Access the entire webinar series here: https://files.asprtracie.hhs.gov/documents/lessons-learned-in-healthcare-operations-during-a-pandemic-speaker-series-summary.pdf

Access speaker bios here: https://files.asprtracie.hhs.gov/documents/excess-mortality-and-covid-19-surges-speaker-bios.pdf

Access this recording here: https://attendee.gotowebinar.com/recording/1212084444438929420

TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS INFORMATION GATEWAY

Healthcare Operations during the COVID-19 Pandemic- Speaker Series

October 2021

ASPR
ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE

Disclaimer

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October 5, 2021

Nearly 1 in 4 COVID-19 deaths potentially attributable to surge-strained hospitals

A case in point for load balancing

Sameer S. Kadri, MD, MS

Head, Clinical Epidemiology Section,

Tenure Track Investigator

Critical Care Medicine Dept., NIH Clinical Center

Disclosures

- **No financial interest or relationships to disclose**

Global Death Toll = 4.55 Million (Sep'21)

Photo Credit: NY Times, The Sun, WSJ, Reuters

Ominous Landmark: But Why Are They Dying?

Virus?

Age, Comorbidity?

Care Quality?

NEWS

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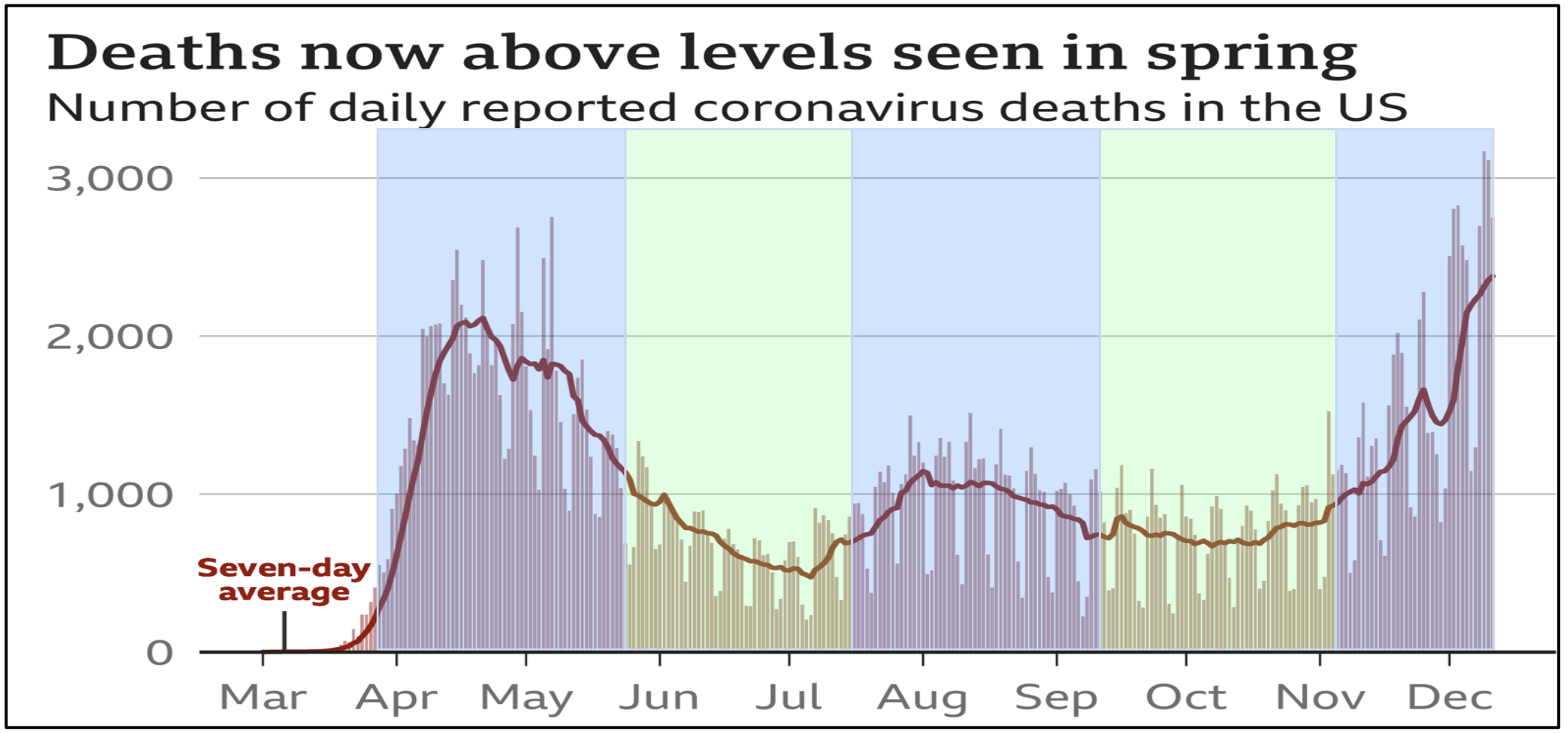
US & Canada

