

NATIONAL ACTION ALLIANCE
for Patient and Workforce Safety

Making Healthcare Safer by Design: Redesigning for Safety, Efficiency, and Burden Reduction

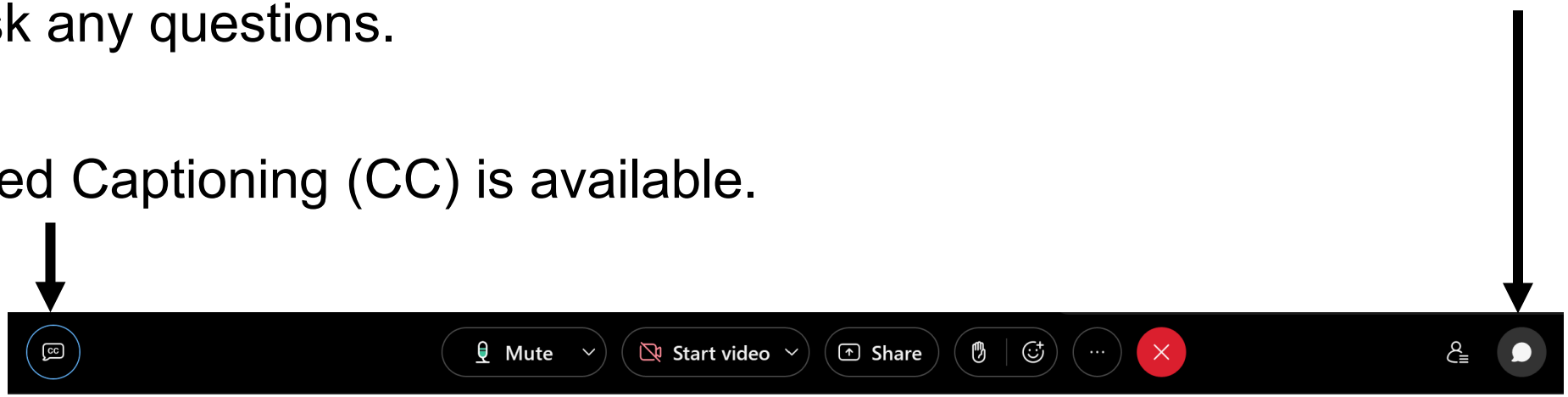
NATIONAL WEBINAR SERIES

July 16, 2024

Housekeeping Instructions

NATIONAL ACTION ALLIANCE for Patient and Workforce Safety

- This webinar will be recorded and available for viewing on the NAA website.
- Please use the ‘Chat’ function to engage with us throughout to webinar and to ask any questions.
- Closed Captioning (CC) is available.



Questions to Run On

NATIONAL ACTION ALLIANCE for Patient and Workforce Safety

- What safety design strategies exist that healthcare organizations could use now to redesign their processes to prevent harm?

- What strategies are some healthcare organizations already using successfully that incorporate safety engineering principles to prevent harm?

Share with us!

NATIONAL ACTION ALLIANCE for Patient and Workforce Safety

What would you wish to "re-design" in your organization for safety?

If you have already "re-designed" a process/system (to be safer, more efficient, less burdensome) in your organization, please share in the chat!

Speaker Welcome

Dr. Jane Fogg, MD, MPH
Physician Director of Organizational Transformation, Professional Satisfaction
American Medical Association

Professional Satisfaction Patient Safety:

designing care to reduce burnout and improve patient safety

National Action Alliance Webinar: Making Healthcare Safer by Design

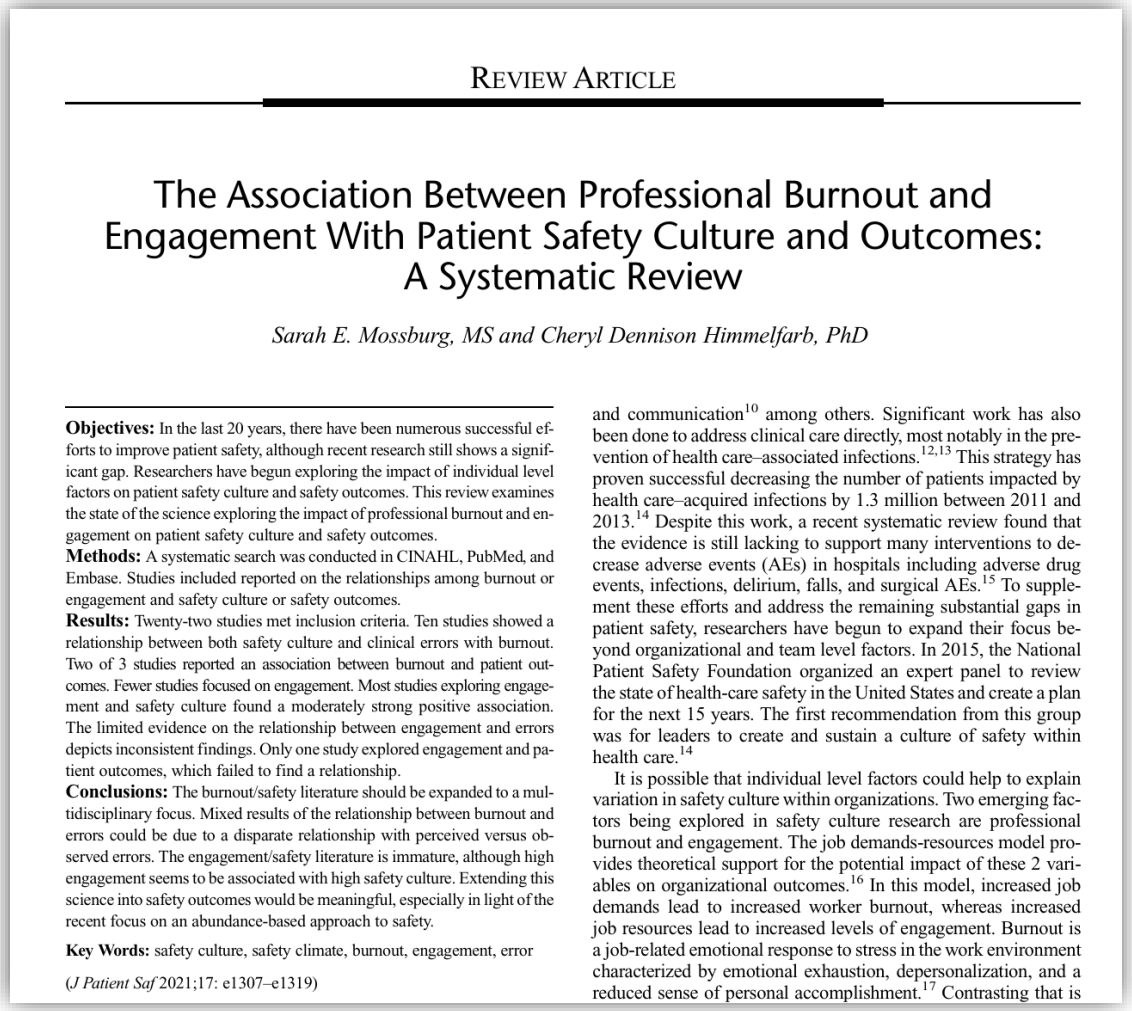
Jane F. Fogg, MD, MPH
Physician Director of Organizational Transformation
Physician Satisfaction, American Medical Association

No disclosures

Agenda

- Physician burnout and patient safety
- Physician burnout - definitions, data, drivers
- Strategy, solutions, safety
- Relational care - values in mitigating burnout and improving safety
- AMA resources

Evidence for the association of Patient Safety and Professional Burnout



REVIEW ARTICLE

The Association Between Professional Burnout and Engagement With Patient Safety Culture and Outcomes: A Systematic Review

Sarah E. Mossburg, MS and Cheryl Dennison Himmelfarb, PhD

Objectives: In the last 20 years, there have been numerous successful efforts to improve patient safety, although recent research still shows a significant gap. Researchers have begun exploring the impact of individual level factors on patient safety culture and safety outcomes. This review examines the state of the science exploring the impact of professional burnout and engagement on patient safety culture and safety outcomes.

Methods: A systematic search was conducted in CINAHL, PubMed, and Embase. Studies included reported on the relationships among burnout or engagement and safety culture or safety outcomes.

Results: Twenty-two studies met inclusion criteria. Ten studies showed a relationship between both safety culture and clinical errors with burnout. Two of 3 studies reported an association between burnout and patient outcomes. Fewer studies focused on engagement. Most studies exploring engagement and safety culture found a moderately strong positive association. The limited evidence on the relationship between engagement and errors depicts inconsistent findings. Only one study explored engagement and patient outcomes, which failed to find a relationship.

Conclusions: The burnout/safety literature should be expanded to a multidisciplinary focus. Mixed results of the relationship between burnout and errors could be due to a disparate relationship with perceived versus observed errors. The engagement/safety literature is immature, although high engagement seems to be associated with high safety culture. Extending this science into safety outcomes would be meaningful, especially in light of the recent focus on an abundance-based approach to safety.

Key Words: safety culture, safety climate, burnout, engagement, error

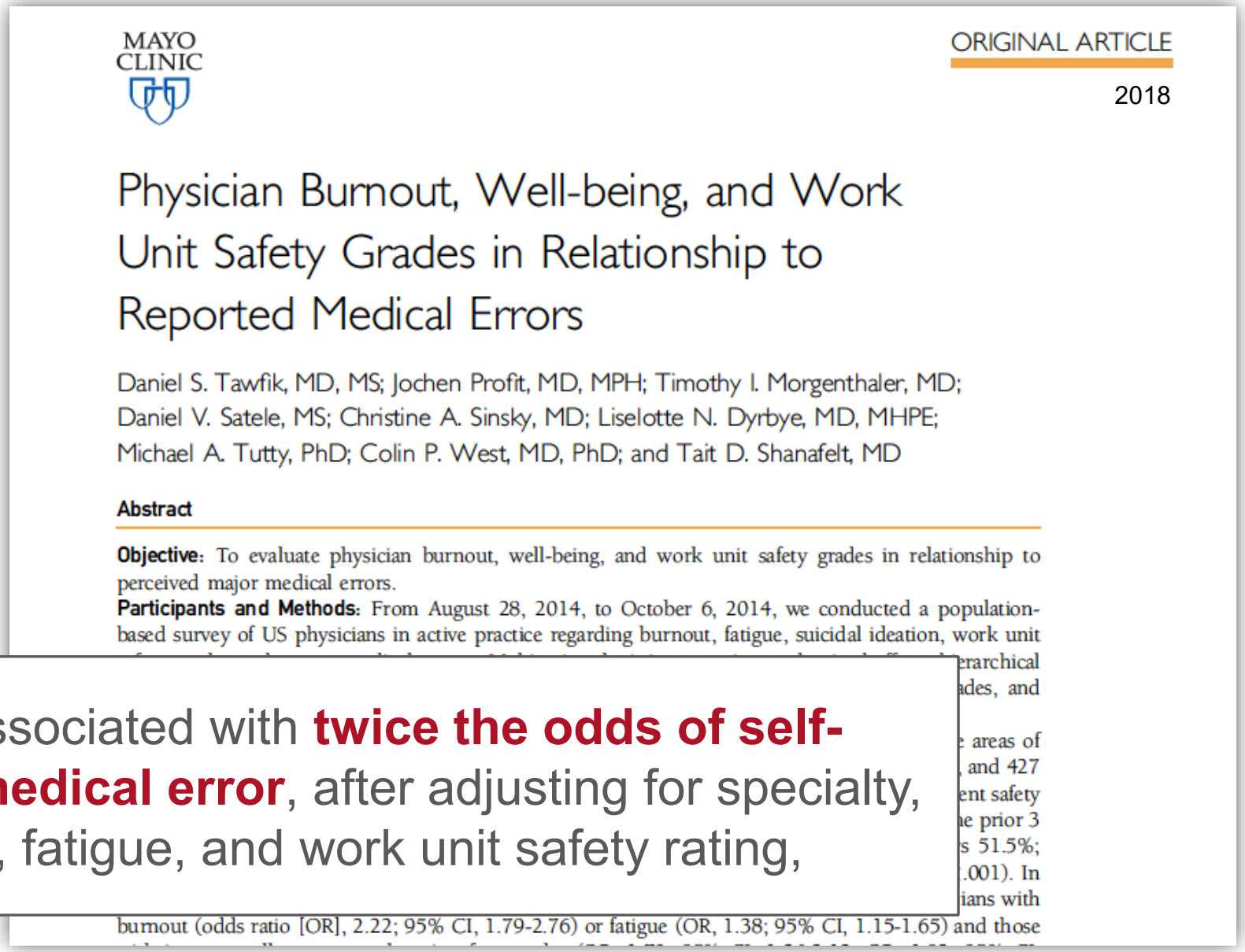
(*J Patient Saf* 2021;17: e1307–e1319)

