

COVID19 Series

July 21, 2020

Tele-Health:
A Nursing Perspective



*Nurses Transforming Healthcare
Through Informatics*

Acknowledgement



This program is presented to you by
NENIC and Boston Children's Hospital



Disclaimers

-
- The speakers have no potential conflicts of Interest.
 - There is no commercial support for this program.

Welcome

Teresa A. Rincon PhD, RN

Director of Clinical Operations and Innovation
Virtual Medicine, UMass Memorial Health Care (UMMHC)
Teresa.rincon@umassmemorial.org



Lisa C. Dutton, MSN, RN-BC, NE-BC

Professional Development Manager, Ambulatory Nursing
Brigham and Women's Hospital
ldutton@bwh.harvard.edu



Laura MacLean MS, RN-BC

Nursing Program Director of Ambulatory Informatics
Brigham and Women's Hospital
lmaclean@bwh.harvard.edu

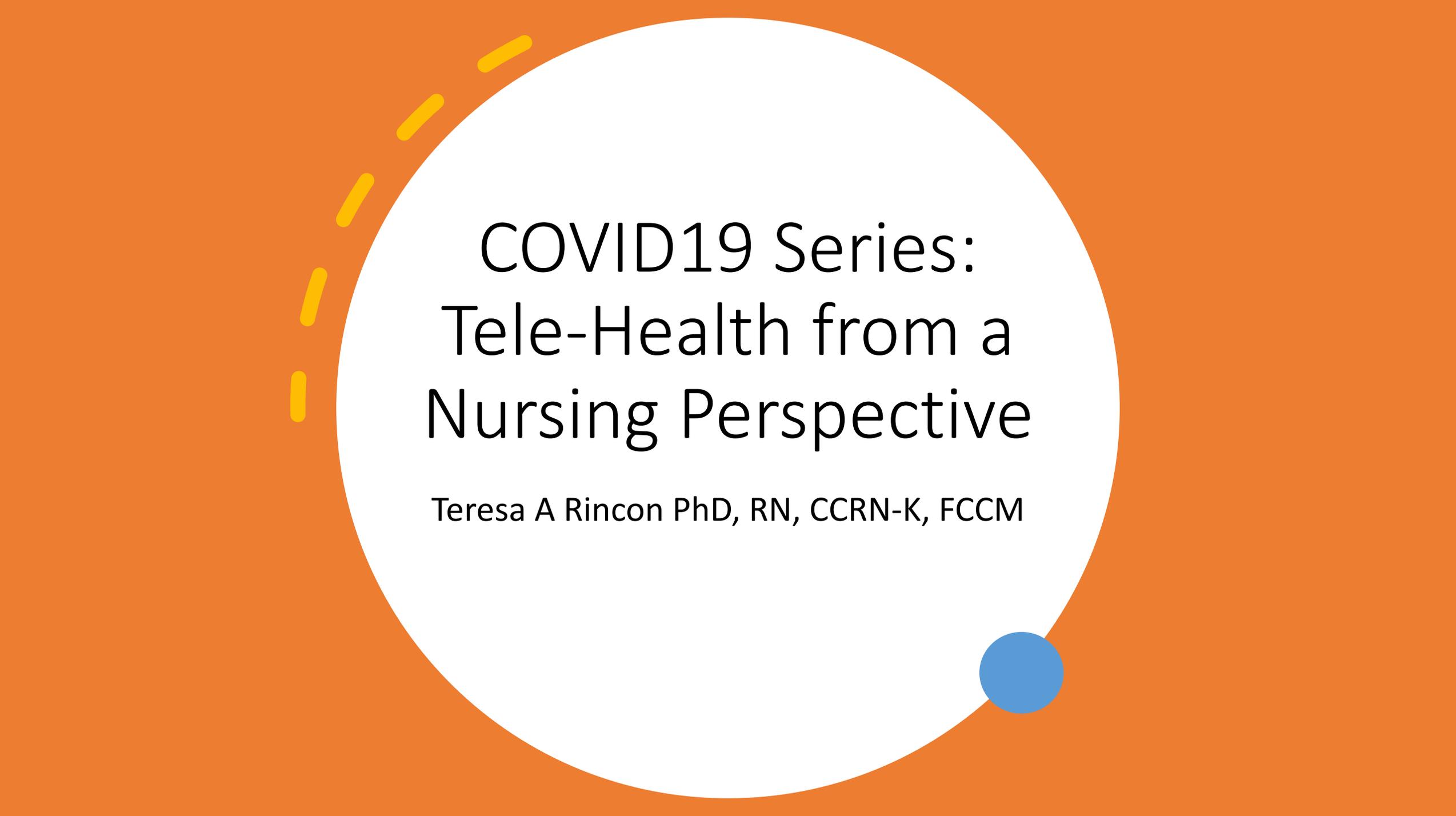




Welcome



Nurses Transforming Healthcare Through Informatics



COVID19 Series: Tele-Health from a Nursing Perspective

Teresa A Rincon PhD, RN, CCRN-K, FCCM

Objectives/ Content Outline

- Describe various applications of telehealth: past, present and emerging
- Identify benefits and challenges to delivering telehealth services
- Understand modifiable factors that influence adoption and effectiveness of telehealth services
- Recognize innovations that can be used to deliver telehealth services that enhance access, timeliness, and effectiveness of care
- Review the use and impact of telehealth during the Coronavirus Disease 2019 (COVID-19)

ERRARE
HUMANUM
EST

Annoa Sen

- In 1999 the Institute of Medicine's (IOM) Committee on Quality of Health Care in America wrote the *To Err is Human: Building a Safer Health System*. **An estimation of at least 44,000 and possibly as many as 98,000 Americans die in hospitals annually as a result of medical errors.**
- A recent Johns Hopkins study reported that more than **250,000 people** in the U.S. die every year due to medical errors while others claim the numbers to be as high as **440,000**.
- Whether we count deaths in tens of thousands or hundreds of thousand per year, too many people are dying from medical errors.

The 6 “Aims for Improvement,”

Quality Care is STEEEP!



To Err Is Human report asserted that the problem is that good people are working in bad systems and those systems need to change.

1999



5 Ways Telehealth Is Taking Modern Healthcare to the Next Level

- Telehealth Brings Expertise to All Areas
- Telehealth Assists People with Limited Access to Specialized Care
- Telehealth Is Practical and Relatively Inexpensive for Patients
- Telehealth Maximizes Access to Mental Health Care
- Telehealth's Benefits Set to Grow

Telehealth's Benefits Set to Grow Snell.M 2019. 5 Ways Telehealth is Taking Modern Healthcare to the Next Level. HealthTech.

<https://healthtechmagazine.net/article/2019/04/5-ways-telehealth-taking-modern-healthcare-next-level>

Evolution of Telehealth



1905
Telephone Orders Questioned



1924
Teledactyl envisioned

1959
Nebraska hospitals establish first interactive video link

1963
MGH opens remote medical outpost at Logan Airport



1960s
NASA takes on telemedicine

1964
Norfolk State Hospital provided telehealth services



1980
MIT Media Lab pioneers "Talking Heads" telepresence

1993
American Telemedicine Association (ATA) founded



2003-2006
First Wave of TeleICUs open across the US



2013-2018
AACN TeleICU Nursing Guidelines & Consensus Statement

2007-2011
AACN established CCRN-E

2000
First TeleICU opens Norfolk VA



1906
First EKG transmitted by telephone



1948
First radiologic images transmitted by telephone



1960s
Telehealth Programs piloted with Dept of Public Health, DOD, Health & Human Services