Covid-19 in the US: Bleak winter ahead as deaths surge

By Mike Hills
Visual journalist



Source: COVID Tracking Project; BBC

Modifying Standards →Public Health Emergency

	CONVENTIONAL	CONTINGENCY	CRISIS
STANDARD OF CARE	Usual	Functionally equivalent	Crisis standard
SPACE	Usual	Patient care areas repurposed (e.g., PACU)	Non-patient care areas (e.g., parking lot)
STAFF	Usual	Step up	Step over
SUPPLIES	Usual	Conservation, adaptation	Severely lacking, relocation of resources

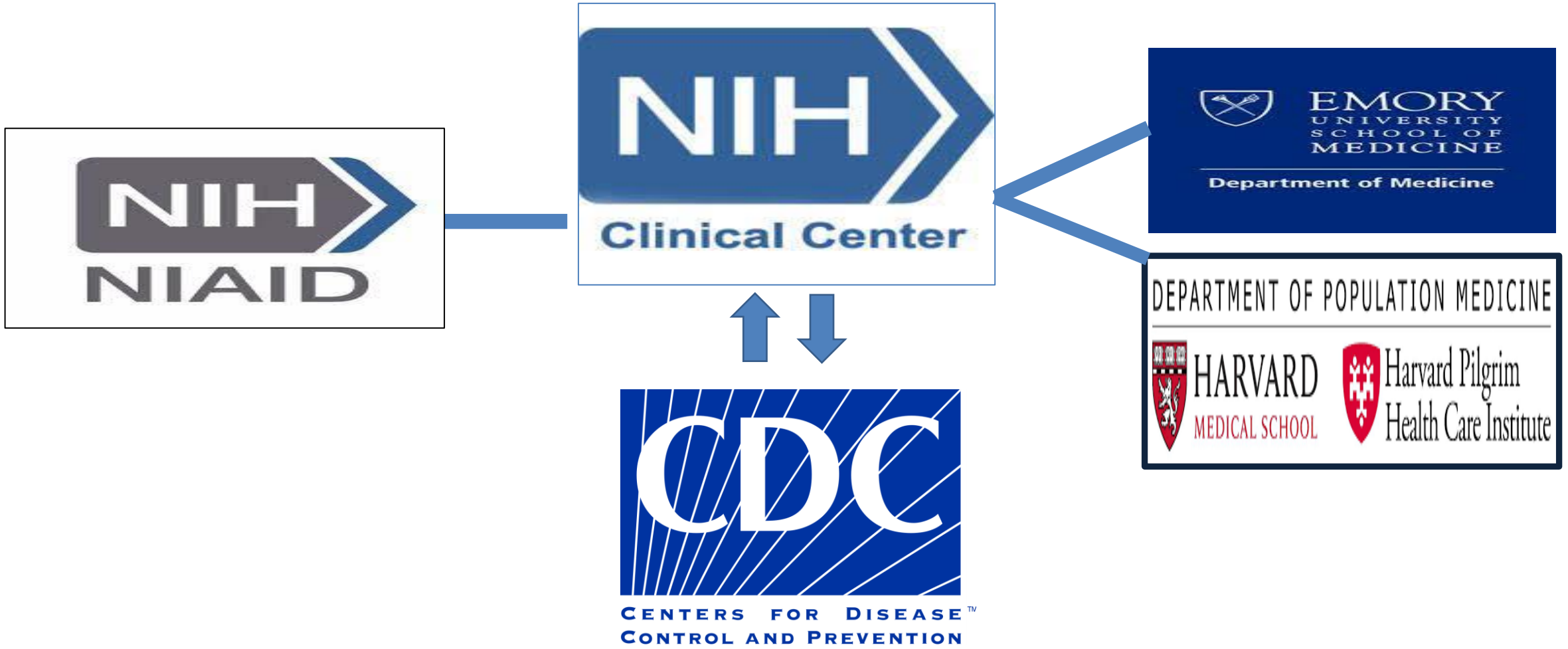
DoH New Mexico, Crisis Std of Care 2018

Modifying Care Standards Comes at a Cost

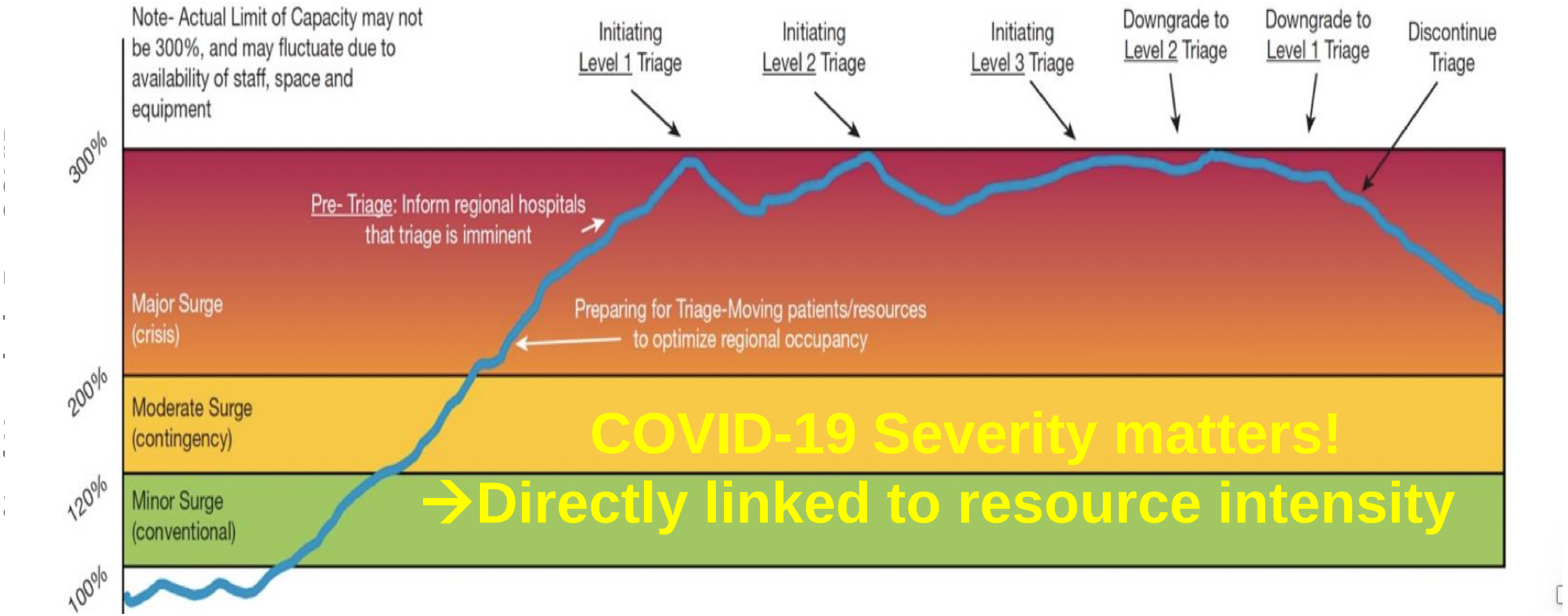
- Medication errors
- Provider fatigue
- Scanty documentation
- Higher bar to hospitalize
- Earlier trigger for comfort care
- Practicing outside scope
- Impact on non-COVID illnesses

