UNDERSTANDING THE IMPACT OF THE EHR ON PHYSICIAN BURNOUT AND WELLNESS

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Conflicts of Interest

Neither Dr. Sharp nor Dr. Stevens have any relevant financial relationships to disclose.

Objectives

- Describe concepts of physician (clinician) burnout and wellness
- Describe current knowledge on the impact of the EHR on burnout and wellness
- Discuss possible interventions to decrease provider burnout, including the SHC and SCH provider efficiency programs
- Discuss metrics by which to measure provider efficiency

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HEALTH CARE

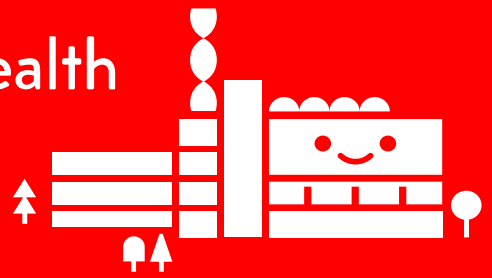
Stanford Health Care (SHC) seeks to care, to educate, and to discover by healing humanity though science and compassion, one patient at a time.

824,000 sq. foot hospital	**613** licensed beds	**56** operating rooms	**1,352,062** outpatient visits	**9,743** employees	**2,556** physicians

66 ICU beds	**26,093** inpatient admits	**71,500** ER visits	**1,140** residents	**7,924** telehealth visits

Level 1 Trauma Center HIMSS Stage 7 Hospital and Ambulatory	Magnet Recognized 2016-2017 Best Hospitals Honor Roll

Stanford Children's Health



BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT RANKED IN 10 SPECIALTIES 2017-18

Major academic medical center at Stanford University for pediatric and obstetric care

Medical foundation with network clinics all over the SF Bay Area

500,000+

pediatric outpatient visits annually

35+

specialty services

725+

Stanford Medicine doctors

Stanford Children's Health | Lucile Packard Children's Hospital Stanford

60+

Bay Area locations

Stanford MEDICINE

What is physician burnout? Wellness?

What's Happening to Doctors?

What is Burnout?

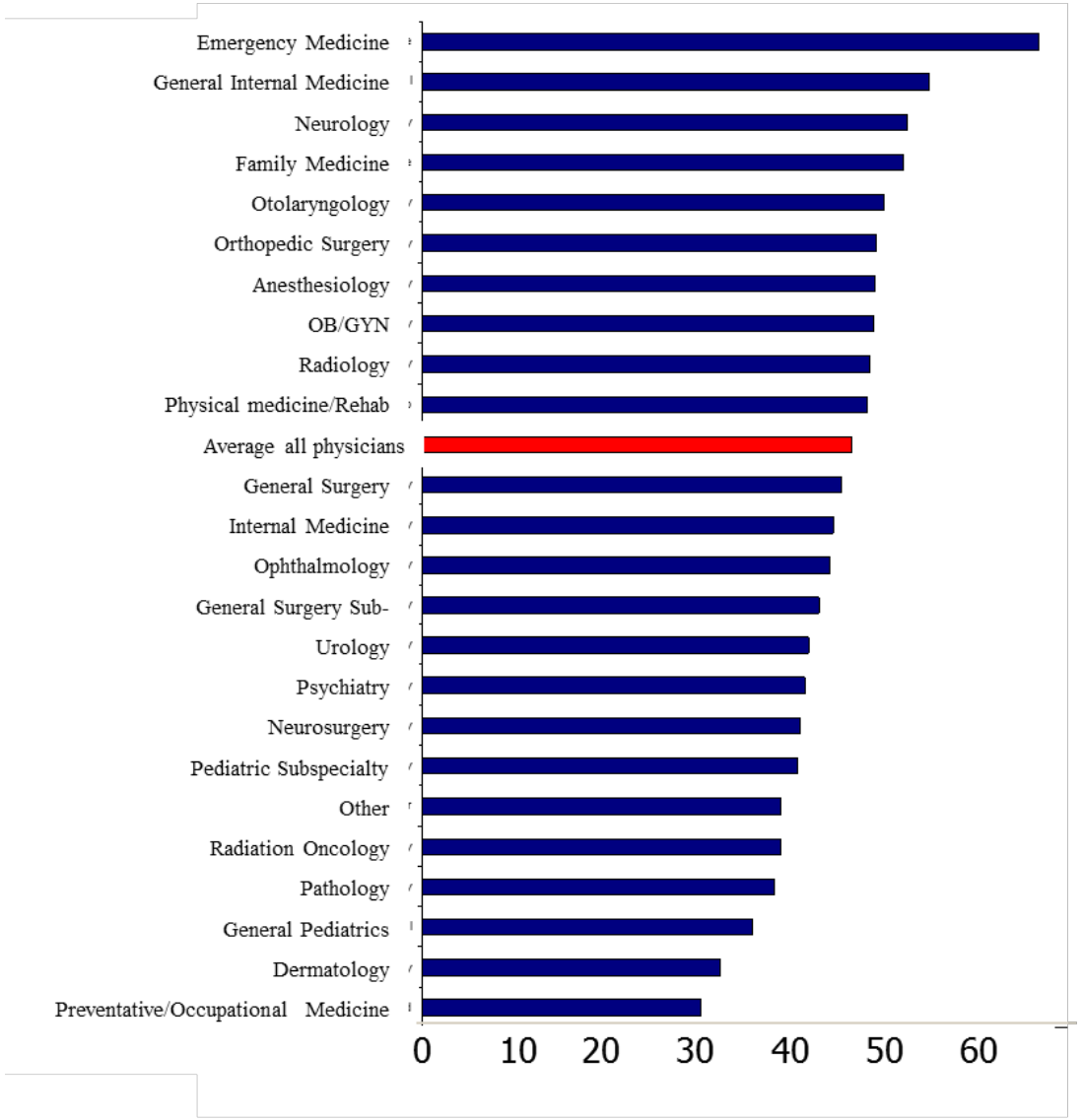
Burnout is a syndrome of depersonalization, emotional exhaustion, and low personal accomplishment that leads to decreased effectiveness at work.

Are you burned-out?

Select the statement below that best describes your situation at work.

1. I enjoy my work. I have no symptoms of burnout.
2. Occasionally I am under stress, and I don't always have as much energy as I once did, but I don't feel burned out.
3. I am definitely burning out and have 1 or more symptoms of burnout, such as physical and emotional exhaustion.
4. The symptoms of burnout that I'm experiencing won't go away. I think about frustration at work a lot.
5. I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help.

Burnout by Specialty 2011

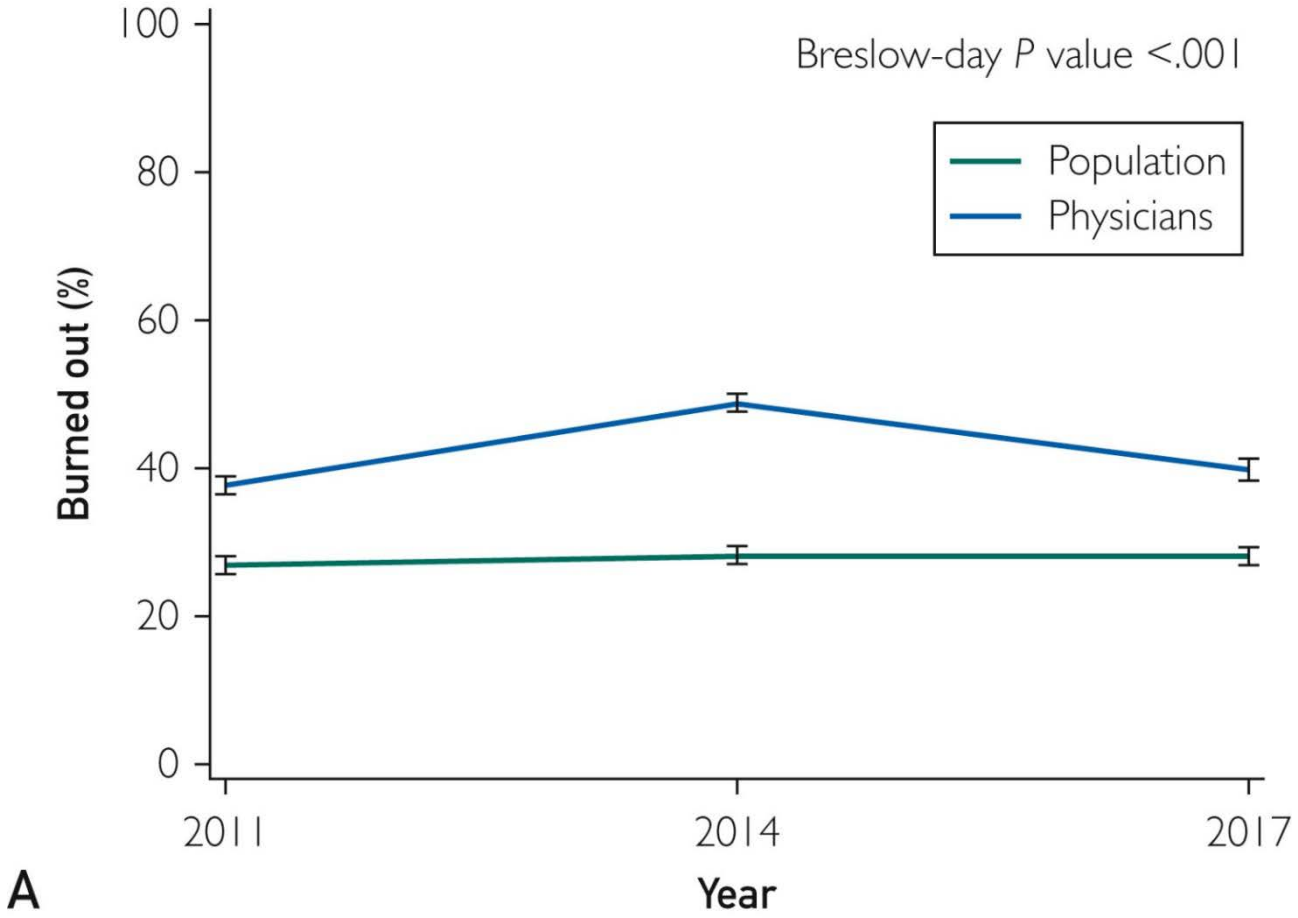


AMA AMERICAN MEDICAL ASSOCIATION

N=7288

Shanafelt et al, JAMA Int Med 172:1137

Burnout in the U.S.: Physicians & Population



Shanafelt TD et al. Mayo Clinic Proceedings. 2019 Online

Well Physicians = Higher Performance

Physicians Who are Well:

- Higher patient satisfaction (Beach, et al. 2013)
- More likely to support preventive health practices in patients (Duperly, et al., 2009; Frank, et al., 2008; Frank, et al. 2013)
- Lower medical error rate (Fahrenkoph, et al. 2008; Shanfelt, et al. 2010; West, et al. 2006; Tawfik, et al., 2018)
- Better patient outcomes, e.g. decreased post-hospital discharge recovery times (Halbesleben and Rathert, 2008)
- Less likely to leave their organization

What is the value ($$) of wellness?

