

Access the recording here: <https://attendee.gotowebinar.com/recording/2013653746990274564>

Access speaker bios here: <https://files.asprtracie.hhs.gov/documents/medical-leadership-in-disaster-preparedness-and-response-vc-bios.pdf>

2026 Medical Leadership in Disaster Preparedness and Response Virtual Conference

May 11, 2026



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Rachel Lehman, Acting Director, ASPR TRACIE

Introduction & Orientation to the Virtual Conference

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Virtual Conference Logistics

- All virtual conference participants are in listen-only mode.
- Time permitting, speakers will answer questions posed using the “Questions” feature. We will not be using the “Raise My Hand” feature.
- ASPR TRACIE and ACEP staff will post links to resources and address technical issues.
- Speaker biographies, the agenda, slides, and CME information are available in the “Materials” section.

Continuing Medical Education Credits

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American College of Emergency Physicians and ASPR Technical Resources, Assistance Center & Information Exchange (TRACIE). The American College of Emergency Physicians is accredited by the ACCME to provide continuing medical education for physicians.

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Disclosure to Learners Individuals in Control of Content / Commercial Support

Activity Title: 2026 Medical Leadership in Disaster Preparedness and Response Virtual Conference

Activity Date: 5/11/2026

Individuals in control of content:

George Solomon – Planner
Amber Hartman - Planner
Angela Cornelius – Faculty
Anuj Mehta – Faculty
Bryan Wexler – Faculty
Christian Dameff - Faculty
John Hick – Faculty
Paul Biddinger – Faculty
Rachel Lehman - Faculty
Sameet Kadri – Faculty
Shannon Manzi – Faculty
Adam Landman - Faculty

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In accordance with the ACCME Standards for Integrity and Independence in Accredited Continuing Education, **all** relevant financial relationships, **and** the absence of relevant financial relationships, must be disclosed to learners for all individuals in control of content:

Before learners engage with the accredited education
In a format that can be verified at the time of accreditation

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No commercial support received.

Accreditation Information

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Individual	Company Name	Type of Relationship
Shannon Manzi	UpToDate	Consulting Fee
	C-Polar	Research Funding
Adam Landman	Abbott	Consulting Fee
Anuj Mehta	Verathon	Consulting Fee

Brian Mazanec, PhD, Deputy Assistant Secretary and
Director, Center for Preparedness, Administration for
Strategic Preparedness and Response

Introductory Remarks

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Ryan Stanton, MD, FACEP, President-Elect, American
College of Emergency Physicians

Introductory Remarks

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Responding to the CrowdStrike Failure Event: Assuring Readiness for the Inevitable Failure of Complex Systems

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Paul Biddinger, MD, FACEP, Chief Preparedness Officer & Continuity Officer, Mass General Brigham (MGB) and Chief, Division of Emergency Preparedness, Department of Emergency Medicine, MGB

Adam Landman, MD, FACEP, Chief Digital Information Officer and Senior Vice President (SVP), Brown University Health and Member of the Faculty, Department of Emergency Medicine, Warren Alpert Medical School, Brown University



Mass General Brigham

Responding to the CrowdStrike Failure Event: Assuring Readiness for the Inevitable Failure of Complex Systems

Paul Biddinger, MD
Adam Landman, MD

May 11, 2026

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Objectives

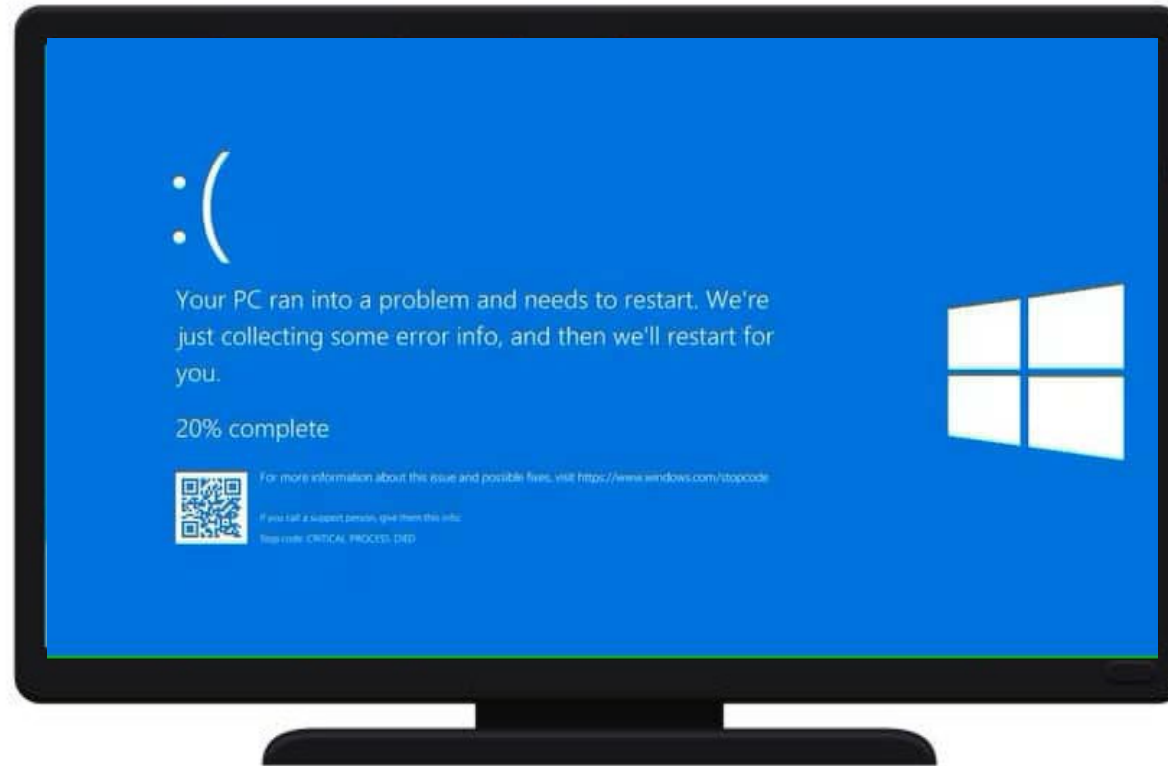
- Utilize the CrowdStrike failure event to understand how trends in healthcare IT systems are increasing vulnerabilities
- Frame digital downtime events through the lenses of patient safety and operational continuity
- Identify critical opportunities for healthcare systems to collaborate among emergency preparedness, IT, information security, clinical, and operational leaders to mitigate vulnerabilities and optimize response to downtime events



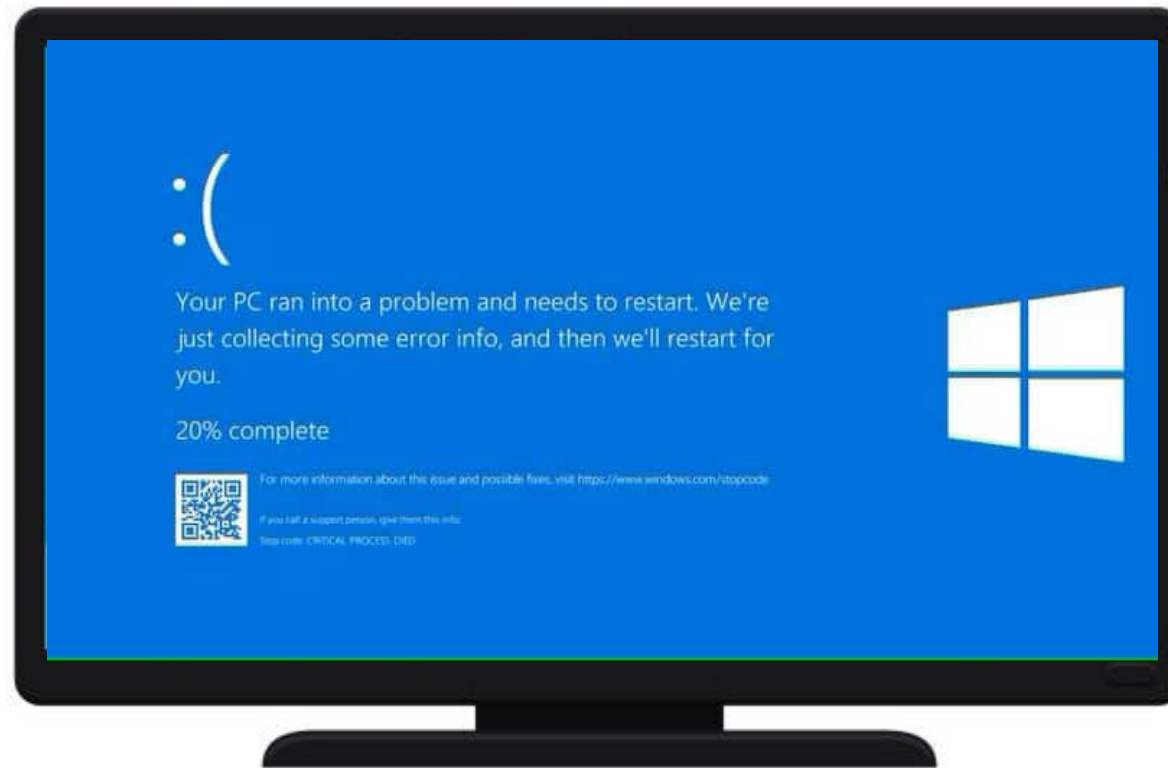
The CrowdStrike Incident



Friday, July 19th at 1:30am

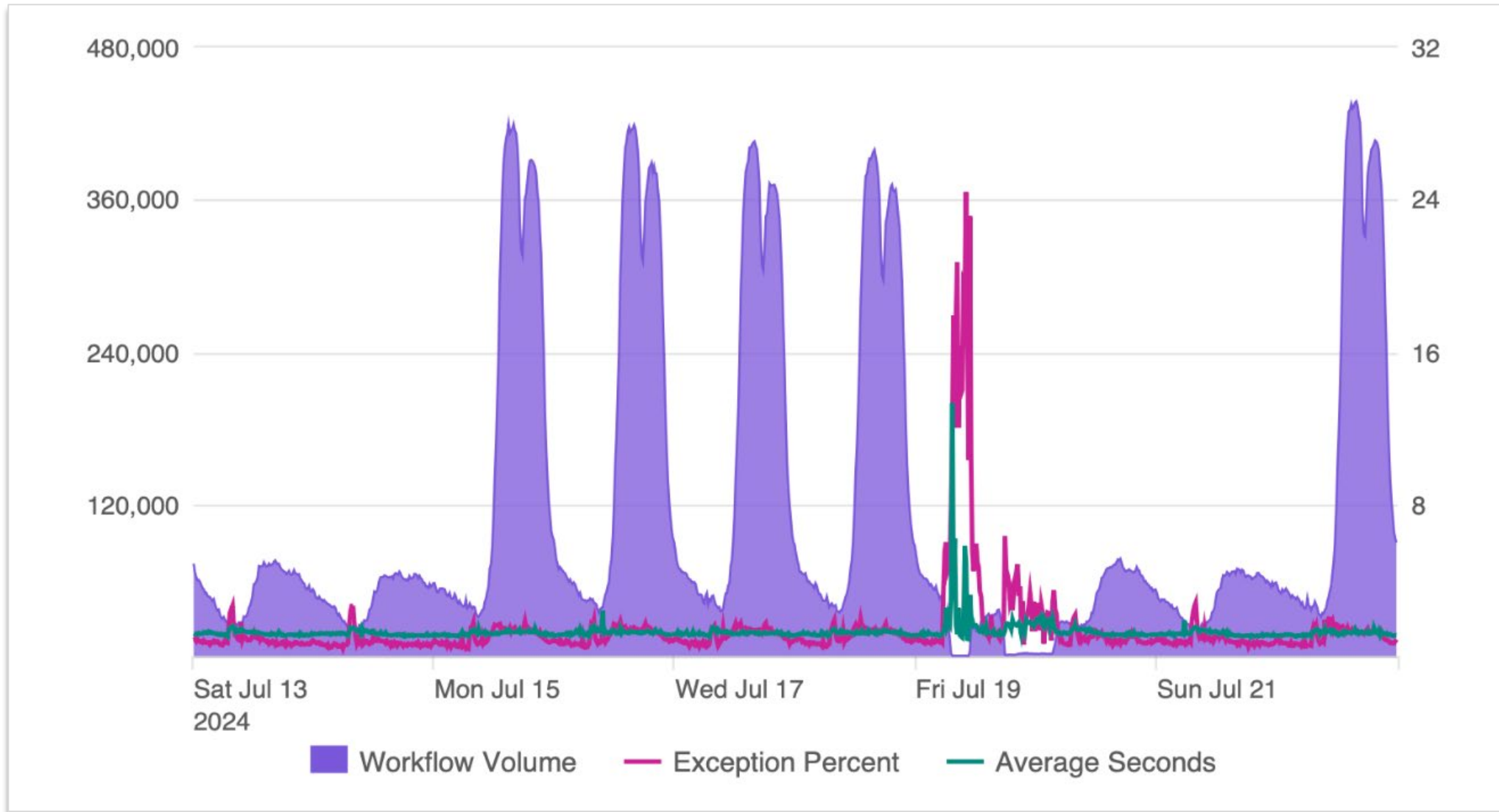


CrowdStrike Update Causes Windows System Crash

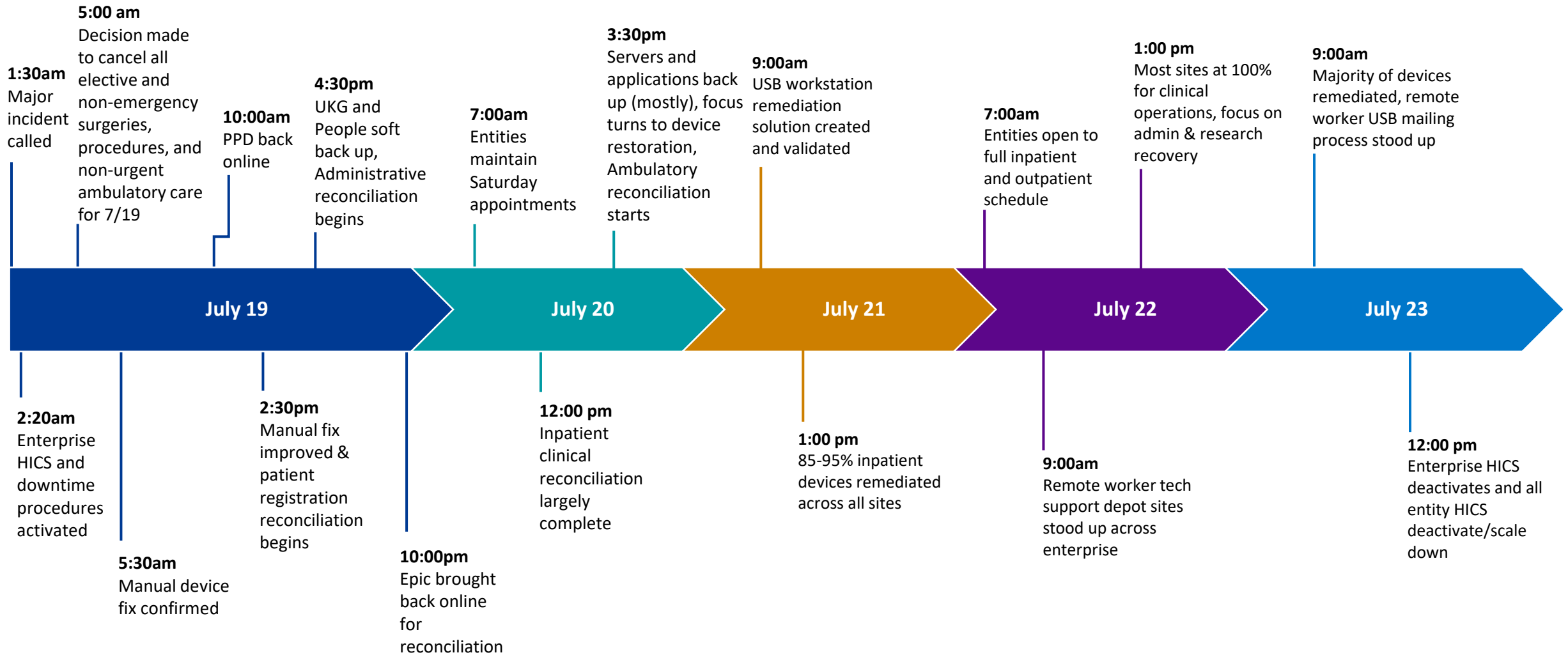


The CrowdStrike Incident Dramatically Affected All MGB Systems

Example: Epic Workflow Volume Reduced Dramatically and then Restored in 24 hours



Overview of MGB Incident Timeline



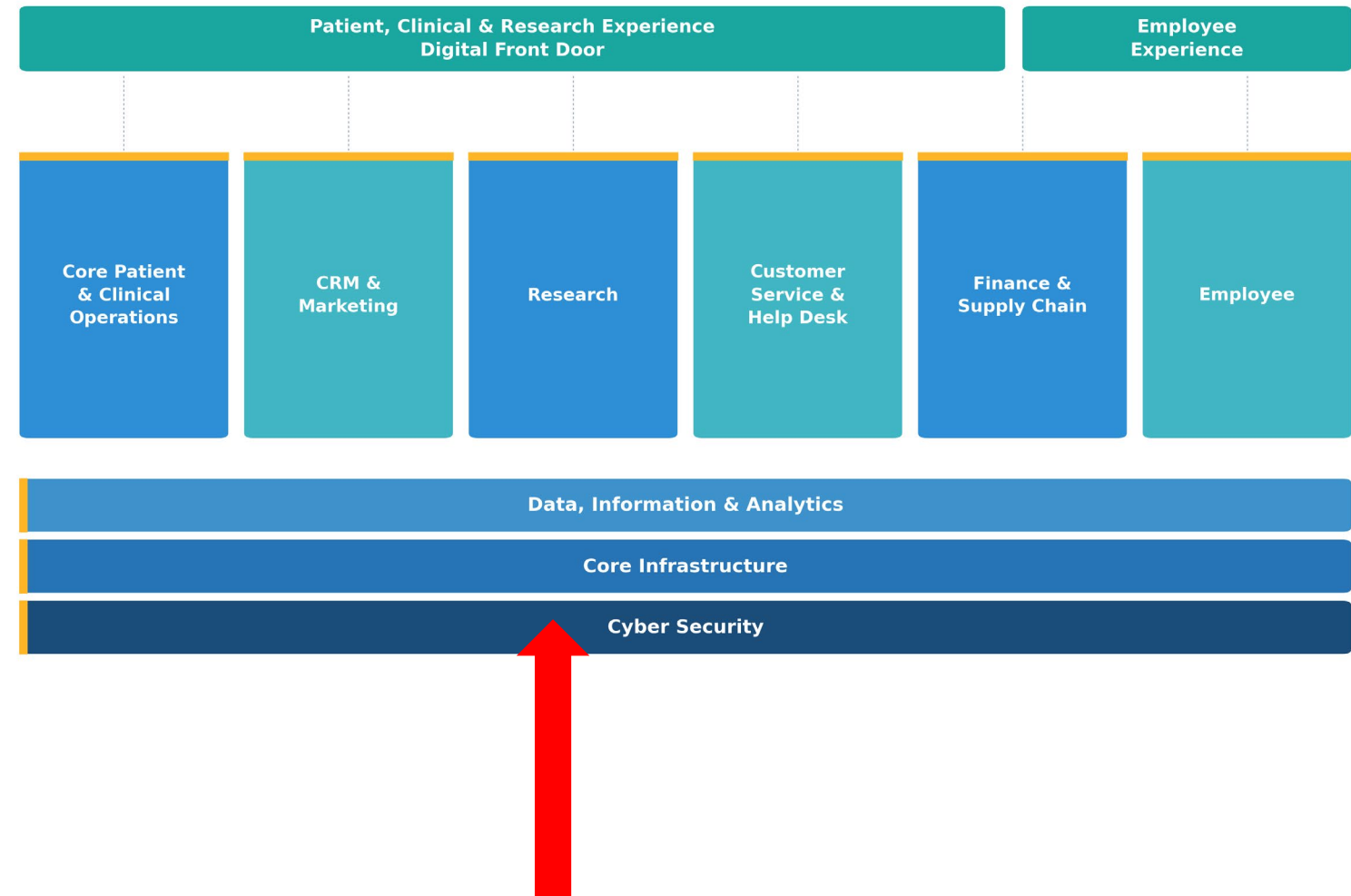
Digital Response and Key Trends in the Landscape



Why was this Incident so Significant?