Photo Credit: Scott Ball / San Antonio Report; Reuters

Rapid Interagency Collaboration

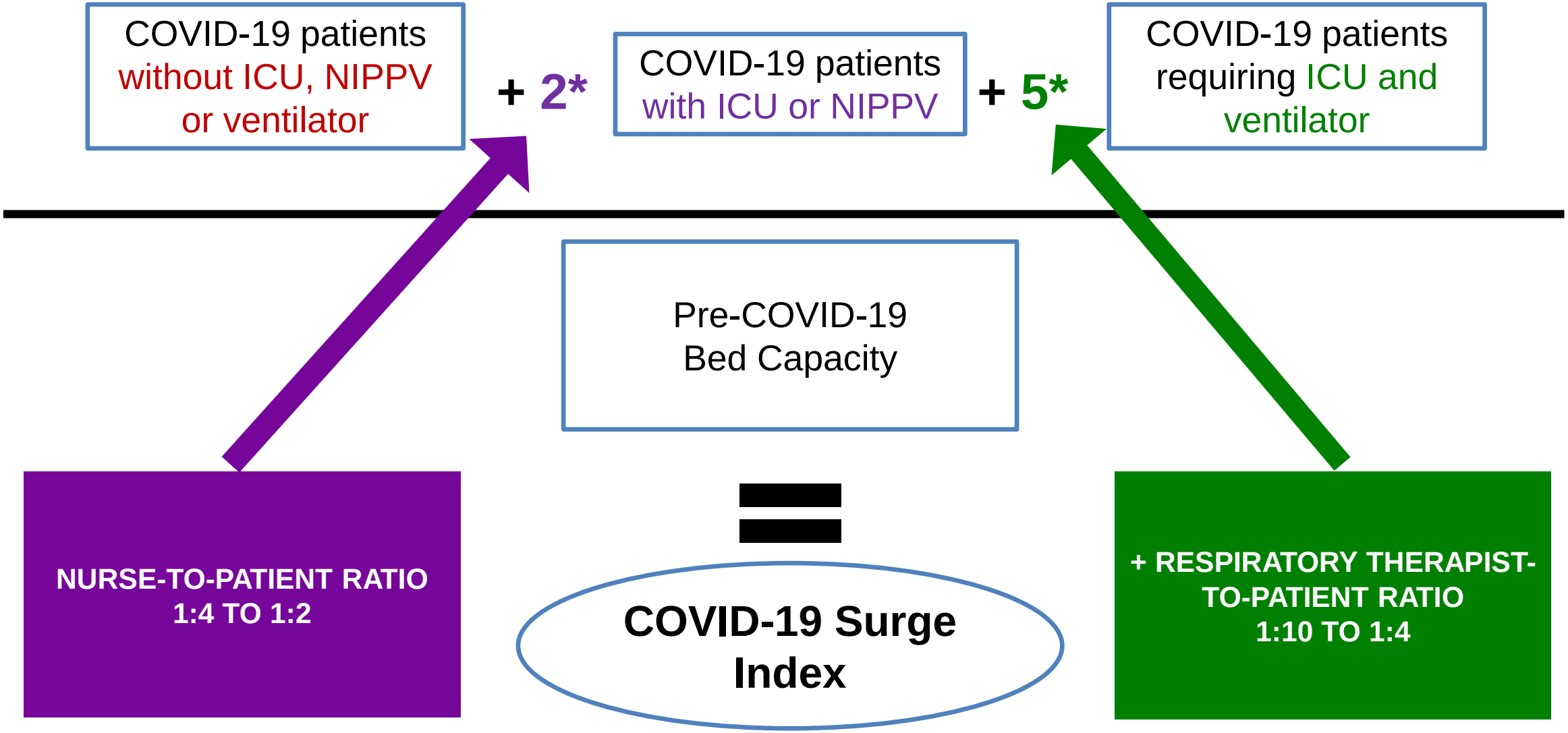


Defining “Surging Hospital”



Maves et al. Chest. 2020

Surge Index Formula



Added Value of Surge Index Over Patient Counts

HOSPITAL A, 100-bed

June 2020

20 COVID-19 admits

None needing intubation, ICU or NIPPV

CASES=20
SURGE INDEX=2

HOSPITAL B, 50-bed

June 2020

20 COVID-19 patients

All intubated

CASES=20
SURGE INDEX=20

ORIGINAL RESEARCH

Annals of Internal Medicine

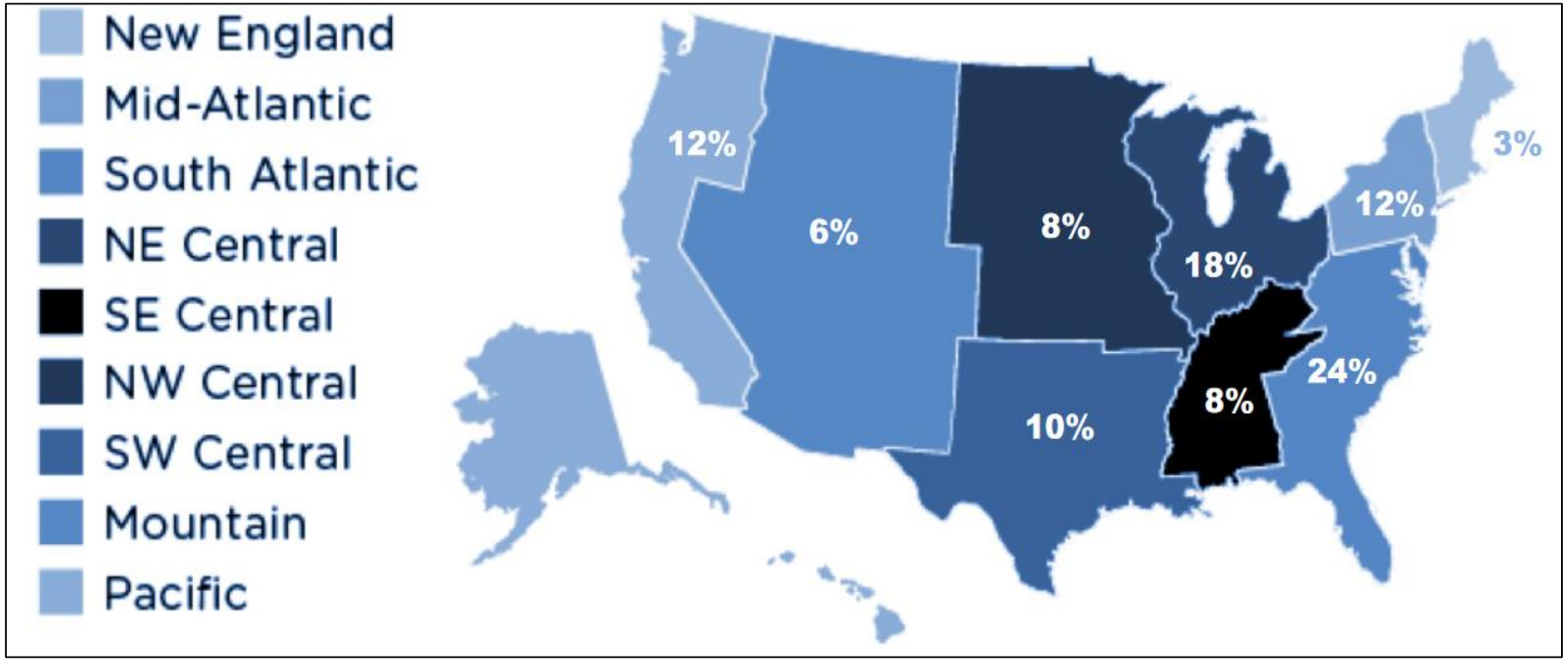
Association Between Caseload Surge and COVID-19 Survival in 558 U.S. Hospitals, March to August 2020