and communication[10] among others. Significant work has also been done to address clinical care directly, most notably in the prevention of health care–associated infections.[12,13] This strategy has proven successful decreasing the number of patients impacted by health care–acquired infections by 1.3 million between 2011 and 2013.[14] Despite this work, a recent systematic review found that the evidence is still lacking to support many interventions to decrease adverse events (AEs) in hospitals including adverse drug events, infections, delirium, falls, and surgical AEs.[15] To supplement these efforts and address the remaining substantial gaps in patient safety, researchers have begun to expand their focus beyond organizational and team level factors. In 2015, the National Patient Safety Foundation organized an expert panel to review the state of health-care safety in the United States and create a plan for the next 15 years. The first recommendation from this group was for leaders to create and sustain a culture of safety within health care.[14]

It is possible that individual level factors could help to explain variation in safety culture within organizations. Two emerging factors being explored in safety culture research are professional burnout and engagement. The job demands-resources model provides theoretical support for the potential impact of these 2 variables on organizational outcomes.[16] In this model, increased job demands lead to increased worker burnout, whereas increased job resources lead to increased levels of engagement. Burnout is a job-related emotional response to stress in the work environment characterized by emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment.[17] Contrasting that is

- Review of 22 studies, 2005-2016
- Hospital-based health care setting
- Relationships between burnout (BO) and safety culture or clinical error (10 studies), BO and patient outcomes (2 studies)
- Less data on engagement
- Encourages more research in BO, engagement, and patient safety

Physicians with BO more likely to report making medical errors



MAYO CLINIC

ORIGINAL ARTICLE

2018

Physician Burnout, Well-being, and Work Unit Safety Grades in Relationship to Reported Medical Errors

Daniel S. Tawfik, MD, MS; Jochen Profit, MD, MPH; Timothy I. Morgenthaler, MD; Daniel V. Satele, MS; Christine A. Sinsky, MD; Liselotte N. Dyrbye, MD, MHPE; Michael A. Tutty, PhD; Colin P. West, MD, PhD; and Tait D. Shanafelt, MD

Abstract

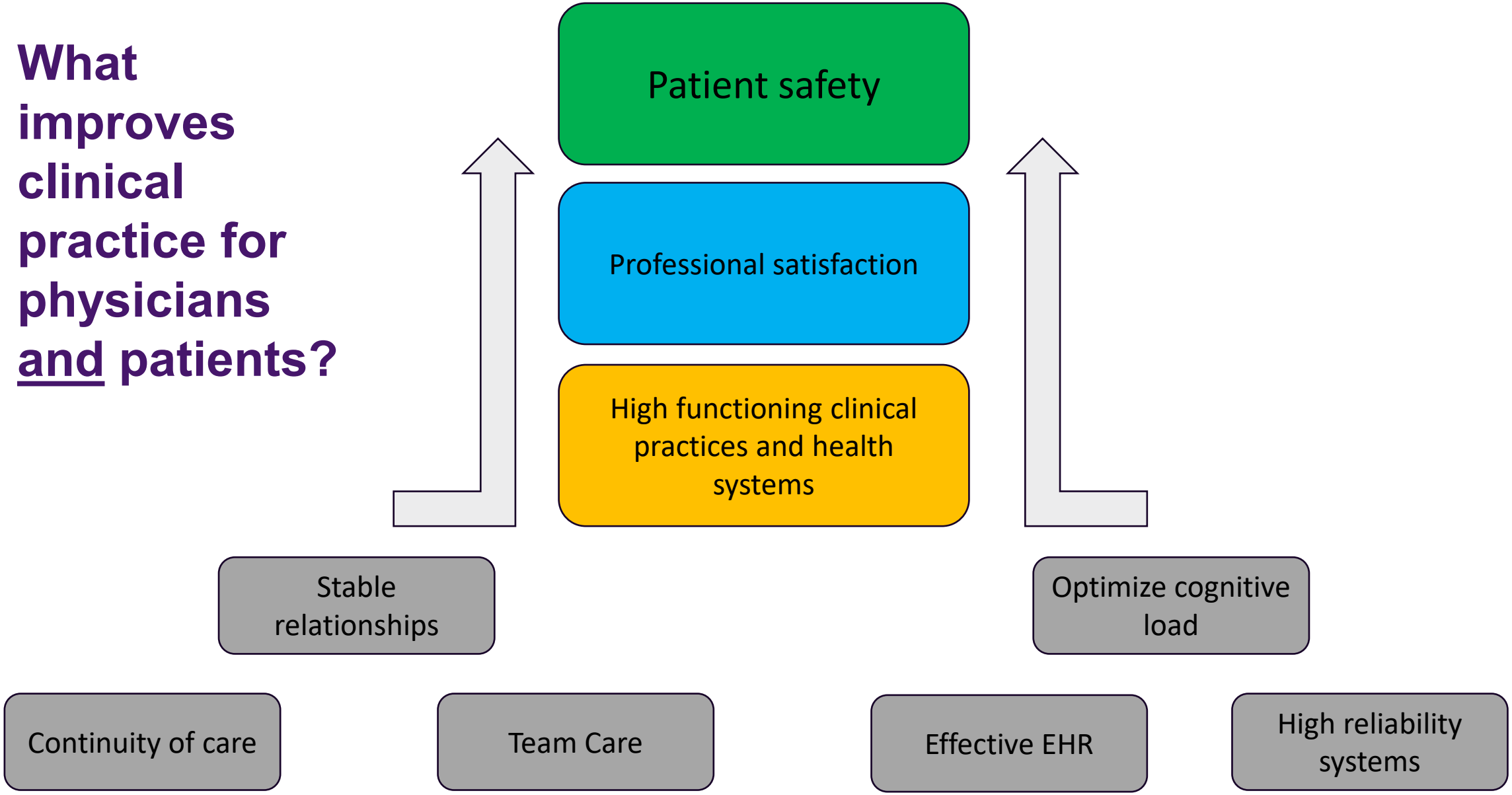
Objective: To evaluate physician burnout, well-being, and work unit safety grades in relationship to perceived major medical errors.

Participants and Methods: From August 28, 2014, to October 6, 2014, we conducted a population-based survey of US physicians in active practice regarding burnout, fatigue, suicidal ideation, work unit

burnout (odds ratio [OR], 2.22; 95% CI, 1.79-2.76) or fatigue (OR, 1.38; 95% CI, 1.15-1.65) and those

"Burnout associated with **twice the odds of self-reported medical error**, after adjusting for specialty, work hours, fatigue, and work unit safety rating,

What improves clinical practice for physicians and patients?



Definitions, Data, Drivers

Burnout

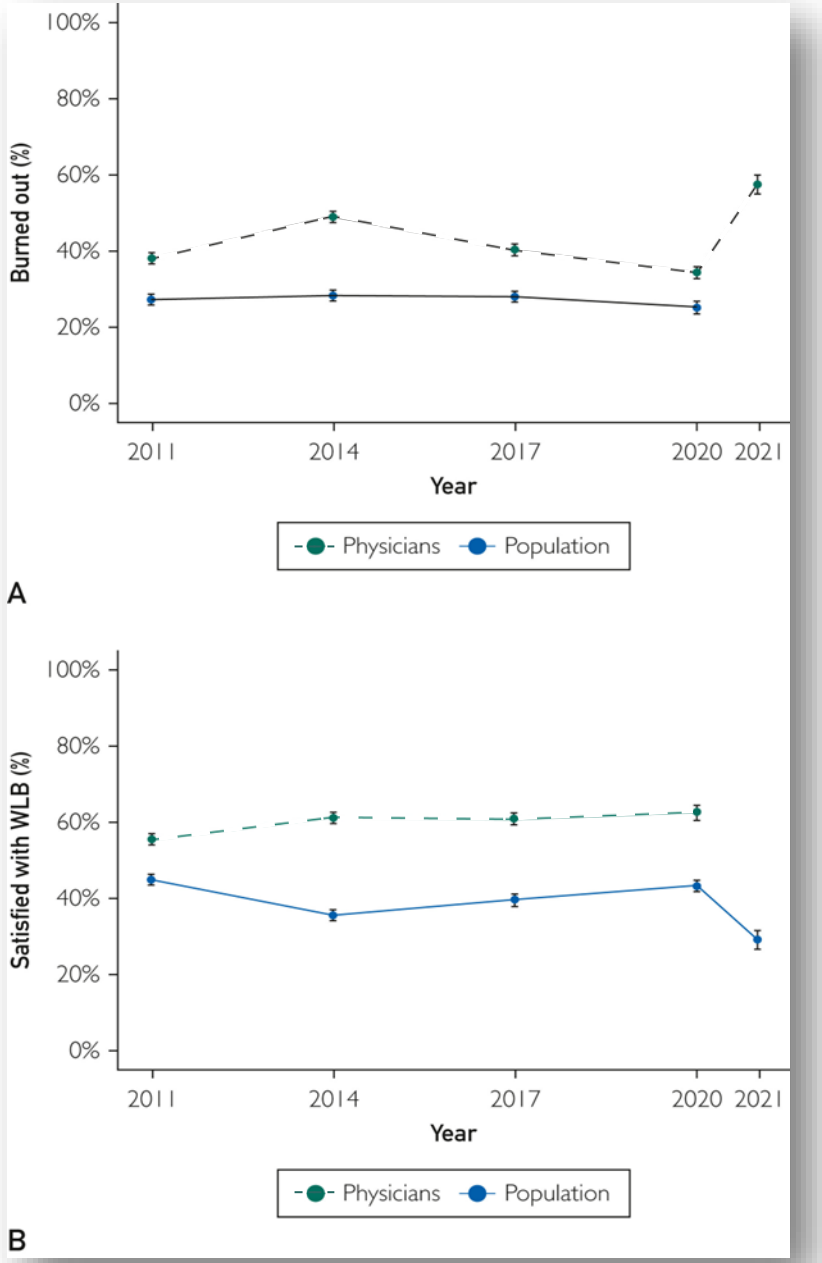
- A syndrome, in the context of occupation, characterized by:
  - Emotional exhaustion
  - Feelings of cynicism and detachment from work; lack of engagement
  - Sense of low personal accomplishment or decreased efficacy in work
- Impact
  - Workforce stability – turnover, disrupted relationships, reduced access
  - Patients - decreased experience, quality, and outcomes
  - Organizations/systems – higher costs
  - Physicians – increased rates of death, divorce

