Penn Medicine

The Electronic Health Record: From the View of the Oncologist

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EHRs – promise….just not all the way there…..

- Remember paper charts – “where is my patient’s chart” – “one of the research assts has it – there is an audit”
- “Why haven’t her labs been filed in her chart?”
- “Her CT scans are signed out but we don’t know to whom”
- Remember the “P” in HIPAA stands for “portability” – really??

We spend our clinical lives in the EHR

- Data acquisition
- Visit documentation
- Patient details
- Patient portals
- Team communication

Oncology Practice

- *High risk – high stakes*
  - *Toxic treatments – patients' health on the line*
  - *Safety*
- *Increasingly complex*
  - *New diagnostics, therapeutics, etc*
  - *Increasingly multi-disciplinary*
- *Time pressured*
- *Increasingly administrative*
  - *EHR documentation*
  - *Pre-authorizations*
  - *Arranging tests and consultations*

What is wrong with current general EHRs?

- Created to serve all specialties – resulting in “lowest common denominator”
- Focus on billing compliance
- While a power of EHRs is that so much patient data is available, it is also a curse – and many “hands” messing with the data – THE PROBLEM LIST
- Critical data often “hidden” – difficult to find….or….Data not found at all – decisions without critical data
- Must be taken in the context of a busy clinic schedule

ANNALS OF MEDICINE

THE BELL CURVE

What happens when patients find out how good their doctors really are?

BY ATUL GAWANDE

Every illness is a story, and Annie Page's began with the kinds of small, unexceptional details that mean nothing until seen in hindsight. Like the fact

lection pad of dry filter paper is taped over it to absorb the sweat for half an hour. A technician then measures the concentration of chloride in the pad.

cystic fibrosis in the "Nelson Textbook of Pediatrics"—the bible of the specialty—was written by one of the hospital's pediatricians. The Pages called and

The New Yorker, 2004

The Bell Curve – Shulman's Interpretation

- *Medical outcomes are the sum of many parts, many little details*
- *People are critical*
- *Systems are critical (including EHRs)*
- *Quality is a result of confluence of both people and systems*

The New Yorker – November 2018

Their Computers

Digitization promises to make medical care easier and more efficient. But are screens coming between doctors and patients?