1974
First Telenursing Article Published



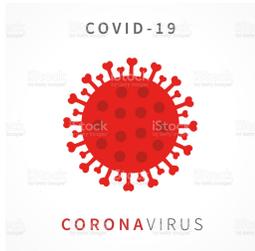
1989
Dawn of the modern Internet



1999
CMS begins reimbursing for telehealth consults in under-served rural areas



Explosion of mobile apps, eVisits and mHealth



Acknowledgement: Supported with the 1st AACN Impact Grant

Innovative Approaches



ASSESSING THE IMPACT OF TELEMEDICINE ON NURSING CARE IN INTENSIVE CARE UNITS

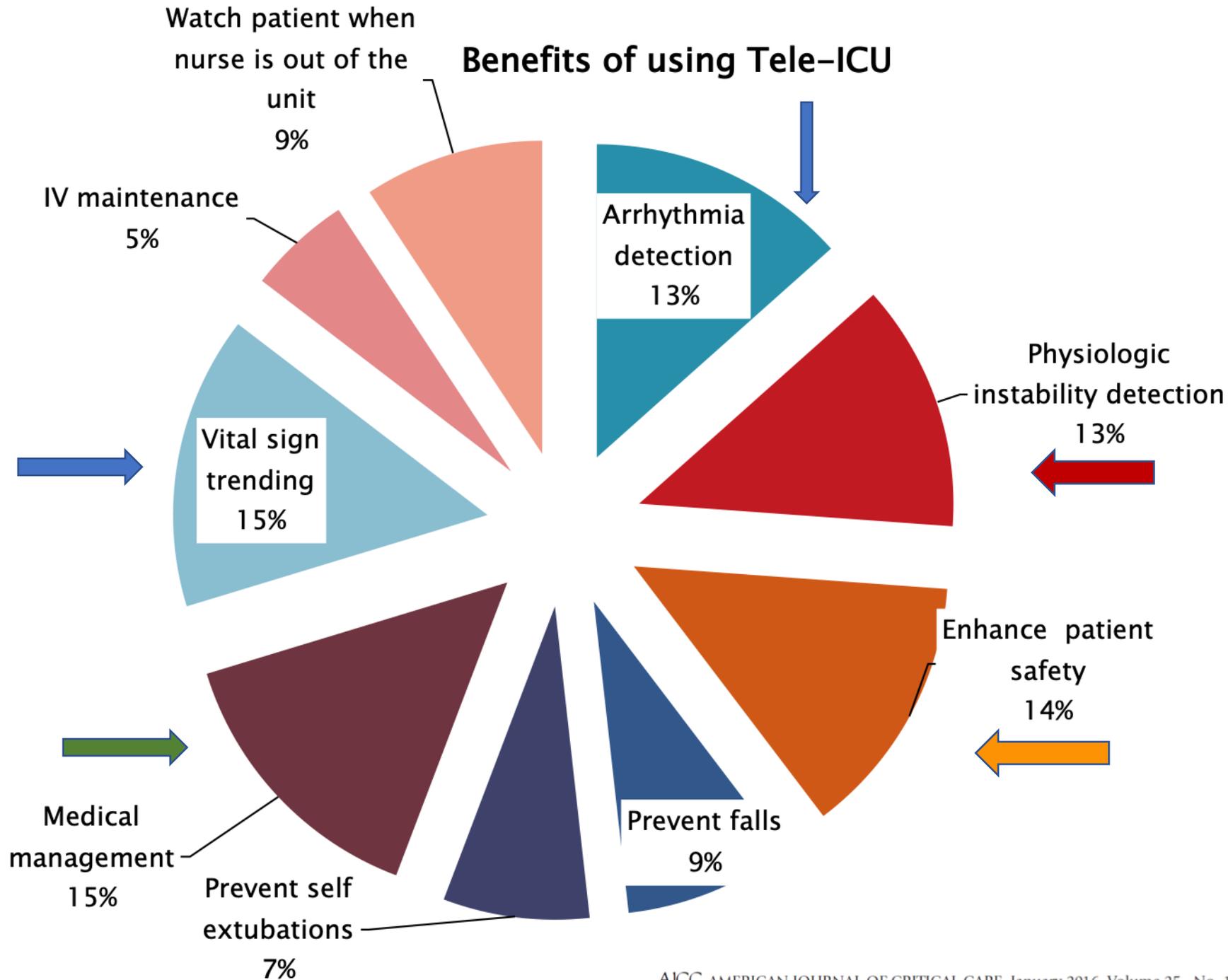
Objectives To conduct a national benchmarking survey of nurses working in intensive care telemedicine facilities in the United States.

Methods In a 2-phased study, an online survey was used to assess nurses' perceptions of intensive care telemedicine, and a modified 2-round Delphi study was used to identify priority areas of nursing.

Kleinpell, R., Barden, C., Rincon, T., McCarthy, M., & Zapatochny Rufo, R. J. (2016). Assessing the Impact of Telemedicine on Nursing Care in Intensive Care Units. *American Journal of Critical Care*, 25(1), e14-e20. doi:10.4037/ajcc2016808

What do TeleICU Nurses Do?

Benefits of using Tele-ICU





AACN TeleICU Nursing Consensus Statement 2018

- TeleICU nurses are described as critical care nurses who use technological tools to participate in nursing care for patients.
- They are nurse experts with advanced knowledge, situational awareness, skills and abilities in critical care who also should possess advanced skills in communication, collaboration, mentoring, surveillance, decision-making, systems thinking and use of technology.
- <https://www.aacn.org/nursing-excellence/standards/aacn-teleicu-nursing-consensus-statement>

Example:
Sepsis
Surveillance



Leading cause of death globally
+ 5 million deaths



High rates annually
+ 31 million sepsis cases

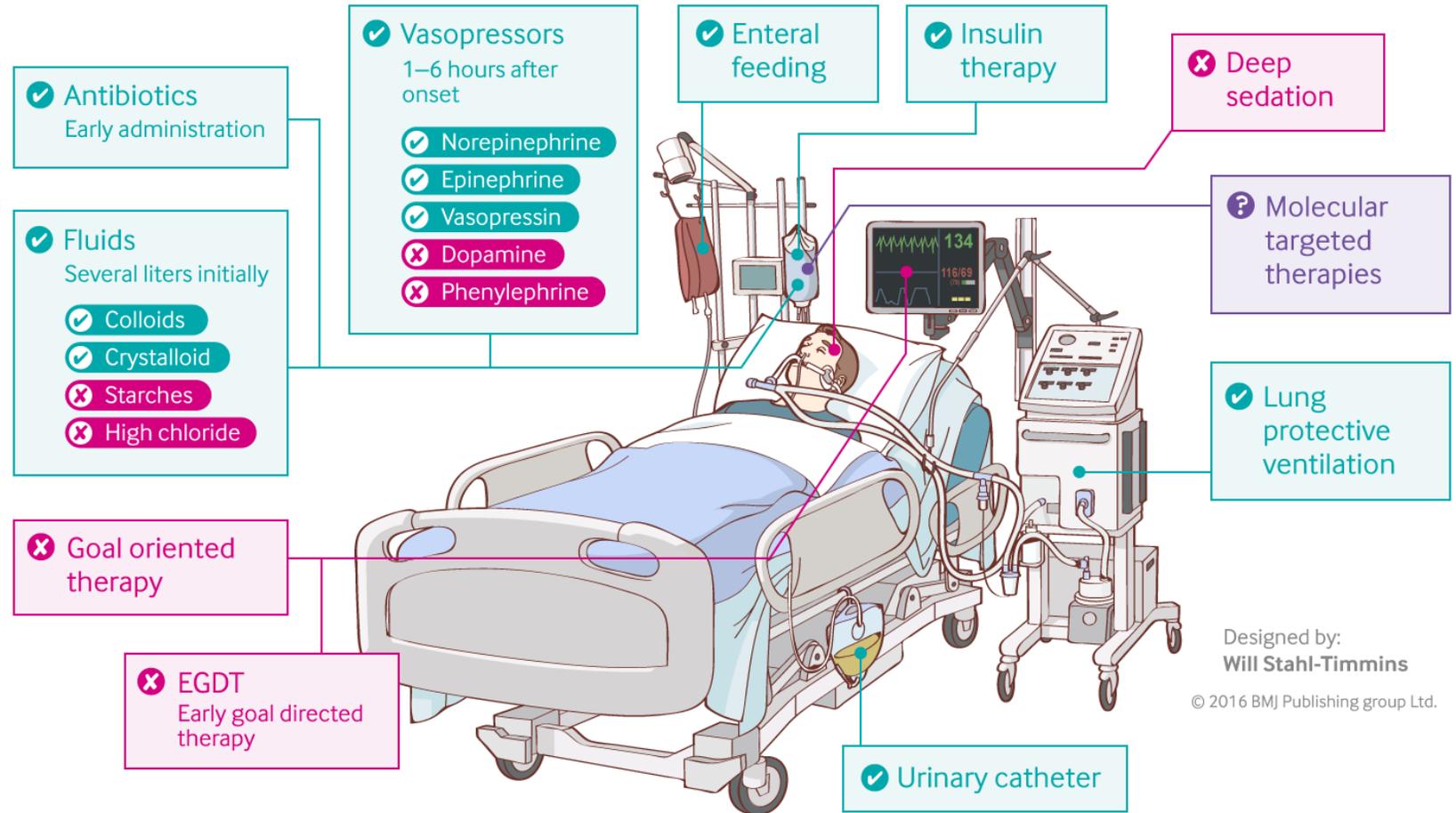
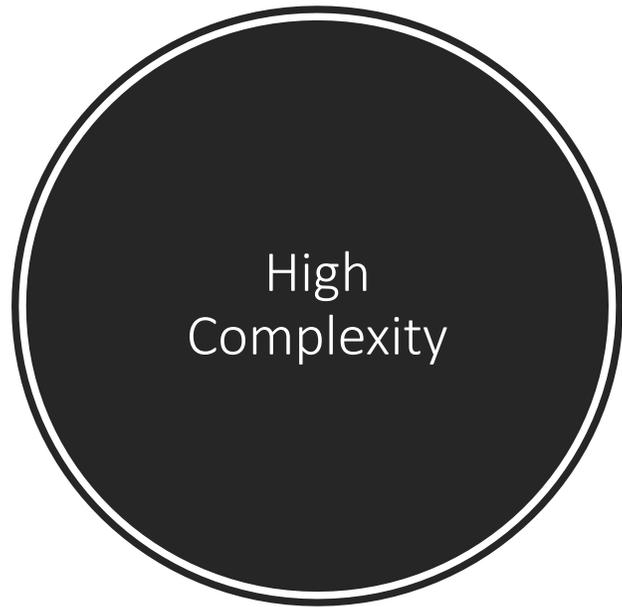


Very expensive condition to treat
+ 24 billion annually in the U.S.



