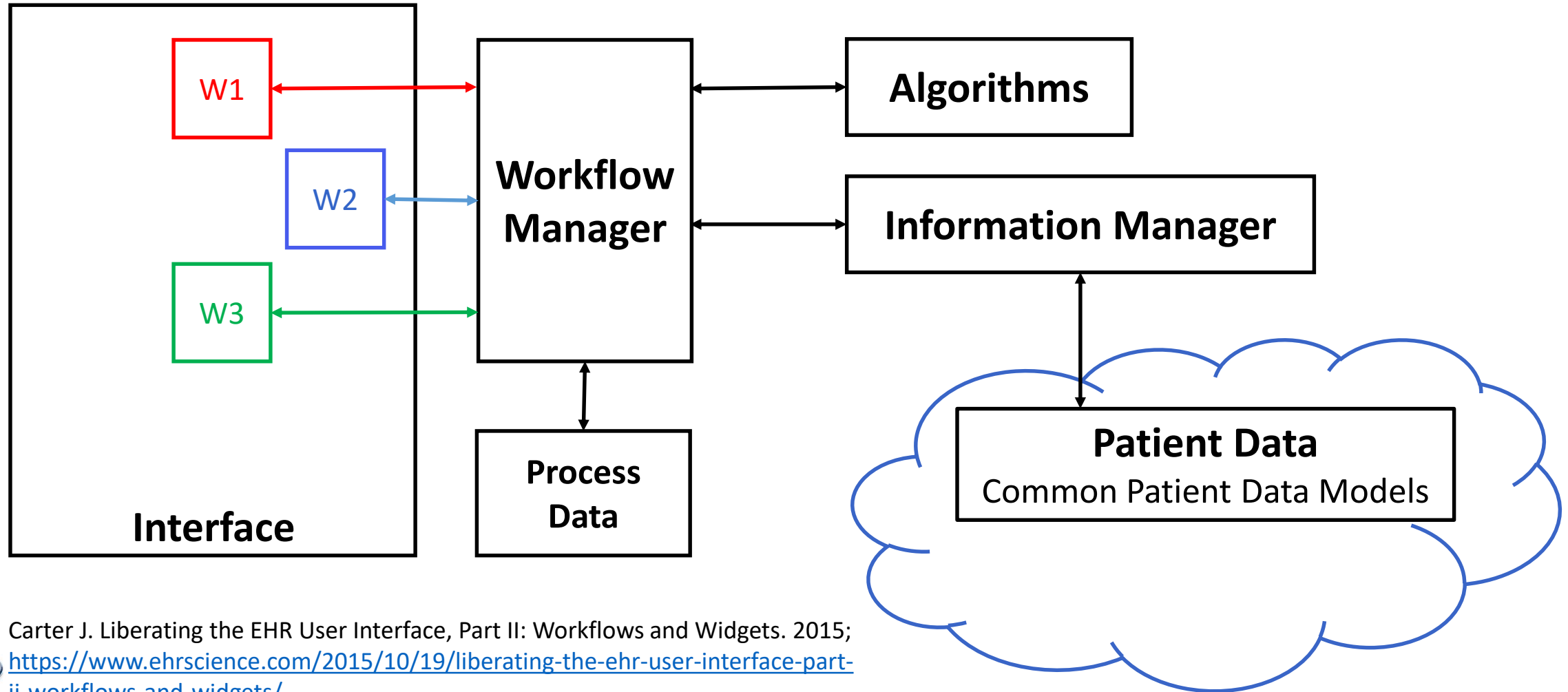
Carter J. Liberating the EHR User Interface, Part II: Workflows and Widgets. 2015; https://www.ehrscience.com/2015/10/19/liberating-the-ehr-user-interface-part-ii-workflows-and-widgets/

Artificial Intelligence and Natural Language Processing

Lin SY, Shanafelt TD, Asch SM. Reimagining Clinical Documentation With Artificial Intelligence. *Mayo Clin Proc.* 2018;93(5):563-565.

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.

Verghese, A., Shah, N., and Harrington, R. (2018). *JAMA 319*(1): 19-20

Reducing Clinician Burden Is a Shared Responsibility

- Academic researchers
- Clinical Informaticians
- Practicing Clinicians
- Software Developers
- UX Professionals
- Regulators/Policy Makers
- IT Administrators (CIOs)