- Impacted Core Infrastructure
- Unable to access application layers if servers and workstations not working
- Required manual remediation (including manually looking up BitLocker encryption key)

Example Technology Platform Architecture



Factors Driving Increasing Complexity and Potential Fragility of Information Systems



Standardizing applications on platform-based solutions



Increased data sharing and integration among applications and across healthcare institutions



Shifting to cloud-based software-as-a-service models

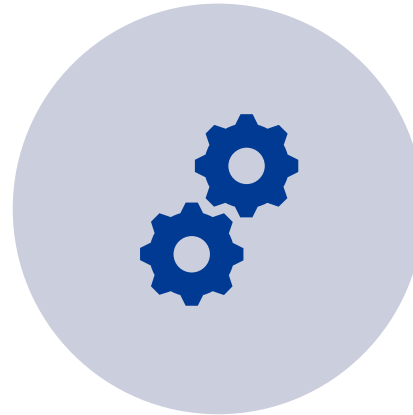


Ensure Critical Systems have Business Continuity and Disaster Recovery Plans



Critical App Inventory

Inventory and prioritize all IT applications (IT and non-IT managed)



Business Continuity

Ensure business operations carry on despite interruptions of any kind, unforeseen or planned



Disaster Recovery

Restore IT functionality (systems, data, access) as quickly (and safely) as possible after a disaster

Strengthen Change Management Processes

Organizations should use an IT Service Management methodology to help minimize risk of errors and disruptions in IT services

- Analysis of the change
- Assessment of the potential impacts
- Communication



Healthcare Organizations Need Comprehensive Cybersecurity Preparedness and Response Plan

Department of Health and Human Services (HHS) Cybersecurity Performance Goals (CPGs)

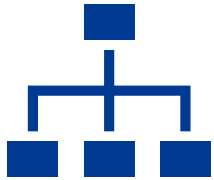
- Help prioritize implementation of high-impact cybersecurity practices
- Address common attack vectors
- Voluntary



Coordinating Complexity in Response Actions



Response opportunities identified coming out of CrowdStrike



HICS structures and systems should adjust as enterprise evolves

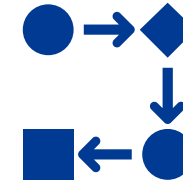
System wide vs. site based

Broad understanding of HICS role & responsibility / chain of command



Alerting and notification systems and protocols should be bolstered

Ensure redundancy and resiliency of communication channels



Downtime and reconciliation procedures need regular review

Identify critical applications and continuity plans

Reconciliation tools and systems require regular review and adjustment

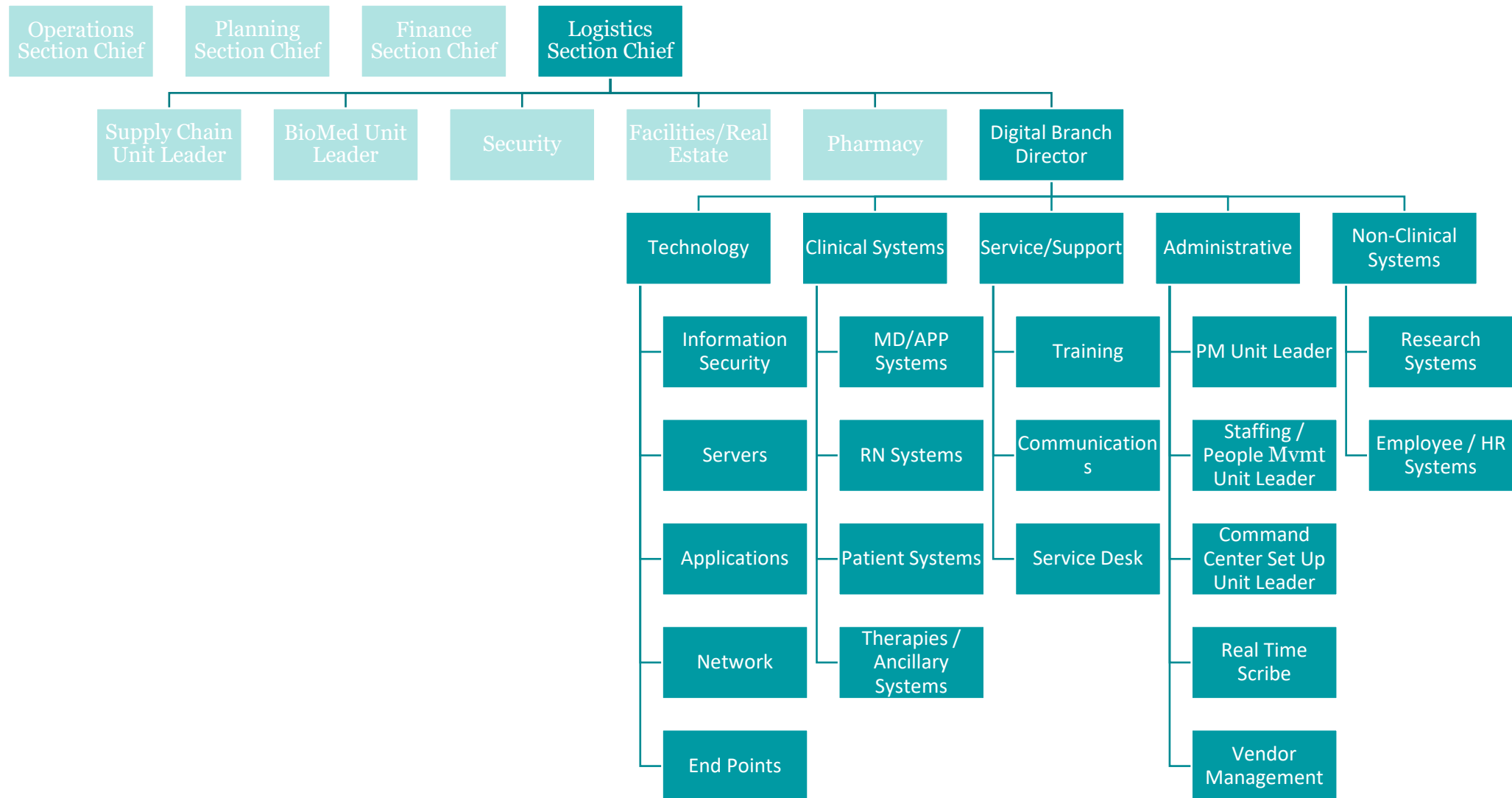
Staff training / education programs should emphasize safety



Train staff on manual workflows during EHR downtimes



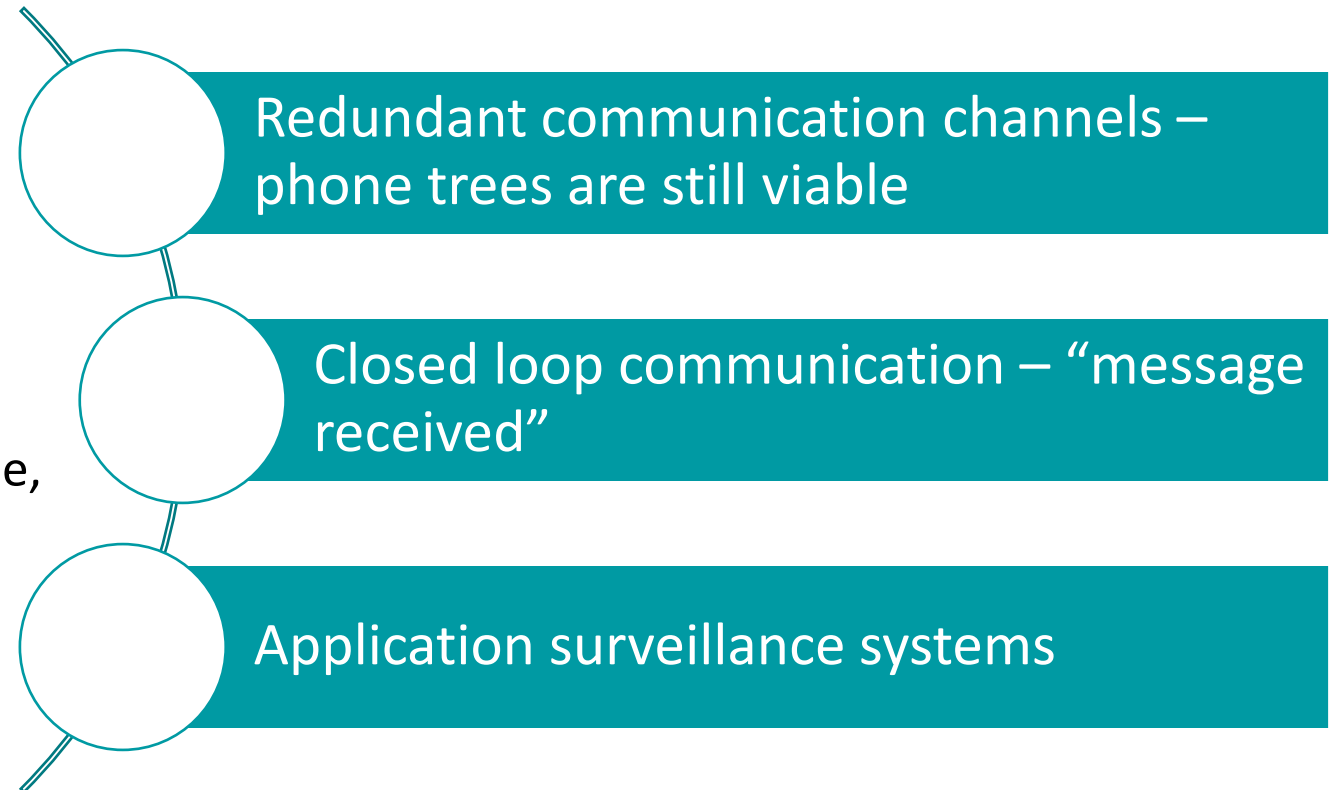
Consider Digital Branch expansion within HICS to coordinate digital response to complex incidents



Bolster alerting and notification systems to ensure resiliency

Consider event possibilities:

- Off-hours event
- Layers of communication
- Paging system not consistently available, and not easily known



Develop an EHR Reconciliation Playbook



Centralize and improve enterprise-wide reconciliation standards in a playbook that includes processes and timelines that reflect our current operations



Clinical, Operational, and Digital Collaboration to design reconciliation guidelines and process

Admissions and patient movement: admission/discharge/transfer
Clinical documentation including minimum clinical datasets
Billing for patient care services and professional charges



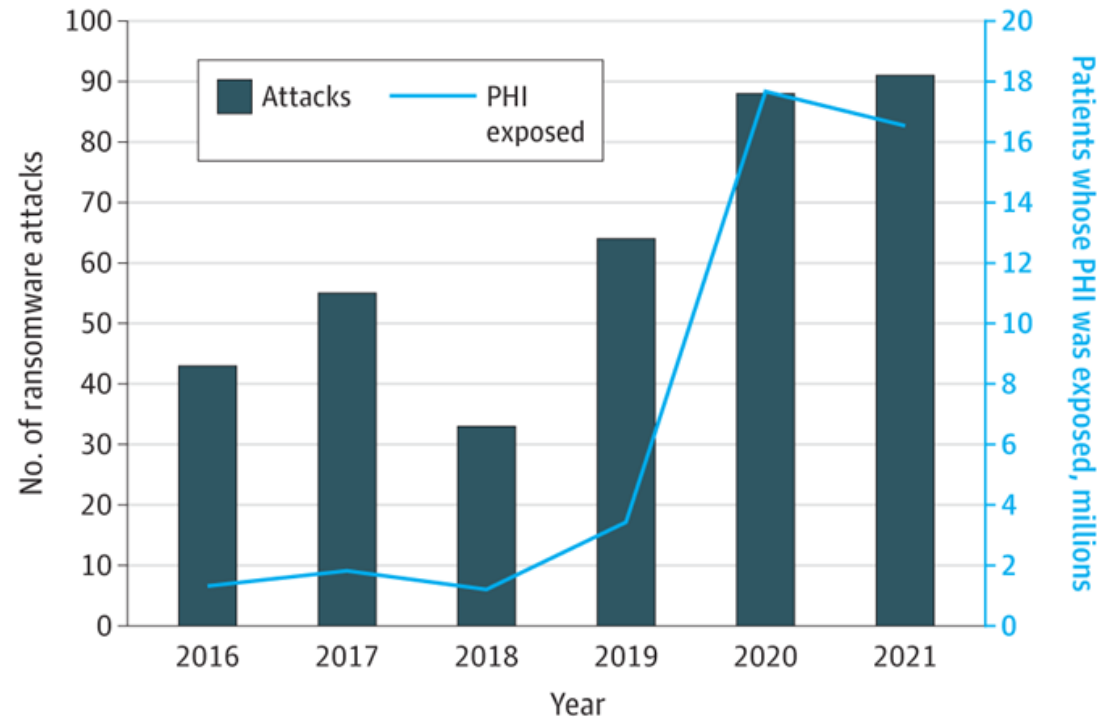
Deliverable Goal: Reconciliation playbook and accompanying guiding standards to be used in future downtime events, that is regularly reviewed to ensure alignment with organization operations



Managing Digital Disruptions as Patient Safety Emergencies



Unplanned Downtime Events are a Growing Risk to Healthcare



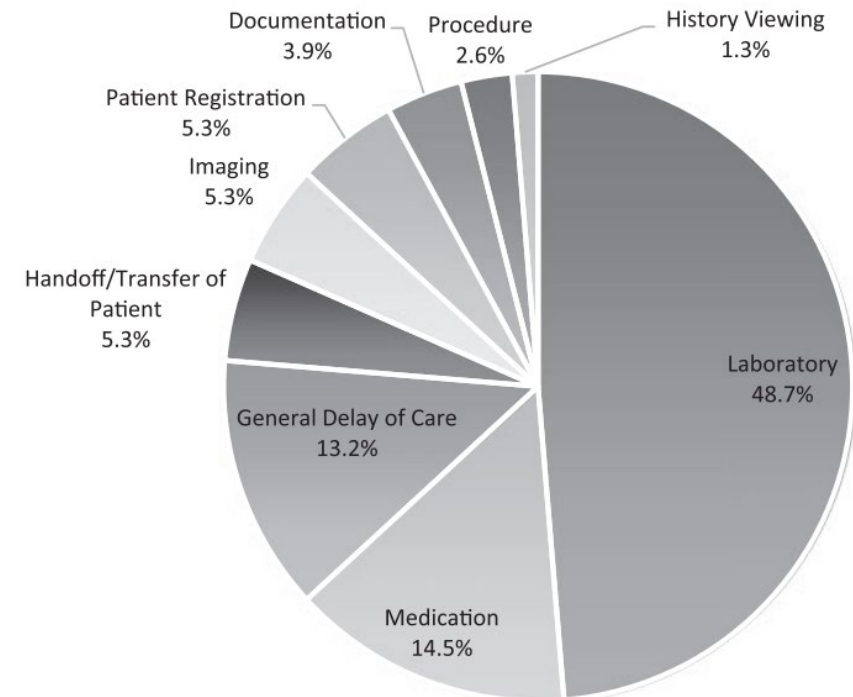
Number of Ransomware Attacks on US Hospitals, Clinics, and Other Health Care Service Delivery Organizations, 2016-2021²

- The frequency of downtime incidents in healthcare, including cyberattacks, is growing.
 - Nearly **1 in 4** cyberattacks target the healthcare industry¹
 - Over the past 5 years, the number of ransomware attacks experienced by healthcare has **more than doubled**²
- Cyberattacks have exposed personal health information of **over 40 million patients**.²
- It can take an average of **4 weeks** for hospital digital systems to come online after an attack.³



Unplanned Downtimes are Disruptive to Patient Care and Safety

- Both intentional attacks and unintentional downtime can disrupt patient care.
- EHR downtime is associated **with patient safety issues** including:
 - laboratory delays
 - medication dose & administration errors
 - throughput and capacity challenges ⁴
- Patients that are admitted to a hospital during a ransomware attack have a **20-35% increased risk of in-hospital mortality.**⁵



Electronic Health Record Downtime Safety Incident Category Breakdown ⁴

Top 5 Patient Safety Concerns During Downtime Events

- The following topics emerged as the most frequently cited patient safety concerns during a prolonged, unplanned downtime event.

1

Communication challenges both within and across hospital departments.

2

Management of procedural patients, especially emergent procedures.

3

Errors and delays with **medication administration**, including manual dosage calculations.

4

Bottlenecks and **patient throughput challenges**, such as delays with discharge.

5

Management of clinical emergencies like codes and rapid responses.



Emergency Management of Digital Downtime Events

Some, but *not all*, digital events are disruptors of patient safety and care

Include emergency management in Digital Major Incident process

Use Downtime Assessment Response Teams or Incident Management Teams to rapidly assess known and potential impact



Events that disrupt patient care and safety should be *managed using HICS*

Aligns hospital operational, clinical, Digital, and communications teams

Leverages Planning section to anticipate problems before they worsen

Mobilizes additional teams specifically focused on safety and equity



Despite best efforts, Digital events will continue to occur. Healthcare leaders must *embrace resiliency* and focus on prevention, mitigation, response, and recovery



Questions and Discussion



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Mass General Brigham

Question & Answer



Break





Patient Care during Disasters: What to do When Standards Don't Exist

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TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS
IN OPERATION ARTWORK

American College of
Emergency Physicians®
ADVANCING EMERGENCY CARE 

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Patient Care during Disasters: What to do When Standards Don't Exist