Burnout levels remain high in physicians compared to population

Longitudinal evaluation of burnout in physicians compared with the population done every 3 years

https://www.mayoclinicproceedings.org/article/S0025-6196(22)00515-8/fulltext

AMA survey data continue to show ~50% of MDs report burnout (2022, 2023)



63% in 2021

2023 KPI from AMA Organizational Biopsy® Data

	Satisfaction Agree Strongly/ Agree	**Stress** Agree Strongly/ Agree	**Burnout** Experiencing at least one symptom of Burnout	**Intent to Leave** Definitely/ Likely/ Moderately	**Feeling Valued** To a great extent/ Moderately
Physicians N= 12,422	72.1%	50.7%	48.2%	35.7%	50.4%
	↑ By 4.4% since 2022	↓ By 4.9% since 2022	↓ By 5.1% since 2022	↓ By 3.6% since 2022	↑ By 4.1% since 2022
Advanced Practice Providers N= 6,998	74.9%	46.9%	50.6%	39.4%	47.9%
	↑ By 4.5% since 2022	↓ By 4.4% since 2022	↓ By 5.1% since 2022	↓ By 3.7% since 2022	↑ By 6.3% since 2022

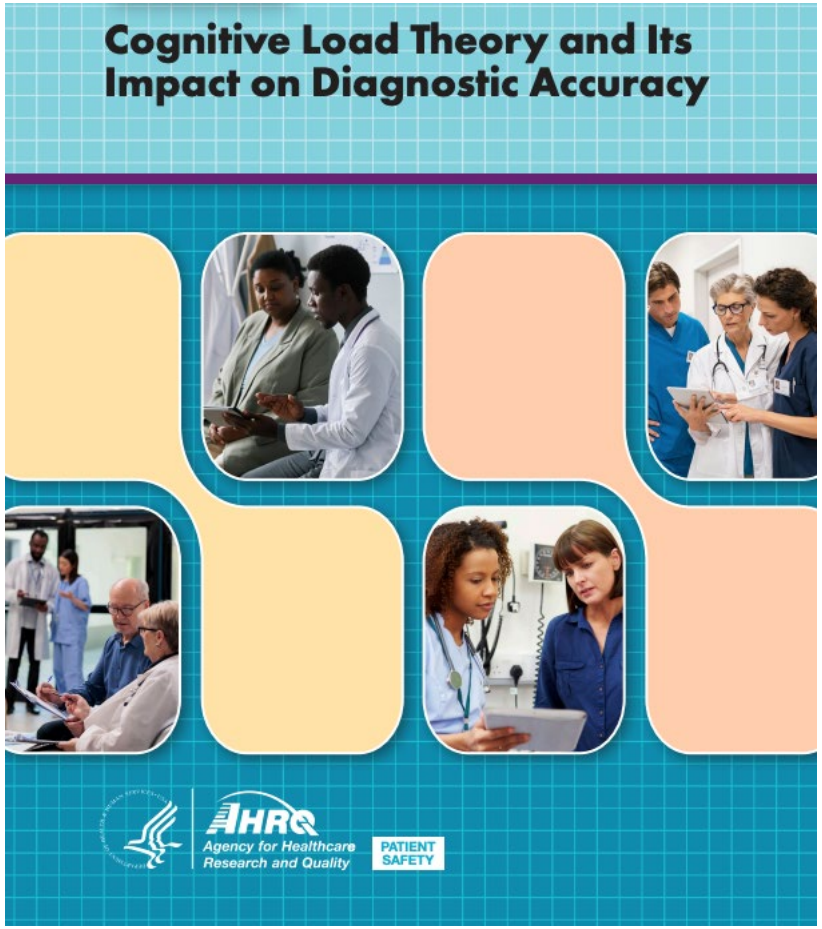
Drivers of Burnout – how we work

While burnout *manifests* in individuals,

it *originates* in systems.

- EHR is not routinely optimized for clinical practice
- Practice inefficiencies, lack of teaming, and obstacles in patient care
- Physician task load

Cognitive Load and Diagnostic Accuracy



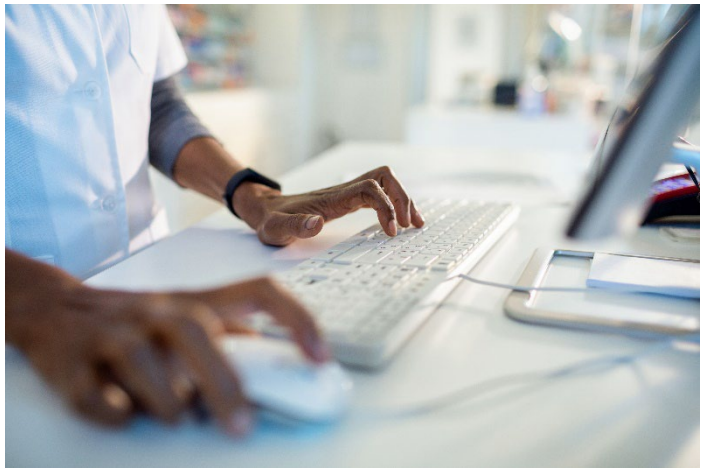
"Diagnostic reasoning has historically been treated as intrinsic to the individual clinician, likely due to difficulty visualizing and measuring cognition based on the inherent complexity and internal nature of mental processes. However, there is now growing recognition that cognition is complex and affected by context, cognitive biases, resources, and physical, social, and technological environments."

Everyday examples, obstacles, and cognitive overload

I am frequently interrupted to enter computer orders while I am taking care of my patients.

My patient keeps missing appointments and going to the ED at night because they don't have transportation…. I can't get any help for them.

Reconciling and renewing medications is hard to do in our computer system and I don't always have the information I need.



I keep a tickler list of important referrals to ensure that my patients get an appointment…. I never know if my referrals are successful.

Strategies, Solutions, Safety

Overview of Solutions for Burnout

Culture and organizational resilience: our leaders, our practice culture, and our commitment to well-being drives joy in practice.

1. Wellness-centered leadership
2. Culture of wellness

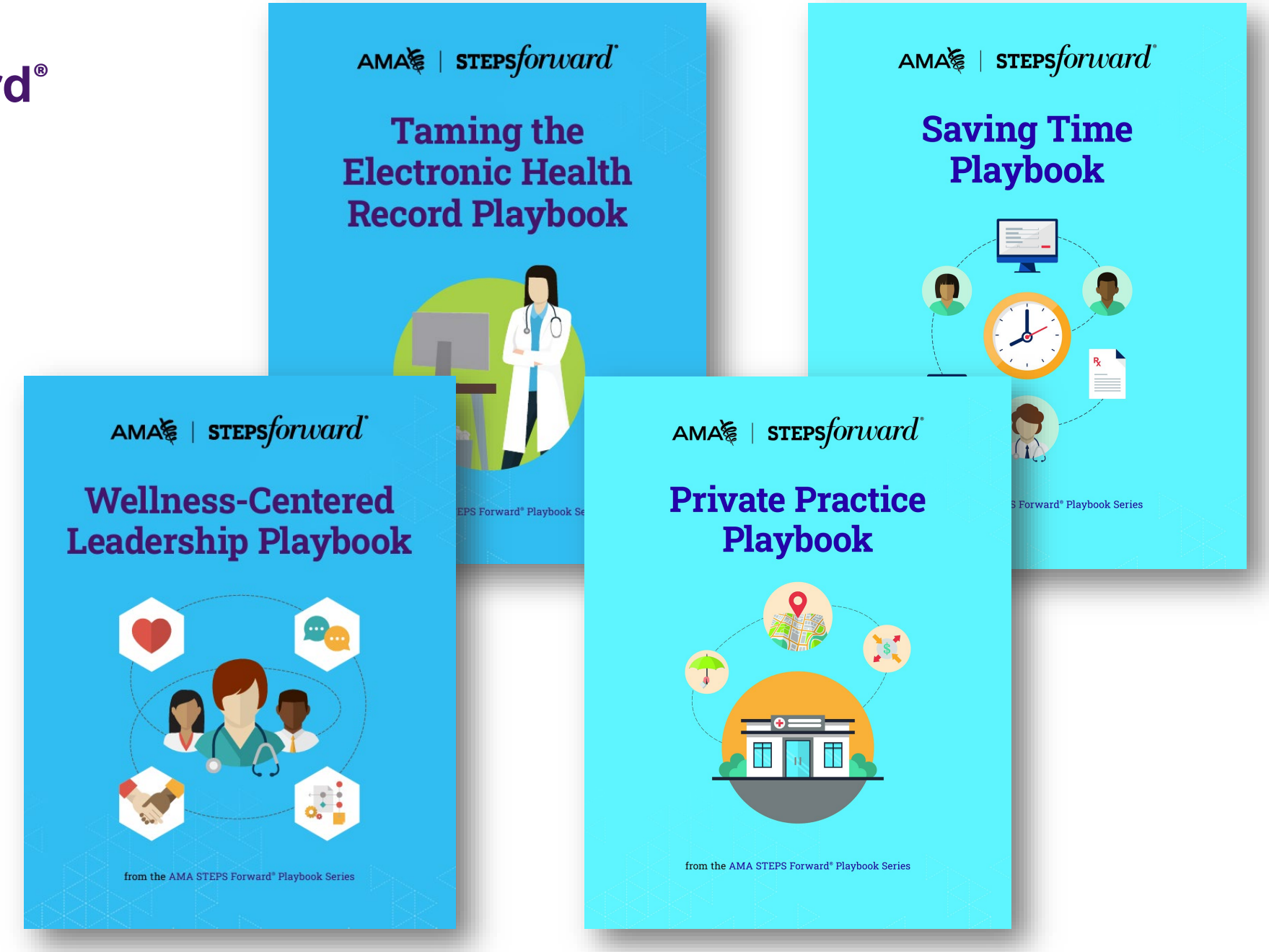
Stanford WellMD Model

Efficiency of practice: the system we work in impacts our ability to care for patients in an efficient and effective manner:

1. EHR optimization and in-basket reduction
2. Team-based care
3. Practice infrastructure and operations
4. Reduce administrative and regulatory burden

AMA STEPS Forward® Playbook Series

AMA STEPS Forward® playbooks combine the best elements of our open-access program—toolkits, webinars, podcasts, success stories, and ready-to-use resources—into topical guides with **practical, actionable strategies** and tactics to help you create change in your practice.



AMA | Physicians' powerful ally in patient care

Taming Technology: EHR

NEJM Catalyst | Innovations in Care Delivery

IN DEPTH

In-Basket Reduction: A Multiyear Pragmatic Approach to Lessen the Work Burden of Primary Care Physicians

Jane F. Fogg, MD, MPH, Christine A. Sinsky, MD

Vol. 4 No. 5 | May 2023

DOI: 10.1056/CAT.22.0438

AMA | STEPSforward

EHR Inbox Reduction Checklist for Health Care Organizations

Eliminate unnecessary burdens and improve workflows in the EHR at the organizational level with this checklist.