$4.6 Billion in MD turnover and reduced clinical hours

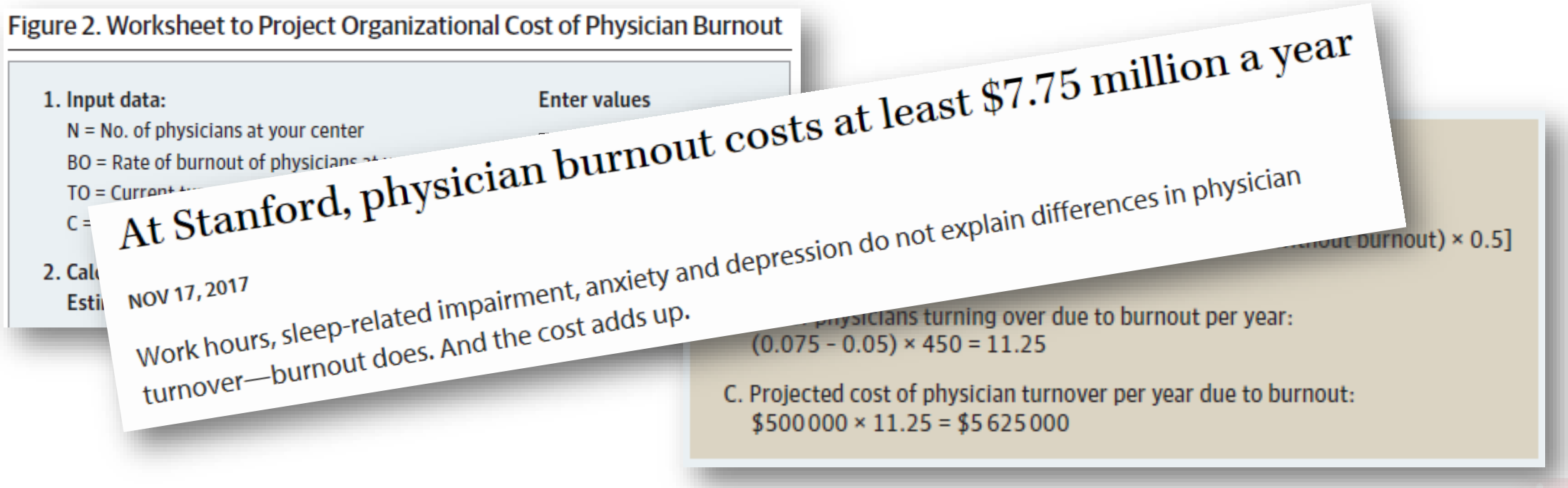


Figure 2. Worksheet to Project Organizational Cost of Physician Burnout

1. Input data:
   N = No. of physicians at your center
   BO = Rate of burnout of physicians at
   TO = Current
   C =
2. Cal
   Esti

Enter values

At Stanford, physician burnout costs at least $7.75 million a year

NOV 17, 2017

Work hours, sleep-related impairment, anxiety and depression do not explain differences in physician turnover—burnout does. And the cost adds up.

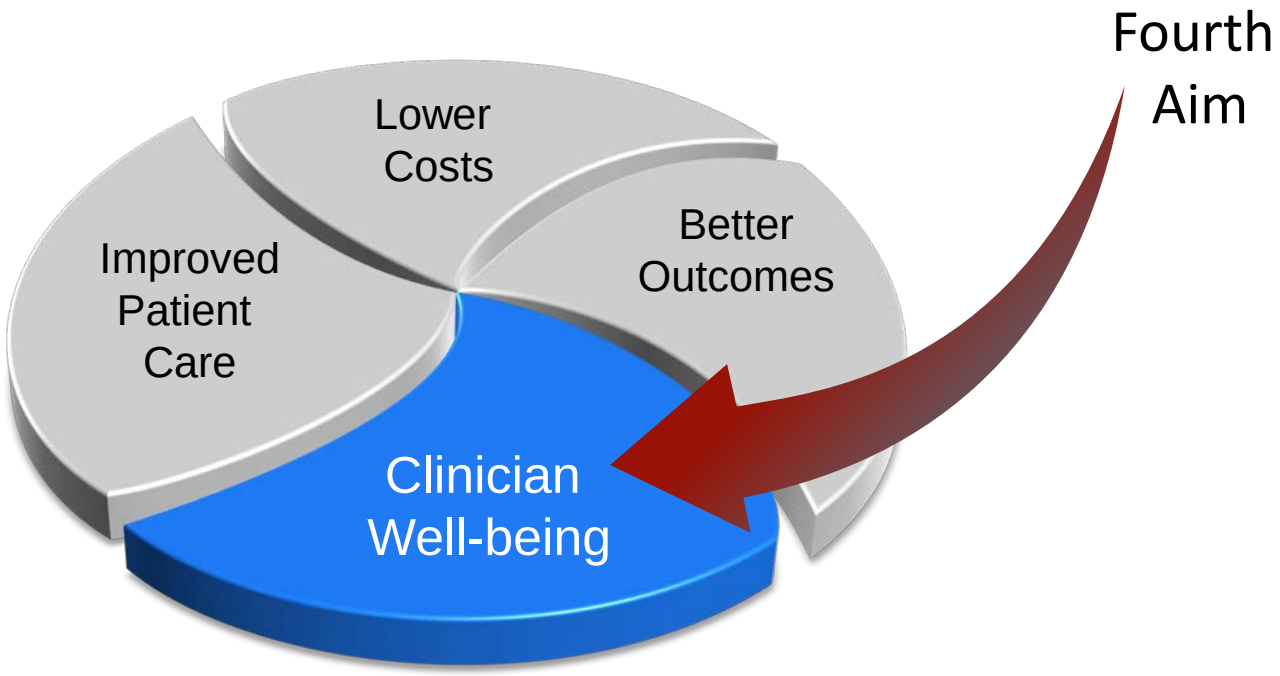
burnout) × 0.5]

physicians turning over due to burnout per year:
(0.075 – 0.05) × 450 = 11.25

C. Projected cost of physician turnover per year due to burnout:
$500 000 × 11.25 = $5 625 000

Estimating the Attributable Cost of Physician Burnout in the United States. Han S, et al. Ann Intern Med. 2019 May 28.
The Business Case for Investing in Physician Well-being. Shanafelt T, et al. JAMA Intern Med. 2017 Dec 01;177(12):1826-1832.

Achieving our mission is no longer possible without addressing wellness



Bodenheimer, Ann Fam Med 12:573

Aiming for Professional Fulfillment

Leadership
Values Alignment
Voice/input
Meaning in work
Community/collegiality
Peer Support
Appreciation
Flexibility
Culture compassion

Bohman, NEJM Catalyst 2016

EHR usability
Triage
Scheduling
Patient portal
Documentation method
Team-based care
OR turnaround times
Staffing

What is the role of information Technology?