The Role for Regional Coordination

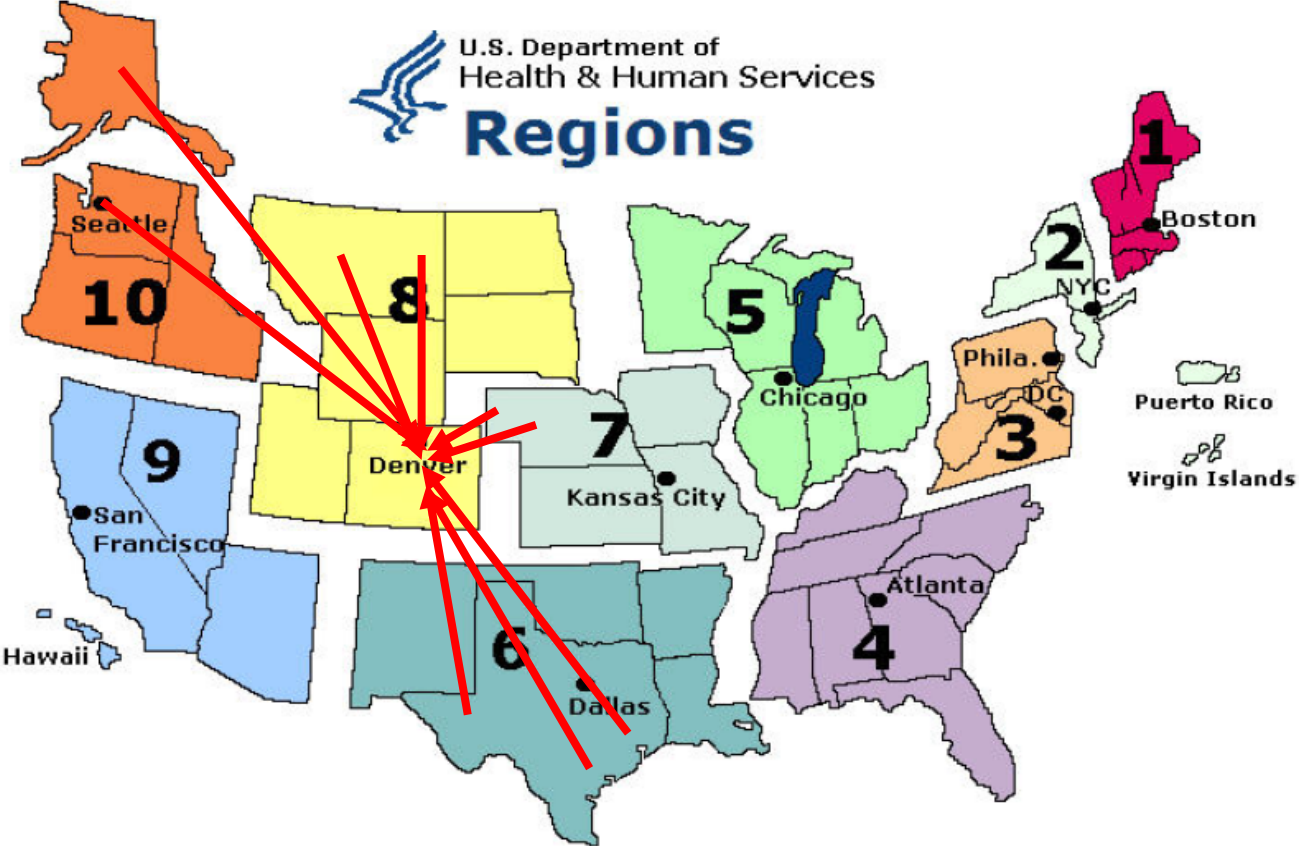
Anuj Mehta MD MS

Associate Professor of Medicine

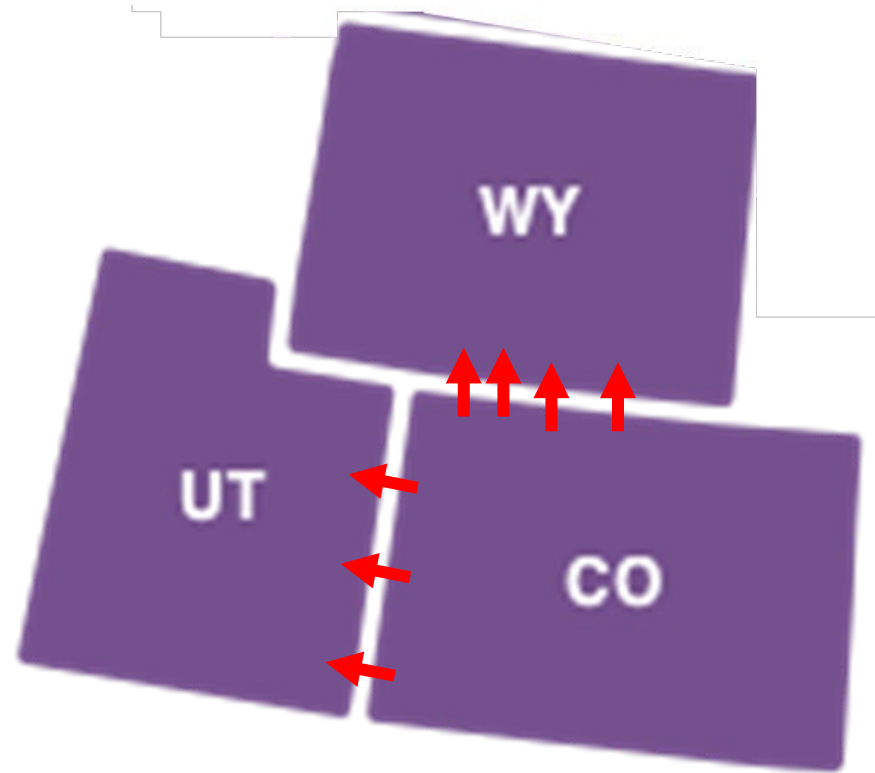
Disclosures

- I have received funding from the NIH for research on tracheostomy outcomes
- I am currently funded through the MPRDHRS which is an ASPR sponsored program

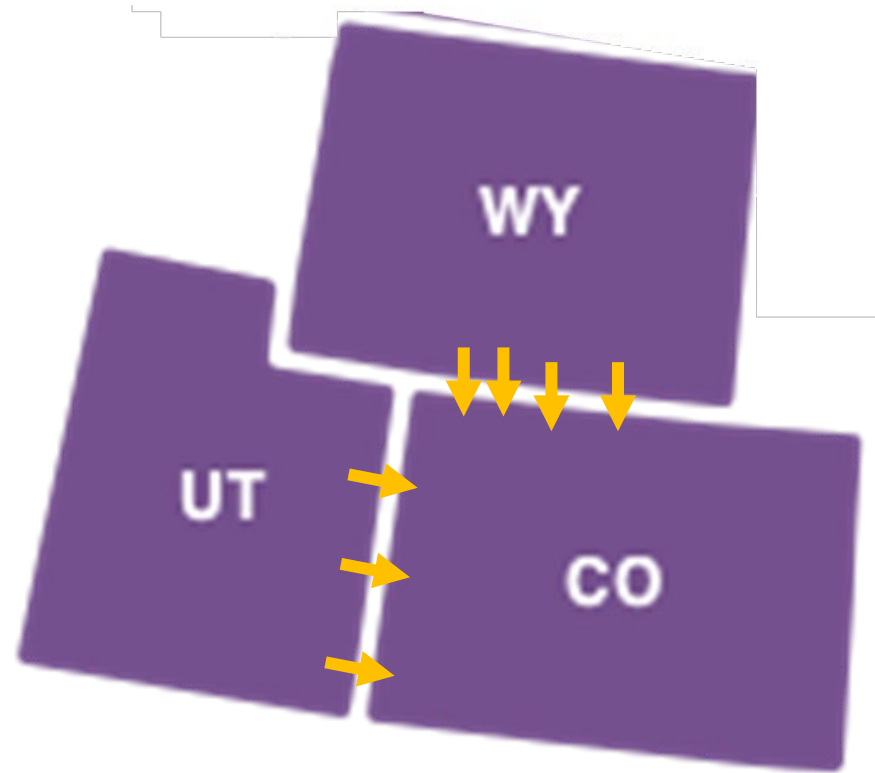
Strategies enacted in 1 area impact other areas



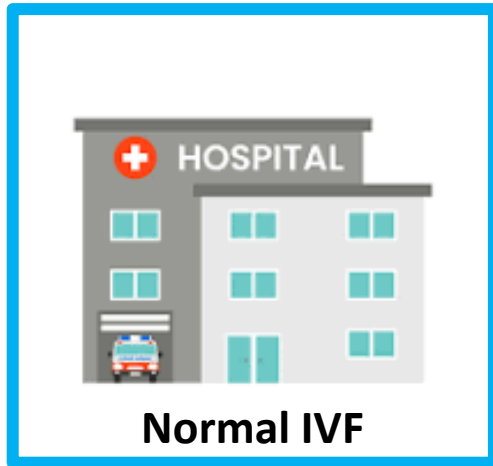
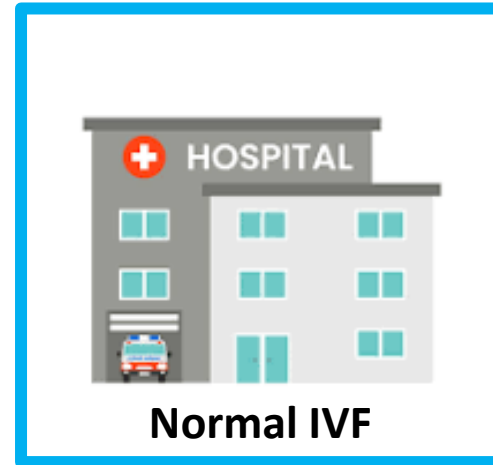
Clinical Strategies Do Not End At State Lines



Clinical Strategies Do Not End At State Lines



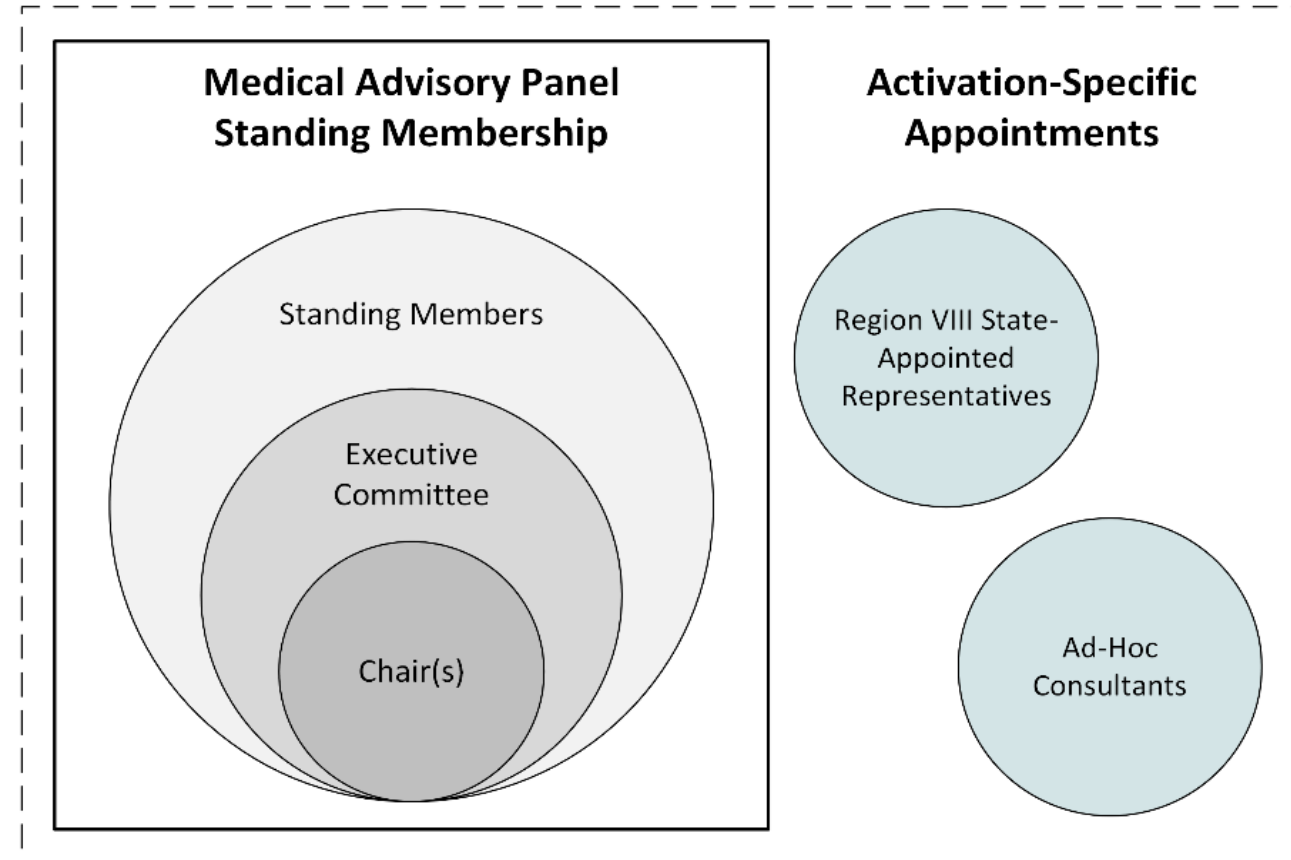
Recent Shortages Have Created Barriers Between Hospitals



Mountain Plains Regional Disaster Health Response System (MPRDHRS)

Medical Advisory Panel

- Group of regional SMEs
- Can be called upon for clinical assistance
- Recommendations at the regional level



Supply Chain – Drugs, Disasters and Dollars

Focus on Pediatrics

Shannon Manzi, PharmD, BCPPS, CPHRM, FPPA

Assistant Professor, Pediatrics, HMS

Director, Safety & Quality, Boston Children's Hospital

Pharmacist, MA-1 DMAT, NDMS, ASPR, HHS

Disclaimer

- This presentation is my own opinion and does not necessarily reflect the opinion of BCH, Harvard, MA-1 DMAT or the US government

Disclosure

- Dr. Manzi has no actual or potential conflicts of interest associated with this presentation.
- No specific products or services are endorsed, any mentioned are as examples only

Evolution of the Current Pharmaceutical Market

US Market

- Historically focused on product quality (thalidomide, gray baby syndrome) and efficacy
- More recent focus on efficiency and excessive cost
 - Just in time inventories
- Manufacturing line conversion is time consuming and can be costly
- New calls for transparency and resiliency

Globalization

- Pros: Decreased cost, scalability, multiple global locations decreases risk of localized disasters (war, earthquakes, etc)
- Cons: Increased risk of political power plays, quality issues with less direct oversight, failure if multiple stages

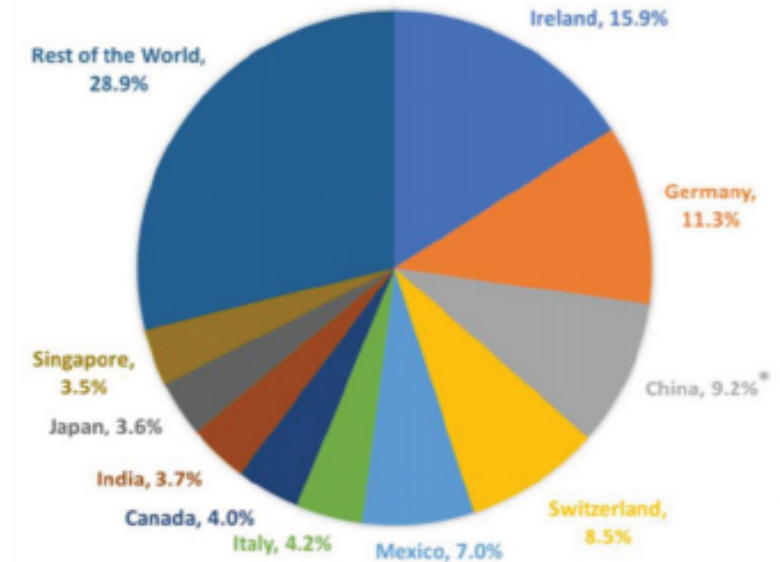


FIGURE 3-1 U.S. imports of pharmaceuticals and medical equipment, products, and supplies in 2019.

† China's 9.2% share of U.S. imports likely understates the extent to which the United States relies on China for pharmaceuticals and medical equipment, products, and supplies because of how these imports are classified.

SOURCE: CRS, 2020a.

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Single Source APIs or critical components

- **Hurricane Maria 2017, Baxter**
 - Plastic bags, Normal Saline production in Puerto Rico
 - Forced BCH to transition to all 1L bags, ended up being a safety win!
- **Tornado in NC 2021, Pfizer & Hurricane Helene in 2024, Baxter**
 - Antibiotics, steroids
 - IV fluid shortage, changed hospital practices around flushing and pre-spiking infusion bags
- Generic drugs comprise 90% of the market and 20 % of the drug expense in the US (AAM, 2021)
 - Low margins of profit result in cheaper manufacturing and products
- Many components needed for production are not available in the US in any capacity

Example: China

- Nearly 100% of the API needed for pen G, acetaminophen and levodopa
- 2/3rds of many other APIs – heparin, chemotherapy, AEDs
- Ranitidine/ARB contamination with NDMA



Global News 092817



NYT 072023



Restricted Regulation

- Prior to 2012, FDA could not compel manufacturers to disclose disruptions, still cannot force disclosure of early signs that a disruption may be imminent

“Of note, however, is that from 2014 to 2021, FDA has sent noncompliance letters to six different manufacturers who have failed to adequately notify of a discontinuance or interruption (FDA, 2021a), although manufacturers are not subject to fines or other disciplinary actions in cases of noncompliance.”

- Manufacturers are not required to proactively submit their resilience plan to the FDA, it must be available on inspection
- Delays in Drug Shortage Notification
 - Wholesaler signals, GPO notifications, professional society listserves and databases
- Actions
 - FDA can allow for importation of foreign drugs (CaNaEDTA, physostigmine, lipids, penicillin G benzathine)
 - Extended expiration dating (COVID MABs, 0.9% NaCl)
 - Allowing 503B companies to produce commercial medications (fentanyl, methadone) although DEA quotas can be restrictive and labeling is not always compliant with safety best practices



[Frequently Asked Questions about Drug Shortages - FDA](#)

Stockpiling and Legislation

- **Stockpiling can be positive and negative**
 - Space! Money! Maintenance!
 - Waste if inventory not cycled (specialized medications, nonformulary dose forms)
 - Can cause more harm by hoarding, patient populations left untreated
 - National, regional, local and individual
- **Drug Supply Chain Security Act (DSCSA) 2013**
 - Electronic block chain tracking end-to-end, “certain” prescription drugs
 - Hospitals had to comply by 11/2023, manufacturers were granted another year extension
 - Also requires lot and exp date to be embedded in a 3D bar code
 - Intended to ensure quality, detecting counterfeit and stolen supplies
- **2020 Coronavirus Aid, Relief, and Economic Security (CARES) Act**
 - Passed by Congress to address supply chain critical shortages
 - Established a committee to assess security and resilience of US supply chain
 - FDA Essential Medications List
- **Executive Order 2025 - Ensuring American Pharmaceutical Supply Chain Resilience By Filling The Strategic Active Pharmaceutical Ingredients Reserve**
 - Stockpile of APIs
 - ASPR to develop a list of APIs for critical medications



Patient Harms and Benefits

• HARMS

- Unable to treat (e.g chemotherapy, IV fluids for surgery) or non-preferred treatments
- Gray market, contaminated or ineffective medications
- Increased errors in EHRs, drug administration

• BENEFITS

- Unprecedented volumes of data re: COVID vaccines
 - Vsafe/VAERS
 - Worldwide populations
 - Open data sharing
 - MRNA science fast tracked
 - FDA/CDC/ACIP new workflows
- Crisis standards of care and tiered availability were publicized
- Some interventions actually drive safer care in steady state and are permanently adopted



CNN health

Life, But Better Fitness Food Sleep Mindfulness Relationships

US cancer centers still see ‘widespread’ shortages of life-saving chemo drugs, survey finds



By [Jacqueline Howard](#), CNN

🕒 4 minute read · Published 9:00 AM EDT, Thu October 5, 2023

> [MMWR Morb Mortal Wkly Rep. 2022 Nov 4;71\(44\):1401-1406. doi: 10.15585/mmwr.mm7144a3.](#)

Safety Monitoring of Bivalent COVID-19 mRNA Vaccine Booster Doses Among Persons Aged ≥12 Years – United States, August 31–October 23, 2022

[Anne M Hause](#), [Paige Marquez](#), [Bicheng Zhang](#), [Tanya R Myers](#), [Julianne Gee](#), [John R Su](#), [Phillip G Blanc](#), [Alisha Thomas](#), [Deborah Thompson](#), [Tom T Shimabukuro](#), [David K Shay](#)

PMID: 36327162 PMCID: [PMC9639436](#) DOI: [10.15585/mmwr.mm7144a3](#)



BCH Response

- Biweekly meetings coordinated by Emergency Management with HICS activation during COVID
 - Burn rates and forecasting
 - Alternative therapies and crisis standards
 - Aliquoting
- Continues as a weekly pharmacy standing meeting
 - Checklist items (not all inclusive)
 - Error potential
 - LASA
 - Storage/stability requirements
 - Formulary/EHR build
 - Pump libraries
 - IV workflow programs
 - Robots
 - Inventory systems
 - BCMA
 - Preservatives, additives
 - Joint guideline with the P&T and Ethics Committees to outline response to critical and crisis shortage situations