Sameer S. Kadri, MD, MS; Junfeng Sun, PhD; Alexander Lawandi, MDCM, MSc; Jeffrey R. Strich, MD, MHS; Lindsay M. Busch, MD; Michael Keller, MD; Ahmed Babiker, MBBS; Christina Yek, MD; Seidu Malik, PhD; Janell Krack, PharmD; John P. Dekker, MD, PhD; Alicen B. Spaulding, PhD, MPH; Emily Ricotta, PhD, ScM; John H. Powers III, MD; Chanu Rhee, MD, MPH; Michael Klompas, MD, MPH; Janhavi Athale, MD; Tegan K. Boehmer, PhD; Adi V. Gundlapalli, MD, PhD; William Bentley, MS; S. Deblina Datta, MD; Robert L. Danner, MD; Cumhur Y. Demirkale, PhD*; and Sarah Warner, MPH*

Ann Intern Med 2021

Premier™ Healthcare Database
Special COVID-19 Release

Administrative dataset from over 900 U.S. inpatient and outpatient care centers



Patient Level Demographics
Billing Codes
Diagnosis Codes
Procedure Codes
Microbiology Results*
General Laboratory Results*
Vitals*

** Select hospitals reporting TheraDoc Data*

Performance of COVID-19 ICD Code vs PCR

Table. Accuracy of the *ICD-10-CM* COVID-19–Specific Diagnosis Code in Capturing Inpatient Discharges Displaying PCR-Confirmed COVID-19 From 150 Hospitals Between April 1, 2020, and May 31, 2020

SARS-CoV-2 PCR test result

No.