A system-level approach to EHR inbox reduction | American Medical Association (ama-assn.org)

Share the Necessary Work: Team Care & Workflows

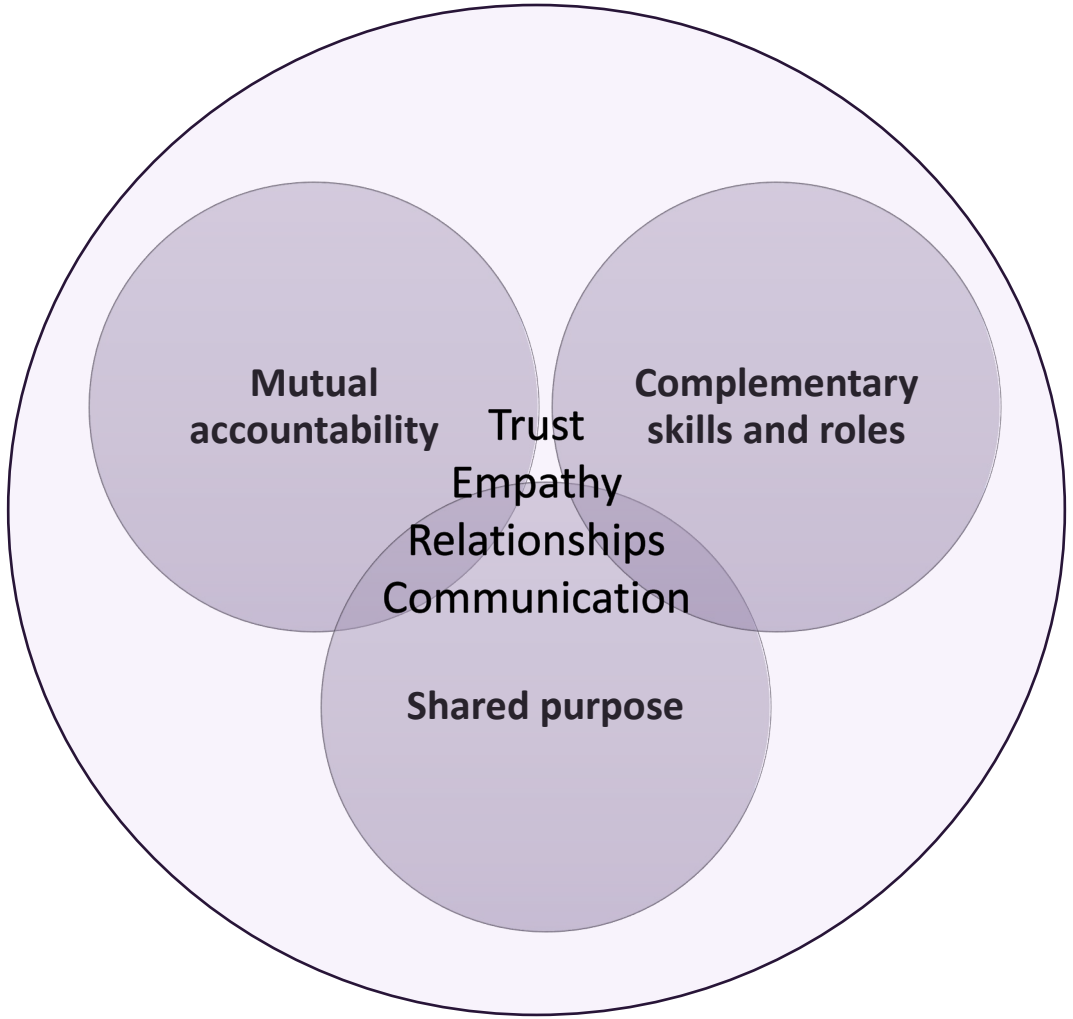
Key workflows to save time and share the work:

- Pre-visit planning and pre-visit laboratory testing
- Advanced rooming and discharge
- Team documentation
- Annual prescription renewals and medication management
- EHR inbox and patient portal management

Saving Time Playbook: Stop Unnecessary Work, Share Necessary Tasks With the Broader Team, and Gain Leadership Support | Workflow and Process | AMA STEPS Forward | AMA Ed Hub (ama-assn.org)

Share the Necessary Work: Team Care & Workflows

- High functioning teams have a shared purpose, mutual accountability, and a mix of skills and roles
- The values of trust, empathy, relationship, and communication are essential to their success
- Take time to assess your team's strength before implementing new workflows and roles!



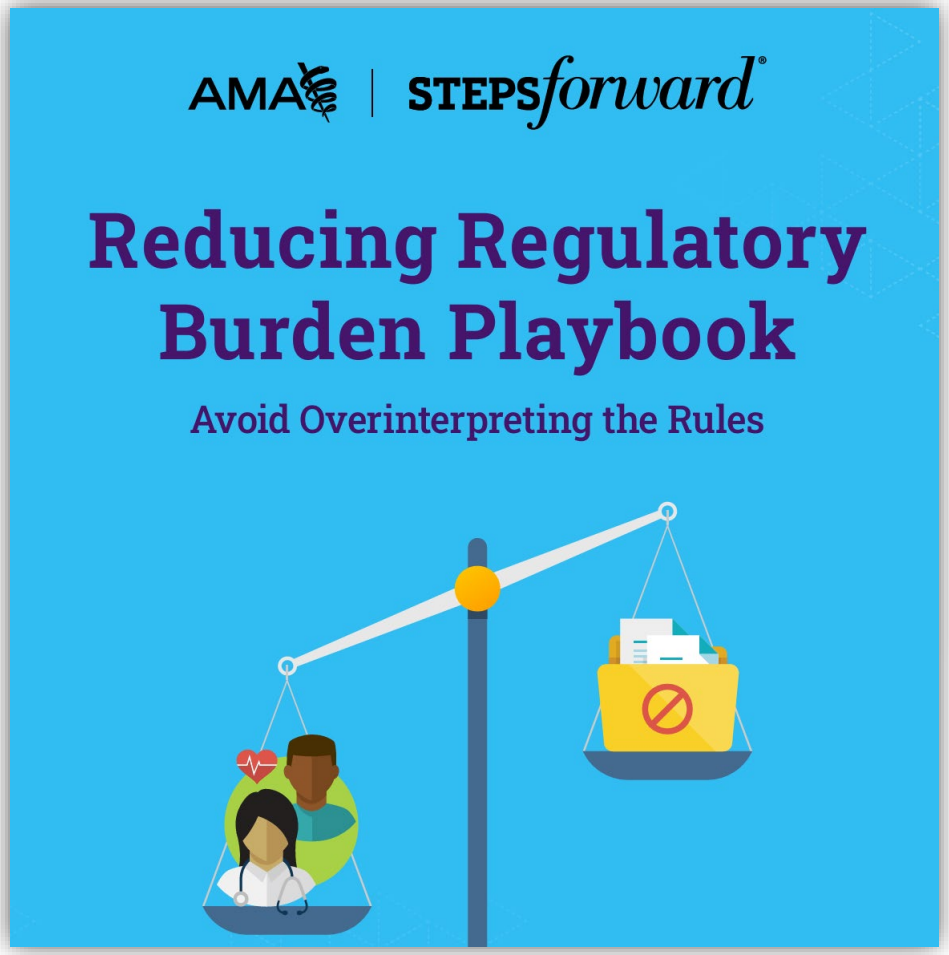
Practice Operations and System of Care

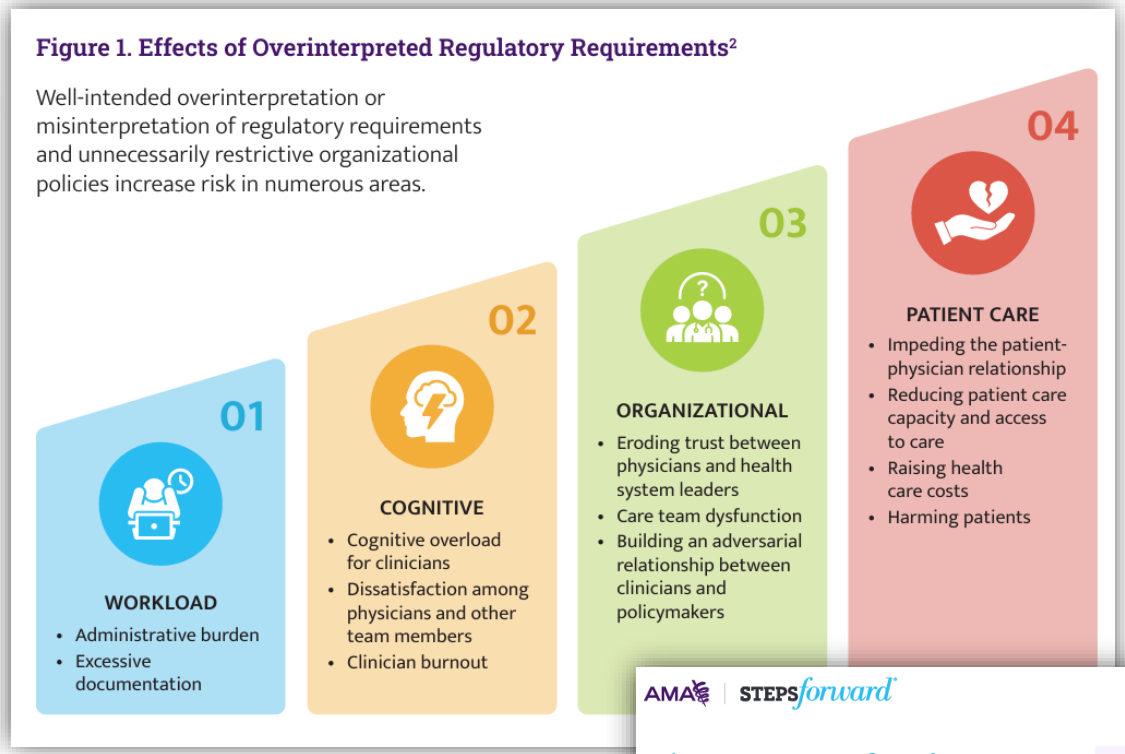
When a practice runs well, doctors trust that their patients' experience and needs will be met across the care continuum.

Examples

- Referral systems that ensure access across departments and closed loops
- Care for urgent and 24/7 needs – telecom, on-call, off hours care
- Shared services to support health related social needs
- Reliable clinical operations – scheduling, telephone, telehealth, cross coverage, care coordination across departments
- Timely communication and access to relevant clinical information at every point of care.