As of 6/4/2020 at 09:00

Drug	In Pyxis (vials,tablets)	In pharmacy storage (Boston)	In pharmacy storage (Waltham storage)	Goal par (mg or mcg) - normal census for 1 month	Goal par (vials) - normal census for 1 month	Total on hand at this point	Total amount (mcg/mg) on hand at this point	Burn Rate from past 7 days (mg/mcg)	Days on hand for normal census (defined as similar to Jan 2020)
Ketamine 1000mg/10mL vial	0	50				50	50000		
ketamine 100 mg/1 mL syringe *BCH*	52	0				52	5200		
Lorazepam				2443			3790	-1078	47
lorazepam 2 mg/mL (1 mL) vial	539	926				1465	2930		
lorazepam 2 mg/mL (10 mL) vial	0	86				86	860		
Methadone				1380			2816	-120	61
methadone 1 mg/mL (1 mL) syringe	16	200				216	216		
methadone 10 mg/mL (1 mL) SPECIAL syringe	10	90				100	1000		
methadone 10 mg/mL (20 mL) vial	0	8				8	1600		
Midazolam				61190			146877	41044	72
midazolam in D5W (Versed Generic) 1 mg/1 mL (50 mL) Syringe	32	102				134	6700		
midazolam in D5W (Versed Generic) 2 mg/1 mL (50 mL) Syringe	18	0				18	1800		
midazolam Inj (PF) (Versed Generic) 1 mg/1 mL (2 mL) vial	1714	1752				3466	6932		
midazolam Inj (PF) (Versed Generic) 1 mg/1 mL (5 mL) vial	135	701				836	4180		
midazolam Inj (PF) (Versed Generic) 5 mg/1 mL (1 mL) vial	338	1619				1957	9785		
midazolam Inj (PF) (Versed Generic) 5 mg/1 mL (2 mL) vial	162	4096				4258	42580		
midazolam Inj (Pharmacy Only) (Versed Generic) 5 mg/1 mL (10 mL) vial	80	1418				1498	74900		

Altered patient populations

Adult planning

Modeling:													
1. Full ICU capacity = 82 beds (excluding the NICU)													
2. OR cases reduced by 75% (avg 25 cases/day)													
3. Average dose for 75 kg patient													
4. Average duration on ventilator = 14 days													
5. Assumes conservation strategies are solid													
Dosing:	Dose form	"Normal" amt per day	Dose units	Wt based	Adult Dose/day	Dose units	Par calculations (Full ICU/10 adults)	Dose unit	Par calculations (Full ICU/22 adults)	Dose unit	Par calculations (Full ICU/82 adults)	Unit	
Dopamine	injection	2358 mg	mg	15 mcg/kg/min	1620 mg	mg	6408 mg	mg	11268 mg	mg	35568 mg	mg	25% on dopamine, 50% each on norepi/epi
Epinephrine	injection	21 mg	mg	0.5 mcg/kg/min	1.44 mg	mg	28 mg	mg	36 mg	mg	80 mg	mg	
Norepinephrine	injection	21 mg	mg	0.5 mcg/kg/min	1.44 mg	mg	28 mg	mg	37 mg	mg	80 mg	mg	



Backorder Tracker

Medication	Controlled Substance?	Priority	Action / To-Do Notes	Supply / Usage	Release Date	When it comes back	Notes for Pharmacy Staff	Supply Status
Dextrose 50%	No	Ongoing Action Required	Will need to reconfigure code trays to fit syringes both bags and vials on backorder? Conserve vials for Pyxis space constraint locations.	12/13 vials: out - switched out for syringes? bags - 228 syringes - > 134 save for pyxis refills &	NERD		Have bags for Pharmacy production and syringes for pyxis. Out of vials as of 11/1/23	Critical
Diazepam Rectal 2.5 mg	Yes	Concerning or New	Will be storing only in 3 areas and pop-up to use intranasal midazolam everywhere else	VERY Little if any remaining Expiring in Jan 2024 - will need to remove entry and not let prescribers order that strength?	NERD		2.5 mg rectal NOT available - use alternative (midazolam IN, lorazepam IV...etc.).	Critical
Factors - ALL	No	Status Stable - On Backorder	Prodigy health will now provide benefix 250 unit on consignment				Need to go through Biocare (exception: Thrombate & Novoseven) Other expectations: true life saving emergencies - discuss w/ charge	Other
Fenoldopam INJ	No	Ongoing Action Required		Current usage at 20 vials per week as of 10/11 166 in BP as of 11/1			Able to get short-dated supply direct if needed, but expires 1/1/24. Then to be discontinued.	Concerning



Building Resilience into the Nation's Medical Product Supply Chains (2022)

Steps to avoid disruption

- Higher quality decreases the risk of recalls and failures in the chain
 - Preparedness actions, publication of tools
 - Ensure public understanding of crisis standards of care, implement universal standards
 - Awareness through an open database of sourcing, quality, volume and capacity
 - Investment in resiliency, use of AI to predict failure points or impending disruptions
 - Consult references from the [Pediatric Pandemic Network \(PPN\)](#), [Disaster Response Toolkit](#) Medicaid, AAP [Professional Resources for Disaster Preparedness](#)
-
- “You cannot grant your way to preparedness!” Jean Bennett, former BCH Emergency Management Director

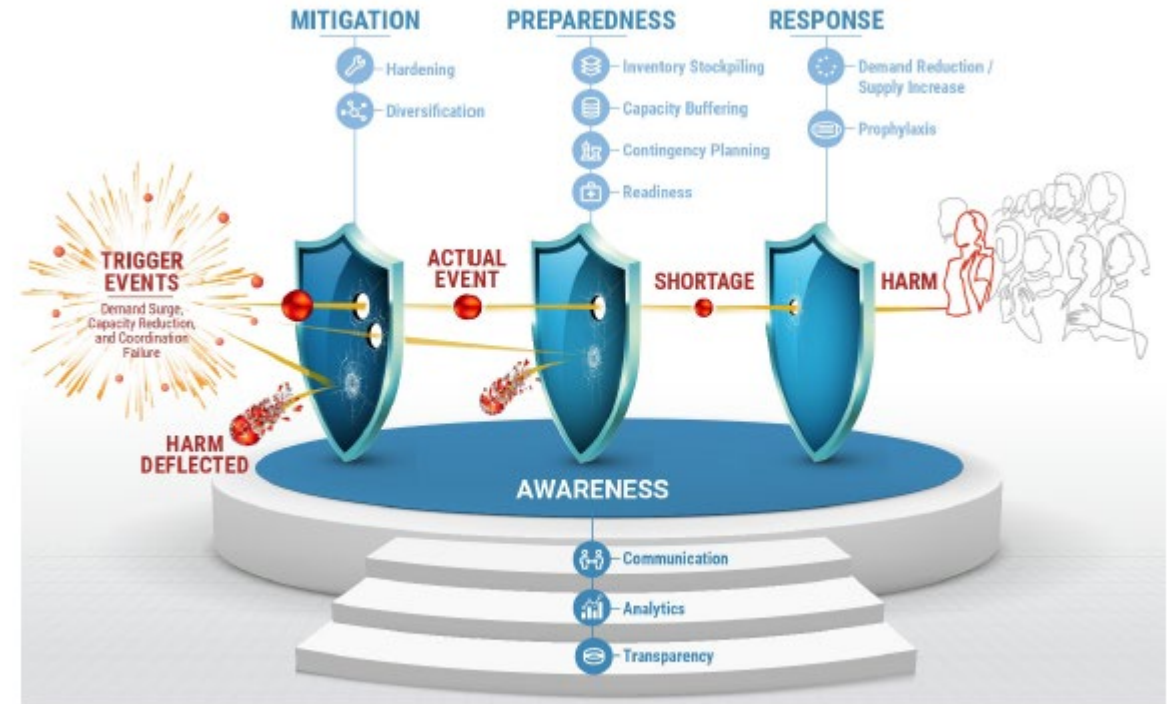


FIGURE 5-4 Medical product supply chains resilience framework: potential trigger events and resilience measures.

National Academies of Sciences, Engineering, and Medicine 2022. Building Resilience into the Nation's Medical Product Supply Chains. Washington, DC: The National Academies Press. <https://doi.org/10.17226/26420>.

John Hick, MD, Hennepin Healthcare and Senior Editor,
ASPR TRACIE

Unclassified//For Public Use



Clinical Resources for Emergency Shortages of Treatments and Supplies (CRESTS)

- Medical product shortages increasingly require health care facilities and providers to conserve and allocate scarce treatments and supplies.
- Clinical best practice guidelines for safely and fairly addressing shortage situations may be delayed or difficult to access.
- CRESTS is intended to bridge the gap until formal clinical guidelines are developed by medical specialty societies and other experts.



CRESTS Activation

- ASPR TRACIE developed a process flow to guide when and how to engage partners.
- CRESTS is only activated when a shortage:
 - Is of national significance
 - Will last long enough to require use restrictions
 - Has no reasonable substitutes/alternatives
 - Poses a significant threat of poor patient outcomes



Resources Available

- CRESTS Resource Page
 - Shortage framework
 - Identified resources relevant to the specific shortage
 - If needed, ASPR TRACIE-developed tip sheets
- CRESTS Topic Collection
 - Complementary collection of resources from previous shortage situations and general supply chain disruptions

The screenshot shows the ASPR TRACIE website interface. At the top, there is a navigation bar with links for HOME, TECHNICAL RESOURCES, ASSISTANCE CENTER, INFORMATION EXCHANGE, and a search icon. Below the navigation bar is the main heading: "Clinical Resources for Emergency Shortages of Treatments and Supplies (CRESTS)". A search bar is prominently displayed with the text "Search the Resource Library:". Below the search bar, there is a paragraph of introductory text about the CRESTS framework and its purpose. A list of links for "For detailed information about CRESTS:" includes "About CRESTS", "CRESTS Partner Organizations", and "Implementing Allocation Strategies". A disclaimer states that ASPR TRACIE/CRESTS is an effort to offer best practice allocation strategies and is not responsible for the accuracy of the information posted. A dark blue banner with white text reads "CRESTS does not have specific considerations for a current shortage." Below this banner, there are two sections: "Current Shortage Tracking Resources" and "General Shortage Strategies".

A blue-tinted photograph of a woman moderating a roundtable discussion with two other people in a glass-walled meeting room. The woman in the center is speaking and gesturing with her hands. The other two people are listening attentively. The text "Moderated Roundtable" is overlaid in white on the image.

Moderated Roundtable

Question & Answer





Update on Disaster Medicine as a Subspecialty

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TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS
IN OPERATION NETWORK

American College of
Emergency Physicians®
ADVANCING EMERGENCY CARE 

Bryan Wexler, MD, MPH, CHPCP, CHEC-III, FAAEM, FACEP, Medical Director, Disaster Preparedness and Response, WellSpan Health; Director, Division of Disaster Medicine and Emergency Management, Department of Emergency Medicine, WellSpan, York Hospital; and Associate Professor, Department of Emergency Medicine, Drexel University College of Medicine

Disaster Medicine



**American Board of
Emergency Medicine**

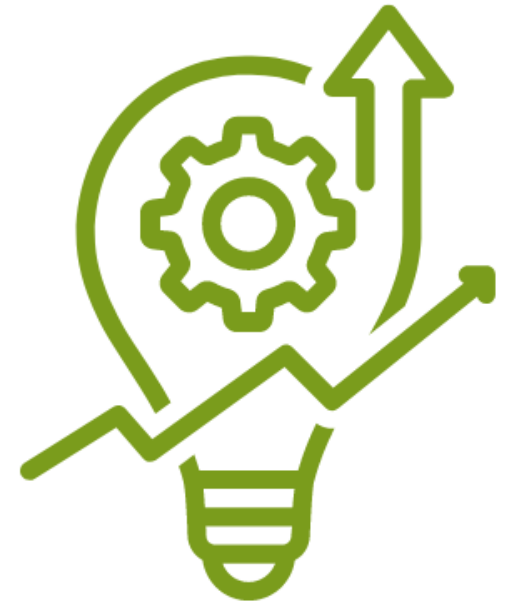


Bryan J. Wexler, MD, MPH

Member, Disaster Medicine Task Force
American Board of Emergency Medicine

Disaster Medicine: History

- 2022: ACGME brought forward to American Board of Medical Specialties and ABEM
- Prompted by interest from the National Biodefense Science Board
 - Prepare and manage patients in ongoing disaster settings



Disaster Medicine: History Cont.

- Common goal: Develop subspecialty in Disaster Medicine
- February 2024: ABEM approved as Administrative Board
- October 31, 2024, the Disaster Medicine Task Force formed: multi-disciplinary representation across the House of Medicine



ABEM Task Force

- Approved in February 2024
- Subject matter experts for development of ABMS application
- Provide recommendations to ABEM regarding eligibility criteria for subspecialty certification
 - Duration and type of clinical experience
 - Fellowship training duration



ABEM Task Force

Barry J. Knapp, MD

Disaster Medicine Task Force Chair, ABEM
Director

Vivek K. Moitra, MD

American Board of Anesthesiology
Critical Care Medicine

Joelle N. Simpson, MD, MPH

American Board of Pediatrics

Wendy E. Braund, MD, MPH, MEd

American Board of Preventive Medicine

David Shatz, MD

American Board of Surgery

Bryan J. Wexler, MD, MPH

American College of Emergency Physicians

Mohamud R. Daya, MD, MSc.

Emergency Medical Services Subboard

Alex P. Isakov, MD, MPH

Emergency Medical Services Subboard



Disaster Medicine: History Cont.

- May 2025: ABEM submitted an application to ABMS Committee on Certification (COCERT) in
- November 2025: COCERT approved the application
- February 2026: ABMS ratified the COCERT decision at its Board of Directors meeting
 - Disaster Medicine is approved as a new subspecialty



Disaster Medicine Core Content

- ABEM Approved February 2024
- Basis for certification exam
- Provides framework for fellowship curriculum
- Anticipate revision in 3-5 years



Eligibility Criteria

- Will offer 3 pathways:



Eligibility Criteria Cont.

Surgical Specialties

- *Training pathway:* ABEM provides a certification pathway for physicians from primary surgical specialties.
- *Policy exception:* ABEM approved a policy exception to address surgical training structures and non-surgical fellowships.
- *Approval requirements:* Fellowship timing must be pre-approved by the primary specialty board; ABEM defers to the primary surgical board for eligibility.



Disaster Medicine Fellowships

- These fellowships are available within departments of Emergency Medicine.
- If you're aware of other departments outside of EM who sponsor fellows, please inform us.
- Non-ACGME–accredited



Governance

Administrative Board

- ABEM

Co-Sponsoring Boards

- American Board of Preventive Medicine
- American Board of Surgery

Qualifying Boards

- American Board of Anesthesiology
- American Board of Internal Medicine
- American Board of Neurological Surgery
- American Board of Obstetrics and Gynecology
- American Board of Ophthalmology
- American Board of Orthopaedic Surgery
- American Board of Pathology
- American Board of Physical Medicine and Rehabilitation
- American Board of Psychiatry and Neurology
- American Board of Radiology

Governance

- ABEM will work on an application to the ACGME to request accredited fellowship training
- ABEM will form an Advisory Committee and an Assessment Committee.
 - The Co-Sponsoring Boards delegate authority and responsibility to the Administrative Board, the Advisory Committee, and the Assessment Committee



Assessment Committee

- Certification Exam question development
- Volunteers needed from the Co-Sponsoring Boards
 - American Board of Preventive Medicine
 - American Board of Surgery
- Solicitation from ABEM in the next few months for Boards to provide representatives to the Committee
- If interested, contact your Board (Preventive Medicine, Surgery, and Emergency Medicine)
- May have a need for expertise from other specialties



Next Steps

- Exam is planned for no earlier than Spring 2028
- ABEM will continue to share updates



Thank you!

CONTACT

email: subspecialties@abem.org

CONNECT WITH US!



@ABEMcert
#ABEMproud



American Board of
Emergency Medicine

Question & Answer



Break





From Data to Action: Closing the Loop Between Disaster Data and Real-World Impact

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HEALTHCARE EMERGENCY PREPAREDNESS
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Emergency Physicians®
ADVANCING EMERGENCY CARE 

Angela Cornelius, MD, MA, FACEP, FAEMS, Associate System Medical Director, Fort Worth Office of the Medical Director; Program Director, EMS Fellowship, Baylor Scott and White All Saints Medical Center; Core Faculty, John Peter Smith Hospital Fort Worth Emergency Medicine Residency, Associate Professor, Emergency Medicine, TCU School of Medicine; and Associate Professor, LSU-Shreveport Emergency Medicine Residency

Christian Dameff, MD, MS, Associate Professor, Departments of Emergency Medicine, Biomedical Informatics, and Computer Science, University of California, San Diego; Co-Director, UC San Diego Center for Healthcare Cybersecurity; and Medical Director of Cybersecurity, UC San Diego Health

Sameer Kadri, MD, MS, Intensivist and Head, Clinical Epidemiology Section, Critical Care Medicine Department, National Institutes of Health Clinical Center

From Data to Action: Closing the Loop Between Disaster Data and Real-World Impact

Christian Dameff, MD, MS, FACEP



CHRISTIAN DAMEFF "QUADDI"

- Associate Professor of:
 - Emergency Medicine
 - Biomedical Informatics
 - Computer Science
- Co-director Center for Healthcare Cybersecurity
- Medical Director of Cybersecurity

@ University of California San Diego

Thesis:

1) Modern healthcare is critically dependent on connected technology

Thesis:

2) Modern healthcare is vulnerable to cyber threats that disrupt, delay, and degrade care

Thesis:

3) Clinicians are ill equipped to care for patients when this technology fails

Thesis:

4) Many technology failures can result in disaster level impacts

Assertion: Use technical systems to gather data, infer connections, and ultimately better prepare for disasters. Think outside the box.

Example: electronic health records

2021

The San Diego Union-Tribune

Subscribe Now
\$4/4 weeks

Scripps enters fourth week of ransomware attack



Cyber Attack Blast Radius



Original Investigation | Emergency Medicine

Ransomware Attack Associated With Disruptions at Adjacent Emergency Departments in the US

Christian Dameff, MD, MS; Jeffrey Tully, MD; Theodore C. Chan, MD; Edward M. Castillo, PhD, MPH; Stefan Savage, PhD; Patricia Maysent, MHA, MBA; Thomas M. Hemmen, MD, PhD; Brian J. Clay, MD; Christopher A. Longhurst, MD, MS

Abstract

IMPORTANCE Cyberattacks on health care delivery organizations are increasing in frequency and sophistication. Ransomware infections have been associated with significant operational disruption, but data describing regional associations of these cyberattacks with neighboring hospitals have not been previously reported, to our knowledge.

OBJECTIVE To examine an institution's emergency department (ED) patient volume and stroke care metrics during a month-long ransomware attack on a geographically proximal but separate health care delivery organization.

DESIGN, SETTING, AND PARTICIPANTS This before and after cohort study compares adult and

Key Points

Question What are the associated regional health care disruptions in hospitals adjacent to health care systems under ransomware cyberattack?