C

C

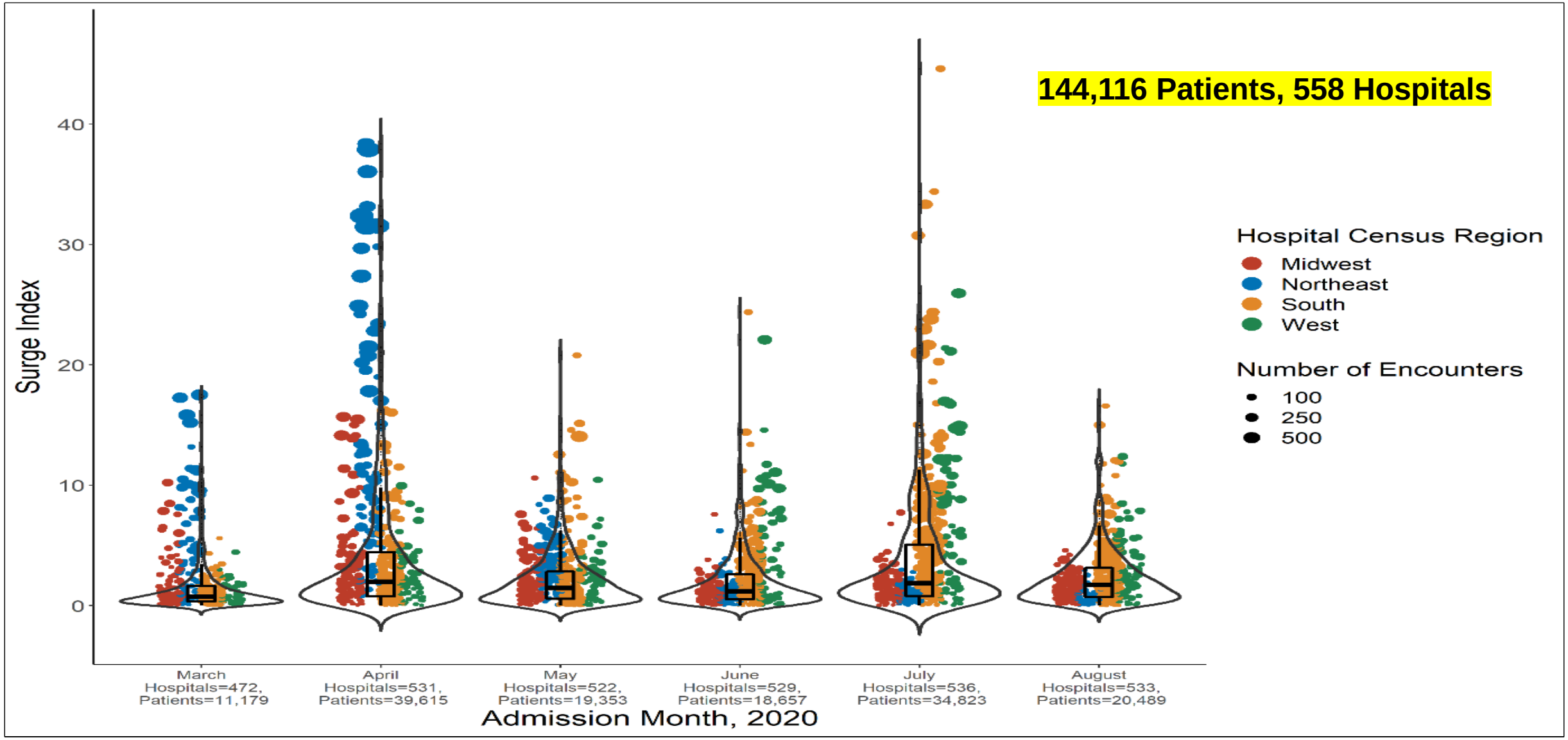
Tota

Billing records accurate for capturing patients hospitalized with COVID-19

Sensitivity: 98.01%	**Positive Predictive Value: 91.52%**
Specificity: 99.04%	**Negative Predictive Value: 99.79%**