ANNALS OF MEDICINE NOVEMBER 12, 2018 ISSUE

WHY DOCTORS HATE THEIR COMPUTERS

FierceHealthcare

HEALTHCARE IT PAYER

EHR

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

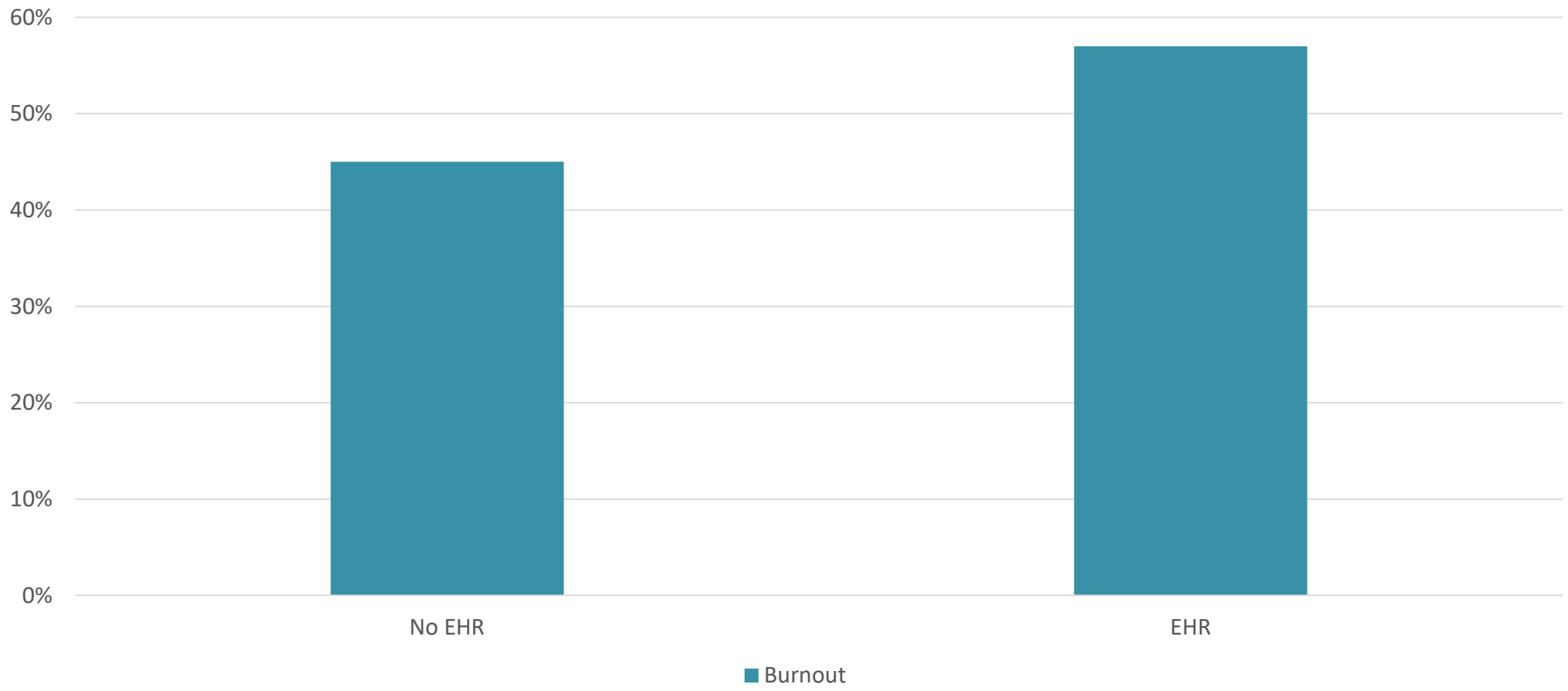
by *Evan Sweeney* | Aug 28, 2017 10:40am

HEALTH

These doctors think electronic health records are hurting their relationships with patients

BY DAVID GORN, KQED FUTURE OF YOU *July 21, 2017 at 11:01 AM EDT*

What is the EHR contribution?



Shanafelt TD, et al. Mayo Clin Proc. 2016;91(7):836-848

How the EHR Contributes to Burnout

Usability,
User Interface,
Interoperability

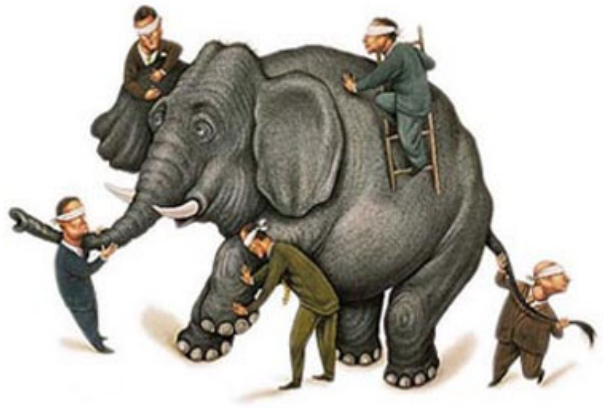
Shift in Workload,
Lack of Mastery

Built-in
Regulatory &
Documentation
Requirements

Effect on
Interpersonal
Interactions

Toll, E. The Cost of Technology. JAMA. 2012;307(23):2497-2498.

What is the EHR… and to whom?



Payers… the source of **billing documentation**.

Health care enterprises… a way to ensure **compliance** with organizational directives.

Legal system… a **statement of legal facts**.

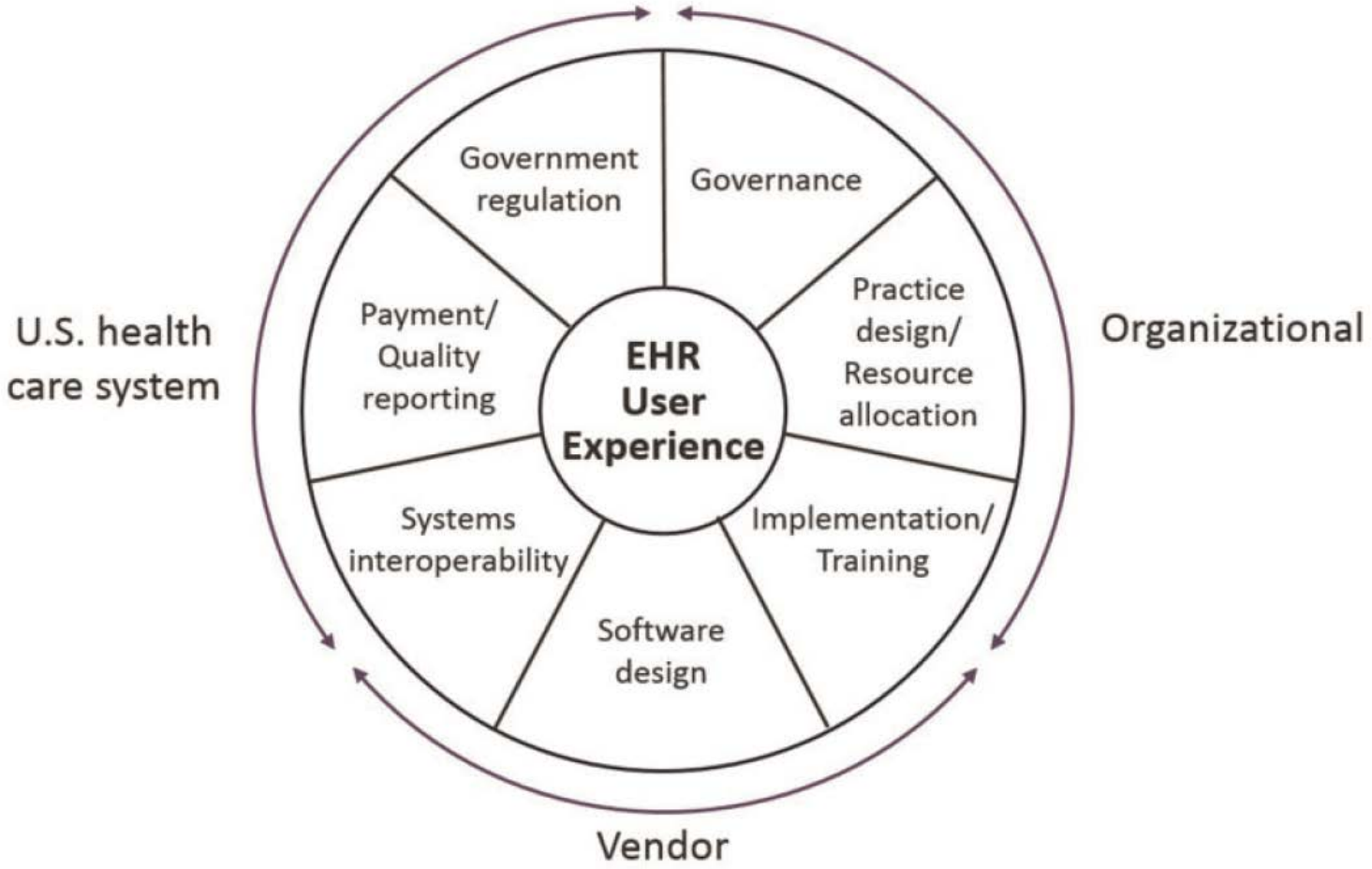
Public health… a way to **collect their data at drastically reduced costs**.

Measurement entities… a way to **automate the collection of measurement data**.

Government entities… a way to **observe and enforce compliance** regulations.

Erickson SM, et al. Putting patients first by reducing administrative tasks in health care. Ann Intern Med. 2017;166:659-61.

The Complex Case of EHRs



Tutty MA, et al. The complex case of EHRs: examining the factors impacting the EHR user experience. JAMIA. 2019; 673-677.

It's About Time 

- For every hour physicians provide direct clinical face time, nearly 2 additional hours is spent on EHR and desk work
- EHR time while face-to-face is equal to "Desktop Medicine" (patient messages, refills, ordering tests, reviewing results)
- While in the room with patients, physicians spent ~50% on direct clinical face time and ~40% on EHR and desk work
- Receiving more than the average number of system-generated in-basket messages was associated with 40% higher probability of burnout

Sinsky C, et al. Allocation of physician time in ambulatory practice: a time and motion study in 4 specialties. Ann Intern Med. 2016;165:753-60.
Tai-Seale M, et al. Electronic Health Record Logs Indicate That Physicians Split Time Evenly. Health Aff (Millwood). 2017 Apr 01;36(4):655-662.
Tai-Seale M, et al. Physicians' Well-Being Linked To In-Basket Messages Generated By Algorithms In Electronic Health Records. Health Aff. 2019; (38): 1073-1078.

What can we do about it?

What is Effective?

Optimization, personalization, and education

Percent of personalization adopted by providers	Average net EHR experience score for organizations	Number of organizations
10–20	−21.5	3
20–30	−29-	6
30–40	−21.1	15
40–50	15.7	44
50–60	27.3	54
60–70	25.1	10

Local Investment in Training Drives Electronic Health Record User Satisfaction. Longhurst CA, et al.; Arch Collaborative. Appl Clin Inform. 2019 Mar;10(2):331-335.