Findings This cohort study of 2 academic urban emergency departments (EDs) adjacent to a health care delivery organization under a month-long ransomware attack



Finding: Emergency Care Was Significantly Impacted

Table 2. Health Care Delivery Organization B ED Census, Recurrence, and Throughput Metrics

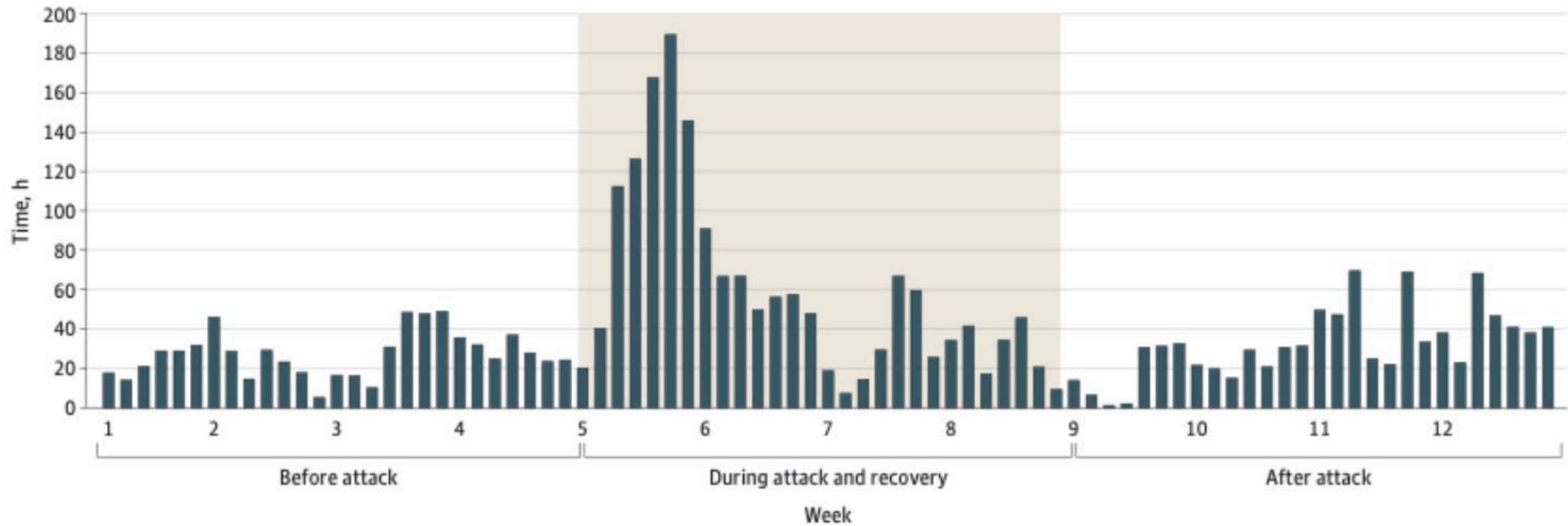
Characteristic	Before attack (n = 6114)	During attack and recovery (n = 7039)	After attack (n = 6704)	P value			
				Overall	Before attack vs attack	Attack vs after attack	Before vs after attack
ED daily census, mean (SD)	218.4 (18.9)	251.4 (35.2)	239.4 (21.3)	<.001	<.001	.13	<.001
EMS arrivals, mean (SD)	1741 (28.8)	2354 (33.7)	1920 (28.9)	<.001	<.001	<.001	.90
Admissions, mean (SD)	1614 (26.4)	1722 (24.5)	1648 (24.6)	.02	.01	.87	.02
Left without being seen, mean (SD)	158 (2.6)	360 (5.1)	260 (3.9)	<.001	<.001	<.001	<.001
Left against medical advice, mean (SD)	107 (1.8)	161 (2.3)	101 (1.5)	.002	.03	<.001	.28
Eloped, mean (SD)	77 (1.3)	102 (1.4)	91 (1.4)	.65	No further statistical analysis performed ^a		
7-d ED revisits, mean (SD)	514 (12.6)	563 (12.2)	548 (12.1)	.79	No further statistical analysis performed ^a		
30-d Readmission, mean (SD)	237 (14.7)	241 (14.0)	234 (14.2)	.85	No further statistical analysis performed ^a		
Median door-to-room time (IQR), min	21 (7-62)	31 (9-89)	23 (8-66)	<.001	<.001	<.001	.001
Admitted median total length of stay (IQR), min	614 (424-1093)	822 (497-1524)	680 (452-1271)	<.001	<.001	<.001	<.001
Discharged median total length of stay (IQR), min	290 (198-421)	307 (203-453)	298 (201-432)	<.001	<.001	.04	.03

Abbreviations: ED, emergency department; EMS, emergency medical services.

^a Due to insignificant overall P value.

Finding: Prehospital Care Was Significantly Disrupted

Figure 2. Cumulative San Diego County Emergency Medical Services Diversion Hours Per Day



Conclusions

This cohort study found an associated increase in ED volume (ie, census), EMS arrivals, patients who left without being seen, waiting room times, total ED LOS for admitted patients, county-wide ED diversion time, stroke code activations, and confirmed strokes at 2 hospitals near an adjacent health care organization under a month-long ransomware attack. These findings support the need for coordinated regional cyber disaster planning, further study on the potential patient care effects of cyberattacks, and continued work to build technical health care systems resilient to cyberattacks such as ransomware.

Cardiac Arrest Outcomes Adjacent to Ransomed Hospitals

Critical Care
Explorations

Society of
Critical Care Medicine
The Intensive Care Professionals

[Crit Care Explor.](#) 2024 Apr; 6(4): e1079.

Published online 2024 Apr 10. doi: [10.1097/CCE.0000000000001079](https://doi.org/10.1097/CCE.0000000000001079)

PMCID: PMC11008621

PMID: [38605720](https://pubmed.ncbi.nlm.nih.gov/38605720/)

Ransomware Cyberattack Associated With Cardiac Arrest Incidence and Outcomes at Untargeted, Adjacent Hospitals

[Thaidan T. Pham](#), MD,¹ [Theoren M. Loo](#), MS,² [Atul Malhotra](#), MD,³ [Christopher A. Longhurst](#), MD, MS,^{4,5} [Diana Hylton](#), MD,⁶ [Christian Dameff](#), MD, MS,^{4,7,8} [Jeffrey Tully](#), MD,⁶ [Gabriel Wardi](#), MD, MPH,^{3,7} [Rebecca E. Sell](#), MD,⁹ and [Alex K. Pearce](#), MD³



Finding: 10-fold decrease in survivability with favorable neurologic outcome



KEY POINTS

Question: Are ransomware cyberattacks on healthcare delivery organizations (HDOs) associated with increased cardiac arrest (CA) incidence and adverse outcomes at adjacent untargeted hospitals?

Findings: This cohort study of two untargeted academic hospitals adjacent to an HDO under a month-long ransomware cyberattack evaluated 78 CAs: 21 during pre-attack, 38 during attack, and 19 during post-attack phases. During the attack phase, decreases in survival with favorable neurologic outcome were observed.

Meaning: This study suggests cyberattacks are associated with worse outcomes for patients suffering from out-of-hospital CA at untargeted, adjacent hospitals, highlighting the critical need for cybersecurity disaster planning and regional healthcare systems resiliency.

Despite similar rates of ROSC for all CAs between phases, there were differences in overall survival with a favorable neurologic outcome ($p < 0.001$), driven by an increase in OHCA mortality. We observed a decrease in survival with favorable neurologic outcome for OHCAs during the attack phase compared with the pre-attack (4.5% vs. 40.0%; $p = 0.02$) and post-attack (4.5% vs. 41.2%; $p = 0.01$) phases. In the post-attack phase, we saw survival with favorable neurologic outcome return to pre-attack levels for OHCAs (41.2% vs. 40%; $p = 0.94$). While speculative, EMS diversions may have contributed to worse outcomes for OHCAs by prolonging

A 40% vs. 4.5% chance for a victim to be able to walk, talk, & feed themselves...



Example: internet measurement tools



Original Investigation | Health Informatics



Patient Care Technology Disruptions Associated With the CrowdStrike Outage

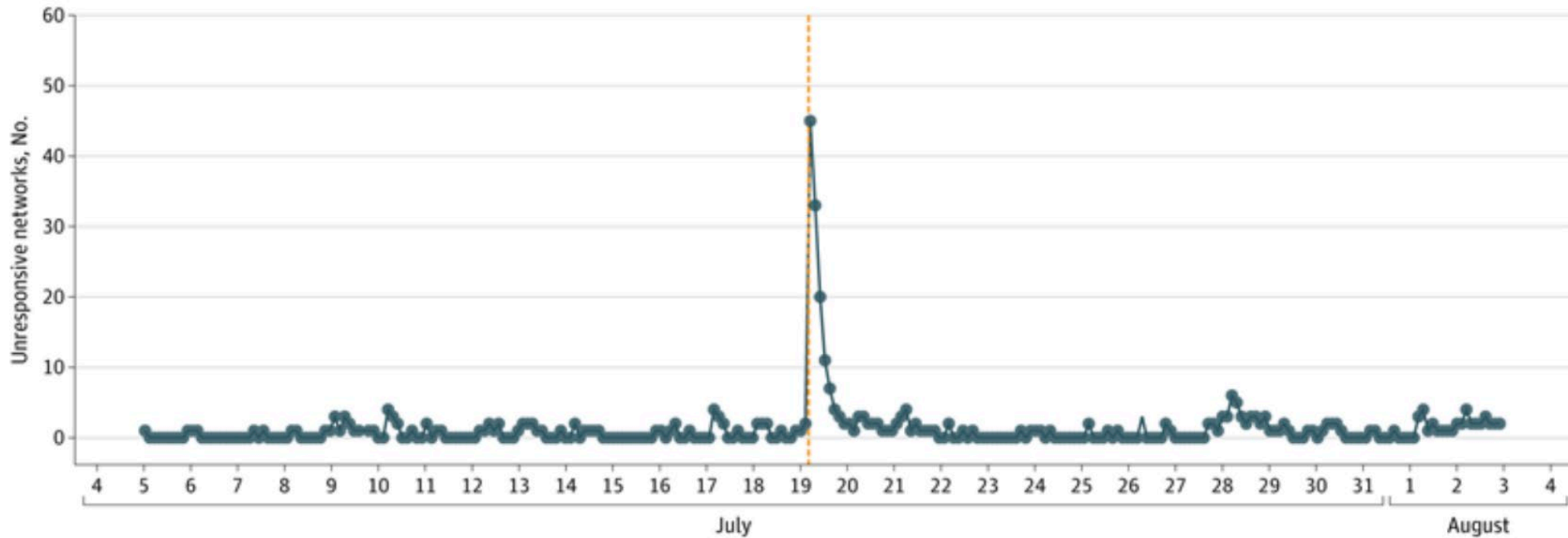
Jeffrey L. Tully, MD^{1,2}; Sumanth Rao, MS³; Isabel Straw, BMBS, PhD¹ ;
Rodney A. Gabriel, MD, MAS^{1,2,5}; Christopher A. Longhurst, MD, MS^{1,5}; Stefan Savage, PhD^{1,3}; Geoffrey
M. Voelker, PhD^{1,3}; Christian J. Dameff, MD, MS^{1,3,4,5}

» [Author Affiliations](#) | [Article Information](#)

 RELATED ARTICLES  FIGURES  SUPPLEMENTAL CONTENT



Figure 2. Unresponsive Health Care Delivery Organization (HDO) Fast Healthcare Interoperability Resource End Points Prior, During, and After the CrowdStrike Outage



[↩ Go to Figure in Article](#)

The vertical orange line marks the time point at which the CrowdStrike outage occurred, July 19, 2024.

Figure 1. Geospatial Map of the Identified Health Care Delivery Organizations Inferred to Have Service Disruptions Using Address Space Scans

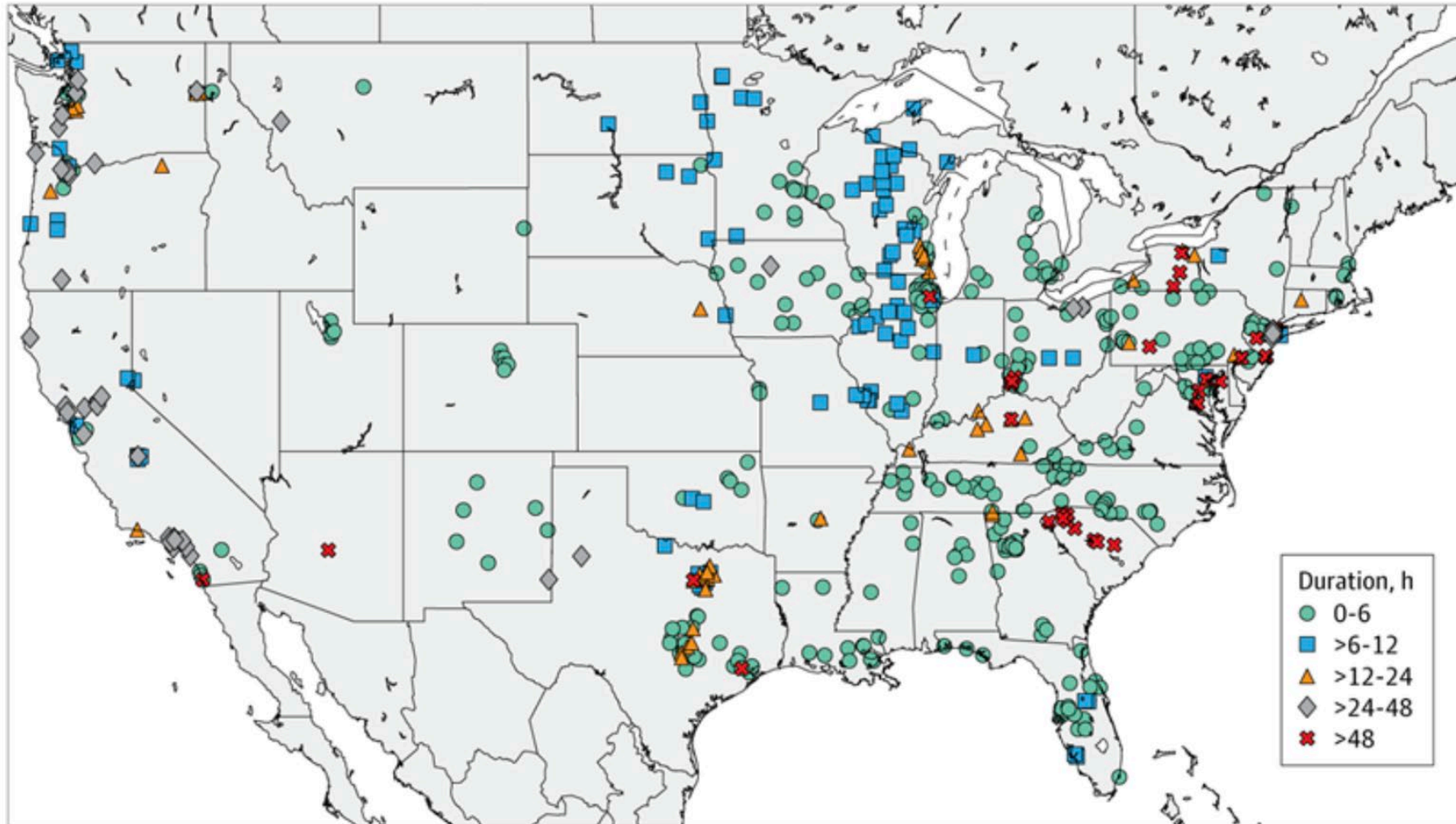


Table. Evaluation of Services With Outages and Their Relevant Clinical Utility

	Category of service			
	Patient facing	Operationally relevant	Research relevant	Not relevant / Unknown
Proportion of total affected services, No. (%) (n = 1098)	239 (21.8)	169 (15.4)	58 (5.3)	631 (57.5)
Examples of identified services and relevance to patient care	Staff portals for viewing patient health records, access to platforms for viewing prehospital clinical information, fetal monitoring systems and device management for telemonitoring, secure document transfer for inter-hospital transfers, access to imaging systems for viewing patient scans	Staff scheduling systems for regular and on call shifts, bill payment systems for health care insurers, clinical workforce management and optimization systems, portal for ordering facilities services, networked printers in the clinical environment, digital systems for establishing patient wait times and patient flow in the hospital environment	Access to databases for clinical trial operations, information websites for research laboratories, patient enrollment systems for rare disease research programs, staff login for clinical research management systems, REDCap research environment for academic centers, login portal for researchers at academic health centers	Testing and staging environments (preproduction), webpage for medical school alumni programs, donation websites for academic centers, medical education websites for students

Q&A

A blue-tinted photograph of a woman moderating a roundtable discussion with two other people in a glass-walled meeting room. The woman in the center is speaking and gesturing with her hands. The other two people are listening attentively. The text "Moderated Roundtable" is overlaid in white on the image.

Moderated Roundtable

From Data to Action: Closing the Loop Between Disaster Data & Real-World Impact

Hospital Strain and Patient Outcomes

Sameer S Kadri, MD, MS

Head, Clinical Epidemiology Section

Intensivist and Senior Investigator

Critical Care Medicine Branch, CC/NHLBI



National Heart, Lung,
and Blood Institute

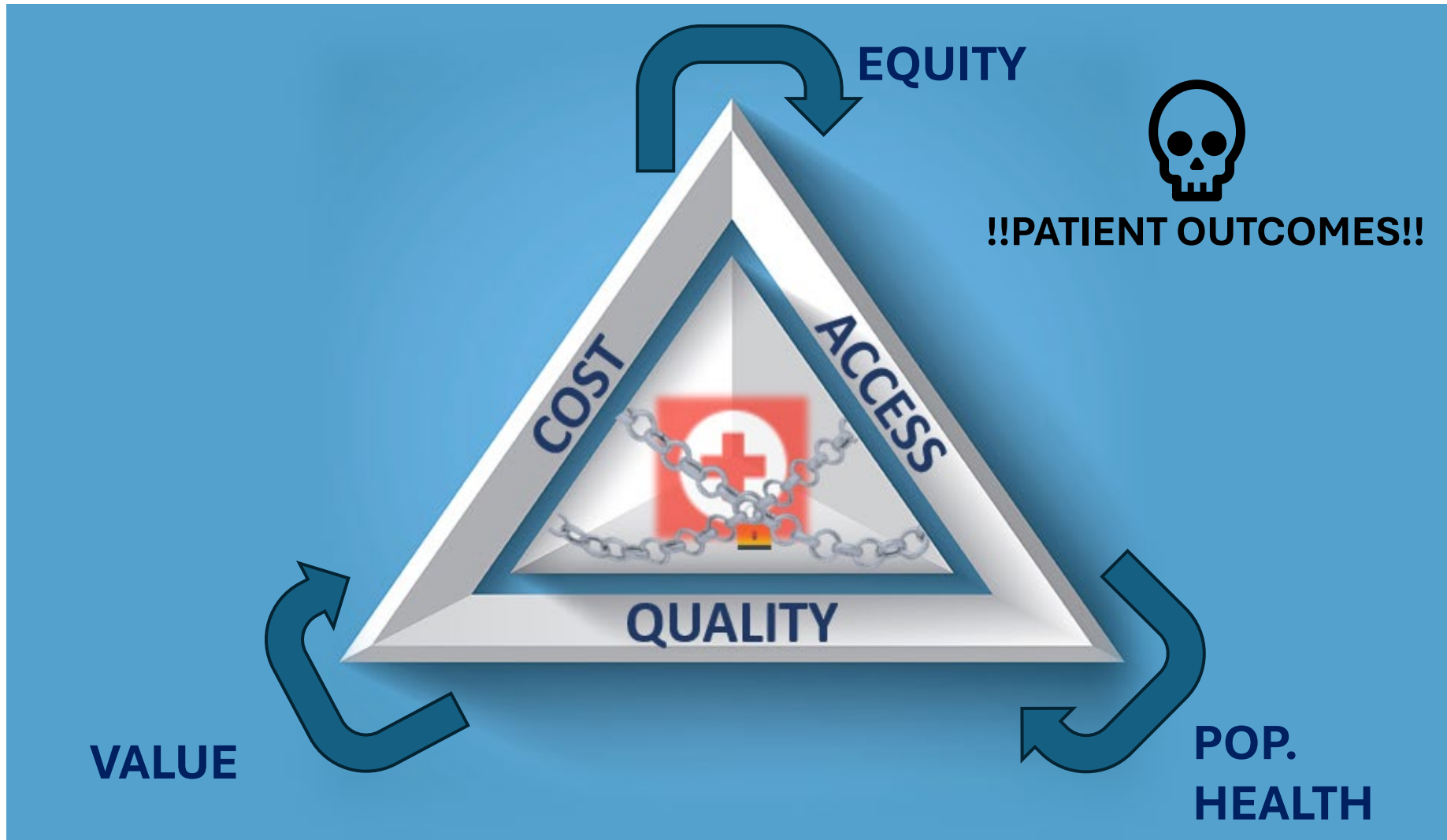
No Financial Disclosures

Co-lead, Data and Technology Section,
National Academies of Medicine
Action Collaborative for Medical Operations
Coordination Centers

Outline

- **Hospital caseload surges and patient outcomes—lessons from real world data**
- **Are medical operations coordination centers effective during widespread surges?**
- **Future Directions**