Difficult to detect, define, and treat
Each hour delay = 4% increase of death

Treating sepsis: the latest evidence



Designed by:
Will Stahl-Timmins
© 2016 BMJ Publishing group Ltd.

Sepsis: pathophysiology and clinical management

BMJ 2016;353:i1585 doi: <https://doi.org/10.1136/bmj.i1585> (Published 23 May 2016)

Increased
complexity
demands an
increase in
expertise



Sutter Health Experience



We saw sepsis care as a
phenomena of concern in 2004.



Initially we tried to train hundreds of
inpatient and emergency department
(ED) nurses to identify sepsis.

Knowledge Management Conceptual Framework

- Knowledge Management (KM) focuses on acquisition, sharing, translation and application of knowledge
- Knowledge translation is used to close the gap between knowledge and practice in order to improve:
 - adherence to evidence
 - outcomes
 - clinician effectiveness

Rincon T. Integration of Evidence-Based Knowledge Management in
Microsystems: A Tele-ICU Experience. *Critical Care Nursing Q* 2012;
35:335-40



TeleICU Nurse Sepsis Surveillance



A centralized, remote team of expert nurses used a software application to identify and advance clinical decision-making for sepsis patients



Assessed patients for sepsis upon admission to the ICU and every 12 hours



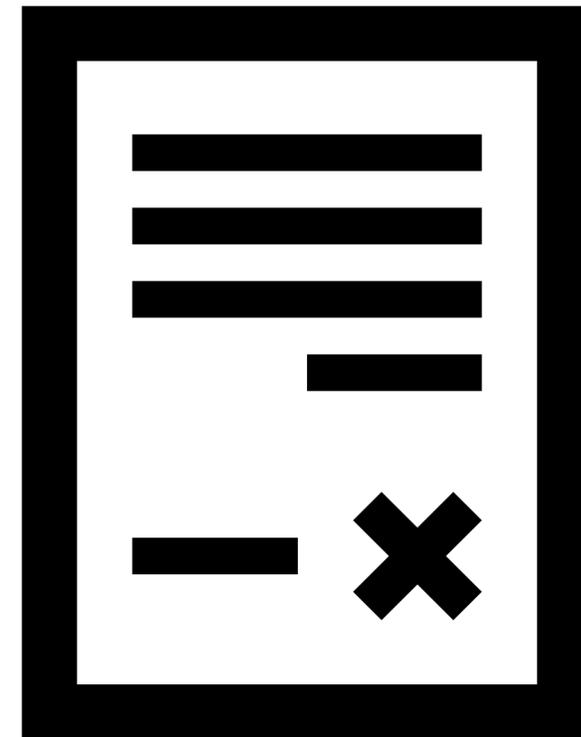
Influenced repetitive, continual, and routine diffusion of evidence-based practices at multiple hospitals in a large healthcare system



Collected data on incidence of and compliance to the bundle through an electronic form that supported near-real time auditing and feedback.

Increased documentation of ICD-9-CM CODES 995.92 and 785.52 with template-oriented monitoring and screening by a Tele-ICU

- Reported incidence per ICU admission:
 - ICD-9-CM 785.52. for 2007-2008: 846/16,359 (5.2%) and 2009: 297/4057 (7.3%) p-value 0.0001.
 - ICD-9-CM 995.92 for 2007- 2008: 473/16,359 (2.9%) and 2009: 202/4057 (5.0%) p-value 0.0001.
- Reported actual mortality:
 - ICD-9-CM 785.52 for 2007-2008: 350/846 (41.4%) and 2009: 102/297 (34.3%) p-value 0.03.
 - ICD-9-CM 995.92 for 2007-2008: 149/473 (31.5%) and 2009: 42/202 (20.8%) p-value 0.03.
- Conclusions: These data suggest that a Tele-ICU-based process increases the documentation of severe sepsis and septic shock and reduces reported mortality rates.



Human Factors

“Human factors and ergonomics must play a more prominent role in health care if we want to increase the pace in improving patient safety.”

*Gurses AP, Ozok AA, Pronovost PJ. [“Time to accelerate integration of human factors and ergonomics in patient safety.”](#) *BMJ Qual Saf* 2012; 21:347-351.*

Design Implications of a Sepsis Alert Used by Tele-ICU Nurses: A Human Factors Evaluation

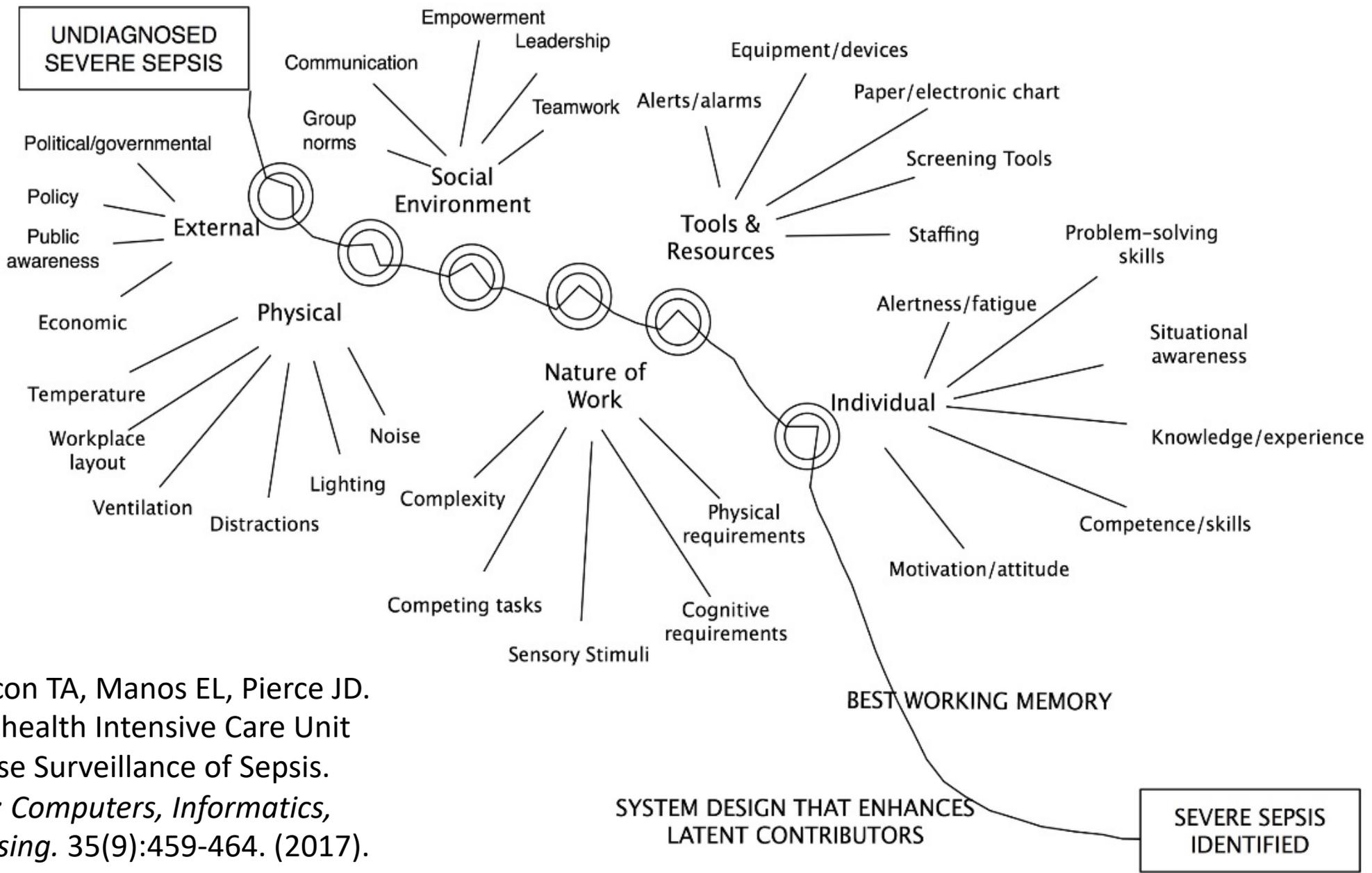
Rincon TA, Manos EL, Pierce JD. Telehealth Intensive Care Unit Nurse Surveillance of Sepsis. *CIN: Computers, Informatics, Nursing*. 2017;35(9):459-464.