Reducing Regulatory and Rule Burden





The value of relationships

Relationships are our Superpower

- Continuity with patients
  - ↑ Quality[1,2]
  - ↓ Cost[3,4]
  - ↓ ER/Hospitalization[5,6]
  - ↓ Mortality[6,7,8]

Continuity within teams

- ↓ Cost[9,10]
- ↑ Q[10,]
- ↑ Access[12]
- ↓ Burnout[13,14]

[1]*Humanity & Society.* 2009; **33**: 56-73
[2]*Ann Fam Med.* 2013; **11**: S50-S59
[3]*BMJ.* 2017; **356**: j84
[4]*Ann Fam Med.* 2015; **13**: 206-213
[5]*Health Aff (Millwood).* 2015; **34**: 1113-1120
[6]*JAMA Intern Med.* 2017; **177**: 1781-1787
[7]*J Gerontol A Biol Sci Med Sci.* 2010; **65**: 421-428
[8]*BMC Fam Pract.* 2021; **22**: 145

[9]*Ann Fam Med.* 2020; **18**: 180
[10]*Ann Fam Med.* 2015; **13**: 139-148
[11]*JAMIA* 2022; **1**: :8-15
[12]*Implement Sci.* 2019; **14**: 22
[13]*Ann Fam Med.* 2019; **17**: 428-435

Dr. Christine Sinsky

[Radical Reorientation of the US Health Care System Around Relationships - Mayo Clinic Proceedings]

COMMENTARY

MAYO CLINIC

Check for updates

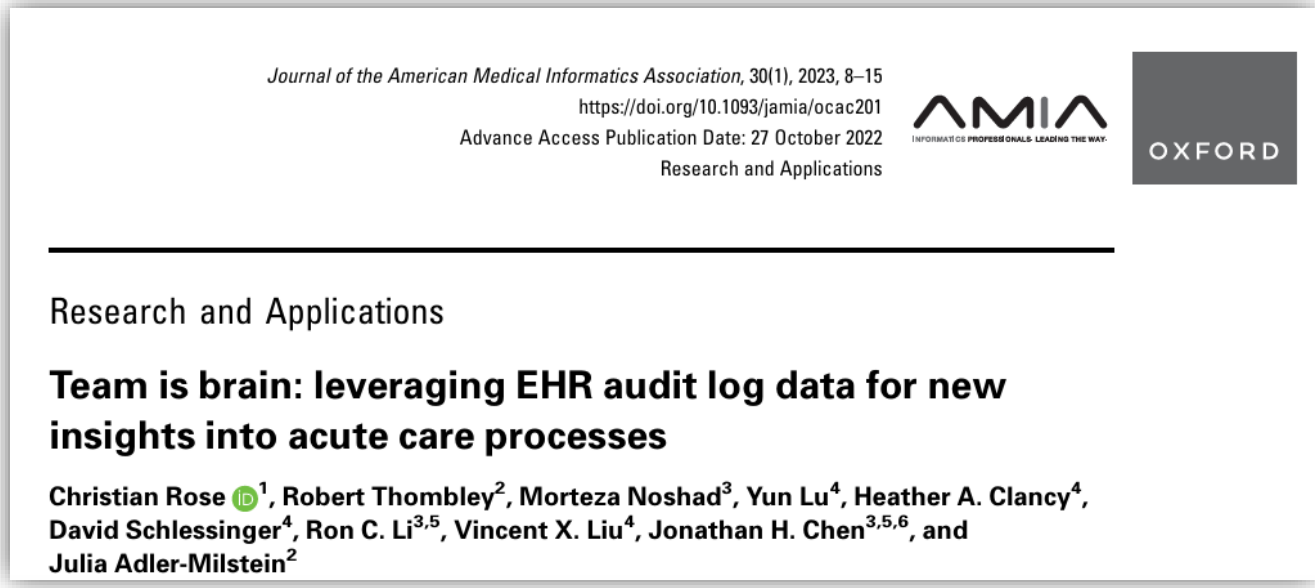
Radical Reorientation of the US Health Care System Around Relationships: Rebalancing the Transactional Model

Christine A. Sinsky, MD; Tait D. Shanafelt, MD; and Alexandra M. Ristow, MD

Stable Care Teams

ED teams that work together more often have a shorter “door to needle” (DNT) time in acute ischemic stroke care.

Surgeons and anesthesiologists that work together more often have reduce patient morbidity after complex gastrointestinal surgery.



Journal of the American Medical Informatics Association, 30(1), 2023, 8–15
https://doi.org/10.1093/jamia/ocac201
Advance Access Publication Date: 27 October 2022
Research and Applications

Research and Applications

Team is brain: leveraging EHR audit log data for new insights into acute care processes

Christian Rose [1], Robert Thombley [2], Morteza Noshad [3], Yun Lu [4], Heather A. Clancy [4], David Schlessinger [4], Ron C. Li [3,5], Vincent X. Liu [4], Jonathan H. Chen [3,5,6], and Julia Adler-Milstein [2]

JAMA Surgery | Original Investigation

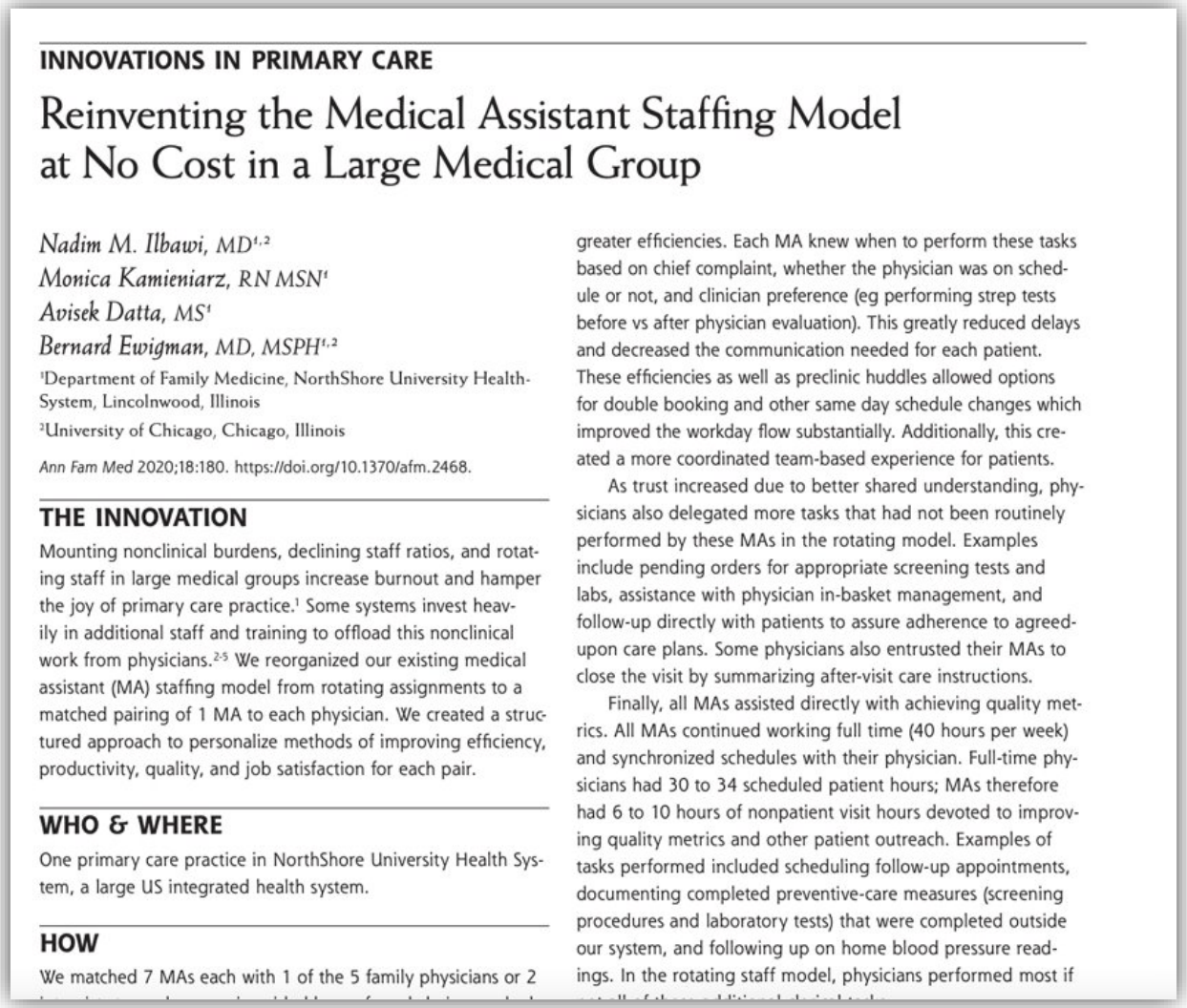
Association Between Familiarity of the Surgeon-Anesthesiologist Dyad and Postoperative Patient Outcomes for Complex Gastrointestinal Cancer Surgery

Julie Hallet, MD, MSc; Rinku Sutradhar, PhD; Angela Jerath, MD, MSc; Pablo Perez d'Empaire, MD; François M. Carrier, MD, MSc; Alexis F. Turgeon, MD, MSc; Daniel I. McIsaac, MD, MPH; Chris Idestrup, MD, MSc; Gianni Lorello, MD, MSc; Alana Flexman, MD; Biniam Kidane, MD, MSc; Yosuf Kaliwal, MPH; Wing C. Chan, MPH; Victoria Barabash, MSc; Natalie Coburn, MD, MPH; Antoine Eskander, MD, ScM

Stable Care Teams

1:1 stable pairings MA:MD

- ↑ RVUs (11%)
- ↑ A1c control, Pap smears, depression screening
- ↑ MD satisfaction
- ↑ MA retention



INNOVATIONS IN PRIMARY CARE

Reinventing the Medical Assistant Staffing Model at No Cost in a Large Medical Group

Nadim M. Ilbawi, MD[1,2]
Monica Kamieniarz, RN MSN[1]
Avisek Datta, MS[1]
Bernard Ewigman, MD, MSPH[1,2]

[1]Department of Family Medicine, NorthShore University HealthSystem, Lincolnwood, Illinois
[2]University of Chicago, Chicago, Illinois

Ann Fam Med 2020;18:180. https://doi.org/10.1370/afm.2468.

THE INNOVATION

Mounting nonclinical burdens, declining staff ratios, and rotating staff in large medical groups increase burnout and hamper the joy of primary care practice.[1] Some systems invest heavily in additional staff and training to offload this nonclinical work from physicians.[2-5] We reorganized our existing medical assistant (MA) staffing model from rotating assignments to a matched pairing of 1 MA to each physician. We created a structured approach to personalize methods of improving efficiency, productivity, quality, and job satisfaction for each pair.

WHO & WHERE

One primary care practice in NorthShore University Health System, a large US integrated health system.

HOW

We matched 7 MAs each with 1 of the 5 family physicians or 2

greater efficiencies. Each MA knew when to perform these tasks based on chief complaint, whether the physician was on schedule or not, and clinician preference (eg performing strep tests before vs after physician evaluation). This greatly reduced delays and decreased the communication needed for each patient. These efficiencies as well as preclinic huddles allowed options for double booking and other same day schedule changes which improved the workday flow substantially. Additionally, this created a more coordinated team-based experience for patients.