The Iron Triangle of Healthcare



What we learnt from the Pandemic



1 in 4 COVID-19 Hospital Deaths likely linked to Surging Patient Caseloads

*Kadri et al. Annals of Internal Med. 2021



National Academy of Medicine recommends strategies to load balance patients

*National Academy of Medicine. 2021



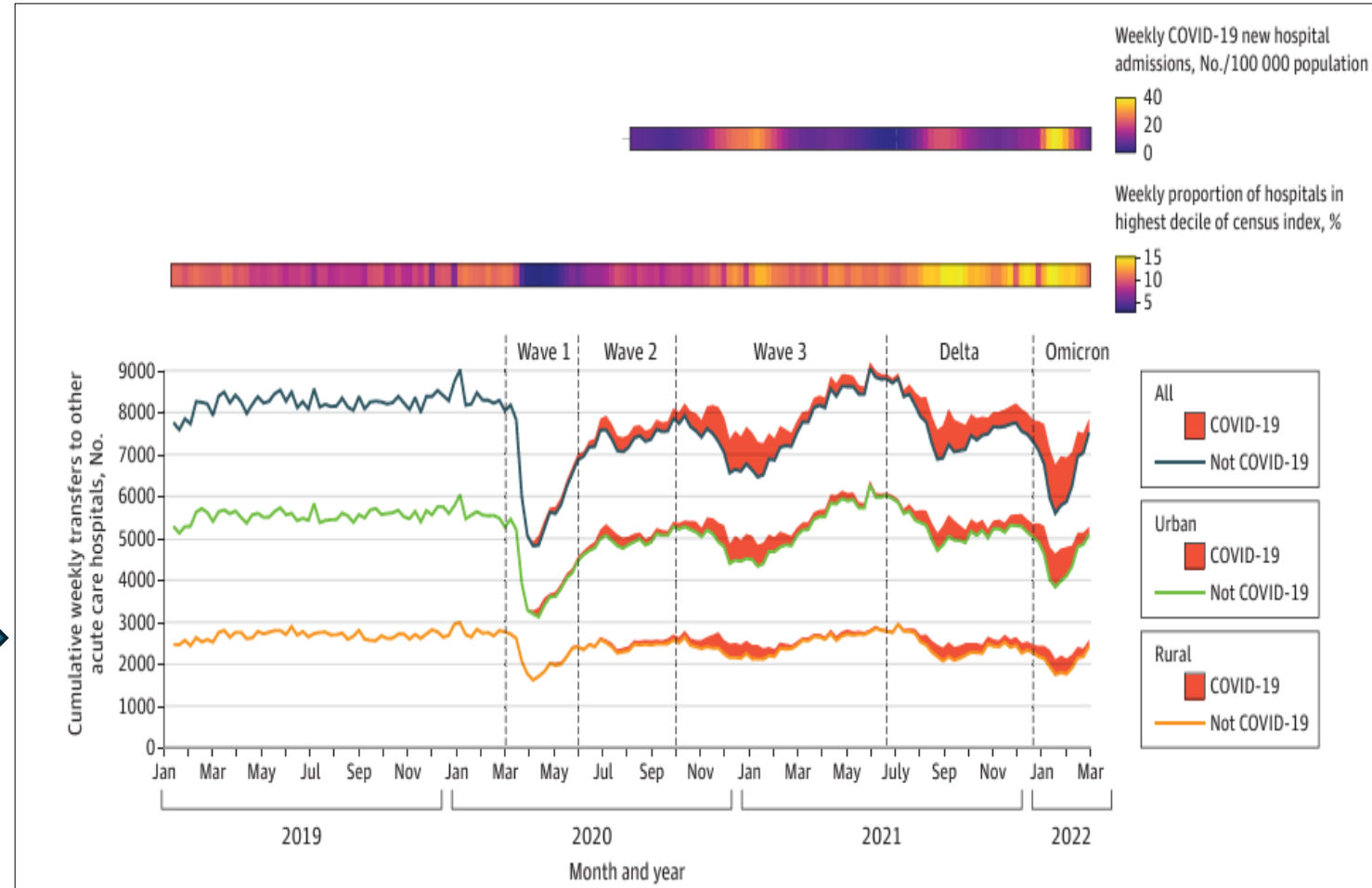
Surges Detrimental across all Hospital Types

*Neupane et al. Annals IM. 2024



Overall Transfers Decreased during times of Patient Surges →

*Sarzynski/Mancera et al. JAMA Open. 2024

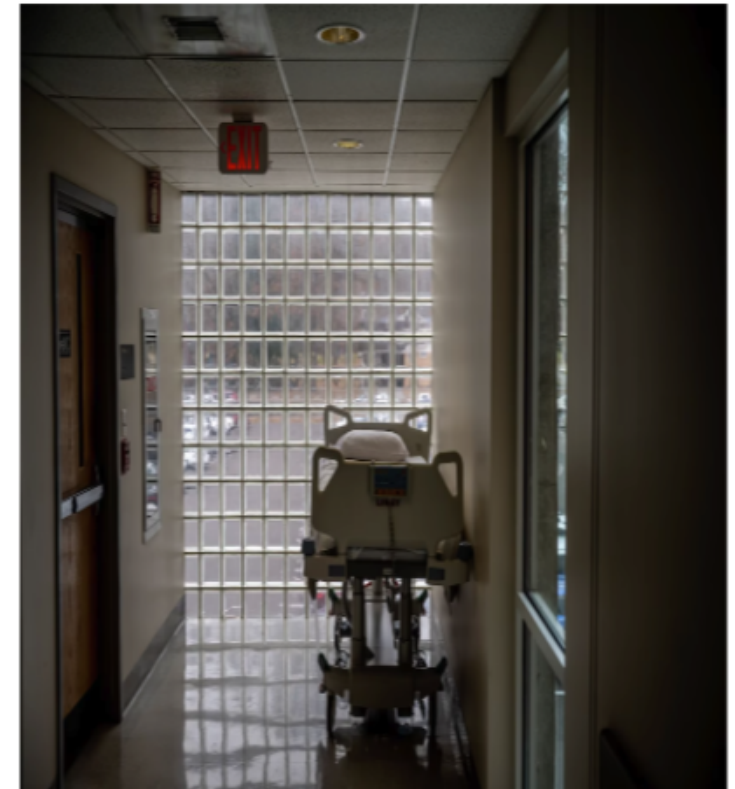


Health

U.S. is headed toward a hospital bed shortage, researchers warn

The researchers project that annual hospitalizations will rise from 36 million in 2025 to 40 million in 2035.

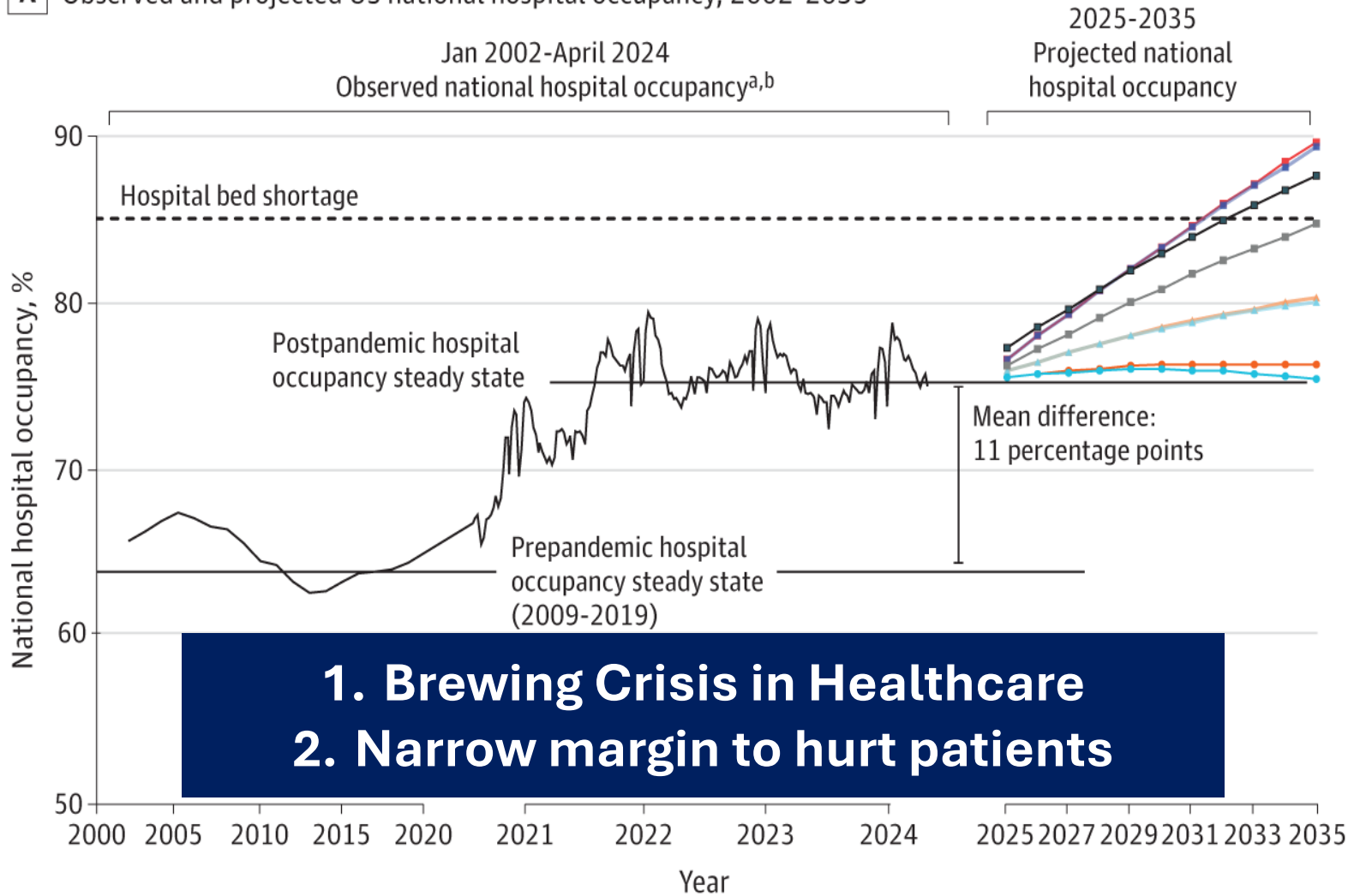
March 8, 2025



(Jon Cherry/Bloomberg)

Hospitals Dangerously Overcrowded by 2032!

A Observed and projected US national hospital occupancy, 2002-2035



1. Brewing Crisis in Healthcare
2. Narrow margin to hurt patients

Hospital occupancy projections

- Adult beds only; fixed bed supply and hospitalization rate
- Adult and pediatric beds; fixed bed supply and hospitalization rate
- Staffed bed supply increase (+5% over decade); fixed hospitalization rate
- Staffed bed supply increase (+10% over decade); fixed hospitalization rate
- Staffed bed supply decrease (-5% over decade); fixed hospitalization rate
- Hospitalization rate decrease (-5% over decade); fixed bed supply
- Hospitalization rate decrease (-10% over decade); fixed bed supply
- Hospitalization rate increase (+5% over decade); fixed bed supply

Nurse Staffing—a new Joint Commission standard (effective 1/1/2026)

- **24/7 RN Presence**
- **Staffing Adequacy** to meet acuity, complexity, skill mix
- **Nurse Executive Accountability** for staff levels
- **Data-Driven staffing decisions** and ensure safe, quality care



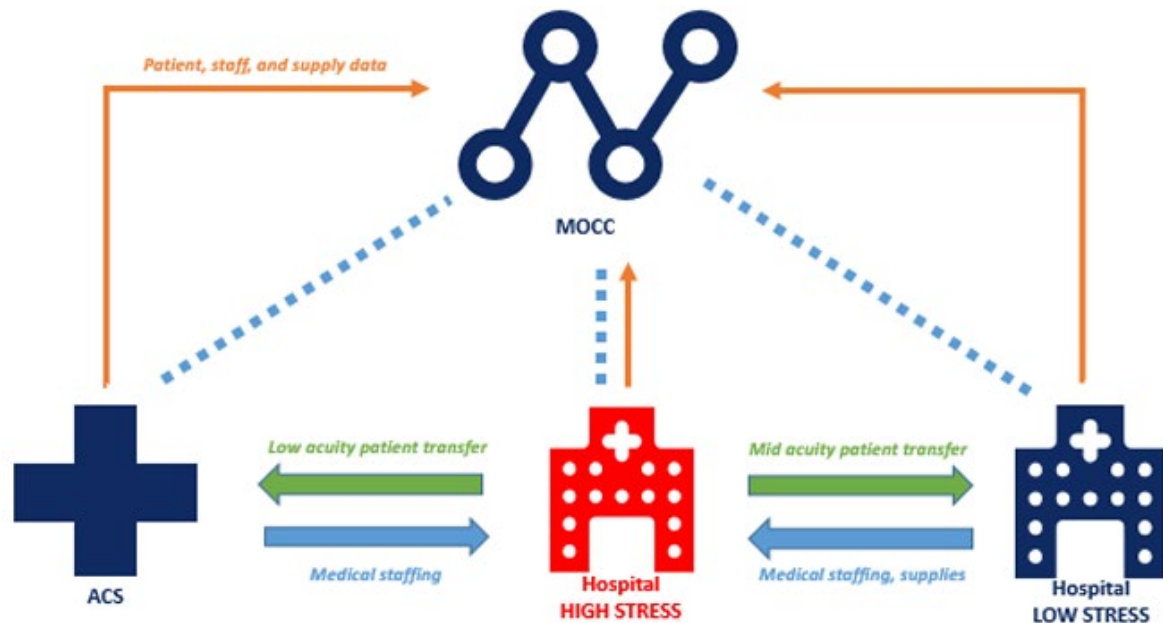
Simple Question—Yet Hard to Answer

**Can Medical Operations
Coordination Centers improve
access in future disasters?**

**(Assumed: Improved access → Improved
outcomes)**

Infrastructure to Facilitate Patient Movement

Medical Operation Coordination Centers (MOCCs)



- Aggregate patient capacity data
- Coordinate patient placement among regional hospitals



Did implementation of MOCCs improve rates of patient transfers during times of caseload surge?

asprtracie.hhs.gov

Franklin et al. NEJM Catalyst 2023

JAMA
Network | **Open**™



December 2025

Original Investigation | Public Health

Statewide Transfer Coordination and Patient Transfer Rates Among Hospitals During Occupancy Stress

Mary E. Richert, MD; Guoqing Diao, PhD; Alex Mancera, MS; Brittany Badesch, MD; Maniraj Neupane, MD, PhD; Roxana Amirahmadi, MD; Sadia H. Sarzynski, MD, MHS; Sarah Warner, MPH; Joel S. Weissman, PhD; Eric Goralnick, MD, MS; Brian J. Franklin, MD, MBA; Bruce J. Swihart, PhD; Lisa Villarroel, MD, MPH; John L. Hick, MD; Steven H. Mitchell, MD; Parneet Kaur, MS; Benjamin Fisher, MPA; Sameer S. Kadri, MD, MS

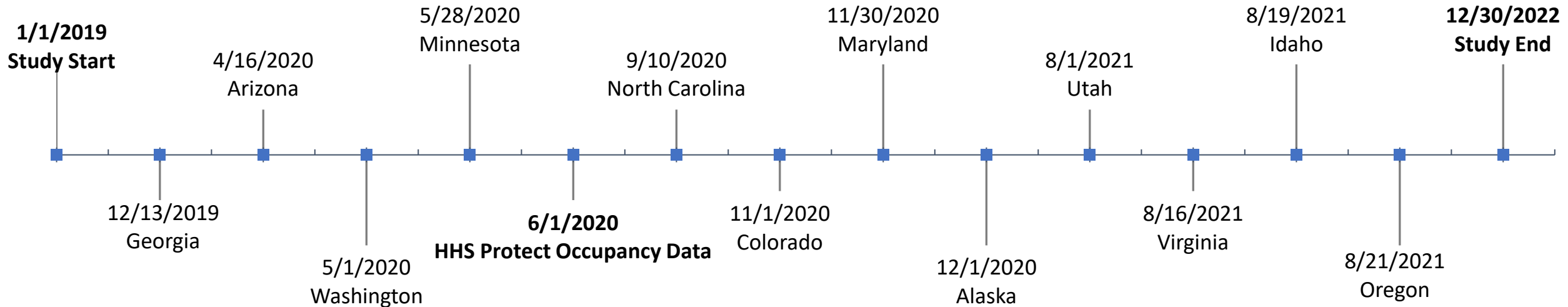
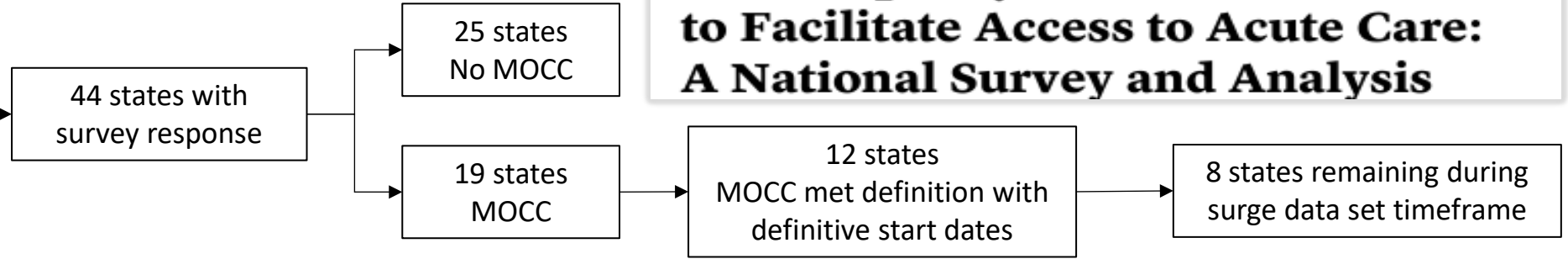
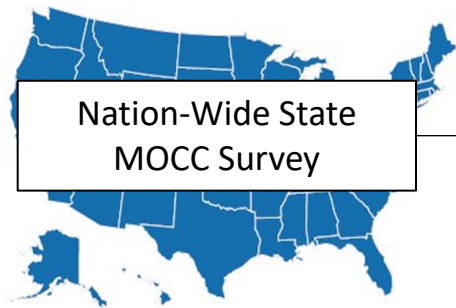
US State MOCC Landscape

NEJM
Catalyst

Innovations in Care Delivery

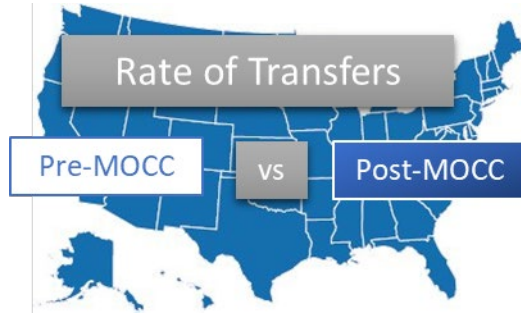
ARTICLE

State Capacity Coordination Centers to Facilitate Access to Acute Care: A National Survey and Analysis



Study Design

Hypothesis



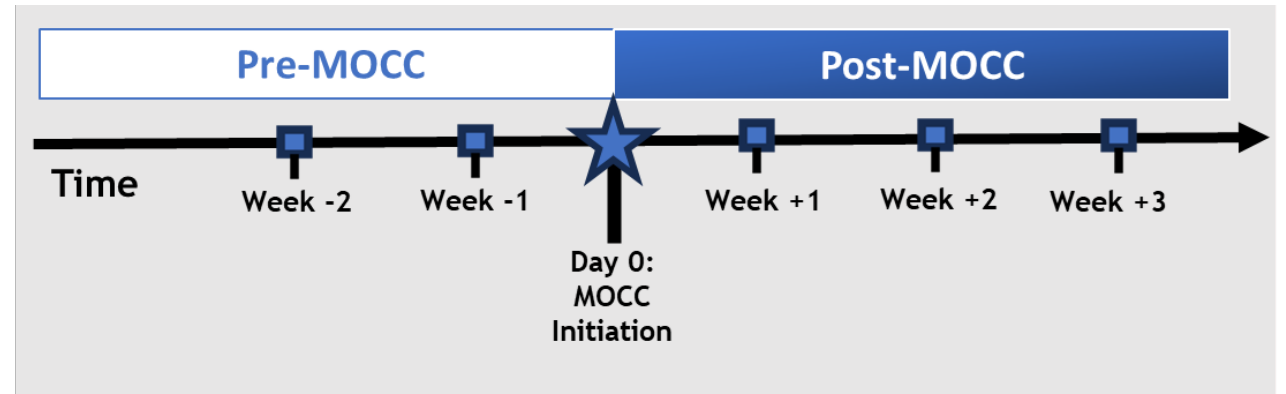
MOCC implementation improved transfer rates during times of surge

