

# Reducing Clinician Burden Project

## Clinical Workflow Focus Team



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# Burdens Related to Clinical Workflow:

A View From 248 Miles Up



# What Is Clinical Workflow?

- Clinical workflow is a sequence of physical and/or mental tasks performed by physicians over time and through space
- Clinical workflow encompasses the activities, processes, technologies, tools, and environments involved in providing health care
  - Direct interaction with patients
  - Finding and organizing data from the medical record
  - Researching information from the medical literature
  - Making diagnoses and clinical decisions
  - Clinical documentation
  - Writing orders, making referrals, and coordinating teams
  - Population management
- Producing effective EHRs requires a deep understanding of how front-line clinicians conduct their cognitive and task oriented work



# Specific Workflow Burdens

- Reimbursement and administrative regulations distort workflows
- EHR systems are just electronic filing cabinets
- EHR systems dictate rather than adapt to physician workflows
- Simplistic algorithm-based system logic
- Ineffective, non-specific clinical decision support (CDS) tools
- Lack of context specific information preprocessing
- Document rather than data paradigm



# Reimbursement and Administrative Regulations

## What is it?

To avoid accusations of billing fraud, physician documentation must include multiple components with little relevance to the encounter being documented and little contribution to quality of care. Extra-visit (non-clinical) documentation requirements divert physician time from more productive, clinically relevant activities

## Why did it happen?

- Concerns that that clinicians were inappropriately increasing billing codes led to Evaluation and Management (E&M) guidelines which defined visit levels determined not by judgement, but by "objective," quantifiable, auditable standards
- The standards established were based mainly on "countability," rather than research into what a note should contain or what factors determine quality of care. Guidelines therefore require multiple documentation components with little relevance to the encounter being recorded.
- Over the last 10 years electronic health records (EHRs) introduced an additional layer of regulatory burdens. Although the programs are well intentioned, collecting data required for complex ICD-10 coding, QI Meaningful Use, MIPS and MACRA further encroaches on the limited time physicians have with each patient



# Reimbursement and Administrative Regulations

## What could we do about it?

- The primary purpose of clinical documentation should be to support patient care and improve clinical outcomes through enhanced communication. **It will be critical that the process of defining content and quality in clinical notes be transferred from payers and regulators back to practicing physicians, clinical specialty societies, and medical educators, allowing them to streamline documentation down to the core essentials necessary for clinical care and communication**
- **Physicians must also be free to focus attention on the patient and on clinical care, not on administrative, regulatory, and financial processes of less clinical value**
  1. EHRs should be required to submit all the information needed for routine preauthorizations and insurance determinations without user intervention
  2. EHRs should be required, as a condition of certification, to be able to record, aggregate, and submit other required non-clinical data without physician intervention, although other clinical professionals might help assume this burden
  3. EHRs should be required, as a condition of certification, to better automate selection of diagnosis codes
  4. If questions arise as to whether charges are justified, or standards of care have been met, the EHR audit trail should be capable of presenting what data was reviewed, how much time was spent in each section of the EHR, and any other data necessary to answer those questions



# EHR Systems as Electronic Filing Cabinets

## What is it?

Information is often not organized to fit physicians' mental model of care and is not optimized to support clinical decision making. Too much clicking, scrolling, switching between paths and screens, and counterintuitive data presentations make it challenging to access and process important data. Critical information is obscured in a mass of less important text or values. Each bit of data must be fetched from the filing cabinet one at a time.

## Why did it happen?

- Clinical processes must accommodate a wide range of data types in support of an enormous range of users performing varying, highly individualized sequences of high complexity tasks, caring for highly individual patients, often with incomplete data
- To be sure all use cases (and legal bases) are covered, designers tend to crowd in too many choices and too many interface elements, creating a system which users find disorganized and confusing
- Current EHR human/computer interfaces continue to adopt visually complex representations derived from prior paper-based records, and the current WIMP (Windows, Icons, Menus, Pointers) form-based data entry paradigm, little changed from Windows 95, remains antiquated and slow



# EHR Systems as Electronic Filing Cabinets

## What could we do about it it?

- Instead of requiring clinicians to train for ever more hours and adapt their thought processes and workflows to predetermined systems, we should require designers to produce more flexible, modular systems that adapt to physicians
- EHR developers should be required to provide robust general-purpose APIs (and associated development platforms) allowing the creation of innovative, pluggable, interchangeable apps created by physicians, healthcare organizations, and others to fill gaps
- Instead of requiring physicians to fetch each piece of information from the filing cabinet one by one, EHRs should assist in aggregating, organizing, and presenting relevant context-specific information to the clinician.





# EHR Systems Dictate Physician Workflows

## What is it?

- Current EHRs are largely designed with hard coded “one size fits all” workflows, consisting of generic tasks and steps which do not accurately reflect clinicians’ mental models or the way they actually provide care at the bedside and in the clinic
- Including a wide spectrum of clinical specialties, environments, and contexts in a few common pathways produces systems which force physicians to alter their preferred workflow and cognitive style to align with the EHR’s requirements.