What is Surveillance?

- “Surveillance has been defined as the purposeful on-going collection, interpretation, synthesis, and analysis of individual patient or population data with the purpose to support clinical decision making.”
- “Dissemination of and/or acting on these data can reduce morbidity and mortality and improve overall health in three ways:
 - through early warning of impending clinical or public health emergencies,
 - documentation of impact of interventions, and
 - tracking the progress towards specific healthcare goals.”

Rincon, Teresa A. BSN, CCRN-K, FCCM; Henneman, Elizabeth PhD, RN An introduction to nursing surveillance in the tele-ICU, Nursing Critical Care: March 2018 - Volume 13 - Issue 2 - p 42-46



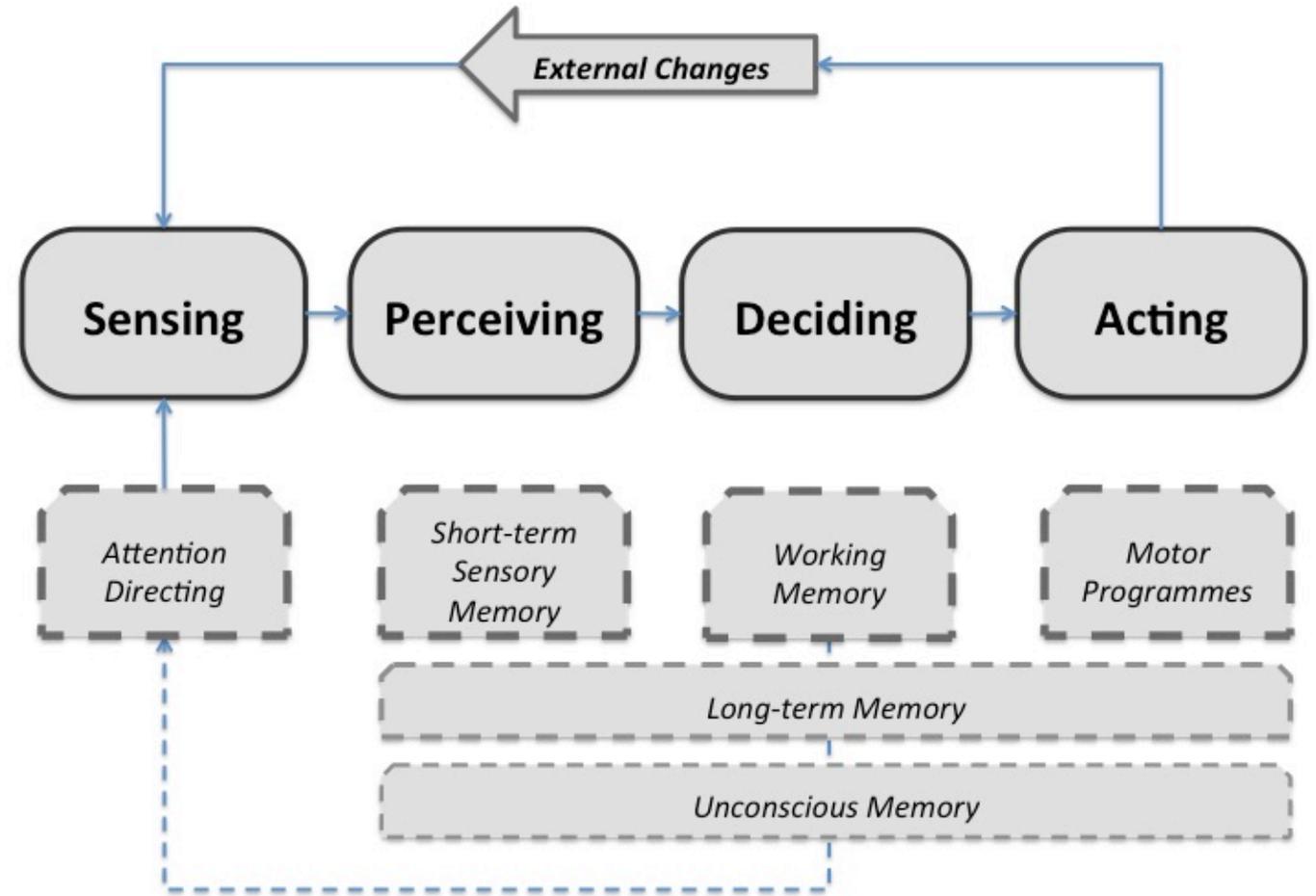
Rincon TA, Manos EL, Pierce JD.
 Telehealth Intensive Care Unit
 Nurse Surveillance of Sepsis.
*CIN: Computers, Informatics,
 Nursing.* 35(9):459-464. (2017).

Cognitive processing:
response to stimuli is
impacted by

- Limitations of human cognition
- Ability to problem solve
- Access to long-term memory
- Level of working memory
- Situational awareness or lack thereof



Human Information Processing



https://www.skybrary.aero/index.php/Information_Processing

The Problem with Alerts and Alarms

Biomedical devices can produce as many as one critical alert every 92 seconds with less than 15% being clinically relevant

Alerts are alarm notification systems that are built within software applications alerts

Desensitization, Misses, Fatigue, Sensory Overload

Discussion

Screening for severe sepsis is resource intensive process and requires high level cognitive processing using working memory

Expert nurses working in a controlled environment with a specific role to observe and respond to clinical alerts may enhance appropriate responses

HF engineering can support system designs that control for and enhance the latent contributors that impact complex tasks such as screening for severe sepsis.

Exemplars from
seven health
systems using
Advanced
Practice
Providers (APPs)
within various
telehealth
service-lines

Rincon, T. A., Bakshi, V., Beninati, W.,
Carpenter, D., Cucchi, E., Davis, T. M., . . .
Kleinpell, R. M. (2019). Describing advanced
practice provider roles within critical care
teams with Tele-ICUs: Exemplars from seven
US health systems. *Nurs Outlook*.
doi:10.1016/j.outlook.2019.06.005