Occupancy Stress Data



HHS Protect Database

Analysis



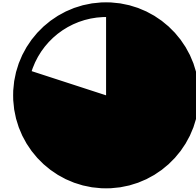
Interrupted Time Series

Outcome: Interhospital Transfers



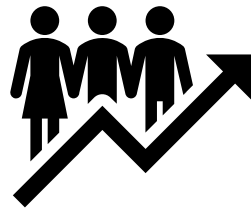
National Emergency Medical Services Information Systems Database

Deriving Occupancy Stress for a Post-COVID World



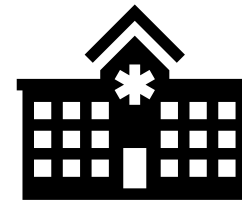
> 80% weekly occupancy*

OR



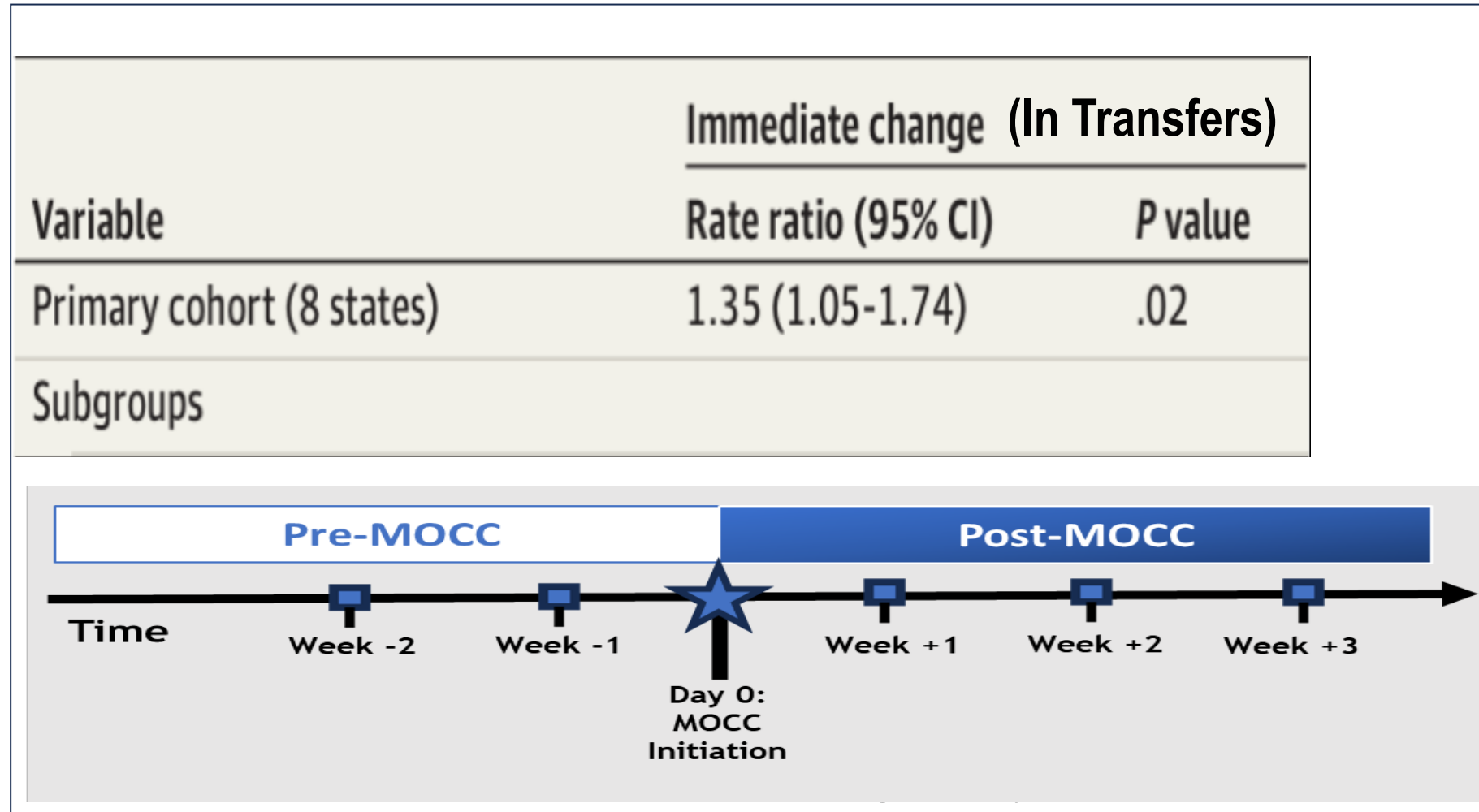
\geq 90th percentile for individual hospital's weekly occupancy average over study period

AND



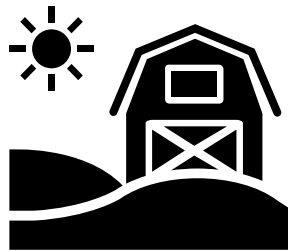
Top quartile of occupancy for hospital type per week

35% Increase in Transfers Immediately Post-MOCC

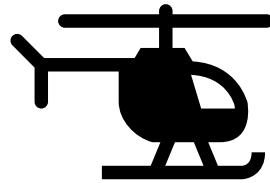


35% Increase in Transfers Immediately Post-MOCC

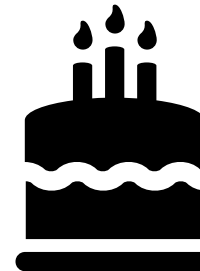
Variable	Immediate change (In Transfers)	
	Rate ratio (95% CI)	P value
Primary cohort (8 states)	1.35 (1.05-1.74)	.02
Subgroups		



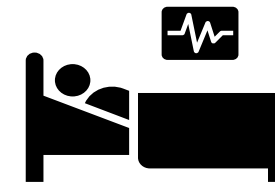
Rural hospitals



Air transport

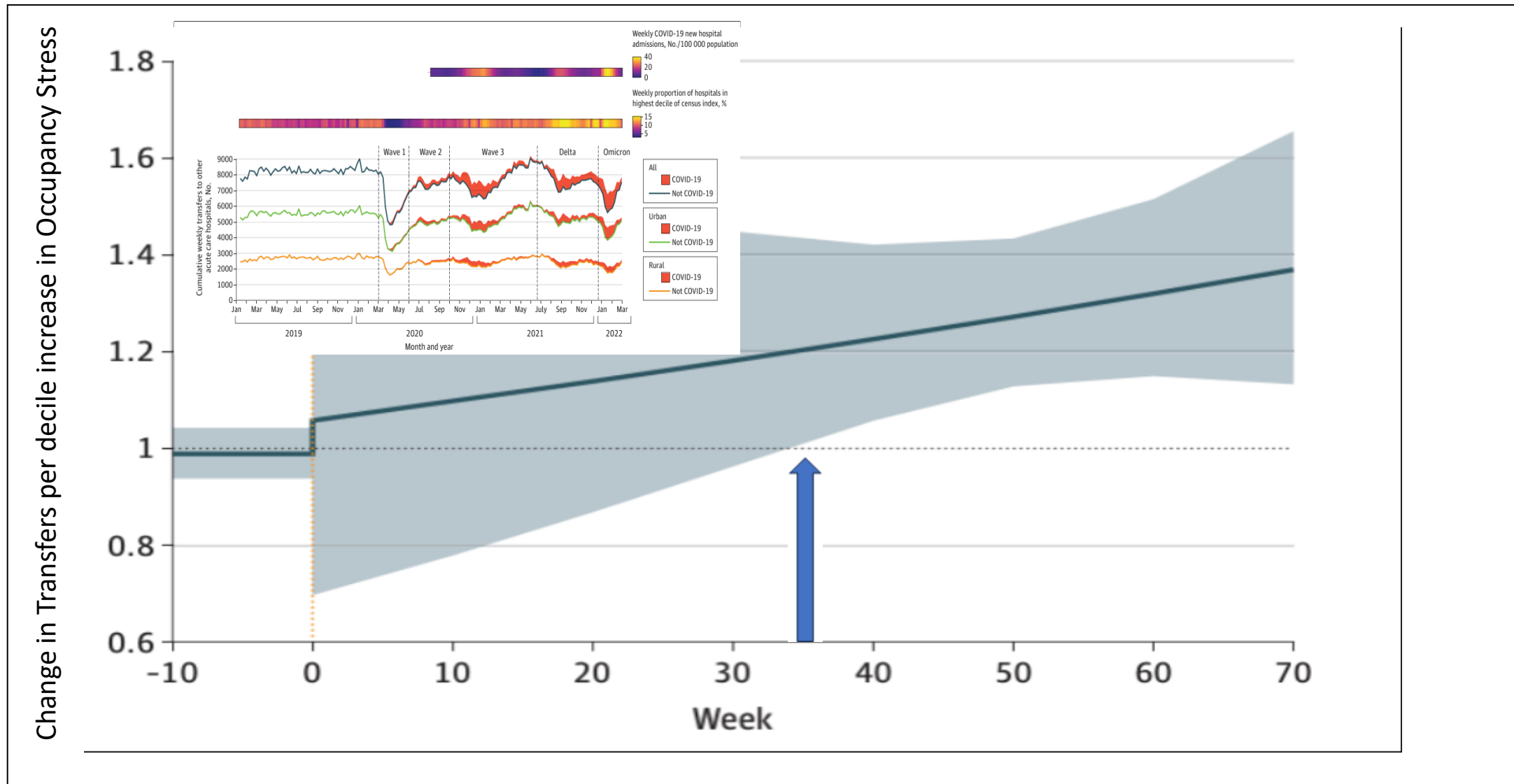


Age Groups



Acuity

MOCCs Reversed Inverse Surge-Transfer Relationship



Limitations

- Occupancy data was self reported
- Study excluded early MOCC adopters (Washington, Minnesota, and Arizona)
- Unable to link findings to a specific MOCC's SOP
- Findings don't generalize to role of MOCCs during routine daily operations

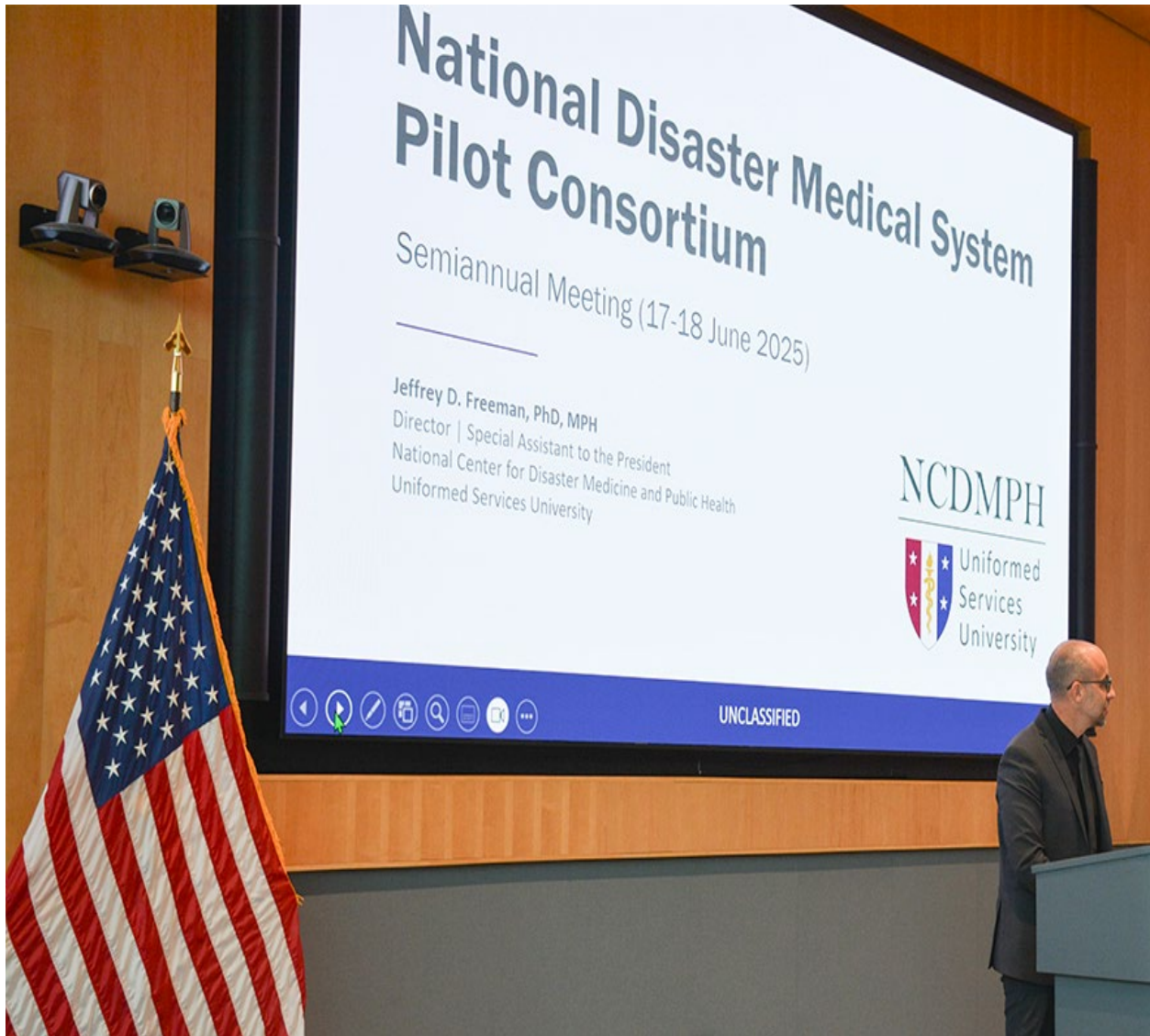
Summary and Implications

- State MOCCs initiation was associated with an immediate 35% increase in interhospital transfers at average occupancy stress levels.
- Increased occupancy stress was associated with increased transfers 30-40 weeks post-MOCC implementation.

IMPLICATIONS:

- Most State MOCCs have sunset active operations post-pandemic.
- Solidifies ongoing relevance of MOCCs, benefit of contingency status, and need to train deployable personnel to improving **access** to care and patient outcomes in future disasters and public health emergencies

Implications in a LSCO



Future Directions

- Role of MOCCs **outside** of disaster settings
- Optimal **structure and distribution** of MOCCS
- Develop **standards**
- **Improving** capacity **data** visualization, metrics, interoperability, governance
- **Support** for MOCC operations

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Home > Program Centers > Action Collaborative on Medical Operation Coordination Centers (AC-MOCCs)

ACTION COLLABORATIVE

Action Collaborative on Medical Operation Coordination Centers (AC-MOCCs)

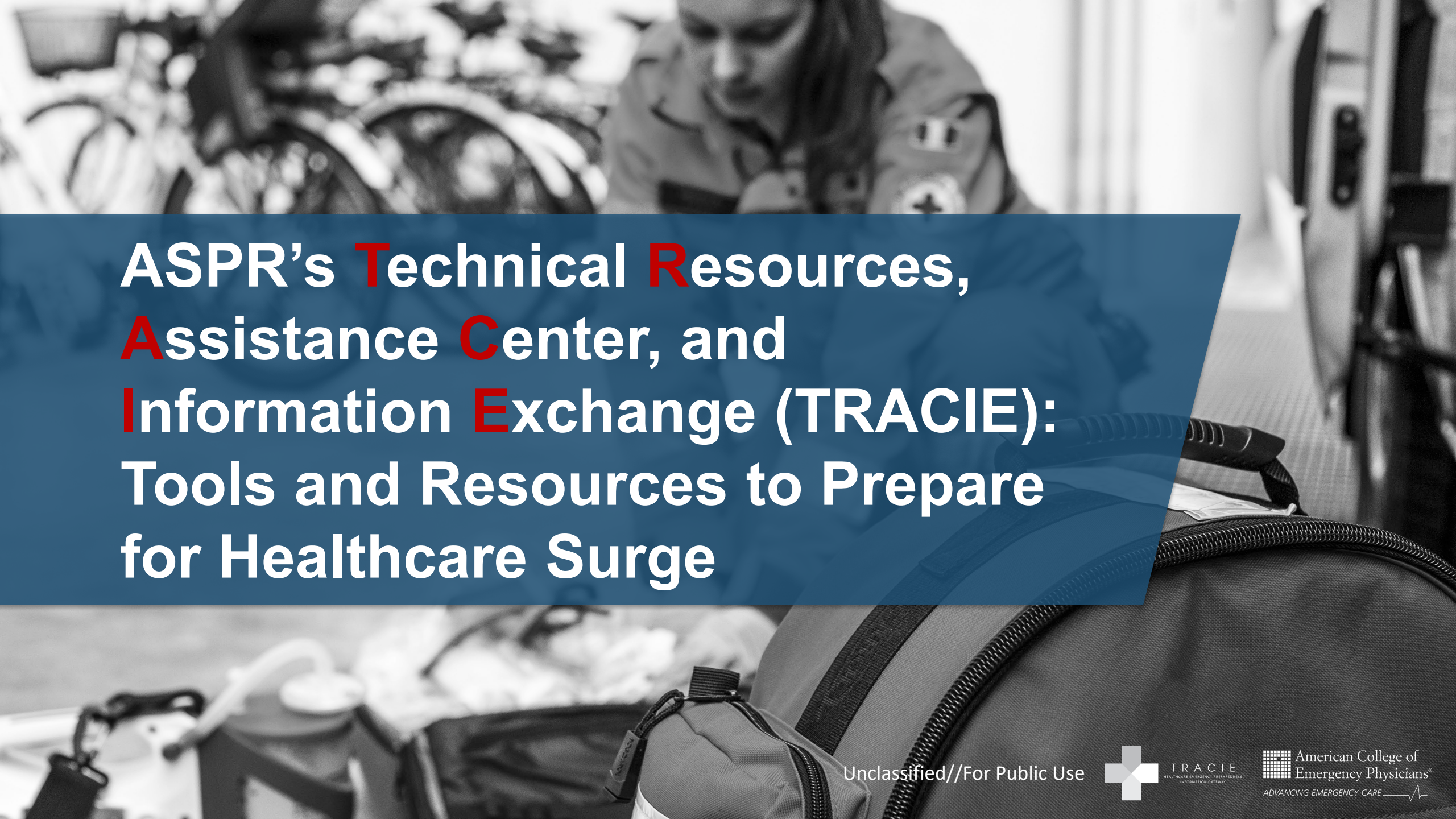
The Action Collaborative on Medical Operation Coordination Centers (AC-MOCCs) is working to enhance the impact and readiness of medical operation coordination centers (MOCCs) by aligning key stakeholders, advancing data and operational standards, and strengthening coordination at both regional and national levels. MOCCs serve as regional hubs that support real-time coordination of patient movement, resource allocation, and clinical prioritization during daily operations, disaster operations, and defense operations.