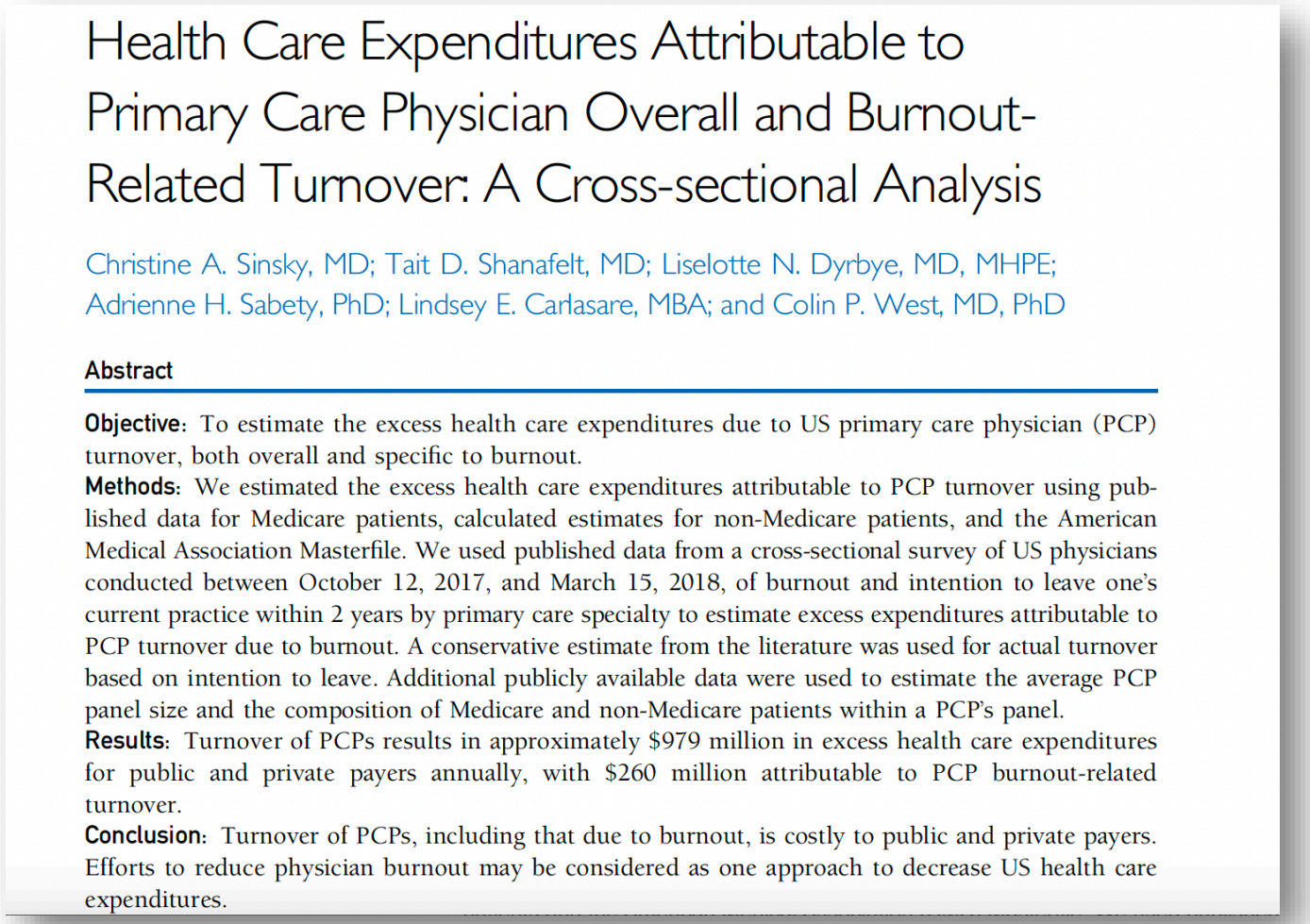
As trust increased due to better shared understanding, physicians also delegated more tasks that had not been routinely performed by these MAs in the rotating model. Examples include pending orders for appropriate screening tests and labs, assistance with physician in-basket management, and follow-up directly with patients to assure adherence to agreed-upon care plans. Some physicians also entrusted their MAs to close the visit by summarizing after-visit care instructions.

Finally, all MAs assisted directly with achieving quality metrics. All MAs continued working full time (40 hours per week) and synchronized schedules with their physician. Full-time physicians had 30 to 34 scheduled patient hours; MAs therefore had 6 to 10 hours of nonpatient visit hours devoted to improving quality metrics and other patient outreach. Examples of tasks performed included scheduling follow-up appointments, documenting completed preventive-care measures (screening procedures and laboratory tests) that were completed outside our system, and following up on home blood pressure readings. In the rotating staff model, physicians performed most if

High Cost of Broken PCP-Patient Relationships

PCP turnover increases health care spending:

- $1B per year in excess healthcare expenditures
- $260M attributed to PCP turnover from burnout
- $189 per Medicare pt; $61 per non-Medicare pt
- $86K per departing PCP



Health Care Expenditures Attributable to Primary Care Physician Overall and Burnout-Related Turnover: A Cross-sectional Analysis

Christine A. Sinsky, MD; Tait D. Shanafelt, MD; Liselotte N. Dyrbye, MD, MHPE; Adrienne H. Sabety, PhD; Lindsey E. Carlasare, MBA; and Colin P. West, MD, PhD

Abstract

Objective: To estimate the excess health care expenditures due to US primary care physician (PCP) turnover, both overall and specific to burnout.

Methods: We estimated the excess health care expenditures attributable to PCP turnover using published data for Medicare patients, calculated estimates for non-Medicare patients, and the American Medical Association Masterfile. We used published data from a cross-sectional survey of US physicians conducted between October 12, 2017, and March 15, 2018, of burnout and intention to leave one's current practice within 2 years by primary care specialty to estimate excess expenditures attributable to PCP turnover due to burnout. A conservative estimate from the literature was used for actual turnover based on intention to leave. Additional publicly available data were used to estimate the average PCP panel size and the composition of Medicare and non-Medicare patients within a PCP's panel.

Results: Turnover of PCPs results in approximately $979 million in excess health care expenditures for public and private payers annually, with $260 million attributable to PCP burnout-related turnover.

Conclusion: Turnover of PCPs, including that due to burnout, is costly to public and private payers. Efforts to reduce physician burnout may be considered as one approach to decrease US health care expenditures.

Sinsky et al, MCP March 2022
https://www.mayoclinicproceedings.org/article/S0025-6196(21)00709-6/fulltext

Professional Satisfaction


Marie Brown, MD


Jane Fogg, MD


Kevin Hopkins, MD


Jill Jin, MD


Christine Sinsky, MD


Margaret Lozovatsky, MD

Research, Measure, Act, Recognize, Convene

AMA Professional Satisfaction

- **Measurement**: AMA Organizational Biopsy®
- **Act**: Steps Forward ® , mentoring, speaking
- **Recognize**: AMA Joy in Medicine™ Health System Recognition Program
- **Convene**: ACPH & ICPH, Boot Camps, Learning Collaboratives
- **Research**: National burnout survey and derivatives q 3 yr, EHR event log research, Data Lab research

AMA Professional Satisfaction Unit

Research, Measure, Act, Recognize, Convene

Questions and Comments?

Dr. Jane Fogg is the former Executive Chair of Atrius Health Internal Medicine Family Medicine service line (2016-2023), a value based, primary care centered organization. Prior to this, she was the Medical Director of Adult Medicine at The Dimock Center, an FQHC in Roxbury, MA (1996-2004). Subsequently, she led primary care practice redesign and systems level transition from volume to value based care in the Beth Israel Lahey academic health system in Boston (2004-2016). She joined the AMA PS2 team October 2023 is currently the Physician Director of Organizational Transformation, Professional Satisfaction, adjunct faculty at the HMS Primary Care Center, and is a lecturer at Harvard Medical School.

Physicians' powerful ally in patient care

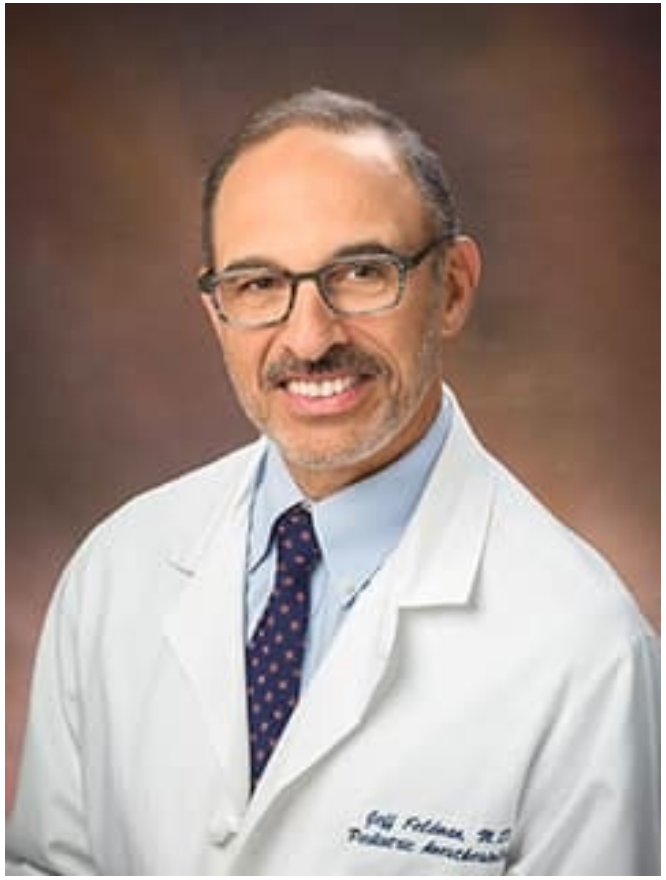
Speaker Welcome

Dr. Bruce Hansel, PhD, CCE

Chief Scientist, Device Safety, ECRI

Speaker Welcome

NATIONAL ACTION ALLIANCE for Patient and Workforce Safety



Jeffrey Feldman, MD, MSE, FASA

Senior Anesthesiologist, Children's Hospital of Philadelphia
University of Pennsylvania, and Chair of the Committee on Technology for the Anesthesia Patient Safety Foundation

ECRI | The Most Trusted Voice in Healthcare

Surgical Fire Prevention: Technical and Clinical Application

National Action Alliance

Making Healthcare Safer by Design: Redesigning for Safety, Efficiency and Burden Reduction

Bruce Hansel, PhD, CCE, Chief Scientist, Device Safety, ECRI

Jeffrey Feldman, MD, MSE, FASA, Attending Anesthesiologist, CHOP, Adjunct Professor of Clinical Anesthesiology, Perelman School of Medicine

Agenda

- Hazard Identification, Investigation, and Remediation
- “Quick Fixes” – Engineering Solutions to Clinical Hazards
- Surgical Fire Prevention
- Clinical Implications of Prevention Strategies

Hazard Identification, Investigation, and Remediation

Awareness and Reporting

Problem reporting through ECRI, PSO, and internal programs. Maintain compliance with state and federal requirements.

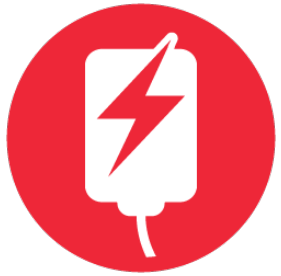
Investigation and Communication

Internal or external investigation, identify root causes, determine if technical hazard exists, communicate hazards

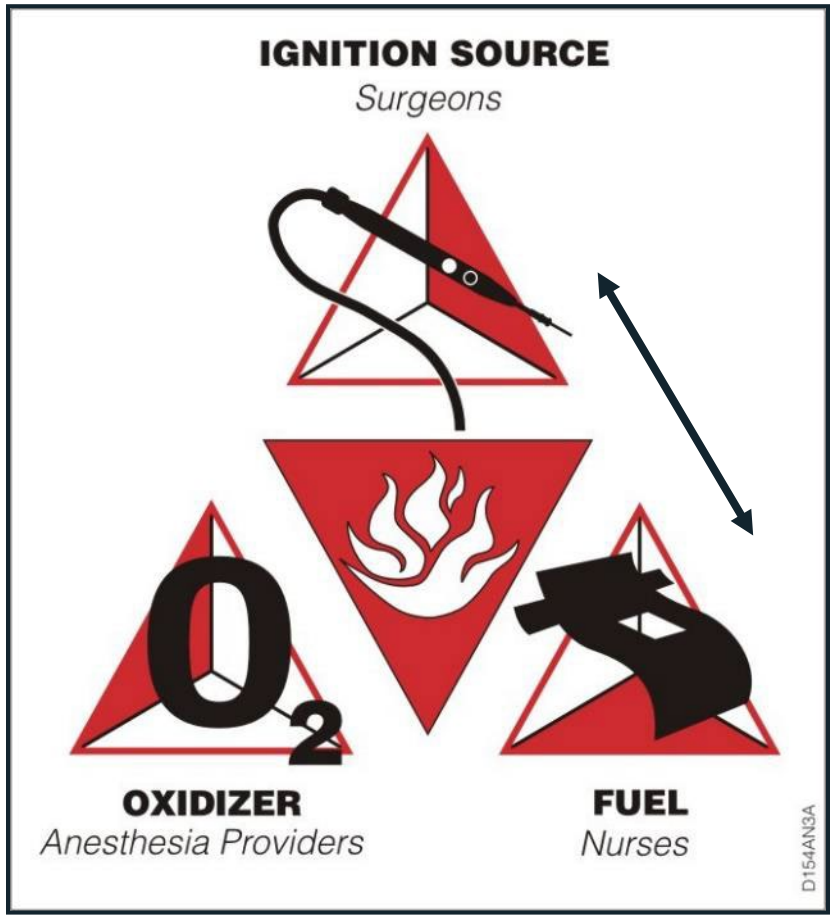
Engineering Solutions

Implement technical, systems based, human factors-oriented solutions and continuously monitor effectiveness by problem reporting / post-market surveillance.