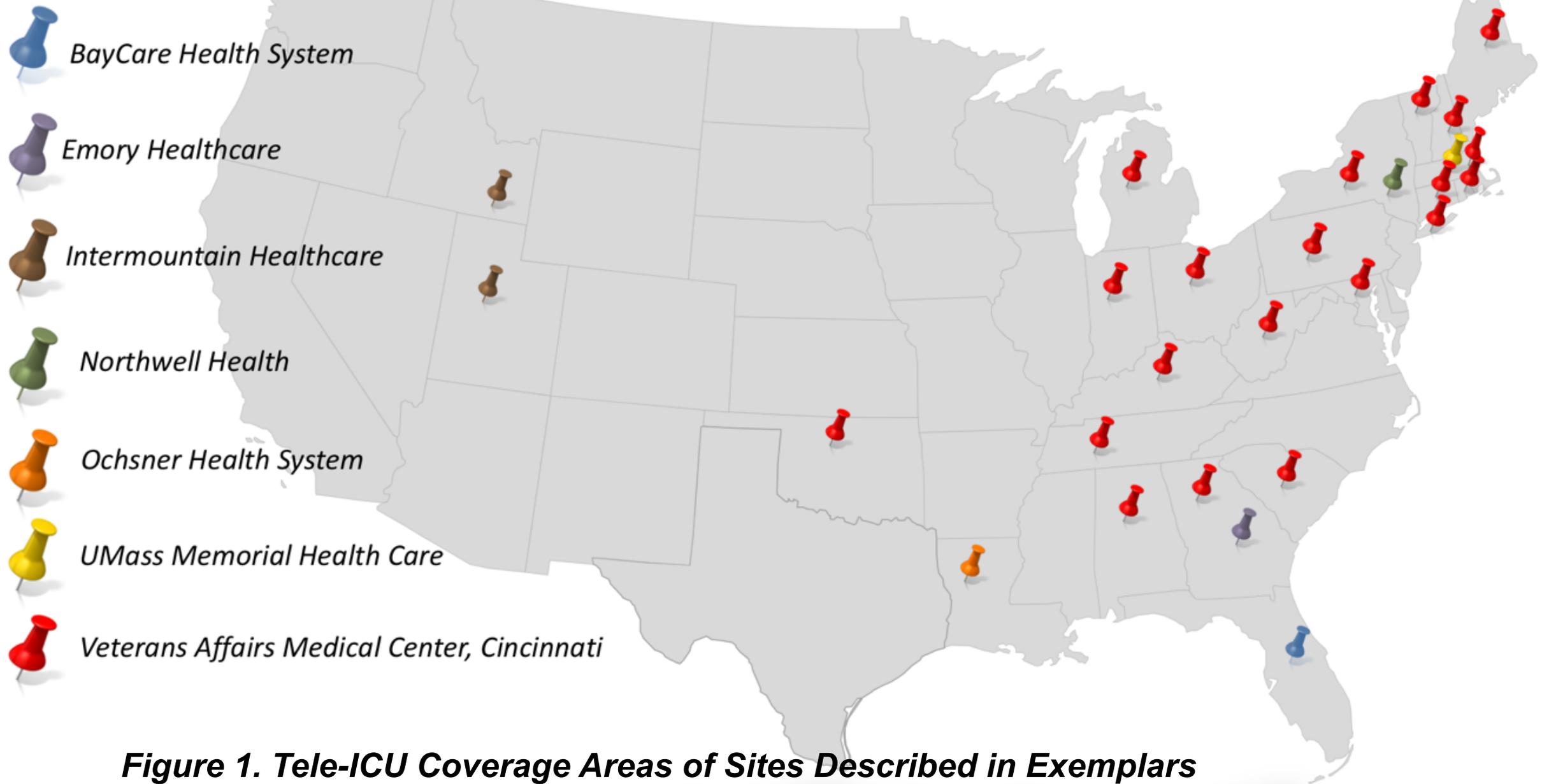


Figure 1. Tele-ICU Coverage Areas of Sites Described in Exemplars

Table 1. APP Consultation and Management Models

	Originating Site	Distant Site	Where Telehealth Services are Provided	When Tele-APPs Work	APP Types
BayCare Health System	Yes	Yes	ICU, ED, RRT, SNF, Home	Night Shift Only	APRNs only
Emory Healthcare	Yes	No		NA	APRNs/PAs
Intermountain Healthcare	Yes	Yes	ICU, RRT, SNF, Home	Day Shift Only	APRNs only
Northwell Health	Yes	Yes	ICU, ED, SNF	24/7	APRNs/PAs
Ochsner Health System	Yes	No		NA	APRNs/PAs
UMass Memorial Healthcare	Yes	Yes	ICU, PACU	24/7	APRNs/PAs
VA Medical Center	Yes	Yes	ICU, ED, SDU	24/7	APRNs only

Originating site, where the patient is located at the time of service; Distant site, location of the provider at the time of service; APRN, advanced practice nurse; PA, physician assistant; ICU, intensive care unit; ED, emergency department; RRT, rapid response team; SNF, skilled nursing facility; PACU, post anesthesia care unit; 24/7, 24 hours per day/7 days per week. Rincon et al. Describing Advanced Practice Provider Roles within Critical Care Teams with Tele-ICUs: Exemplars from Seven U.S. Health Systems. Under Review.

Spring (February) 2020 At- A-Glance

https://www.cchpca.org/sites/default/files/2020-05/CCHP_50_STATE_INFOGRAPH_SPRING_2020_FINAL.pdf

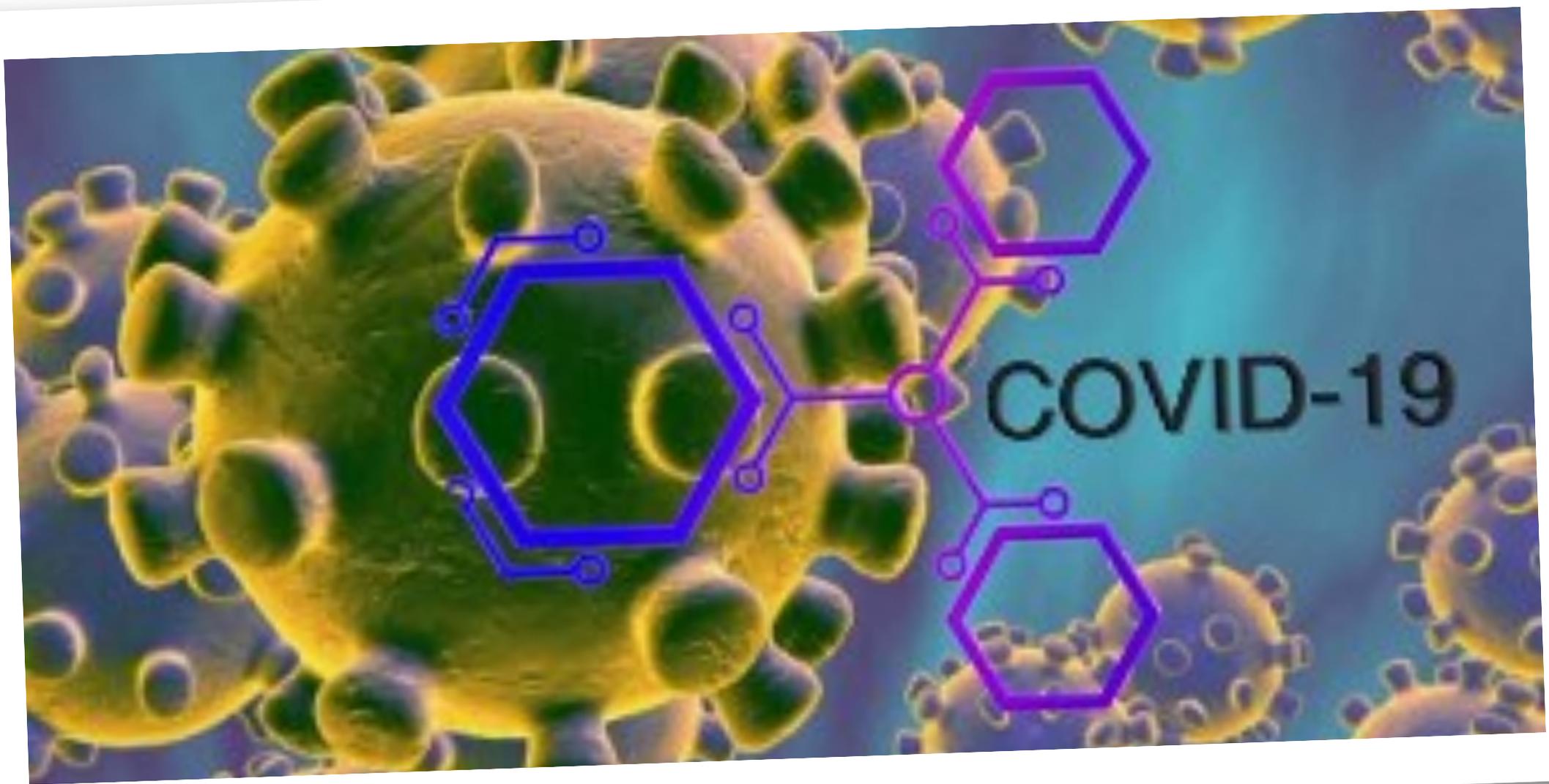
AT A GLANCE | Spring 2020



Medicaid Policy Trends ▲

All 50 states and D.C. now reimburse for some type of live video telehealth services. Reimbursement for store-and-forward and remote patient monitoring (RPM) continues to lag behind. Sixteen state Medicaid programs reimburse for store-and-forward and twenty-three states reimburse for remote patient monitoring (RPM), with additional states having laws requiring Medicaid reimbursement for store-and-forward or RPM, yet no official written policies indicating that such policy has been implemented.

Many of the reimbursement policies that do exist continue to have restrictions and limitations, creating a barrier to utilizing telehealth to deliver services. One of the most common restrictions is a limitation on where the patient is located, referred to as the originating site. While most states have dropped Medicare's rural geographic requirement, many Medicaid programs have limited the type of facility that can serve as an originating site, often excluding a patient's home from eligibility. However, nineteen states do now explicitly allow the home to be an eligible originating site under certain circumstances.