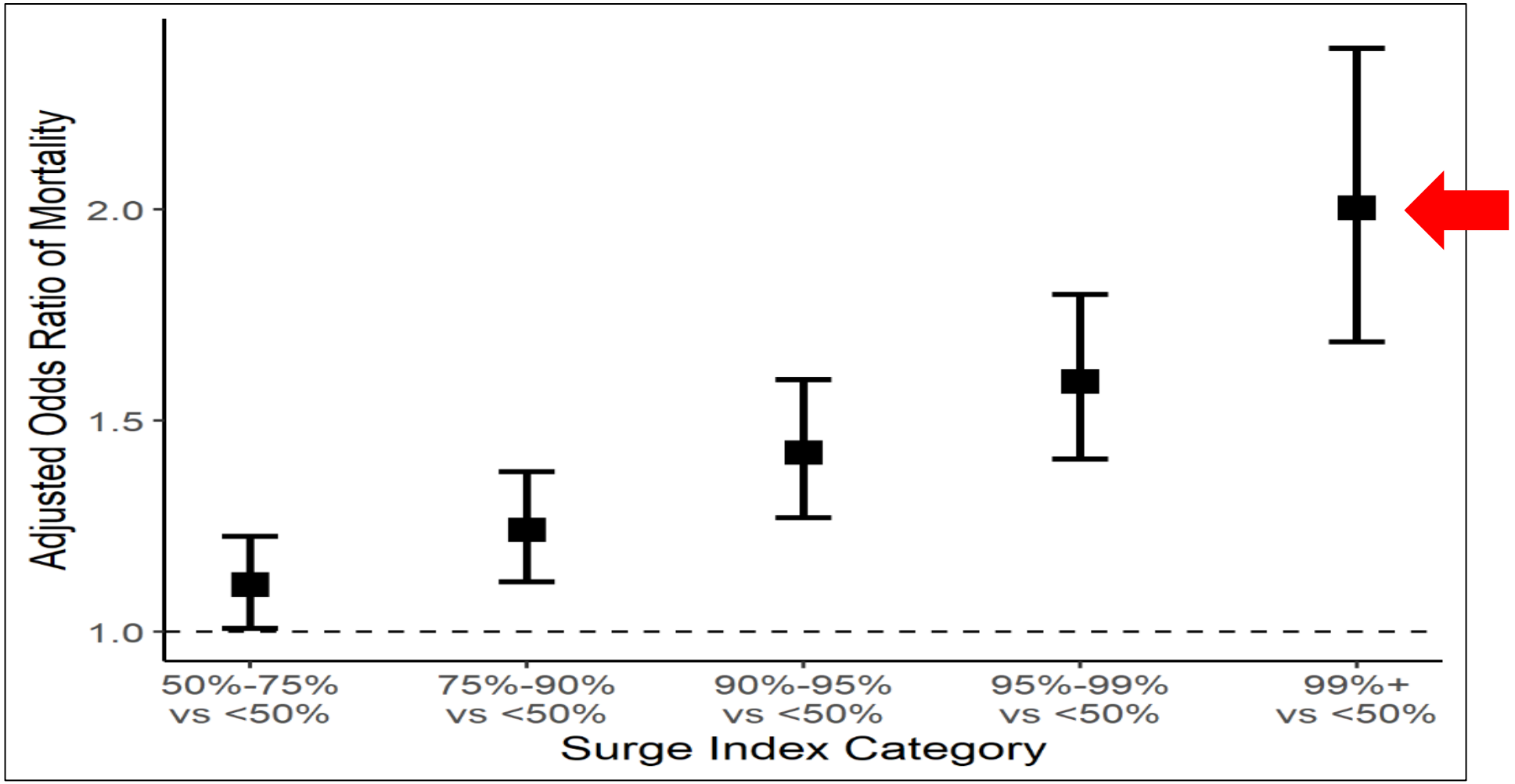
Kadri, Gundrum, Warner et al. JAMA 2020

Surge Index Varied by Hospital, Month, & Region



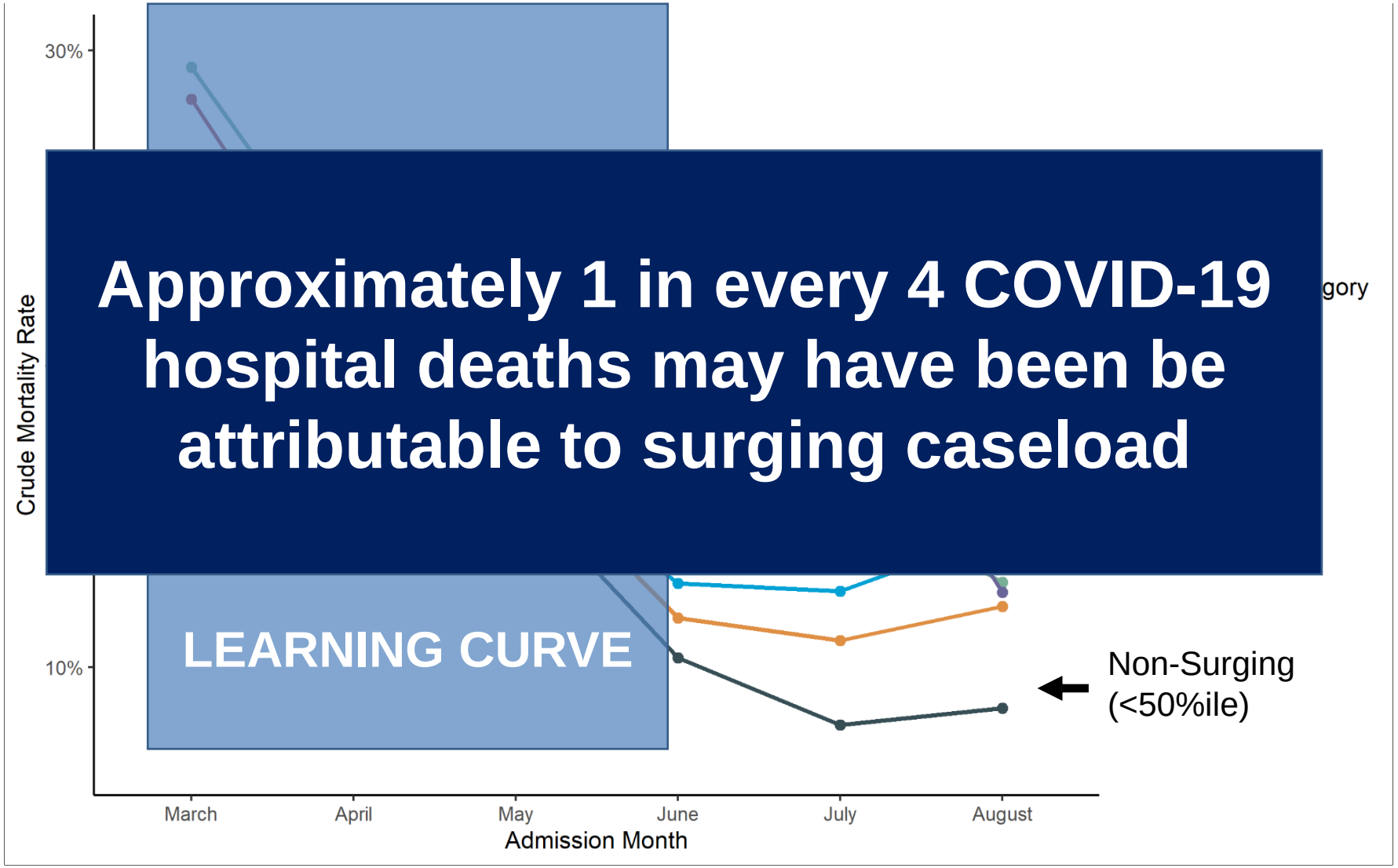
Kadri et al. Annals of Internal Med. 2021

Mortality Risk Doubled at Worst Hit Hospitals



Kadri et al. Annals of Internal Med. 2021

Excess Surge-Related Mortality Persisted Despite Overall Survival Improvements



Approximately 1 in every 4 COVID-19 hospital deaths may have been be attributable to surging caseload

Unpublished

Lessons for Hospitals and Governments

- Top decile of surge index→**80%** of caseload surge–attributable deaths

- Top 1 percentile→**37%** of caseload surge–attributable deaths

No. of hospitals in the top 1% of Surge Index
Mar-May 2020 : 49 hospitals
Jun-Aug 2020: 20 hospitals