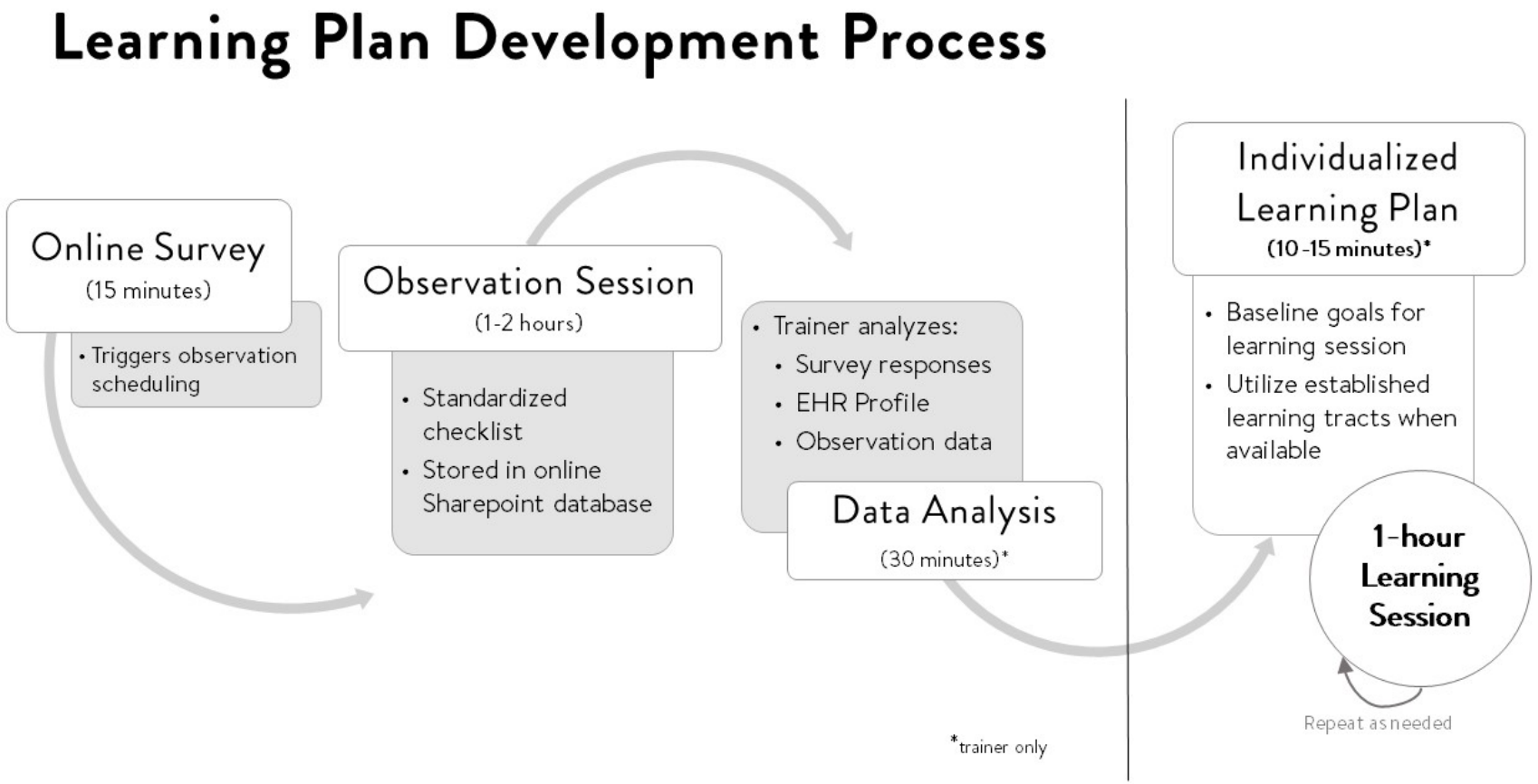
Optimization Sprints: Improving Clinician Satisfaction and Teamwork by Rapidly Reducing Electronic Health Record Burden. Sieja A, Markley K, Pell J, Gonzalez C, Redig B, Kneeland P, Lin CT. Mayo Clin Proc. 2019 May;94(5):793-802.

Improve Comfort with Current Technology

- In 2015, SCH initiated the Home 4 Dinner Program* to improve provider efficiency and satisfaction through targeted training
- Similarly, SHC created the Epic Concierge targeted training/optimization program

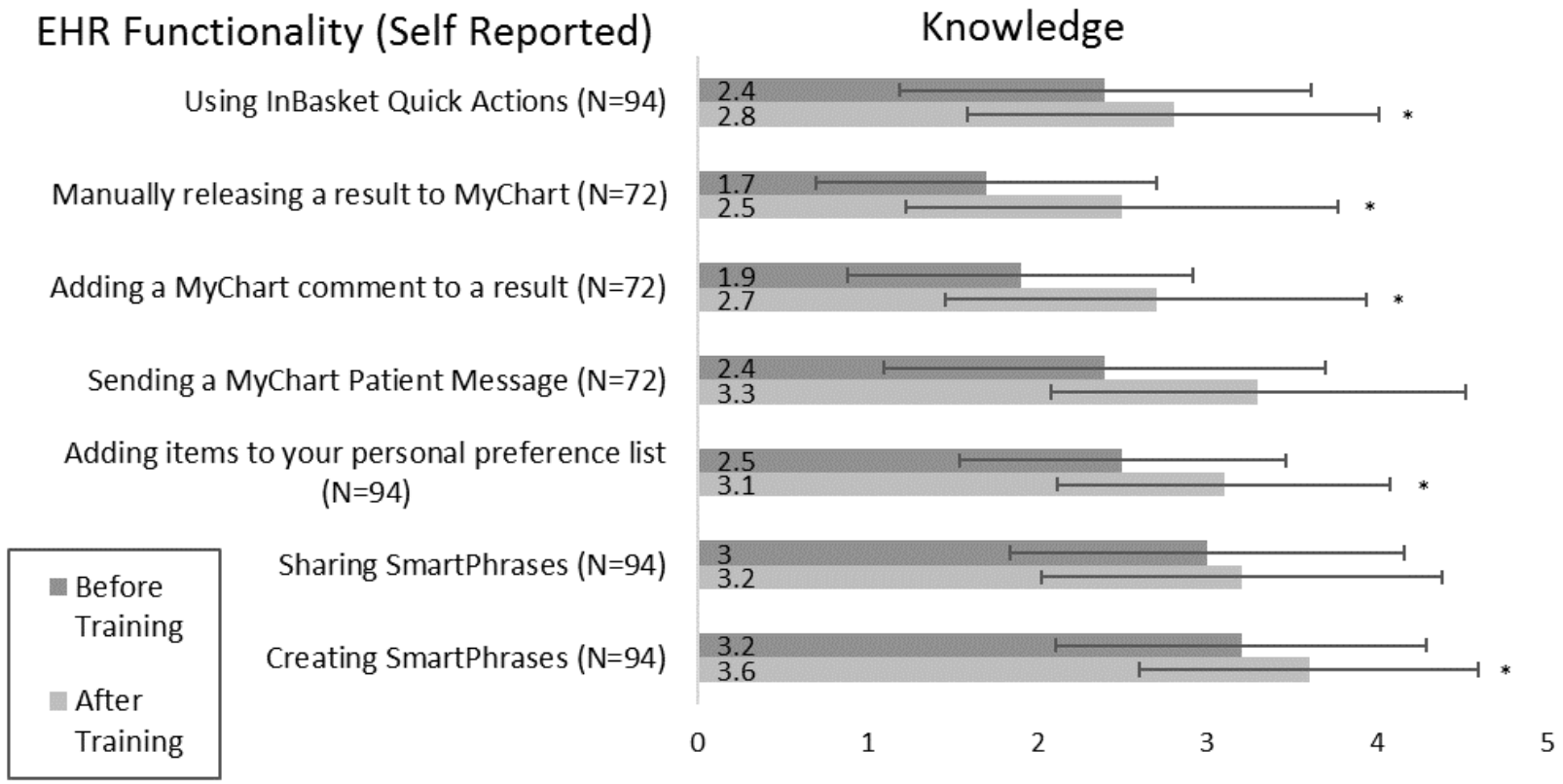
*see slides from UGM226-2016, TAC05-2017 for more info on program design

Home 4 Dinner Process



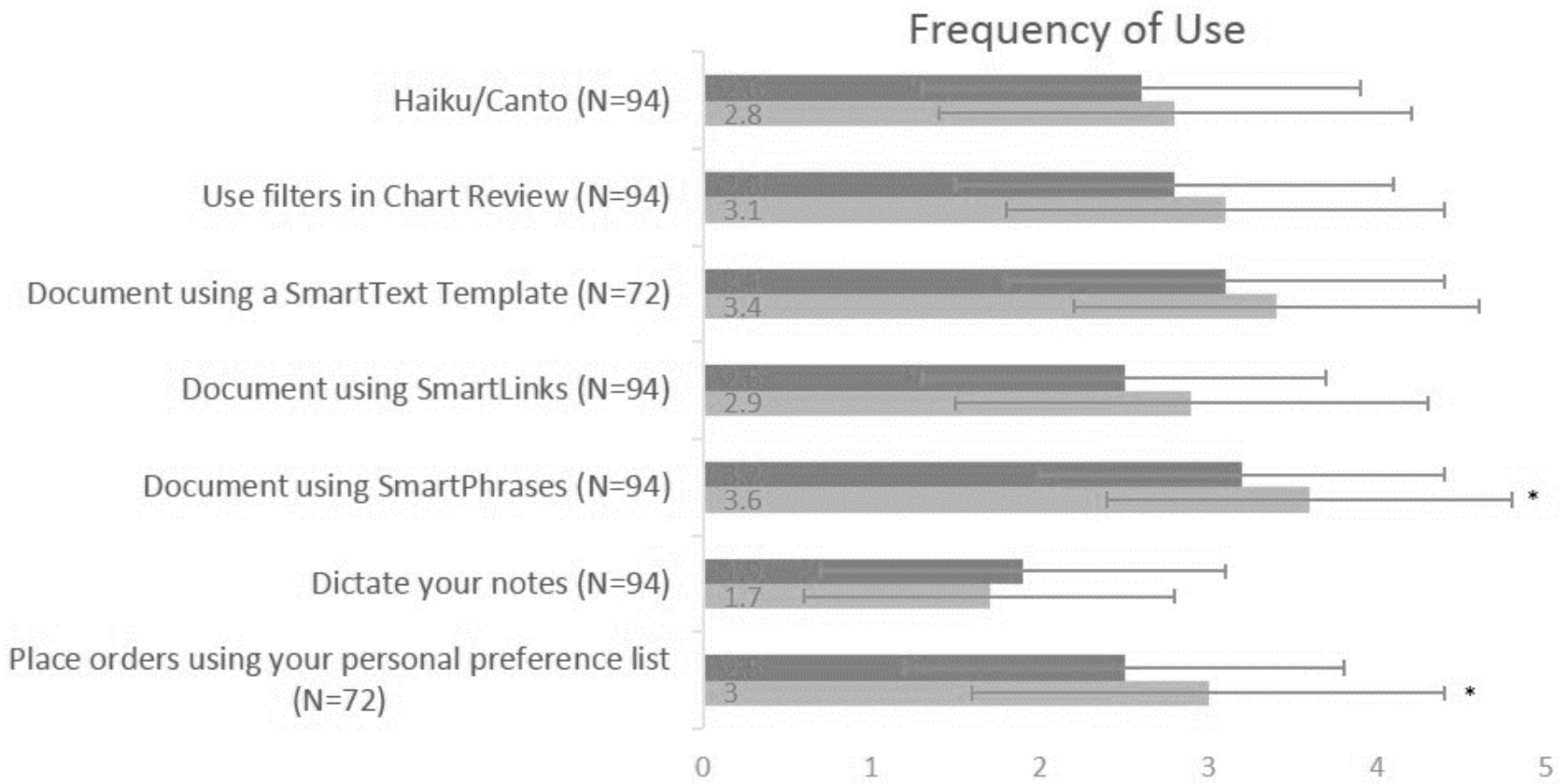
Stevens, et al. *Applied Clinical Informatics.* 2017.