## Why did it happen?

- Patients are extremely variable in their individual disease histories and their genetic and molecular characteristics
- To provide patient-centered care, physicians have developed highly individualized workflows which differ between specialties, individual practitioners, and even between patient visits for a single practitioner
- Current EHR design paradigms are not adequate to deal with this level of complexity and granularity
- Current EHR designs assume there is some standard or optimal way of thinking about each clinical process at a very granular level, and no such standard exists
- In fact, most clinical processes are context-dependent and have never been thoroughly mapped or understood, and physicians approach them with highly variable mental models and cognitive styles.



# EHR Systems Dictate Physician Workflows

## What could we do about it it?

- More rigorous, consistent application of User-Centered Design (UCD) methods during EHR software development, focusing on users and tasks (locating information, task and information flow, solving relevant clinical problems, workload, communication and coordination) throughout, leading to better understanding of the multiple ways clinical workflows are conceived and executed
- More localized, granular user-centered design processes which allow clinician teams more control over the appearance and operation of their systems, so they can be adapted to local context
- More robust EHR personalization tools for creating individualized interfaces (within safety guardrails), e.g., allowing a physician could populate one or more screens, in real time, with exactly the information chunks needed at a particular point in workflow and save those representations for reuse and sharing with others?
- EHRs should present robust, consistent APIs, with associated development systems that would allow individual clinicians great latitude (within safety guide rails) to develop new modules and to customize their individual workflows based on what works best for each of them
- Development of consensus “platform convention” representations for certain common types of workflows



# Simplistic System Logic/Lack of Context

## What is it?

- EHRs often assume a rationalized model of healthcare delivery which can be represented as algorithmic sequences of choices, but clinical care is iterative, with physicians constantly reformulating goals, revising tasks, and reordering sequences as they acquire information, interact with individual patients, and encounter clinical constraints
- The resulting workflows are inherently complex, nonlinear, and interruptive, creating an inherent “disorder” which EHRs are unable to accommodate

## Why did it happen?

- Current EHR human/computer interfaces arose from algorithmic coding methods and adopted visually complex representations derived from prior paper-based records
- Those interfaces also adopted a WIMP (Windows, Icons, Menus, Pointers) form-based data entry paradigm, little changed from Windows 95, requiring clinicians to navigate deeply nested menus and browse through long pull-down lists that are neither filtered nor contextualized in order to enter data
- EHR systems were not designed to parse or account for what process is underway or what information is needed at any particular point in workflow



# Simplistic System Logic/Lack of Context

## What could we do about it?

- EHRs should evolve from data-centric transactional systems (essentially electronic filing cabinets) to process-centric workflow systems, designed from the ground up to be flexible and context-aware and to provide “just in time” delivery of exactly the data and functionality the physician needs at the current point in workflow
- EHRs should be designed to parse the ongoing clinical process and collect, sort, and present the most relevant clinical information from multiple sources (previous notes, laboratory results, radiology reports, pharmacy records, etc.), organized to support clinical thinking and decision making
- EHRs should 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 “disorder” involved in clinical practice and be rapidly adjustable to fit new clinician needs and pathways



# Ineffective, Non-Specific Clinical Decision Support (CDS)

## What is it?

Many current CDS tools are interruptive, fail to integrate key pieces of data in the context of workflow, and inundate clinicians with low value alerts which can lead to alert fatigue, or display far more information than is needed at the current point in workflow which can cause distraction and slow decision making.

## Why did it happen?

- As the medical and scientific knowledge base expands exponentially, physicians and care teams need tools to navigate this information and apply it to help interpret the complex patterns found in patient narrative, physical exam, laboratory data, and radiographic images
- Current CDS interventions, which too often take the form of pop-up alerts notifying physicians of warnings, trigger without accounting for data elsewhere in the EHR or current workflow which negates the need for the alert to fire
- In order to cover a wider range of circumstances and protect against legal ramifications, CDS tools are designed to activate when a simple database pattern match shown even a tiny possibility of an adverse effect and to provide reams of information, much of which is irrelevant to the current workflow process, in order to be “complete” and shift all responsibility to the provider



# Ineffective, Non-Specific Clinical Decision Support (CDS)

## What could we do about it it?

- EHRs should provide robust tools for monitoring CDS alert metrics, for allowing immediate end user feedback at the time alerts fire, for measuring the perceived clinical value of each alert, and for configuring the behavior of interruptive alerts
- Healthcare organizations should maintain interdisciplinary alert-advisory groups to provide expert advice and oversight for alert refinement, ongoing review of alert data, and timely use of the configuration tools to make adjustments
- CDS should be context-aware and able to semantically search relevant scientific literature to present real-time evidence based recommendations such as differential diagnoses, suggested evaluations, risk calculators and clinical guidelines **based on what the clinician is likely to need at the current point in workflow**
- CDS tools need redesigned interfaces which present information and recommendations in a less disruptive way, with minimal, if any, pop-ups, keystrokes, or mouse clicks



## Health IT Works Best As a Partnership



Human intelligence working with artificial intelligence—a well-informed, empathetic clinician armed with good predictive tools and unburdened from clerical drudgery—can bring physicians closer to fulfilling Peabody’s maxim that the secret of care is in “caring for the patient.”

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





# Comments and Questions?



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