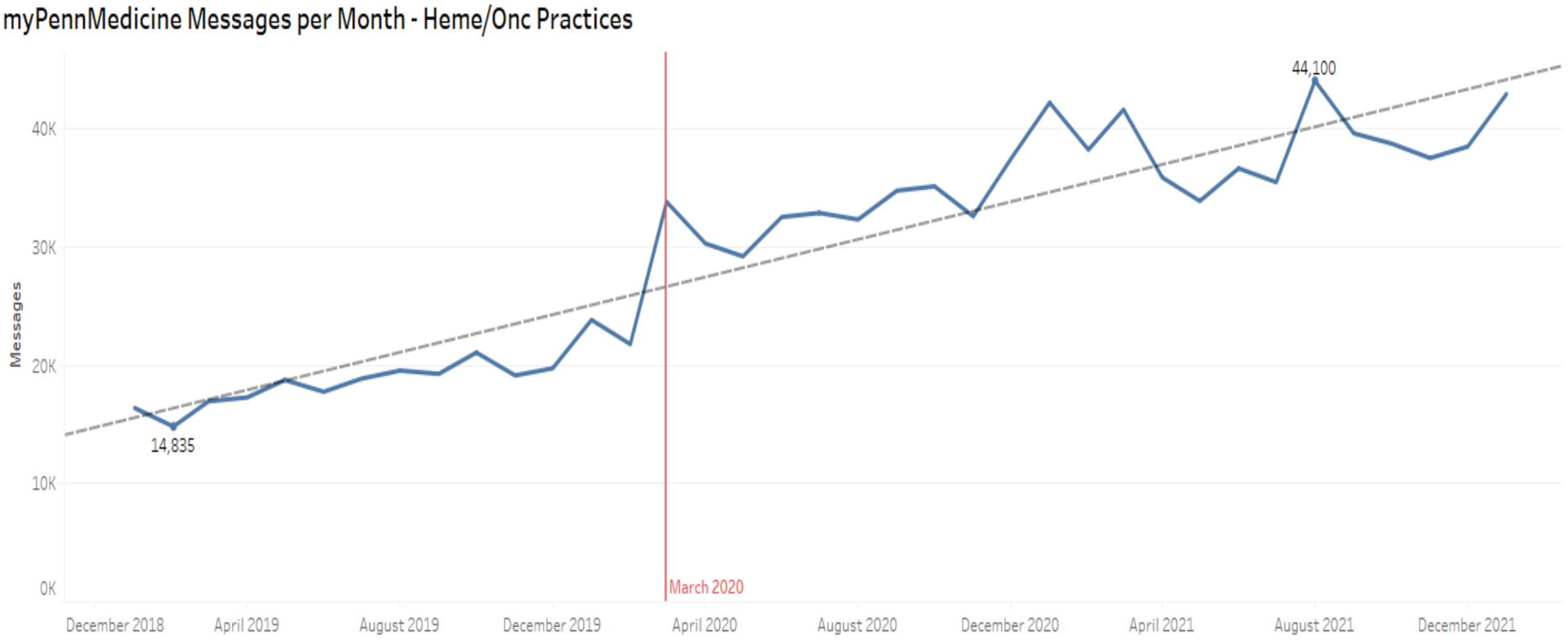
By Atul Gawande

But three years later I've come to feel that a system that promised to increase my mastery over my work has, instead, increased my work's mastery over me. I'm not the only one. A 2016 study found that physicians spent about two hours doing computer work for every hour spent face to face with a patient—whatever the brand of medical software. In the examination room, physicians devoted half of their patient time facing the screen to do electronic tasks. And these tasks were spilling over after hours. The University of

Their Computers – Atul Gawande The New Yorker 2018

Sadoughi told me of her own struggles—including a daily battle with her Epic "In Basket," which had become, she said, clogged to the point of dysfunction. There are messages from patients, messages containing lab and radiology results, messages from colleagues, messages from administrators, automated messages about not responding to previous messages. "All the letters that come from the subspecialists, I can't read ninety per cent of them. So I glance at the patient's name, and, if it's someone that I was worried about, I'll read that," she said. The rest she deletes, unread. "If it's just a routine follow-up with an endocrinologist, I hope to God that if there was something going on that they needed my attention on, they would send me an e-mail." In short, she hopes they'll try to reach her at yet another in-box.

In-Basket Messages for the Hematology-Oncology Practices at Penn



Quality of Cancer Care

- We try hard, and individuals want to provide high-quality care, but therapies are complex and our systems are complex and make this challenging

- In the end, *systems must support, not thwart*, high-quality care, and clinicians must focus and pay attention to their patients and details

EHRs and Safety

- Why are some industries much safer than medicine?
- How do EHRs factor into safety?
- What are the principles of safety that should drive EHR design?

What do we need to safely and effectively care for patients?

- Critical data unencumbered by unneeded information
- Data displayed to be maximally accessible
- Data displayed without ambiguity
- Longitudinal displays when appropriate

What are the critical data??

- *Cancer stage*
- *Pathology details and genetics/genomics*
- *Radiology*
- *Labs*
- *Longitudinal cancer journey*
- *Outside data (a bane)*

JAMA Network | Open

2021

Original Investigation | Health Informatics

Analysis of Electronic Health Record Use and Clinical Productivity and Their Association With Physician Turnover

Edward R. Melnick, MD, MHS; Allan Fong, MS; Bidisha Nath, MBBS, MPH; Brian Williams, MD; Raj M. Ratwani, PhD; Richard Goldstein, MD, PhD; Ryan T. O'Connell, MD; Christine A. Sinsky, MD; Daniel Marchalik, MD; Mihriye Mete, PhD

Physicians spent 5.5 hours of EHR time for every 8 hours of clinic time.

Physicians with lower utilization metrics more likely to leave the practice.

VIEWPOINT

Implementing Measurement Science for Electronic Health Record Use

The EHR has the potential for benefit, harm, and burden. To optimize EHR design, implementation, and regulation, EHR use measures must be developed that are trustworthy, clinically important, scientifically sound, transparent, and feasible for implementation. These measures are needed now.

How did it happen that the electronic health record (EHR) emerged as a concern regarding clinicians' well-being, and what is the path forward? Increasingly, evidence indicates that the EHR is imposing an intolerable burden on clinicians and may be degrading, rather than elevating, clinical care. A study of EHR use measurements across 2 vendor products found that ambulatory, nonteaching physicians (n = 573) spent more than 5 hours on the EHR for every 8 hours of scheduled clinical time.[1] Clinicians trained in patient care are locked into hours of screen time to complete mandatory clerical and documentation tasks, often unrelated to the quality of the care.