Coronavirus Disease 2019 (COVID-19)

[Your Health](#) ▾ [Community, Work & School](#) ▾ [Healthcare Workers & Labs](#) ▾ [Health Depts](#) ▾ [Cases & Data](#) ▾ [More](#) ▾

Healthcare Workers

HEALTHCARE WORKERS

Testing +

Clinical Care +

Infection Control +

Optimize PPE Supply +

Potential Exposure at Work +

First Responder Guidance

Using Telehealth to Expand Access to Essential Health Services during the COVID-19 Pandemic

Updated June 10, 2020

[Print Page](#)



Purpose of this Guidance

To describe the landscape of telehealth services and provide considerations for healthcare systems, practices, and

On This Page

[Background](#)

[Telehealth Modalities](#)

I'm looking for...



HHS A-Z Index



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Programs & Services



Grants & Contracts



Laws & Regulations

HHS > [Coronavirus Home](#) > Telehealth: Delivering Care Safely During COVID-19

Coronavirus (COVID-19)

CARES Act Provider Relief Fund

For Providers

General Information

Data

FAQs

Text Resize **A A A**

Print

Share



Telehealth: Delivering Care Safely During COVID-19

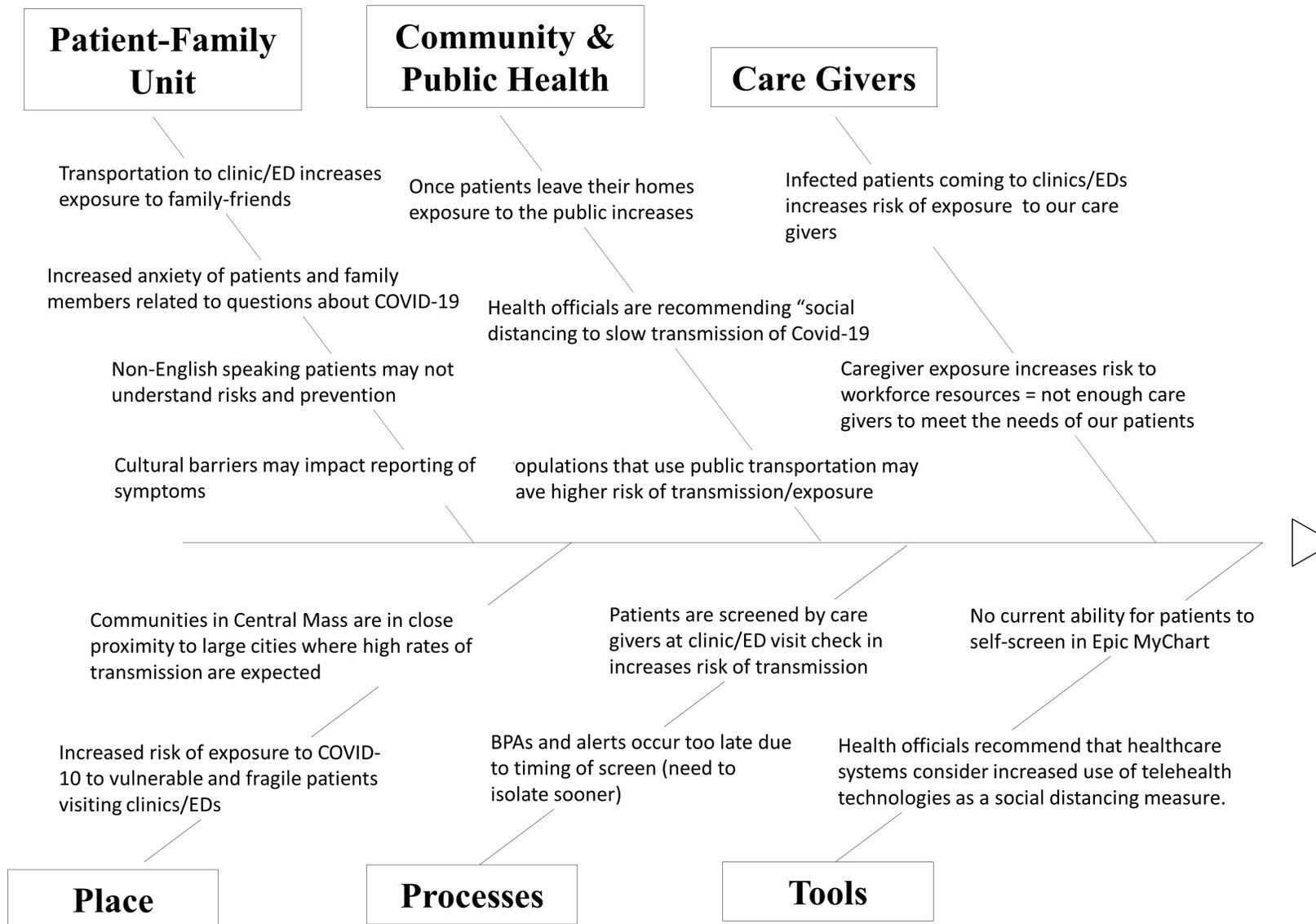
[HIPAA flexibility](#) • [Waivers from the Centers for Medicare & Medicaid Services](#) • [Cost-sharing for patients in federal health care programs](#) • [Billing and reimbursement](#) • [Additional flexibilities](#)

Editorial: Telemedicine and the COVID-19 Pandemic, Lessons for the Future

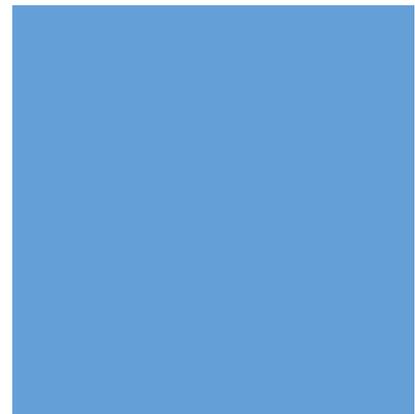
With the onset of COVID-19 and almost within days, it has become obvious that:

- Outpatient visits in various settings can be clinically managed effectively from a distance.
- The infrastructure for connectivity is widely available at both ends of the clinical encounter (smart phone technology).
- The necessary training where needed, staffing and workflow development can be implemented rapidly with minimal disruptions or dislocations.
- Little or no resistance is encountered because it is protective for providers and patients.
- “Government has relaxed all restrictive regulations for telemedicine deployment, including interstate licensing, data confidentiality issues, and most significantly reimbursement.”

Bashshur, R., Doarn, C. R., Frenk, J. M., Kvedar, J. C., & Woolliscroft, J. O. (2020). Telemedicine and the COVID-19 Pandemic, Lessons for the Future. *Telemedicine and e-Health*, 26(5), 571-573. doi:10.1089/tmj.2020.29040.rb



March 2020



Per the CDC, it is only a matter of time before widespread transmission of coronavirus disease 2019 (COVID-19) occurs.

WEAKNESSES

- Resource capacity planning was poor prior to crisis
- Not enough appropriately skilled resources were provided during crisis
- Schedules/deadlines were unrealistic
- Resources were assigned inconsistently
- Too many unplanned requests for resources and tools
- Shifting resources to respond to problems
- Role and Scope Creep abounded

STRENGTHS

- Best place to give care, best place to get care vision
- Established foundation for telehealth
- Established relationships with 2 telehealth technology vendors



OPPORTUNITIES

- In a position to be the provider of telehealth and telecommunication solutions within our health system, for Central MA, and beyond.
- Telehealth is now mainstream.