Self Reported Knowledge After H4D



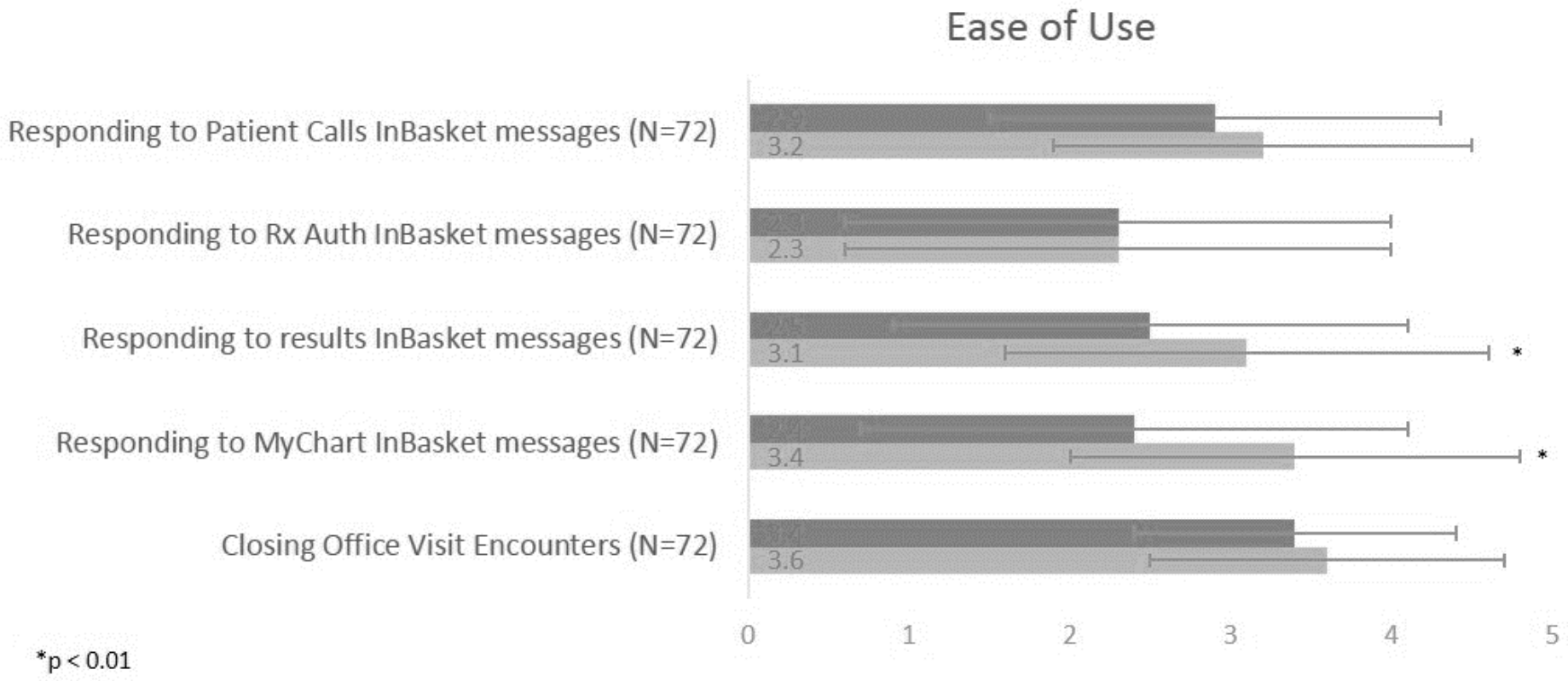
DiAngi, et al. *JAMIA Open.* 2019.

Self-Reported Frequency of Use After H4D



DiAngi, et al. 2019

Self-Reported Ease of Use After H4D



DiAngi, et al. 2019

Epic Experience Variables Pre/Post-Training

Survey Questions	Mean (SD) Before Training	Mean (SD) After Training	t-test
Satisfaction with			
The EHR (N=147)^	3.0 (1.0)	3.0 (1.0)	1.45
Clinical work (N=147)^	3.9 (0.8)	3.8 (0.8)	0.62
Workload in the EHR (N=114)^	2.7 (1.0)	3.0 (1.0)	3.60*
Amount of time in the EHR after clinic hours (N=94)^	2.7 (1.1)	2.7 (1.0)	0.34
Competence with the EHR (N=147)^	3.3 (0.9)	3.4 (0.9)	1.42
Improvement in stress level related to the EHR (N=94)^	2.7 (0.9)	2.9 (0.8)	1.15
Self-reported hours spent in the EHR after clinic per week (in hours) (N=94)	5.0 (4.3) hrs	4.1 (3.7) hrs	2.28

^Scale of 1-5 where a higher number indicates a more favorable rating; *p<0.01

DiAngi, et al. 2019

Epic Functionality Metrics After H4D

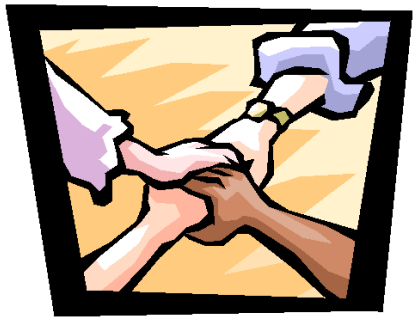
Inbox Turnaround Time (Days) (N=65)				
Results	4.0 (2.8)	(0.04-11.5 days)	3.2 (2.3)	(0.1-12 days)
Patient Calls	2.3 (2.1)	(0.1-10 days)	1.9 (1.8)	(0.1-7.7 days)
Preference list entries (N=91)[c]	38.1 (65.9)	(0-256 entries)	63.5 (90.5)	(0-404 entries)

DiAngi, et al. 2019

Where do we go next?

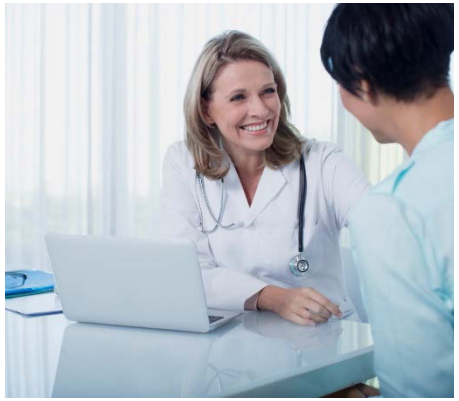
Looking forward

Usability / User Interface



Team-based Care

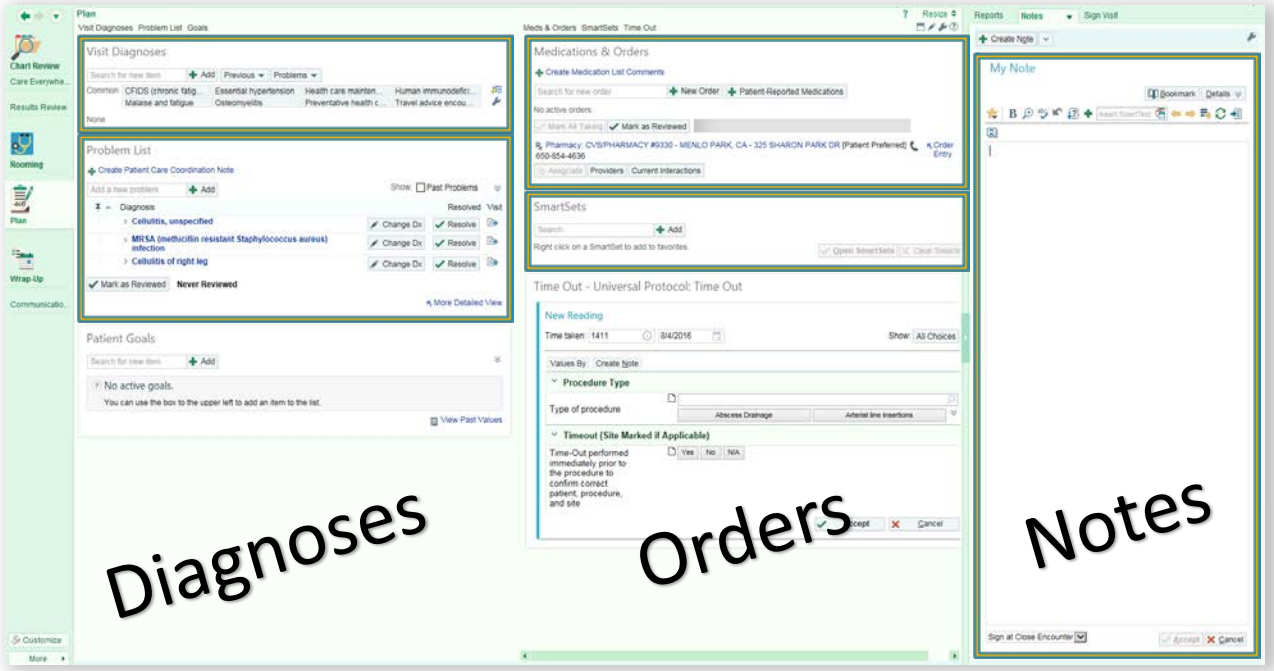
Regulatory & Documentation Requirements



Effect on Interpersonal Interactions

User Interface *Incremental* Improvements

A single screen for all activities



And other improvements selected by your champions:

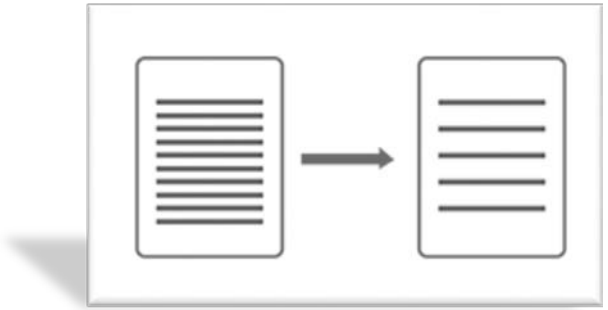
- Specialty Snapshot
- Preference List Updates
- Diagnosis Speed-buttons
- Risk Score Calculators
- Note Templates
- Automated Letters

User Interface *Digital Health* Improvements

Impacting Regulatory Requirements

CMS rules are changing…

- Medical Student notes
- E&M Billing requirements



https://www.cms.gov/Research-Statistics-Data-and-Systems/Monitoring-Programs/Medicare-FFS-Compliance-Programs/SimplifyingRequirements.html

Team-based Care

Proactive planned care	Pre-visit planning and lab tests
Sharing clinical care among a team	Rooming protocols, standing orders, and panel management
Sharing clerical tasks	Collaborative documentation, order entry, Rx management
Improving team communication	Decrease of in-box activities
Improving team function	Co-location, team meetings, work flow mapping

Sinsky CA, Willard-Grace R, Schutzbank AM, Sinsky TA, Margolius D, Bodenheimer T. In search of joy in practice: a report of 23 high-functioning primary care practices. Ann Fam Med. 2013;11(3):272–8.

Data Entry Assistance

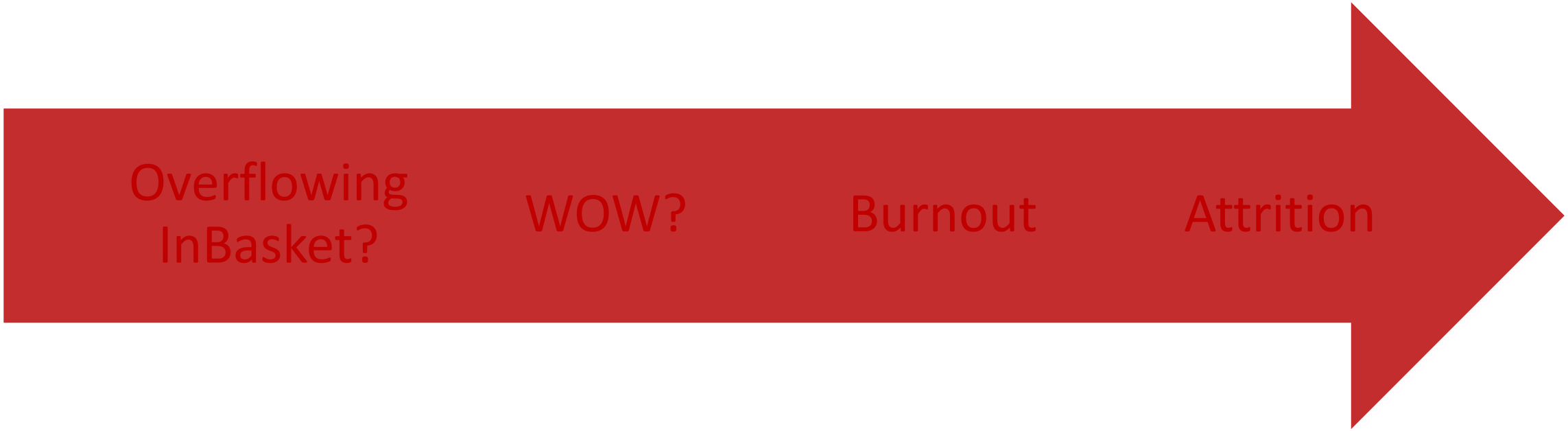
Impact of Scribes on Physician Satisfaction, Patient Satisfaction, and Charting Efficiency: A Randomized Controlled Trial. Ann Fam Med. 2017

How will we know?

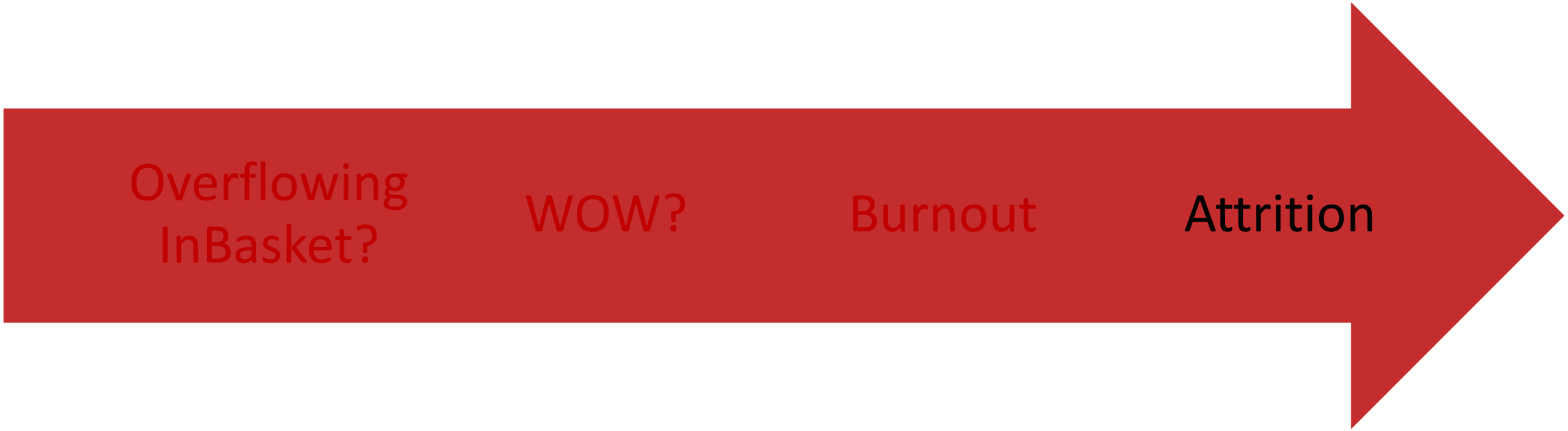
Metrics for Understanding Efficiency

- There hadn’t been any previously validated metrics for trending provider efficiency, so how can we measure the effects of interventions?
- Surveys are time-consuming and aren’t always fully representative