Melnick, Sinsky, Krumholz, JAMA 2021

Is the EHR situation getting better or worse?

Always add – never subtract

- Orders
- Regulatory and institutional requirements

Increasing complexity of care

- Genomics
- New diagnostics
- New therapies
- New guidelines

Death by 100 cuts/clicks

Patient portals – the good, bad and ugly

	Date/Time	Test	Scan Doc Description	Accession #	End Exam	Status	Date Filed	Encounter Type	Auth. Provider	Org	Rlsd MPM	Patient Sharing
Recent												
	02/03/2022 16:38	MR HEAD GAMMA...		41689769		Scheduled	01/25/2022	Ancillary Orders	Ali, Zarina Sultana, MD	PAH		Not Released
	01/27/2022 16:14	MR HEAD W AND W...		39373066	01/27/2022 1614	Final	01/27/2022	Hospital Encounter	Miller, Denise, CRNP	PCAM	Time Based	Seen
	12/03/2021 17:36	CT CHEST W IV CO...		39638670	12/03/2021 1736	Final	12/03/2021	Hospital Encounter	Lattimer, Jennie, CRNP	PCAM	Time Based	Seen
	12/03/2021 17:36	CT ABDOMEN/PELVI...		39638669	12/03/2021 1736	Final	12/03/2021	Hospital Encounter	Lattimer, Jennie, CRNP	PCAM	Time Based	Seen
	11/30/2021 15:57	RP PORT REMOVAL	billign	39712593	11/30/2021 1557	Final	11/30/2021	Hospital Encounter	Shlansky-Goldberg, Richard Da...	PCAM	Time Based	Seen
	11/26/2021 17:12	NM BONE WHOLE B...		39647775		Ordered	11/21/2021	Telephone	Lattimer, Jennie, CRNP			Not Released
	11/17/2021 18:26	MR HEAD W AND W...		36416572	11/17/2021 1826	Final	11/17/2021	Hospital Encounter	Cioffi, Sarah Deanne, CRNP, M...	RADKP	Time Based	Seen
	10/19/2021 14:54	RP CHEST PORT PL...	Billing	37894020	10/19/2021 1454	Final	10/19/2021	Hospital Encounter	Lattimer, Jennie, CRNP	PCAM	Time Based	Seen
	10/06/2021 12:36	XR CHEST 2 VIEWS		37541142	10/06/2021 1236	Final	10/06/2021	Hospital Encounter	Lattimer, Jennie, CRNP	RADKP	Time Based	Seen
	10/06/2021 10:23	RP CHEST PORT PL...				Ordered	10/04/2021	Office Visit	Stehman, Katherine A, PA-C			Not Released
	10/06/2021 09:06	RP IR CONSULT				Ordered	10/04/2021	Office Visit	Boyle, Nancy, CRNP			Not Released
	09/08/2021 08:39	MR HEAD GAMMA...		36275233	09/08/2021 0839	Final	09/08/2021	Hospital Encounter	Lee, John Youngkeun, MD, MS...	PAH	User	Seen
	09/02/2021 14:29	VASC UPPER EXTR...		36354370	09/02/2021 1429	Final	09/10/2021	Hospital Encounter	Lattimer, Jennie, CRNP	PCAM	User	Released
5 Months Ago												
	08/12/2021 16:06	MR HEAD W AND W...		35959297	08/12/2021 1606	Final	08/12/2021	Hospital Encounter	Lattimer, Jennie, CRNP	PCAM	Time Based	Released
	08/12/2021 10:27	XR CHEST 2 VIEWS		36067154	08/12/2021 1027	Final	08/12/2021	Hospital Encounter	Stewart, Christina L, CRNP	PCAM	Time Based	Seen

IMAGING/PROCEDURES Since 2/17/2021 | Last two years | All time

- 1/27/2022 · MR HEAD W AND WO IV CONTRAST METASTASIS FOLLOWUP
  Since 11/17/2021, 10 new/enlarging metastasis with one additional possible new metastasis. Metastasis may be parenchymal and/or leptomeningeal. Stable treated left cerebellar metastasis. A Category 3 Yellow message was created for DENISE MILLER via the PowerConnect Actionable Findings system on 1/27/2022 4:43 PM, Message ID 4794645. FOLLOW-UP NOTICE: A finding is present that may require medical care within 3 months. This report has been flagged to inform the patient to contact their ordering provider to discuss the finding. [FOL3M] *(More...)*
  IMAGES