THREATS

- The Covid—19 crisis forced us to act faster than we were prepared to act.
- Competition for hardware, software and human capital with a limited supply in all areas.
- Other health systems are rapidly becoming experienced in providing telehealth services

Created by T. Rincon 4.26.20

SMART GOALS:

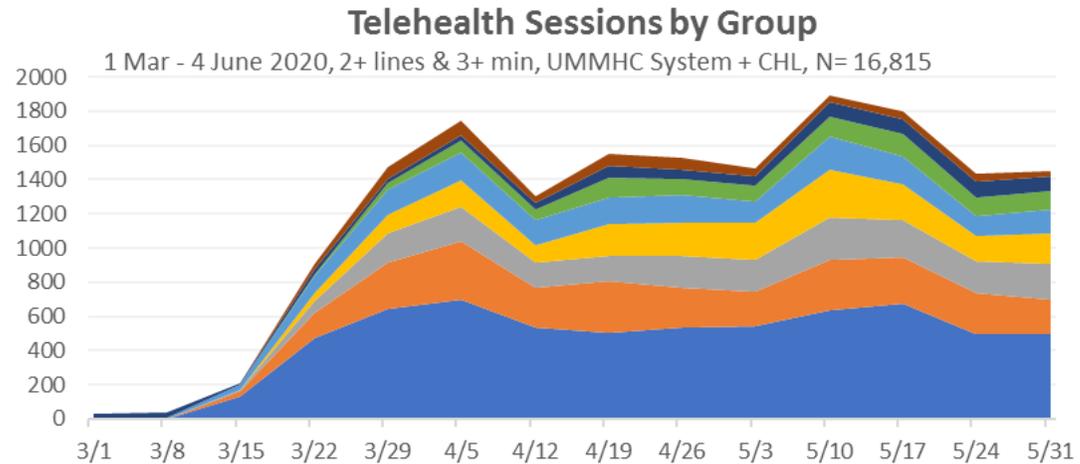
- **Minimize exposure and improve provider efficiency** Lean methods for measuring adoption and data analytics will include the all telehealth visits pre and during the height of the COVID-19 pandemic period March-June 2020.
- Measure and report the number of video visits and telephone visits:
 - Goal: increase the ratio of video visits to telephone visits. Target 15% with stretch goal of 25% of total number of ambulatory setting visits and Target 15% with stretch goal of 25% of all specialty consults for inpatient/ED.
- Measure and report the number of billed video visits and telephone visits:
 - Goal: improve charge capture of video and telephone visits to match charge capture organizational goals. Target and stretch goal to be determined.
- Measure and report the number of video visits and telephone visits paid by third party payers:
 - Goal: improve revenue of video and telephone visits to match organizational goals for percent of paid visits. Target and stretch goal to be determined.

COUNTERMEASURES (PLAN)

- Develop a lean, reproducible plan that includes training, support and deployment schedule to implement telehealth technologies throughout the health system in a 3 to 4-week period.
- Standup a telehealth health support center (TSC) team, standard processes, knowledge articles, and engage NTT in knowledge transfer (see Appendix).
- Create a dashboard that uses data from multiple data bases to measure and report video and telephone visits pre and post Covid-19.
- Use lean and qualitative methods to collect, analyze and report data related to user satisfaction with and adoption of telehealth technologies.
- Work with UMMHC government relations to address important State level barriers to provision of telehealth: payment parity, state licensure, and credentialing by proxy.

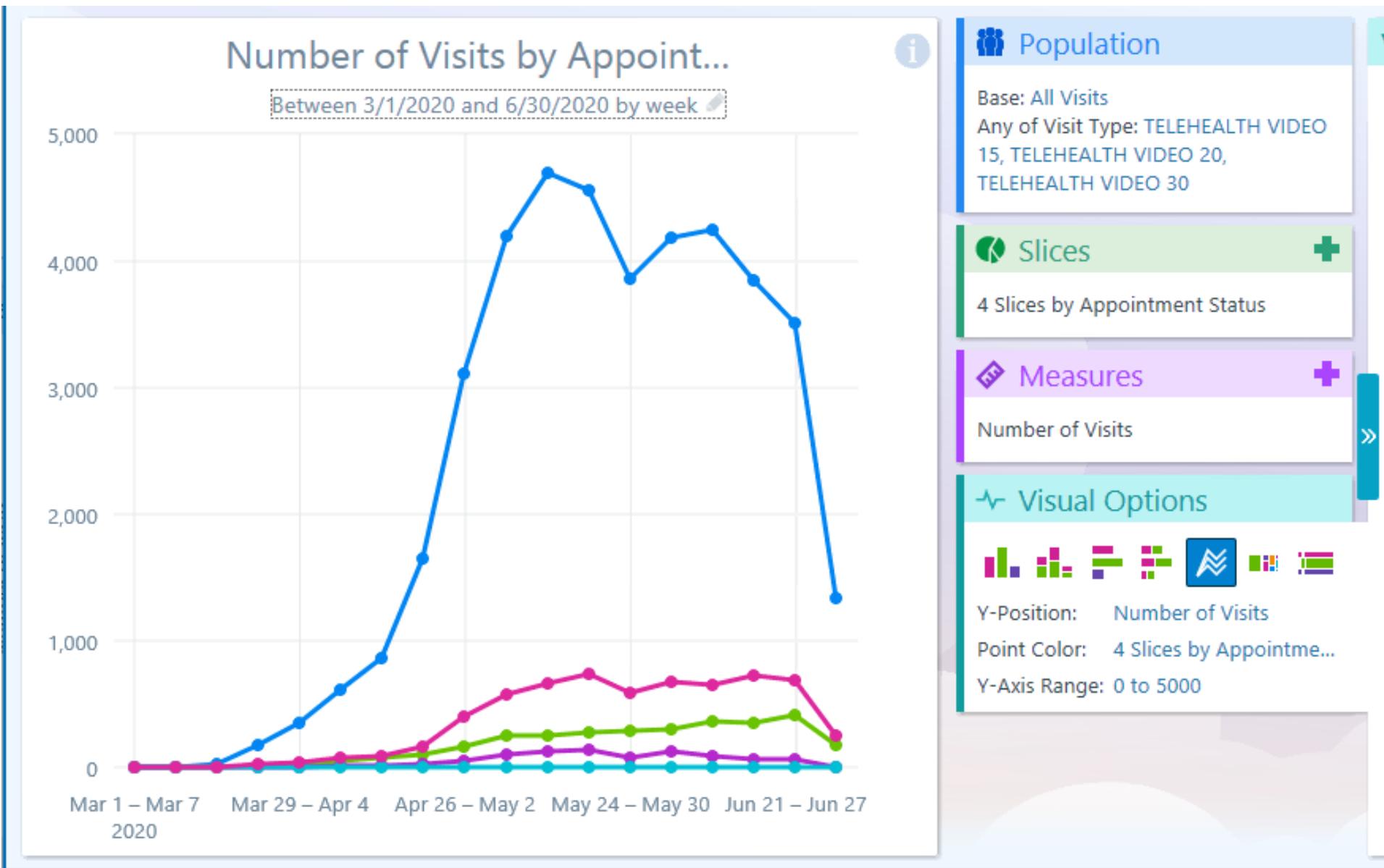
Unique Multi-Line Sessions by Group and Week

CHL and Psych remain the largest users, relative usage by groups remains fairly constant



	3/1	3/8	3/15	3/22	3/29	4/5	4/12	4/19	4/26	5/3	5/10	5/17	5/24	5/31
■ Ambulatory (Staff): 579				33	71	86	36	76	69	46	37	51	44	30
■ Neurology: 709	29	27	12	34	19	29	37	66	51	56	83	85	94	87
■ Pedi / NICU / PICU: 955			2	7	38	73	67	116	93	93	122	130	105	109
■ Psych: 1617		5	25	94	149	157	145	153	161	118	189	163	122	136
■ Amb (Provider): 1845	1	1	1	53	107	154	101	190	198	222	278	212	149	178
■ All other groups: 1977	0	0	7	71	173	207	146	146	183	183	252	212	186	211
■ Other Providers: 2768	1	1	31	146	269	338	236	300	232	203	296	274	238	203
■ CHL: 6365			134	470	645	699	532	507	538	543	634	674	495	494

Video Visits



Telehealth Optimization “Voice of Caregiver” Summary

June 2020

*Lead: Teresa Rincon, RN, PhD, CCRN-K, FCCM,
Director of Clinical Ops & Innovation | Virtual Med*

Adarsha Bajracharya, MD

Abraham Lin, Medical Student

Kimberly McGuigan, Master Black Belt

**Best Place to Give Care -
Best Place to Get Care**

UMass Memorial - Community Healthlink
UMass Memorial HealthAlliance-Clinton Hospital
UMass Memorial - Marlborough Hospital
UMass Memorial Medical Center
UMass Memorial Medical Group
UMass Memorial Accountable Care Organization, Inc.