Rice University September 12, 1962

"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."
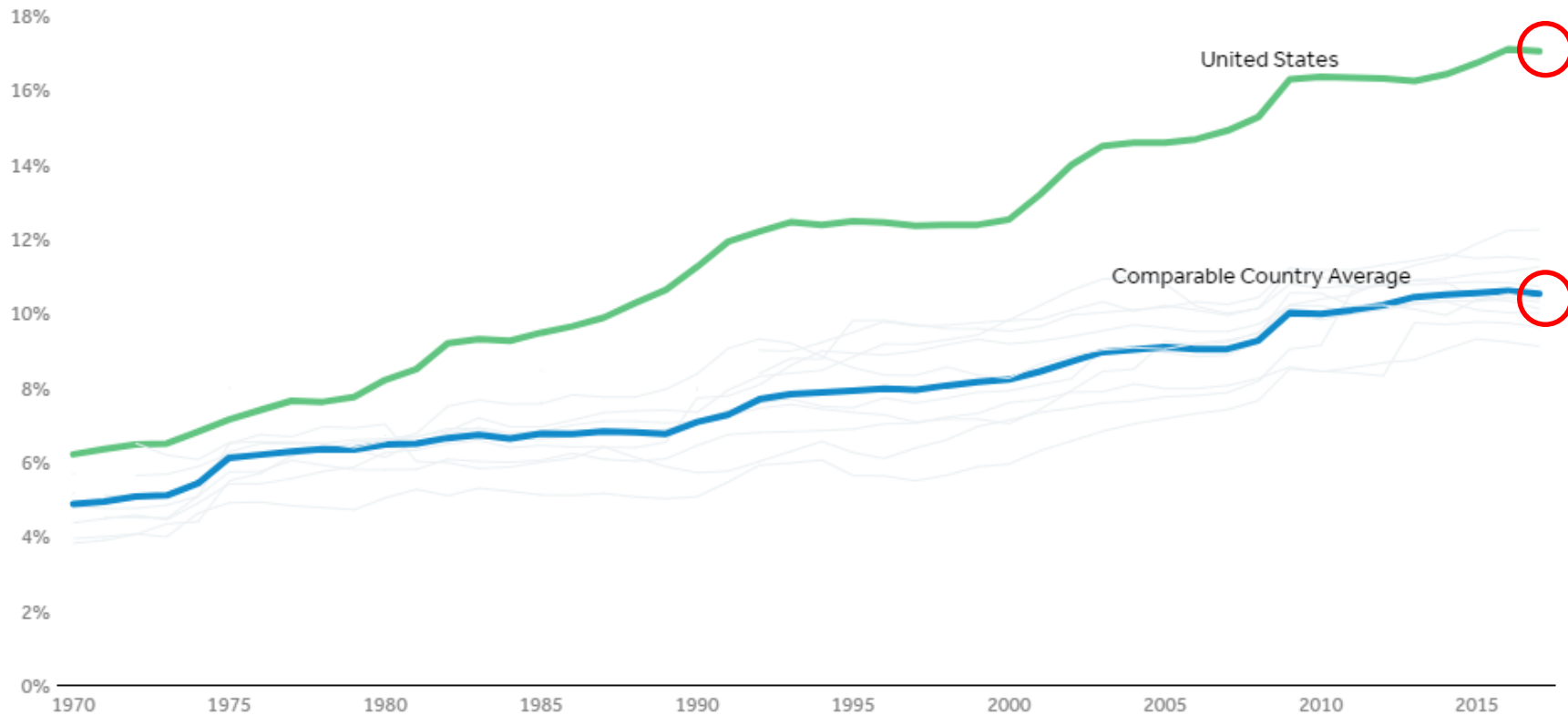
The Moon July 20, 1969
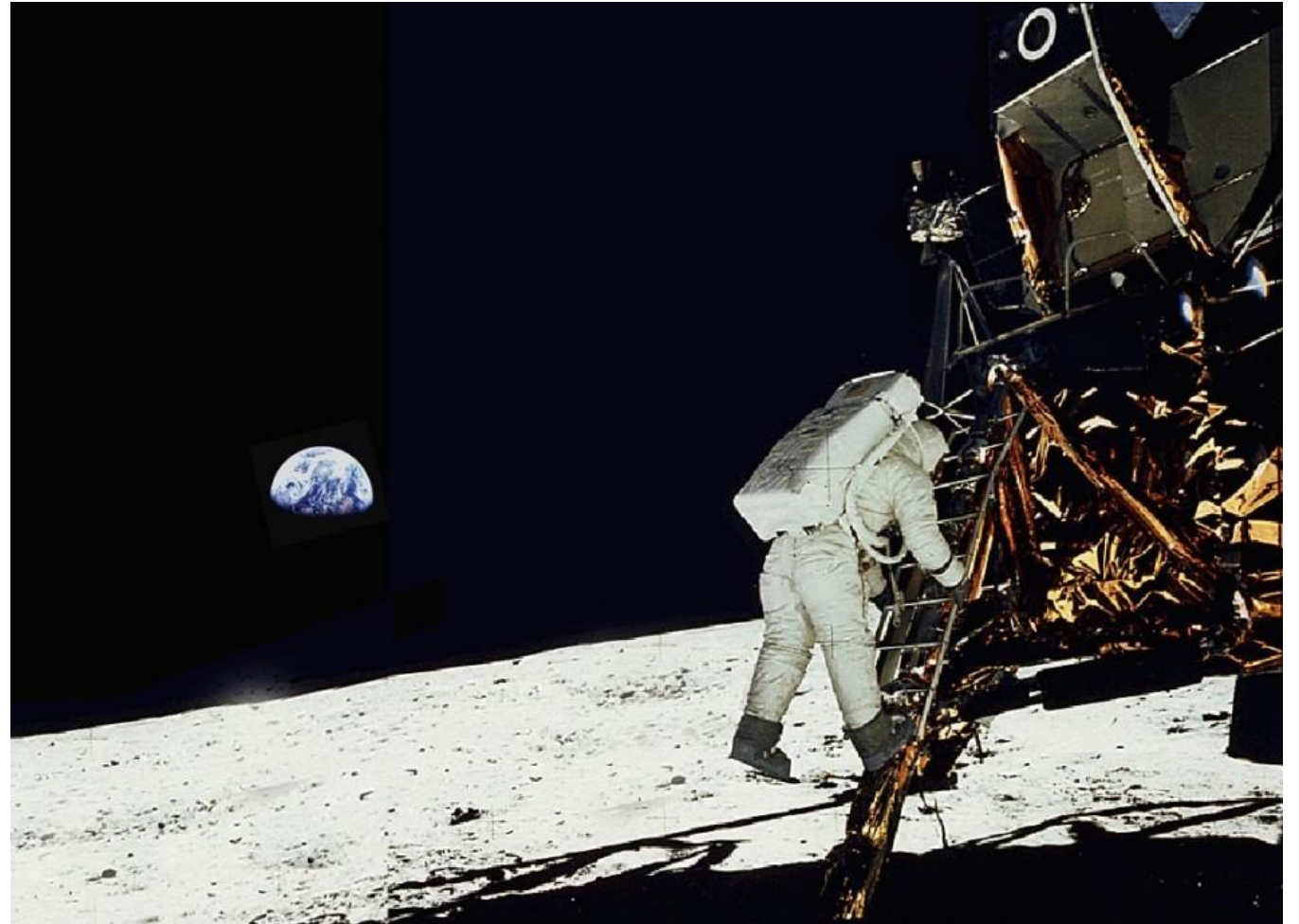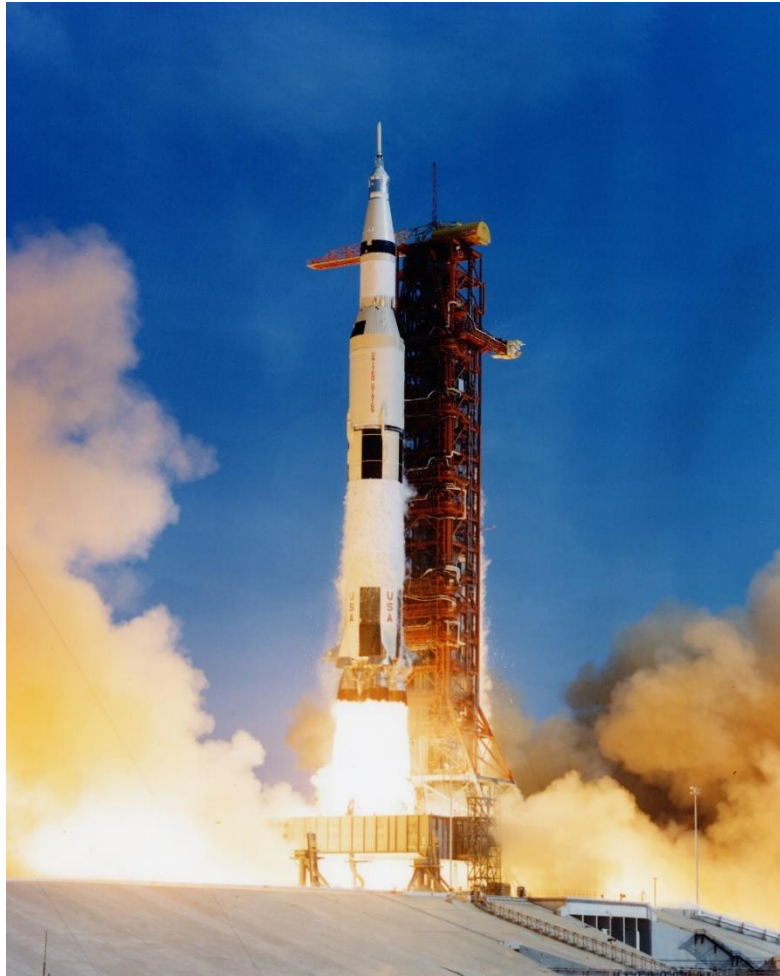
"That's one small step for [a] man, one giant leap for mankind."

Unsustainable Rise in Healthcare Costs

Health consumption expenditures as percent of GDP, 1970 – 2017

United States

Comparable Country Average

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

Peterson-Kaiser
Health System Tracker

https://www.healthsystemtracker.org/chart-collection/health-spending-u-s-compare-countries/#item-since-1980-the-gap-has-widened-between-u-s-health-spending-and-that-of-other-countries   2018

Comments and Questions

David Schlossman, MD, PhD, FACP, MS (Medical Informatics), CPHIMS

| Email dschloss@uab.edu | Email dschloss39@gmail.com | Phone (573) 864-6401 |