Health Technology Hazards: “Quick Fixes”

2024 #7 	2023 #3 	2023 #6 	2023 #7 
Increased Burn Risk with Single-Foil Electrosurgical Return Electrodes	**Inappropriate Use of Automated Dispensing Cabinet (ADC) Overrides Can Result in Medication Errors**	**Inflatable Pressure Infusers (IPIs) Can Deliver Fatal Air Emboli from IV Solution Bags**	**Confusion Surrounding Ventilator Cleaning & Disinfection Requirements Can Lead to Cross-Contamination**
Adult patients are placed at an unnecessary risk of burns during electrosurgery when single-foil conductive return electrodes are used instead of dual-foil electrodes or other safer options.	ADCs should be configured to require pharmacist approval prior to allowing access to a drug. Use of an ADC’s override feature should be routinely tracked and monitored.	Avoid the use of IPIs for continuous infusion through vascular sheaths and catheters that terminate in the left heart. Even small amounts of air introduced in this location can be fatal.	ECRI challenges manufacturers to provide instructions for cleaning & disinfecting ventilator components that are complete, clear, well documented, and realistically achievable.

Surgical Fire: Preventable



- Fuel: Prep solution, drapes, towels
- Oxidizer: Oxygen, nitrous
- Ignition: ESU, laser, cautery

Fire Prevention: Nuclear and Airline Industries

- Nuclear
  - Extensive policies on fire prevention, fire identification, and fire extinguishing
  - Two approaches to manage fire safety:
    - “Deterministic fire protection”: system-based approach – components will survive a fire
    - “Risk-informed, performance-based fire protection”: focus fire protection activities ***on areas of greatest risk***

- Airline
  - In-flight fire prevention: Limit possibility of fire (e.g. no smoking in lavatory)
  - Post-crash fire survivability: Material flammability and insulation

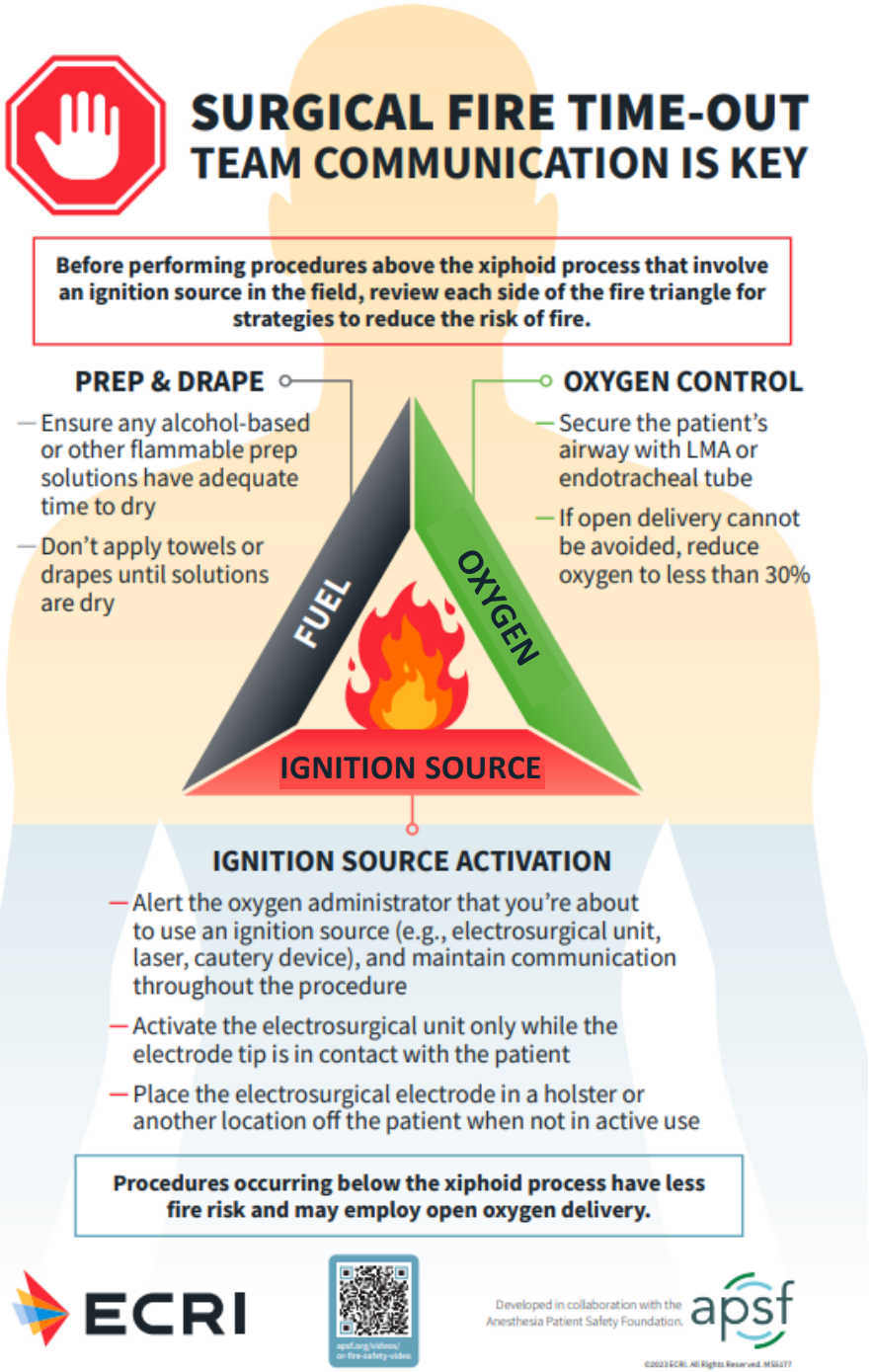
Surgical Fire: Areas of Greatest Risk

- Anatomic Locations
  - 44% Face, Head, Neck, Upper Chest
  - 21% Airway
  - 26% Elsewhere ON body
  - 8% Elsewhere IN body

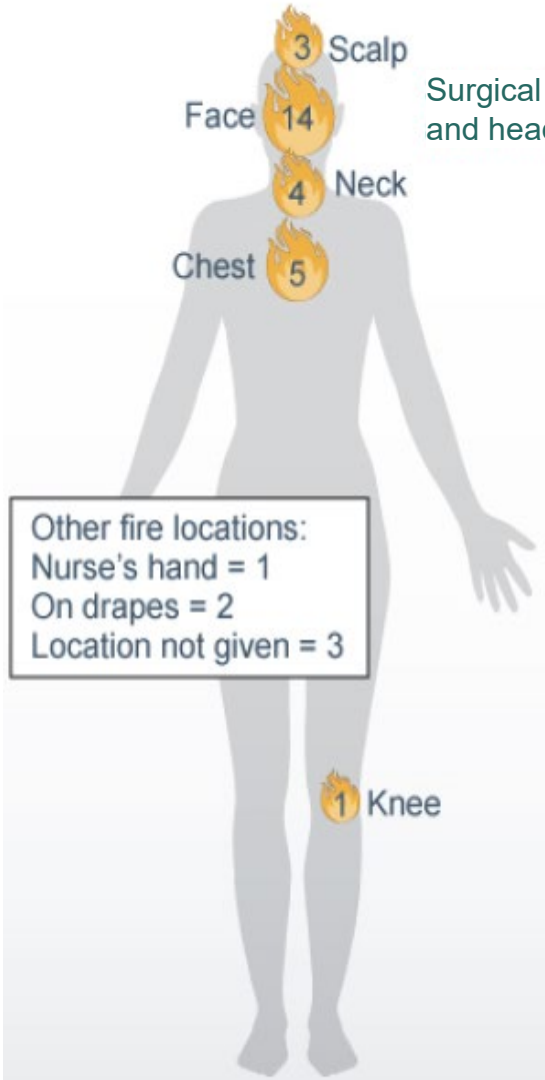
- **>70% involve oxygen enrichment**

Surgical Fire Harm: Preventable

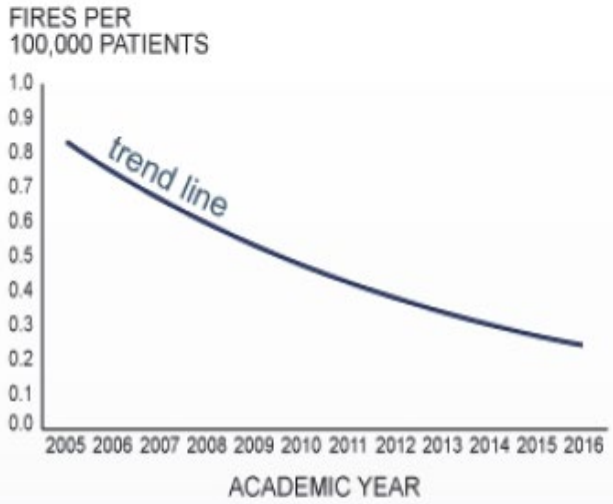
- Use pre-op time-out to assess fire risk and discuss mitigation efforts.
- Allow 3-min dry time for prep before draping. Watch for pooling.
- Secure patient airway if supplemental O_2 is required.
- If open delivery is used – reduce O_2 to less than 30%.



Incidence of Surgical Fires Improves in Pennsylvania



Surgical fires near the upper chest, neck, both internal and external, and head which occurred in oxygen-enriched atmospheres



Surgical fires per 100,00 surgical procedures dropped from **0.83** (AY2005 through 2011) to **0.24** (AY2011 through 2016)

71%

If the downward trend continues, the incidence of surgical fires in Pennsylvania can diminish to—

a single fire

by AY2032

MS570

Pa Patient Saf Advis 2018 Jun;15(2). http://patientsafety.pa.gov/ADVISORIES/Pages/201806_SurgicalFires.aspx.
Fires, surgical [patient safety topic]. 2007. http://patientsafety.pa.gov/pst/Pages/Fires_Surgical/hm.aspx.

Note: Academic years (AY) are for the 12 months ended June 30 of each year.

Patient Safety Authority

Is the patient at risk of surgical fire?

(Procedures involving the head, neck and upper chest/above T5 and use of an ignition source in proximity to an oxidizer).

No → Proceed but reassess for changes in fire risk frequently.

Yes

Does patient require oxygen supplementation?

No → Room air sedation.

Yes

Is >30% oxygen concentration required to maintain oxygen saturation?

No → Use delivery device such as blender or common gas outlet to maintain oxygen below 30%.