Methodology Details

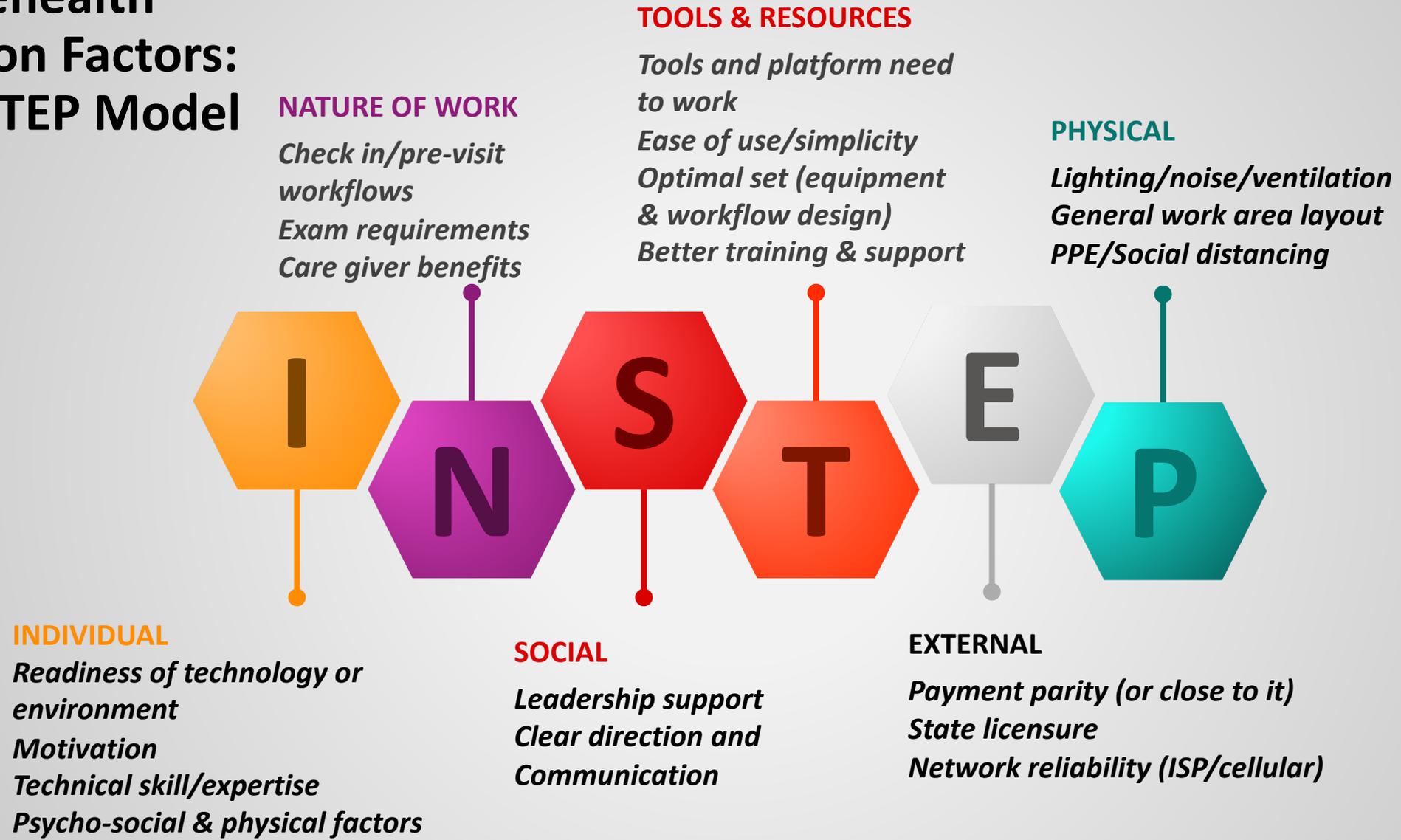
1. General categories of factors were established (INSTEP model)
2. Recorded focus groups were transcribed and notes were taken in optimization huddles
3. Specific points from the first focus group transcription were added to each of the categories
4. Initial topics were reviewed and refined by multiple people to add clarity and consistency
5. Key points from each focus group were coded, grouped and counted in each category
6. Points from individual focus groups were consolidated into a master list by category
7. Key points were rated:
 - a. High: 4 or more providers mentioned it, substantial emphasis
 - b. Medium: 2-3 providers mentioned it, some emphasis
 - c. Low: 1- 2 providers mentioned it, little to no emphasis
8. Multiple reviewers reached consensus on the categorization and ratings to enhance accuracy
9. Points mentioned with the most frequency and emphasis were further analyzed and summarized for presentation

Represented Caregiver Groups

- Primary Care (Hospital-based & CMG)
- ENT
- Pediatrics
- Sleep Medicine
- Pulmonology
- Cardiology
- Emergency Medicine
- Nursing Informatics
- Psych / EMH
- CHL
- Neonatology
- Hospitalists / Inpatient Nursing
- Surgery (multiple disciplines)
- Dermatology
- Palliative Care
- Critical Care

* Note: other groups were invited, but did not attend

Telehealth Adoption Factors: the INSTEP Model



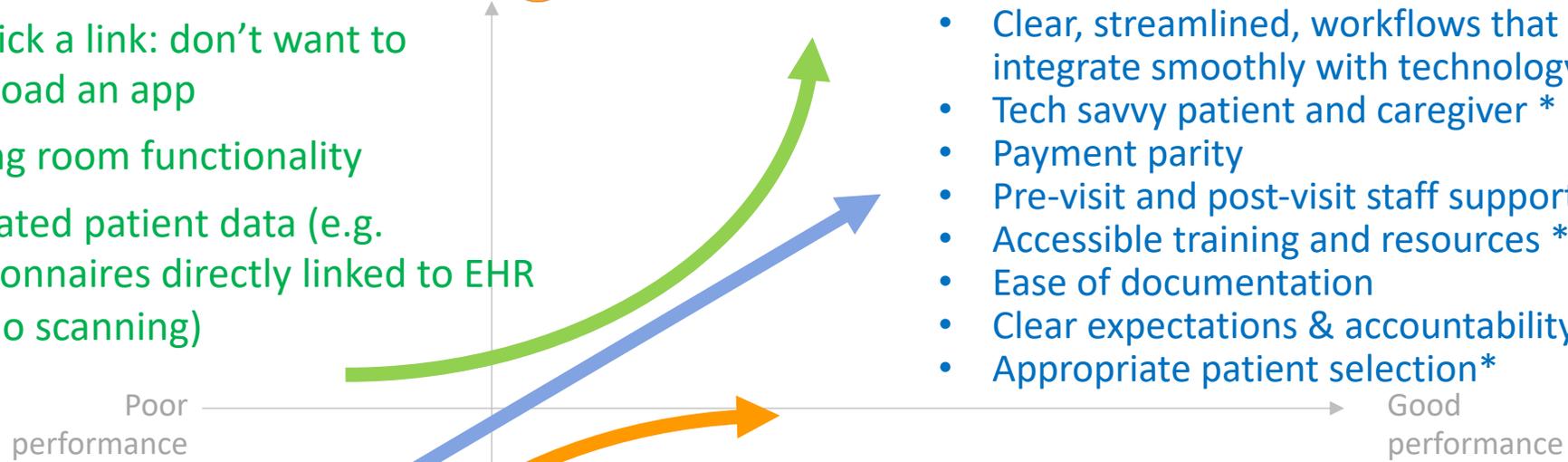
Elements of Satisfaction

Delighters: “Bonus!” Highly satisfied

- + Just click a link: don't want to download an app
- + Waiting room functionality
- + Integrated patient data (e.g. questionnaires directly linked to EHR with no scanning)

Performance: “More is Better”

- Clear, streamlined, workflows that integrate smoothly with technology
- Tech savvy patient and caregiver *
- Payment parity
- Pre-visit and post-visit staff support*
- Accessible training and resources *
- Ease of documentation
- Clear expectations & accountability
- Appropriate patient selection*



Basic Expectations: “Get these right or else”

- ✓ Simple, reliable, accessible platform*
- ✓ Quality of network connection*
- ✓ Patients and caregivers have compatible equipment that they are familiar with*
- ✓ Patient not physically or cognitively impaired
- ✓ Interpreter services integration*

* Applies to patients AND caregivers

Recommended next steps

Keep doing /
do more of

- Provide a simple, reliable platform & network: easy for patients & caregivers!
- Clear, consistent, timely leadership messaging on expectations
- More staff support for patient preparation
- Clarify equipment requirements and make equipment readily available
- Communicate and enhance interpreter services integration

Stop doing /
do less of

- Too many options: clearly focus on 1 – 2 platforms
- Mixed messages
- Reduce complexity

Start doing

- Broad, simple patient and family communications
 - Telehealth availability
 - How to get set up (all platforms)
 - How to get support
- Enhanced EHR integration

Fundamental fail points in healthcare's approach to reduce errors that harm patients.

*“Urging clinicians to **“try harder”** or **“be more careful”** will not safeguard them against errors. Likewise, efforts to improve care solely through education often have minor and fleeting improvements, if any. To reduce or prevent such harms, the health care environment must be designed with human limitations and abilities in mind.*

Armstrong Institute for Patient Safety and Quality (2020);

Human Factors Engineering; Human Factors in Health Care

https://www.hopkinsmedicine.org/armstrong_institute/centers/human_factors_engineering/human_factors_in_health_care.html



Additional References

- Rincon TA. How NPs can help expand telehealth services. *The Nurse Practitioner*.44(11):30-35.(2019)
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