Thank you

Sameer.kadri@nih.gov

Question & Answer





ASPR's **T**echnical **R**esources,
Assistance **C**enter, and
Information **E**xchange (TRACIE):
Tools and Resources to Prepare
for Healthcare Surge

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HEALTHCARE EMERGENCY PREPAREDNESS
AN ORIGINATOR OF THE

American College of
Emergency Physicians®
ADVANCING EMERGENCY CARE 

John L. Hick, MD, ASPR TRACIE Senior Editor

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ASPR TRACIE: Three Domains



- Self-service collection of audience-tailored materials
- Subject-specific, SME-reviewed “Topic Collections”
- Unpublished and SME peer-reviewed materials highlighting real-life tools and experiences



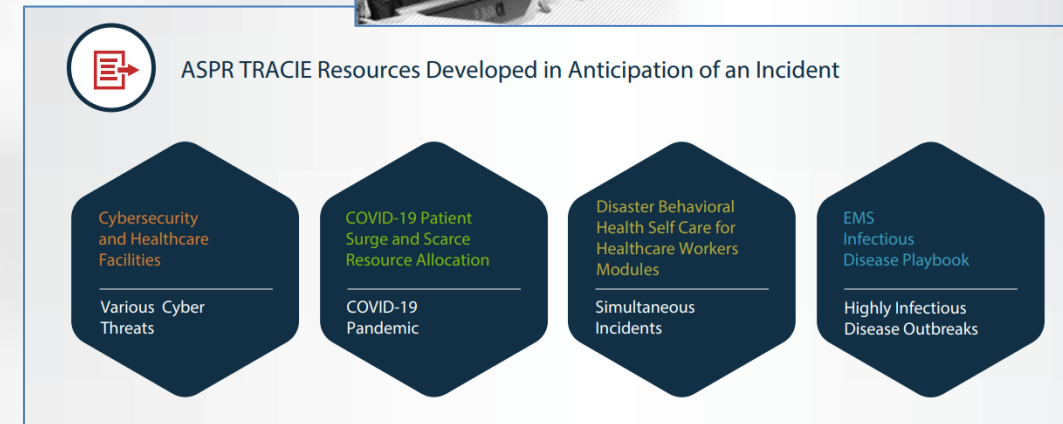
- Personalized support and responses to requests for information and technical assistance
- Accessible by toll-free number (1844-5-TRACIE), email (askasprtracie@hhs.gov), or web form (ASPRtracie.hhs.gov)



- Area for password-protected discussion among vetted users in near real-time
- Ability to support chats and the peer-to-peer exchange of user-developed templates, plans, and other materials

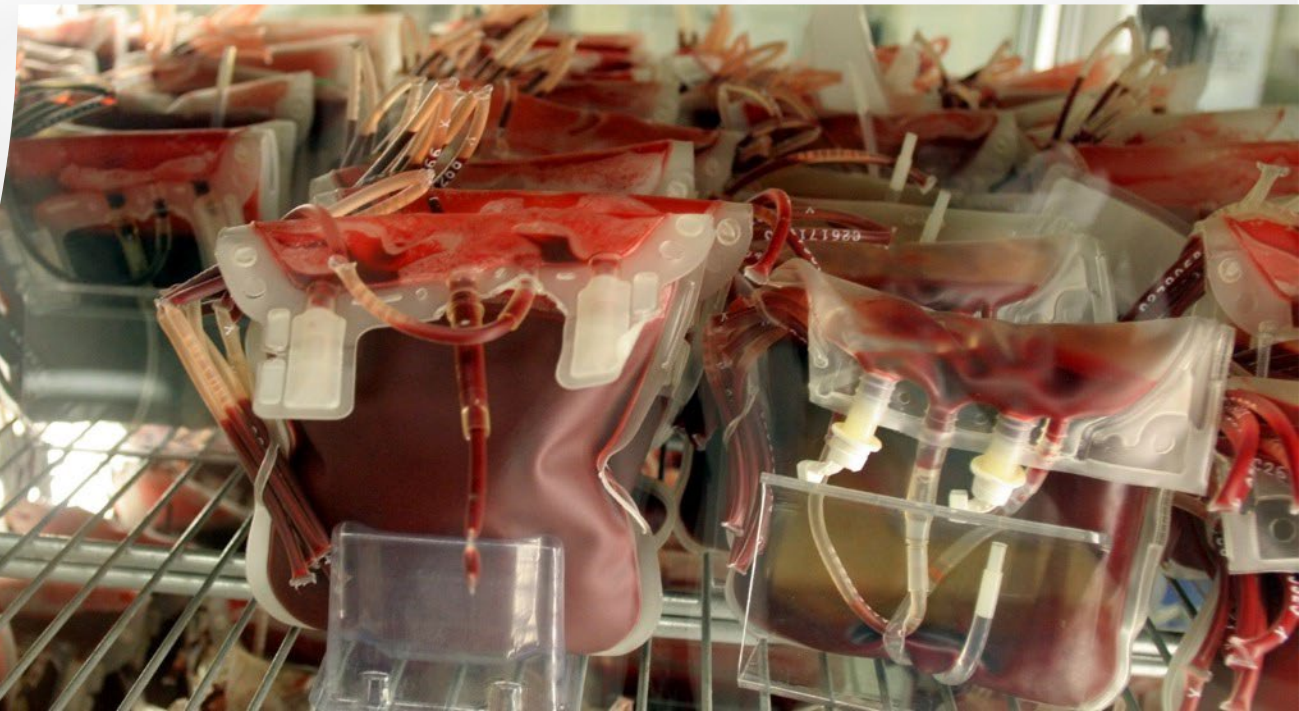
ASPR TRACIE Supports All Phases of Emergency Management

- Searchable resource library
- 550+ ASPR TRACIE developed resources
- Topic Collections
- Resource Pages
- Virtual-based learning opportunities



Select Relevant Topic Collections

- Crisis Standards of Care
- Hospital Surge Capacity and Immediate Bed Availability
- Mass Distribution and Dispensing/ Administration of Medical Countermeasures
- Patient Movement, MOCCs, and Tracking
- Pre-Hospital (e.g., EMS)
- Pre-Hospital Mass Casualty Triage and Trauma Care
- Volunteer Management



Considerations for the Use of Temporary Surge Sites for All-Hazards Incidents

- Considerations for healthcare facility emergency planners developing temporary surge sites including:
 - Operationalizing a temporary surge site.
 - Clinical care delivery.
- Updated to combine existing separate resources for seasonal illness surges and all-hazards incidents.

<https://files.asprtracie.hhs.gov/documents/aspr-tracie-considerations-for-the-use-of-temporary-care-surge-sites-for-managing-all-hazards-incidents.pdf>

Considerations for the Use of Temporary Surge Sites for All-Hazards Incidents

Created February 2020
Updated November 2024

A wide range of incidents may result in a temporary surge of patients seeking healthcare services in a community. These include large mass casualty incidents (MCI), seasonal illness spikes and other disease outbreaks, and natural disasters resulting in damaged healthcare infrastructure or displaced patient populations.

Some of these incidents occur with little or no warning while others allow for advance planning. While some healthcare surge incidents are resolved within hours of their onset, others require months of management. This considerations document describes the major issues healthcare facility emergency planners should account for when planning temporary patient surge sites. For the purposes of this document, the term "hospital" is used to describe acute care hospitals with emergency departments (EDs) and free-standing facilities with emergency care capability. The term "temporary surge site" is used to describe a range of solutions, including the use of non-patient care areas (e.g., waiting rooms), soft sided structures (e.g., tents), use of community infrastructure (e.g. community center), and mobile facilities to triage and/or treat patients. This document provides an opportunity for healthcare facilities to review their plans and procedures to ensure readiness for potential patient surges. Facility emergency managers should contact their state licensing agency and Centers for Medicare & Medicaid Services (CMS) Regional Office for information about specific licensing and certification requirements for such temporary surge sites.

There is little an individual hospital or healthcare system can do to prevent patient surge, but a region or healthcare coalition (HCC) can use coordinated strategies to help provide situational awareness to support patient surge management throughout the community. All hospitals must have an emergency operations plan (EOP) that includes patient surge strategies covering a range of impact from conventional to crisis – with crisis plans usually involving use of non-traditional spaces for patient care. Strong consideration should be given to activating these plans and implementing incident management whenever usual strategies to manage patient demand are inadequate. Surge is never solely an "emergency department problem," but should be addressed through facility-wide strategies, including inpatient and outpatient services.

Crisis Standards of Care Resources



[CSC Resource Page](#) and [CSC Topic Collection](#)



[CSC Considerations](#) and [CSC Briefs](#)



[Hospital Surge Capacity and Immediate Bed Availability Topic Collection](#)



[Hospital Crisis Standards of Care Resource Allocation Annex Template](#)



[Crisis Standards of Care: Lessons From the Pandemic](#) (Speaker Series)



[Crisis Standards of Care – Insights from the Pandemic and Pharmaceutical Supply Challenges](#) (Webinar)

Hospital Crisis Standards of Care Resource Allocation Annex

- Template to develop hospital Emergency Operations Plan annex for use during shortages that pose significant risks to patient outcomes.
 - Allocation of resources
 - Critical care patient triage

<https://files.asprtracie.hhs.gov/documents/template-hospital-csc-resource-allocation-annex.pdf>

Figure 1 – Crisis Care Clinical Progression - relationship of consequences of resource triage and expectations of process followed⁸

Maximize contingency strategies including regional load balancing and resource sharing/allocation

1. Space – graduated plans to maximize care spaces and expand critical care
2. Staff – graduated plans to maximize use of caregivers (ratios, non-traditional staffing)
3. Supplies – conserve, substitute, adapt, re-use

Recognize transition to crisis – significant risk of poor patient outcome due to resource limits
Shift decision-making focus to population needs in addition to individual patient needs

Discontinue non-beneficial care (i.e. survival not expected, no reasonable benefit)

1. Avoid implicit triage - continue to initiate interventions unless evidence of overwhelming mortality is clear
 - Consultation / validation with experienced provider required if withholding initial intervention unless in usual scope of practice (e.g. neurosurgeon evaluating catastrophic head injury)
2. Withdraw or de-prioritize non-beneficial care according to usual or expedited processes
3. Assure that patient preferences are documented for all patients including desire for protracted mechanical ventilation and/or multi-organ support

Low consequence strategies

Clinical teams target resources to those most likely to benefit

Consultation not required unless outside usual scope of practice

Examples

- Full featured ventilators for patients with most complex ventilation requirements
- Highest trained staff provide care to most complex patients,
- Adjust admit, discharge, and transfer criteria to optimize use of resources according to demand – use 'bed control / bed triage' provider

Moderate consequence strategies

Shared or rationed resources or significant access delays unusual for facility or care provided on unit and by staff that does not provide that level of care

Consultation required, report intervention / issue to incident command

Develop and circulate best practices for specific shortages

Examples

- Shorten or delay dialysis runs
- Provide consultation support for care-in-place when cannot move patient to critical care unit
- Ration medications (target most likely to benefit / divide doses)

High consequence strategies

Unable to offer beneficial care or must withdraw resources – highly likely to result in morbidity / mortality

1. **Multi-member triage team engagement required** for withdrawal of resources or competing demand for specific life-saving resources
2. Identify patients receiving **inappropriate** life-prolonging care based on the situation and reduce or discontinue these cares
3. Must follow best practice guidelines of facility for restrictions on initial care / triage (e.g. intubation)

Examples

- Triage patients for ECMO
- Triage limited ventilators or other respiratory support
- Offer critical care beds to those most likely to benefit when large numbers with life-threatening conditions

⁸This is a capsule summary of progression – facility should include specific plans for consultation, triage team, etc.

⁸ Modified from The Joint Commission Journal of Quality and Patient Safety. Hick J.L., Hanfling D, and Wynia M. Hospital Planning for Contingency and Crisis Conditions: Crisis Standards of Care Lessons from COVID-19. 2022 Jun-Jul;48(6-7):354-361. doi: 10.1016/j.jcjq.2022.02.003. Used with permission.

Select Medical Operation Coordination Centers (MOCC) Resources

- [MOCC Resource Page](#)
- [Exchange Issue 18: Innovations in Health Care Surge Capacity Management](#)
- [MOCC Brief](#)
- [MOCC/Patient Load-Balancing: Summary of Lessons Learned during COVID-19](#)
- [MOCC Toolkit \(Third Edition\) \(Pediatric and Burn Surge Appendices\)](#)
- [Patient Movement, MOCC, and Tracking Topic Collection](#)

Move **patients, staff,**
and
supplies



to the right
provider



at the right **time,**
in the right **way**



to **improve**
patient
well-being



Hospital Mass Casualty Response Plan Considerations

- Provides considerations/questions that hospital staff can address in the MCI plan
- Scope is primarily focused on the first hour of a response, though in some cases, considerations are longer-term
- Example sections: Initial Triage, Space and Care Adaptations, Secondary/Tertiary Triage, Family Support, Integration with Other Hospitals/ HCC/ Emergency Management

Hospital Mass Casualty Incident Response Plan Considerations

7. Space and Care Adaptations	
Considerations/ Questions	Description/ Examples
7.1. How are beds cleared in the ED anticipating incoming victims?	Strategies include consolidating patients in lower acuity areas, moving pending admits up to inpatient hallways or other locations, moving stable ambulatory patients back to internal triage or observation areas, and discharging patients. Include a plan for rapid patient hand off to non-ED medical personnel staffing these areas.
7.2. Where is the overflow area for critically injured patients?	Assuming that demand exceeds available resuscitation beds, staff must determine whether to add patients to those rooms to maximize staff ability to monitor, place patients into other areas of the department suitable for critical care, or both/other strategies.
7.3. What area(s) may be used for care of patients with minor injuries?	Designated areas must accommodate large numbers of ambulatory patients with minor injuries but are close enough to the ED in case a patient deteriorates. Note the importance of careful triage (e.g., to avoid unrecognized penetrating truncal injury in ambulatory patient) and designating staff and supplies (e.g., designated MCI bins) for these areas.
7.4. What areas may be used for overflow of non-ambulatory patients?	Areas such as internal hallways in the ED, adjacent or nearby observation and procedure areas, conference rooms, and surgical services areas such as post-anesthesia care may be used to manage overflow. An established and practiced tiered approach is key to a smooth response.
7.5. Does the hospital have a "surge discharge" process/holding area? How is this activated?	The Hospital Command Center should determine the need for, and scope of, accelerated discharges based on the size of the incident. There should be a process on each unit (including ICU – which will not actually discharge but will "bump" patients to intermediate care) and holding area identified. Ensure there is a process for incident patient discharges that is different from normal/typical patient discharges.
7.6. How is inpatient care expansion achieved?	Early discharge of patients who can safely be sent home. Each monitored/floor unit should be prepared to receive a certain initial number of patients from the ED. Designated spaces for critical patient care expansion should be activated. Doubling rooms may be instituted depending on the hospital plan. Procedure areas and large meeting areas may be designated as "holding areas." <ul style="list-style-type: none"> • The ASPR TRACIE Mass Casualty Hospital Capacity Expansion Toolkit (Word, PDF) provides assistance on mapping inpatient care expansion.
7.7. What are some sources of additional staff for the ED and Operating Rooms (ORs)?	Rapid response teams, in-house teams, and others may be designated to support the OR and ED. Include protocols for requesting additional assistance from the labor pool/Hospital Command Center. OR and ED staff responding from home should always go first to their work areas and then to the labor pool/staging area if they are not needed. Consider using EMS personnel to assist in the ED if they are able to remain.

<https://files.asprtracie.hhs.gov/documents/aspr-tracie-mci-response-plan-considerations.pdf>

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Mass Casualty Hospital Capacity Expansion Toolkit

- Create scaled, prioritized specific space and operational expansion plans
- Ensure consistency of response
- Appropriately prioritize expansion (e.g., safest/easiest option first)
- Reflect these plans in a table format as a “one-pager” for quick reference by leaders during incidents

Emergency Department (ED) – Mass Casualty Incident (MCI)

ED – HAZMAT

Inpatient general medical/surgical

Intensive Care Unit (ICU)

Partnering with the Healthcare Supply Chain During Disasters

- Emergency planning and response considerations for healthcare supply chain owners, operators, providers, patients, and health care coalitions.
- Supply Chain Integrity Self-Assessment appendix for healthcare coalitions.

<https://files.asprtracie.hhs.gov/documents/aspr-tracie-partnering-with-the-healthcare-supply-chain-during-disasters.pdf>



Disaster Available Supplies in Hospitals (DASH) Tool

Hospital Pharmacy Module

Estimates supplies of medications a hospital should have in its pharmacy to meet seriously injured patient needs for 48 hours following an MCI.

USE THE MODULE

Personal Protective Equipment Module

Estimates minimum personal protective equipment (PPE) needed by hospital personnel managing patients suspected or known to be infected with a special pathogen.

USE THE MODULE

Burn Supply Module

Estimates supplies needed to care for critical burn patients with an average 40% burn surface area for the first 48 hours after a burn incident.

USE THE MODULE

Trauma Supply Module

Estimates supplies needed to care for seriously injured trauma patients for the first 48 hours after an MCI.

USE THE MODULE

<https://asprtracie.hhs.gov/dash-tool>

Select Burn Resources



[Burn Topic Collection](#)



[Burn Mass Casualty Incidents: Triage, Assessment, and Treatment Considerations](#)



[Mass Burn Event Overview](#)



[Extreme Weather and Healthcare– Are you Ready for a Burn Disaster?](#)



[Medical Operations Coordination Centers \(MOCC\) Toolkit, Burn Considerations for MOCCs Appendix](#)



[Exchange Issue 20: Preparing for and Responding to Mass Casualty Burn Incidents](#)

Family Support and Family Assistance

- Hospital Family Support
- Community
 - Family Reception Center
 - Family Assistance Center
- EMS
- Integration
- Communication

Tips for Healthcare Facilities: Assisting Families and Loved Ones after a Mass Casualty Incident

January 2025

Overview

Mass casualty incidents (MCI) can be human-caused or a result of a natural or technological disaster, and may overwhelm local healthcare systems, communications, and other services. Understandably, MCIs cause great concern among the loved ones of the wounded, missing, or deceased, who may rush to healthcare facilities, reunification centers, or the incident site to seek information and reunification. In the immediate aftermath of a mass casualty incident (MCI), those affected will have four fundamental concerns or needs:

1. Determining if their loved one was involved in the MCI;
2. Determining their loved one's whereabouts and injury status;
3. Obtaining information regarding the MCI and receiving available immediate support (e.g., food, shelter, clothing, and aid); and
4. Receiving their loved one's personal effects.

This [ASPR TRACIE](#) resource sheet summarizes family support strategies for **hospitals and healthcare providers** following an MCI and examines the collaboration between hospital support systems and jurisdictional family support initiatives.

<https://files.asprtracie.hhs.gov/documents/aspr-tracie-family-assistance-center-fact-sheet.pdf>

Additional Resources

- [Utility Failures in Health Care Toolkit](#)
- [Mass Violence Resource Page](#)
- [ASPR TRACIE-Developed Resources](#)

Mass Violence/Active Shooter Incident Tip Sheets

Mass Violence/Active Shooter Incidents: Community Response and Media Management

Mass Violence/Active Shooter Incidents: EMS Considerations

Mass Violence/Active Shooter Incidents: Expanding Traditional Roles to Address Patient Surge

Mass Violence/Active Shooter Incidents: Family Assistance

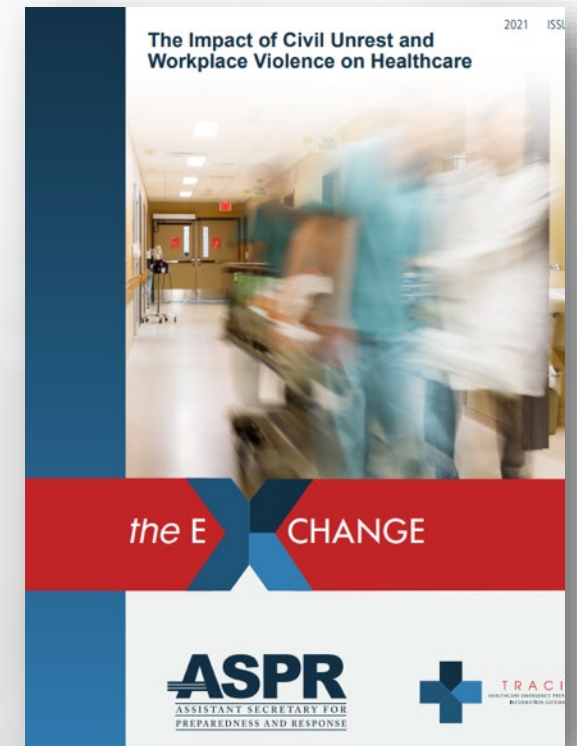
Mass Violence/Active Shooter Incidents: Fatality Management

Mass Violence/Active Shooter Incidents: Hospital Triage, Intake, and Throughput

Mass Violence/Active Shooter Incidents: Non-Trauma Hospital Considerations

Mass Violence/Active Shooter Incidents: Trauma Surgery Adaptations and Lessons

Mass Violence/Active Shooter Incidents: Trauma System Considerations



Contact ASPR TRACIE



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Question & Answer



Brian Mazanec, PhD, Deputy Assistant Secretary and Director, Center for Preparedness, Administration for Strategic Preparedness and Response

Closing Remarks

Rachel Lehman, Acting Director, ASPR TRACIE

Closing Remarks

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2026 Medical Leadership in Disaster Preparedness and Response Virtual Conference -



CME Questions



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