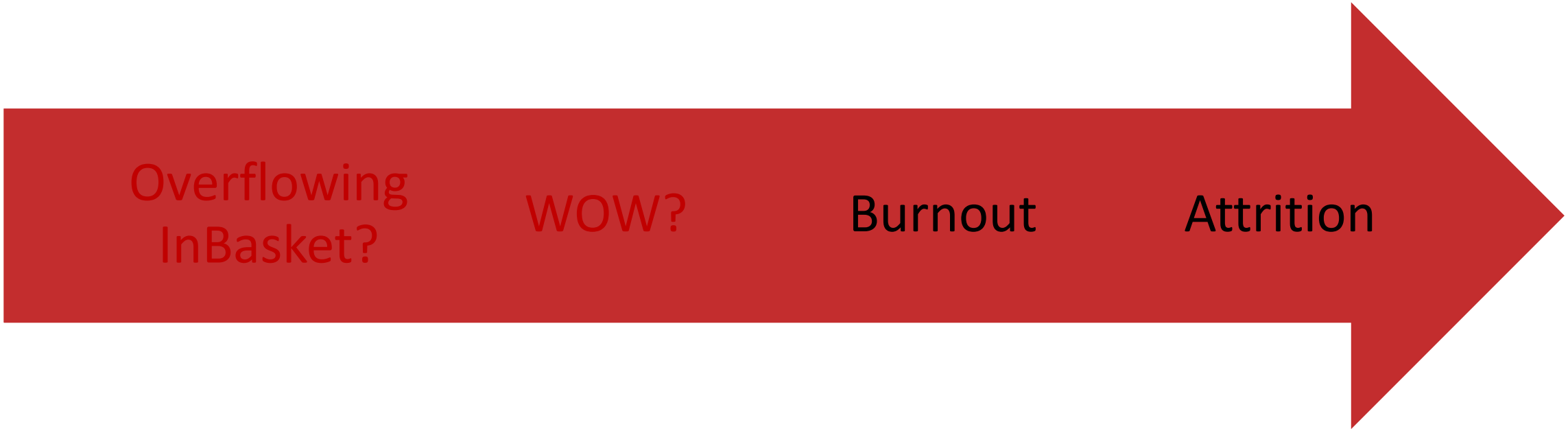
Leading vs. Lagging Indicators



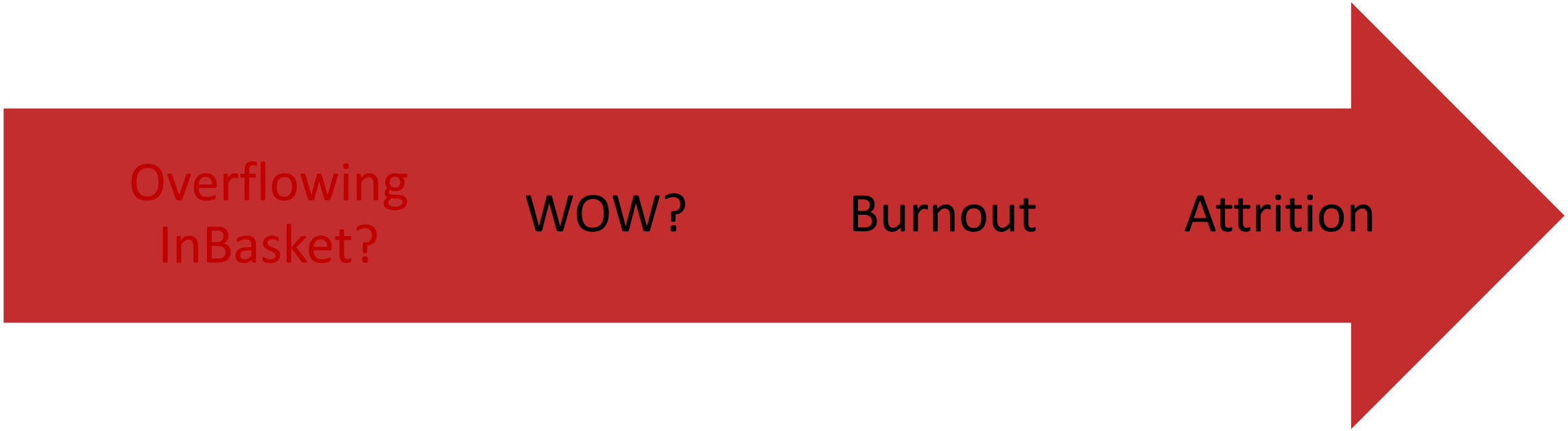
Leading vs. Lagging Indicators



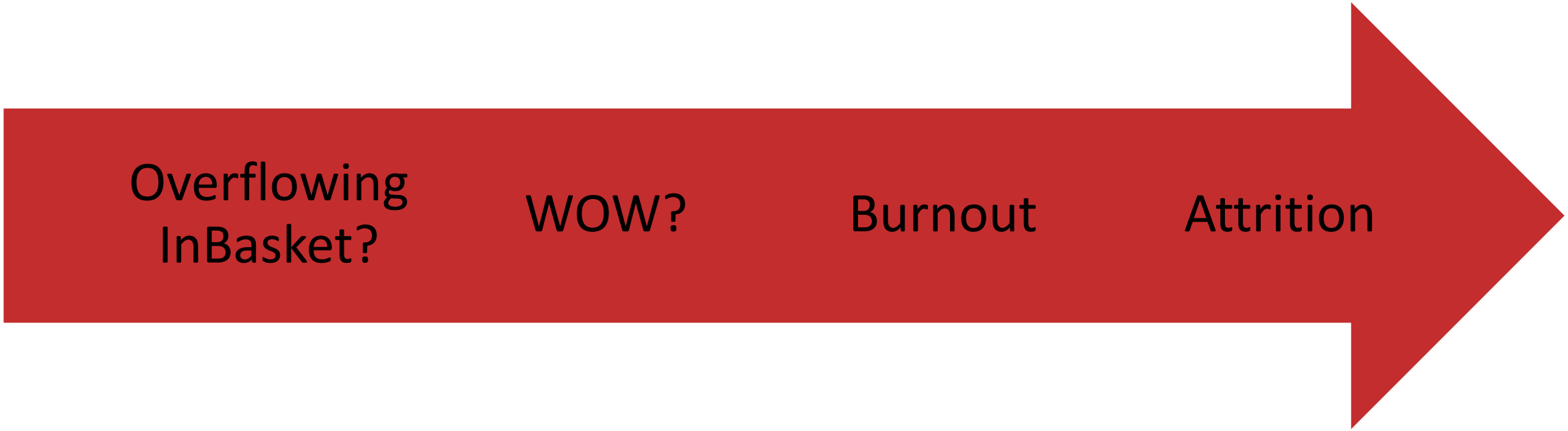
Leading vs. Lagging Indicators



Leading vs. Lagging Indicators

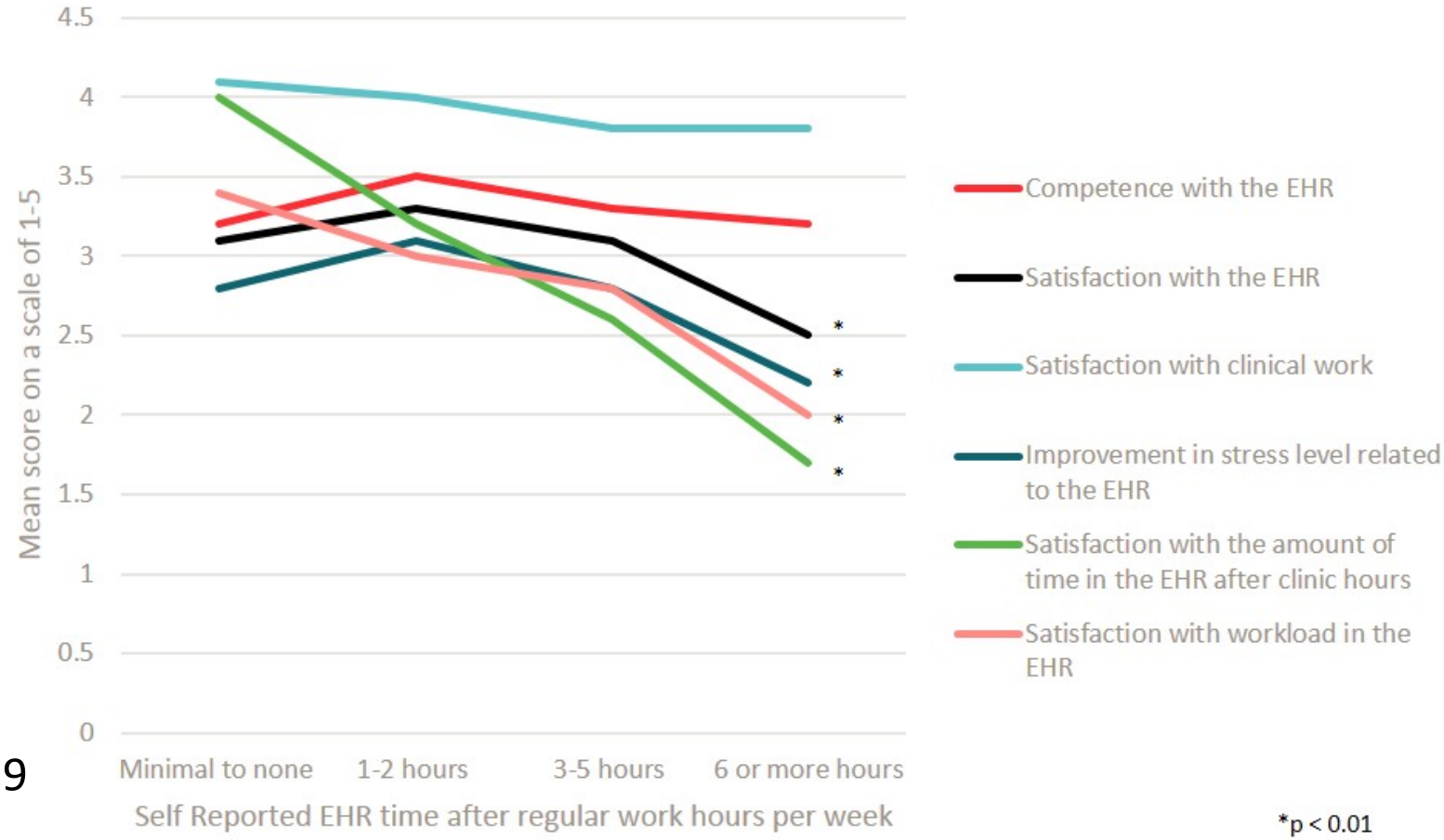


Leading vs. Lagging Indicators



Pre-Intervention Survey at SCH

Figure 2: Relationship between self reported after clinic hours per week in the EHR and self reported EHR experience