Yes

Secure airway with endotracheal tube or supraglottic device.

apsf Anesthesia Patient Safety Foundation

Fire Prevention Algorithm

Surgical Fire Response

- Immediate action
- Mitigate risk of injury
- Protect patient, protect staff, protect equipment

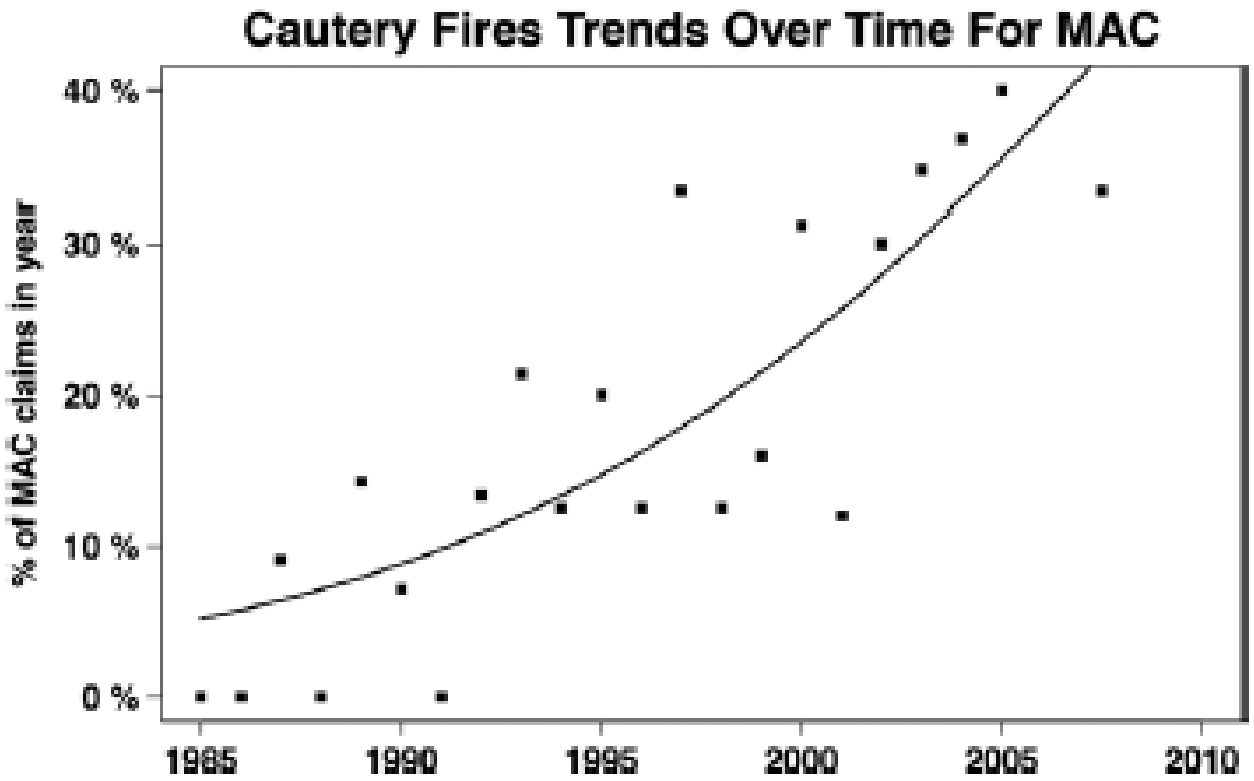
KNOW YOUR PART

WHEN RESPONDING TO A SURGICAL FIRE

	Oxygen Control	Scrubbed Personnel	Unscrubbed Personnel
Immediately			
	Any staff member should announce the presence of fire to the surgical team		
	— Turn off flow of oxygen or other oxidizer — In case of airway fire, disconnect and remove ET tube; pour sterile saline/water into the airway to extinguish any burning material — Assess the patient's respiratory status	— Remove any burning material from the patient (e.g., throw drapes onto the floor)	— Extinguish burning materials (e.g., drapes thrown onto the floor) — If the fire is too large to smother or to extinguish with sterile saline/water, retrieve a 5 lb CO_2 fire extinguisher — Assign a staff member to stand at the OR entrance and direct the response team

ECRI

99% of Cautery Fires during MAC



fires claims. Recognition of the fire triad (oxidizer, fuel, and ignition source), particularly the critical role of supplemental oxygen by an open delivery system during use of the electro-cautery, is crucial to prevent OR fires. Continuing education

Ref: Mehta, SP. Anesthesiology, 2013:118;1133–1139

We have Met the Enemy …

OXYGEN!

We are the Accomplice

SMOKING GUN - Auxiliary O2 Flowmeter

ASA Advisory

tion source is about to be activated. The anesthesiologist should (1) *stop* the delivery of supplemental oxygen or *reduce* the delivered oxygen concentration to the minimum required to avoid hypoxia and (2) *wait* a few minutes after reducing the oxidizer-enriched atmosphere before approving the activation of the ignition source.

ery system will reduce the risk of ignition. Routine delivery of supplemental oxygen in an open system is to be avoided.

Critique of ASA Advisory

- Allows for Open Delivery of Oxygen
- Auxiliary oxygen flowmeters deliver 100% oxygen
- Cannot measure Oxygen concentration in the field
- More importantly…
  - Surgeon notifies intention to use an ignition source
  - Anesthesia professional stops oxygen flow and waits …
  - Is there a high concentration of oxygen in the field?
  - If the patient requires oxygen to prevent hypoxemia, what do you do when the oxygen is turned off?

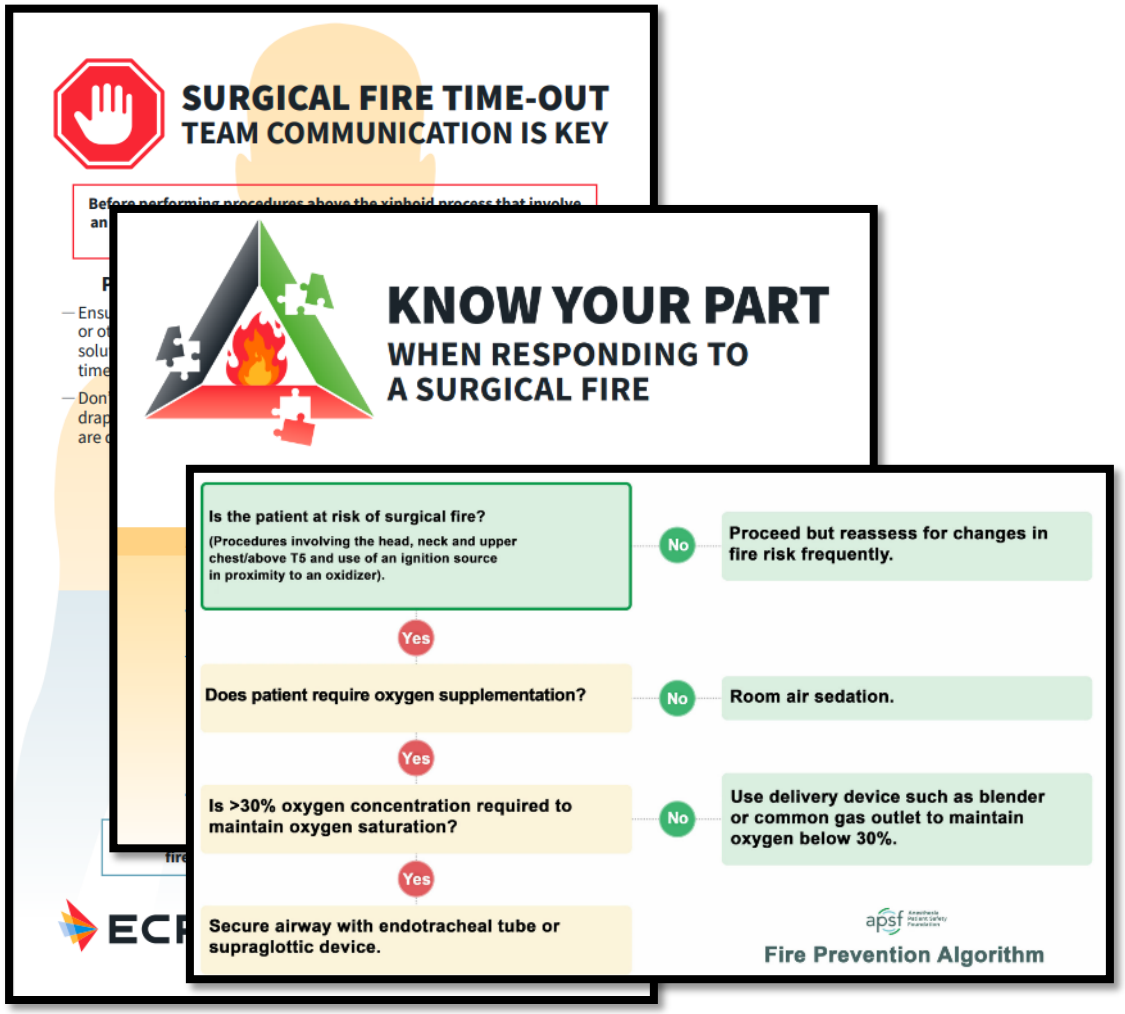
Opportunities to Ensure Surgical Fire Prevention

- Culture
  - Surgical team recognizes value of controlling the airway ***even in short procedures***
  - Anesthesia provider recognizes the risk of delivering 100% oxygen
- Education
  - Teach sedation techniques that do not require enriched oxygen concentrations
- Technology
  - Oxygen/Air blender ***STANDARD*** at every anesthetizing location

Key Takeaways

- Patients
  - Ask your surgical team how you will be anesthetized.
  - What are the fire prevention strategies?
- Engineers
  - Design equipment that will foster compliance with prevention strategies e.g. ready access to oxygen/air blenders.
- Providers
  - Time out to identify high-risk scenarios and agree on prevention strategies, especially oxygen delivery.

Resources



APSF.ORG/FIRE

ECRI

Contact Information

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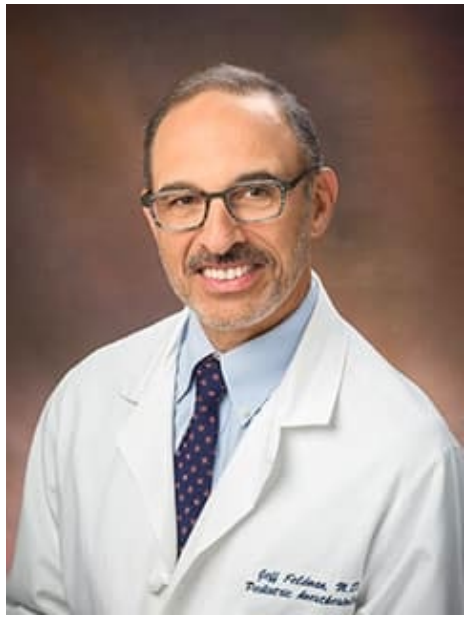

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Professor of Clinical Anesthesiology and Critical Care, Perelman School of Medicine, University of Pennsylvania

APSF Board of Directors

Thank You

Question & Answers

Let Us Know!

NATIONAL ACTION ALLIANCE for Patient and Workforce Safety

Based on what you have learned today, what will you do to "re-design" a safety challenge you have within your system?

***Please submit your response in the chat**

Upcoming Events of Interest

Registration is open and can be found on the AHRQ website.

Thank You!

Announcing the Next NAA Monthly National Webinar

Promoting Safe Care Everywhere by Leveraging a Competency Framework

August 20, 2024

12:00 – 1:00 PM ET

Registration is open and can be found on the NAA website

https://cma.ahrq.gov/actionallianceaugust

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