- 12/3/2021 · CT CHEST W IV CONTRAST
  1. Decreased left pleural effusion now small, loculated with evidence of pleurodesis. Trace right pleural effusion. Near resolved pericardial effusion. 2. Small scattered pulmonary nodules either stable or decreased in size since prior examination. No progressive disease in the chest.. Pulmonary nodule follow-up recommendation: [LN17O] Continued imaging follow-up with chest CT may be performed per the clinical protocol regarding the primary neoplasm. *(More...)*
  IMAGES

- 12/3/2021 · CT ABDOMEN/PELVIS W IV CONTRAST
  * Decreased size of a hepatic segment 3 hypoattenuating lesion now measuring 5 mm it is possible that this represents a partially treated metastasis versus a hemangioma imaged at a slightly different phase of contrast enhancement resulting in apparently decreased size. This can be definitively characterized with contrast-enhanced MRI if it would change clinical management. * No new or enlarging abdominopelvic breast cancer metastasis. *(More...)*
  IMAGES

Patient has right arm re...

2/8/2022

SPINE CENTER NEUROSURGERY PAH
Telehealth Visit
Primary Dx - Brain metastasis (CMS-HCC)
Zarina Sultana Ali, MD

Ali, Zarina Sultana, MD (Feb 8, 2022, 8:09:54 AM)

Assessment/Plan:
Most recent imaging demonstrates multiple new metastases
Multiple new/enlarging intracranial metastasis on series 7 and 8:
-Right cerebellar 5 mm metastasis (series 8: Image 23).
-Right lateral cerebellar metastasis, 1.0 cm (series 8: Image 28)
-Right cerebellar 3 mm metastasis (series 8: Image 36).
-Right lateral cerebellar metastasis, 4 mm (series 8: Image 40).
-Right superior cerebellar 4 mm metastasis (series 8: Image 60).
-Right superior cerebellar 2 mm metastasis (...

1/31/2022

Department of Radiation Oncology
Telehealth Visit
Primary Dx - Secondary malignant neoplasm of brain and spinal cord (CMS-HCC)
Goldie Kurtz, MD

Miller, Denise, CRNP (Jan 28, 2022, 9:58:27 AM)

Assessment:
s a 67 y.o. Polish-speaking female with a history of ERPR+ and HER2+ R breast ca s/p lumpectomy and lymph node dissection 2017 presenting with new evidence of metastatic breast cancer to the lungs and pericardium and a 2.1 cm left cerebellar brain metastasis. She underwent Gamma Knife SRS to the single lesion on 9/8/21 and has recovered well. She was found to have new lesions on most recent imaging and presents for discussion for treatment options.
Cancer S...

PATHOLOGY Since 2/17/2021 | Last two years | All time

▸ **7/22/2021** · Surgical Pathology Report

.Final Diagnosis:
1. Pericardium, biopsy:
- Rare clusters of metastatic carcinoma present in a background of inflamed fibrous tissue, compatible with an adenocarcinoma of mammary origin, see note.

2. Pleura, biopsy:

Surgical Pathology Report

ACCESSION: COLLECTION DATE/TIME: ...

Addendum Discussion
Metastatic carcinoma biomarker immunohistochemistry (very limited tumor cellularity)
Performed on Block 1A:

Estrogen Receptor (ER): NEGATIVE
Approx. 0% of tumor cells show nuclear staining.

Progesterone Receptor (PR): NEGATIVE
Approx. 0% of tumor cells show nuclear staining.
...
(More...)

▸ **7/22/2021** · Non-Gyn Cytology Report

National Cancer Policy Forum Workshop on the Oncology Workforce

VIEWPOINT

The Future of Cancer Care in the United States—Overcoming Workforce Capacity Limitations

"Increasing the efficiency with which oncology clinicians provide high-quality care may be the only solution that will allow clinicians to care for more patients without extending work hours, potentially lowering levels of stress and burnout. To accomplish this goal, we need to reverse the trends noted previously….."

Shulman, Kennedy Sheldon, Benz, JAMA Oncology 2020