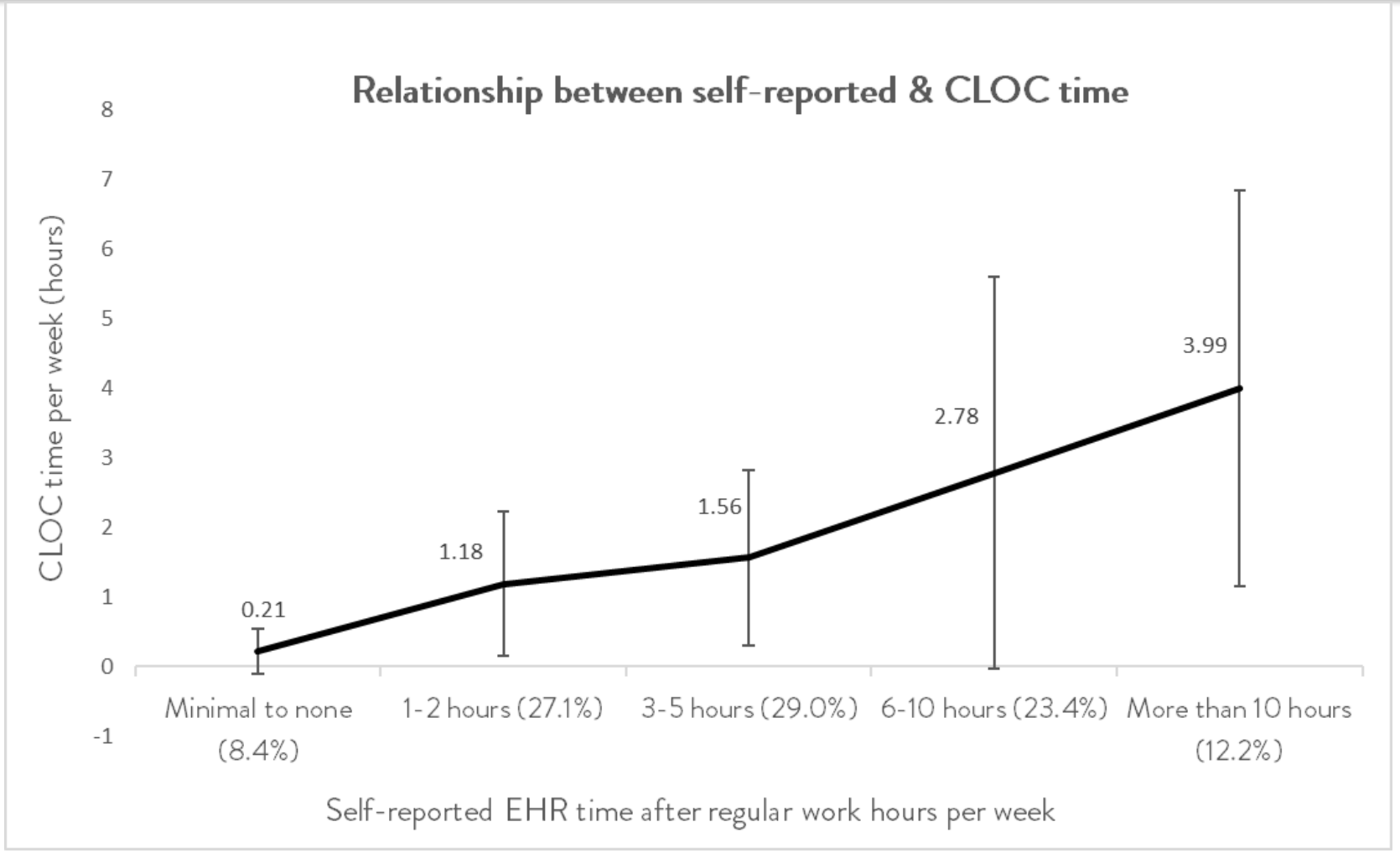
*p < 0.01

DiAngi, et al. 2019

Clinician Logged-In Outside Clinic (CLOC) Time

- If "Work Outside Work" is a useful metric, is there an easier way of capturing this than surveying providers?
- CLOC metric developed at Stanford
  - Attempts to quantify how much time clinician is logged in outside of scheduled time using Epic data
    - 30 min before to 1h after scheduled time
    - Only works well for ambulatory providers

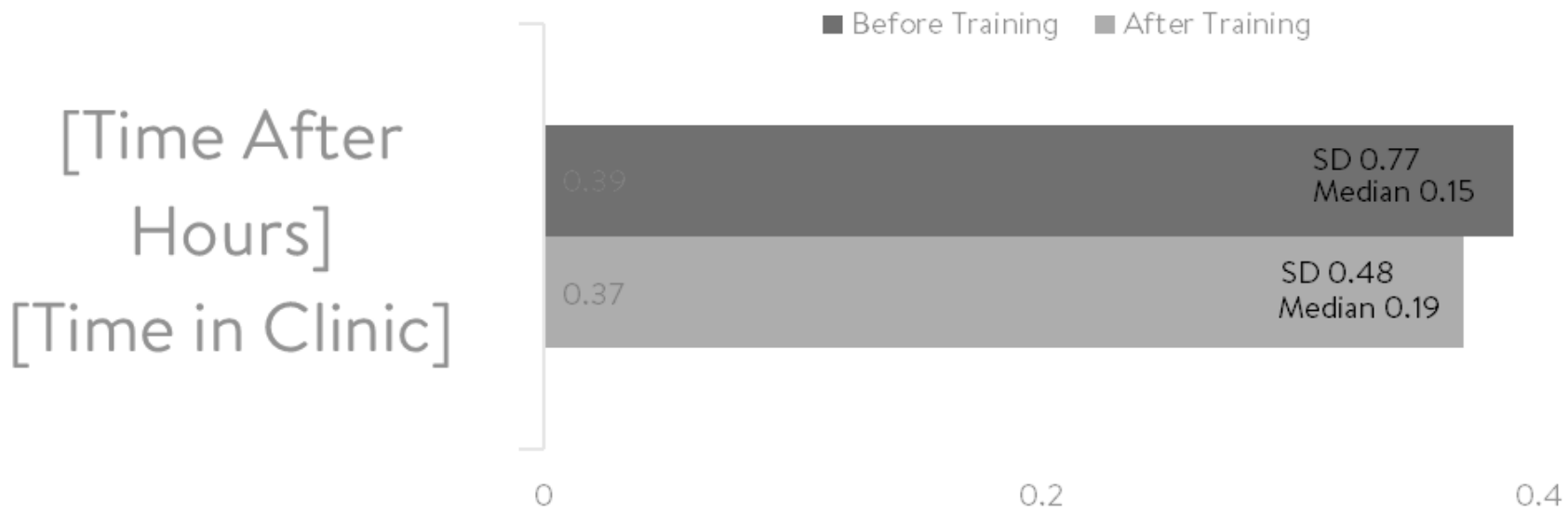
CLOC vs. Self-Reported Time



DiAngi, et al. 2019

CLOC Time After H4D

Figure 5. Mean calculated CLOC time in the EHR Before and After Training (N=107)

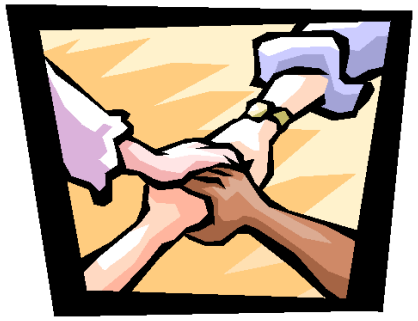


Data averaged over 3 months; Providers who only provide inpatient care and those with an availability of zero were excluded; p = 0.73

DiAngi, et al. 2019

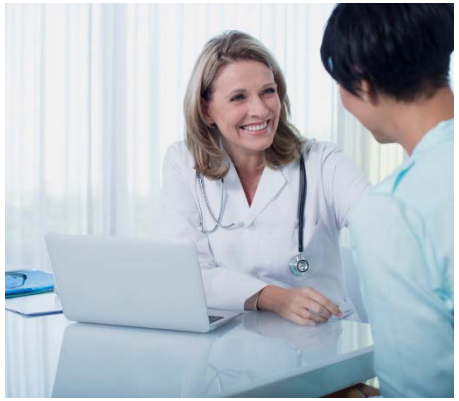
Ways Forward

Usability / User Interface



Team-based Care

Regulatory & Documentation Requirements



Effect on Interpersonal Interactions

What are other areas of focus?

- **Click Counts –** click counts needed to accomplish daily tasks
- **Teamwork** – ratio of staff-entered to physician-entered
- **Being Present** – rates of visits with documentation or other assistance
- **Fair Pay** - track uncompensated EHR work (i.e. InBasket)
- **Regulatory Balance** - billing/pay-for-performance related clicks

DiAngi, et. al. Annals of Int Med. 2017

AMA Joy of Medicine Award

Joy Award recognition criteria

	Bronze	Silver[2]	Gold[3]
Commitment	Sign charter Establish a well-being committee	CWO on the executive leadership team (report directly CEO/dean) and with at least 0.5 FTE Organization identifies struggling units and/or individuals and supports interventions	Organization establishes a center for physician or workforce well-being
Assessment	Annual assessment of physician well-being using a validated tool[4]	Burnout results reported to board along with a specified goal	The costs of physician burnout are estimated annually and reported to the organization's leadership/board
Leadership	Annual assessment of all unit leaders using the Mayo Leadership Index or similar instrument, with feedback to leader	Leader development program that includes training in transformational leadership, ability to foster productive work environment and guide physicians' careers Professional coaching to leaders who are in the bottom quartile two consecutive years	Department chiefs (or clinic chiefs) responsible for improving well-being score in their department
Efficiency of practice environment	"Work outside of Work" (WOW_n)[5] measured via EHR audit log data for select specialties[6]	WOW_n[5] results reported to organization's board and physicians Local units involved in root case analysis and development of intervention	WOW_n[5] reported confidentially to the AMA[7]
Teamwork	Teamwork measured annually using AHRQ Teamwork, Safety Attitudes Questionnaire or similar instrument for select specialties[6]	Teamwork also measured in select specialties[6] via EHR audit[8] Results reported to organization's board and physicians	Teamwork results reported confidentially to the AMA[7]
Support	Peer support program that supports dealing with adverse clinical events (i.e., second victim)	Peer support program that supports distressed physicians	Supports opportunities for community building among physicians

https://www.ama-assn.org/system/files/2019-07/joy-award-brochure.pdf

Summary

- Burnout for providers is a growing problem
  - Causes decreased engagement and effectiveness
  - Well physicians are better doctors
- Multiple factors contribute to burnout
  - EHR documentation burden exacerbated by regulatory, UI, institutional-related factors
- Individual training can improve comfort with the EHR, but does not address all issues contributing to burnout
  - Admin support, regulatory changes, UI improvements, AI/NLP could help
- CLOC time may be a good correlate to “Work Outside Work”
  - Likely other leading indicators can help

Questions?

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