→ **Earlier** support to and decompression of these **few** hospitals **could have saved many lives**

ASPR Grand Rounds Session (8/26) Audience Survey

- Implications of **Medical Operations Coordinator cells (MOCCs)** for load balancing
- 328 total participants (diverse backgrounds, ED, EMS healthcare workers and administrators)
- 44 U.S. States and DC
- 4 participants from 4 other countries (Brazil, Saudi Arabia, Tuvalu, Uganda)

My Region has an Active Medical Operations Coordinating Cell (MOCC)

- Not now, and don't plan to – 13%
- Not now, but plan to sometime – 5%
- Not now, but want to emergently – 1%
- Want to, but barriers prohibitive – 3%
- Yes, operated by the state – 15%
- Yes, operated by hospitals – 23%
- Yes, operated by emergency management – 9%
- Yes, operated by "OTHER" (please specify "Other" in chat) – 6%
- Don't know – 25%

Among 186 responses

Most Difficult Barrier to Implementing a MOCC in my Region?

- Lack of interest or perceived need – 10%
- No leader taking charge - 10%
- Don’t know how to set one up – 4%
- Lack of financial support – 5%
- Concern about negative financial impact – 6%
- Unwillingness to participate – 7%
- Lack of agreement to load balance – 9%
- Lack of support from hospital administration (s) – 6%
- Lack of support from clinicians – 2%
- N/A. We have a MOCC in our region – 40%

Among 137 responses

My Region's MOCC has Reached Out to Other Regions' MOCCs to Coordinate Patient Placement

- Yes – 32%
- No – 11%
- Don't know – 57%

Among 152 responses

Implications for the Current Delta Variant Phase?

- The surge index might help:
  → identify strained hospitals sooner, giving lead time for action
  → Identify strain among smaller, rural hospitals

More than a year and a half later…many hospitals are still compromised

- We need to:
  → counter barriers that preclude capacity transfers and load balancing
  → raise awareness about medical operations coordination centers (MOCCs) and their utility

Conclusions

- High caseload surges can make hospitals dangerous places
- Rapidly expanding bed capacity is a stop gap, not a solution
- Transferring patients to less impacted hospitals might even the load and prevent a single hospital from becoming compromised
- Load balancing seems to be underutilized
- MOCCs could benefit from higher-level leadership and supervision

COVID-19: What Are We Learning?

John Hick, MD

Hennepin Healthcare

Overarching

- Dynamic
- Focus on contingency and graceful degradation – the line between contingency and crisis is very blurry
- One resource or many affected
- Reluctance to acknowledge the situation
- Need to have access to clinical expertise – bedside support and transport decision support
- Fatigue, burnout, moral distress, cognitive overload compound care expansion

Equity

- Don’t exacerbate underlying disparities
- Direct additional resources to preventing illness in at-risk population
- Examine CSC frameworks for potential equity / discrimination issues
- Key impact areas
  - Urban safety net hospitals
  - Rural hospitals

State Actions

- Politics plays a key role
- State resources, authority, and leverage is needed for effective response
- Regulatory, administrative, legal support
- Information exchange – voluntary vs. required data sets from hospitals, best epi and practice information to hospitals

Hospital Actions

- CSC is not a separate plan – integrate with surge planning
- Understand the regional structure and resources
- Adopt a consistent regional approach and nomenclature – including for restricting non-emergency procedures
- Think outside the facility and system
- Standard work – checklists, identify key vulnerabilities / risks in patient care
- Prioritization – focus on acute care delivery
- Staff – education on triage, behavioral health support
- Information sharing – current state, best practices

MOCC Operations

- Key facet of response – must assure part of future response structures
- Expectations for critical care transfers and load-balancing
- Define public/private partnership, authorities, information shared
- Define prioritization mechanism
- Integration with EMS
- Should not be based on insurance or other non-medical factors
- Regional – catchment areas, state, inter-state

Clinical Decision-Making

- Focus on best clinical care possible given the situation
- Do NOT focus on ventilator triage – but do consider ECMO – regional approach
- Avoid implicit triage
- Allocation decisions should not be ad hoc bedside – should be supported by consultation and integration into incident management
- Individualized patient assessment based on prognosis
- Withholding interventions is triage! (unless consistent with known patient wishes)

Additional Resources

- Hick J, et al. Crisis Standards of Care and COVID-19: What Did We Learn? How Do We Ensure Equity? What Should We Do? National Academies of Medicine. August 2021.
- Kadri SS, et al. Association Between Caseload Surge and COVID-19 Survival in 558 U.S. Hospitals, March to August 2020. Ann Intern Med. 2021 Sep;174(9):1240-1251.
- ASPR TRACIE COVID-19 Patient Surge and Scarce Resource Allocation

Speaker Roundtable

Dr. John Hick, Hennepin Healthcare
Dr. Sameer S. Kadri, NIH

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