ARIZONA TELEMEDICINE PROGRAM

COLLEGE OF MEDICINE TUCSON
Department of Medicine

SOUTHWEST TELEHEALTH RESOURCE CENTER TRC

Provider-to-Provider Telehealth

Monday April 11, 2022

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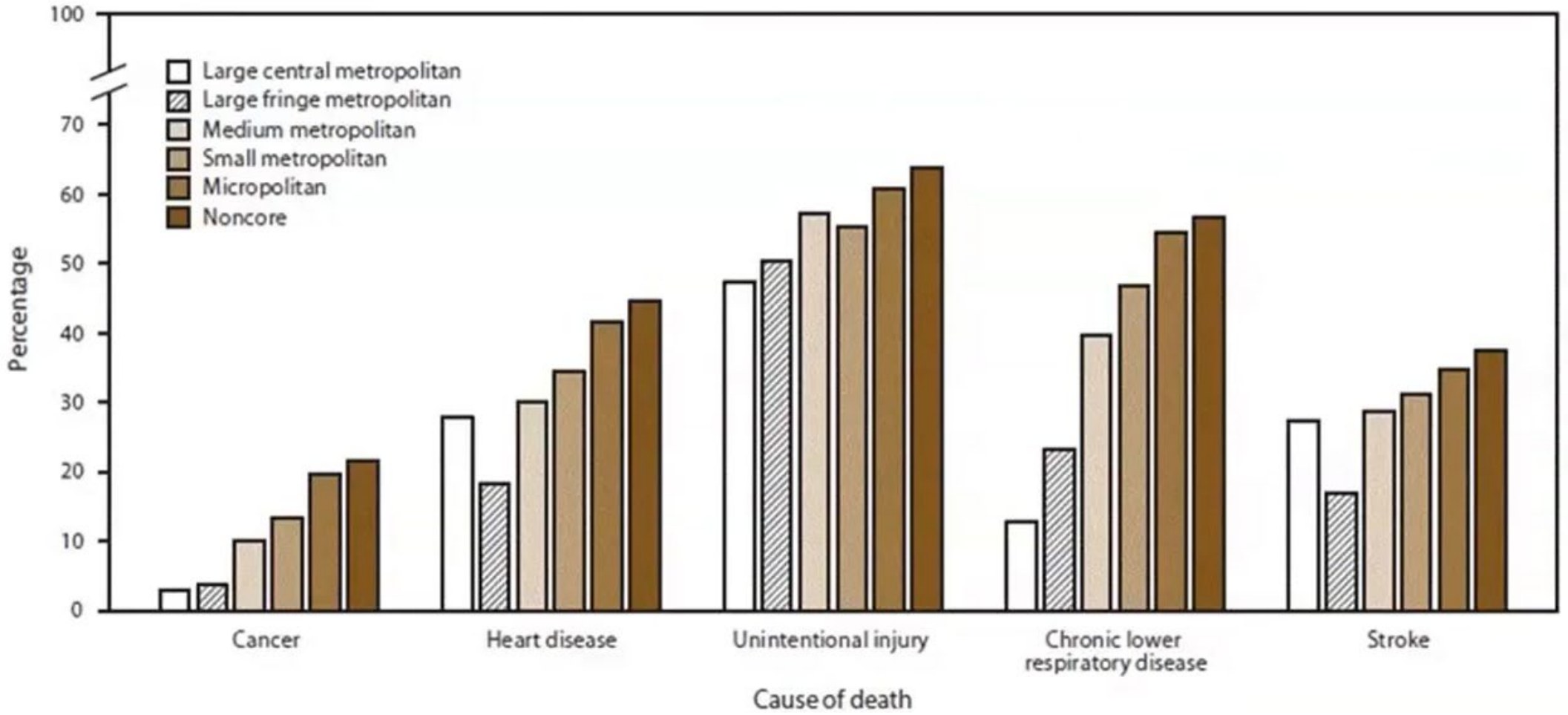
Learning Objectives

- Future of Provider-to-Provider telehealth in rural areas
- Telemedicine use during the pandemic
- Exemplars and variations in telemedicine use
  - P2P Warmline
  - P2P COVID Grand Rounds
  - COZI-r study
  - Establish other collaborations

Background

- 17% of Americans live in Rural Areas
- 50% higher heart disease; 75% higher respiratory disease
- 20,000 excess disease due to cancer
- 40% more likely to be hospitalized or die due to COVID-19 disparities
- Widening disparities between rural and urban areas
- Access to care, lower insurance, and closure of rural hospitals
- Delays in physical and mental health

High rates of avoidable or excess deaths



Background - 2

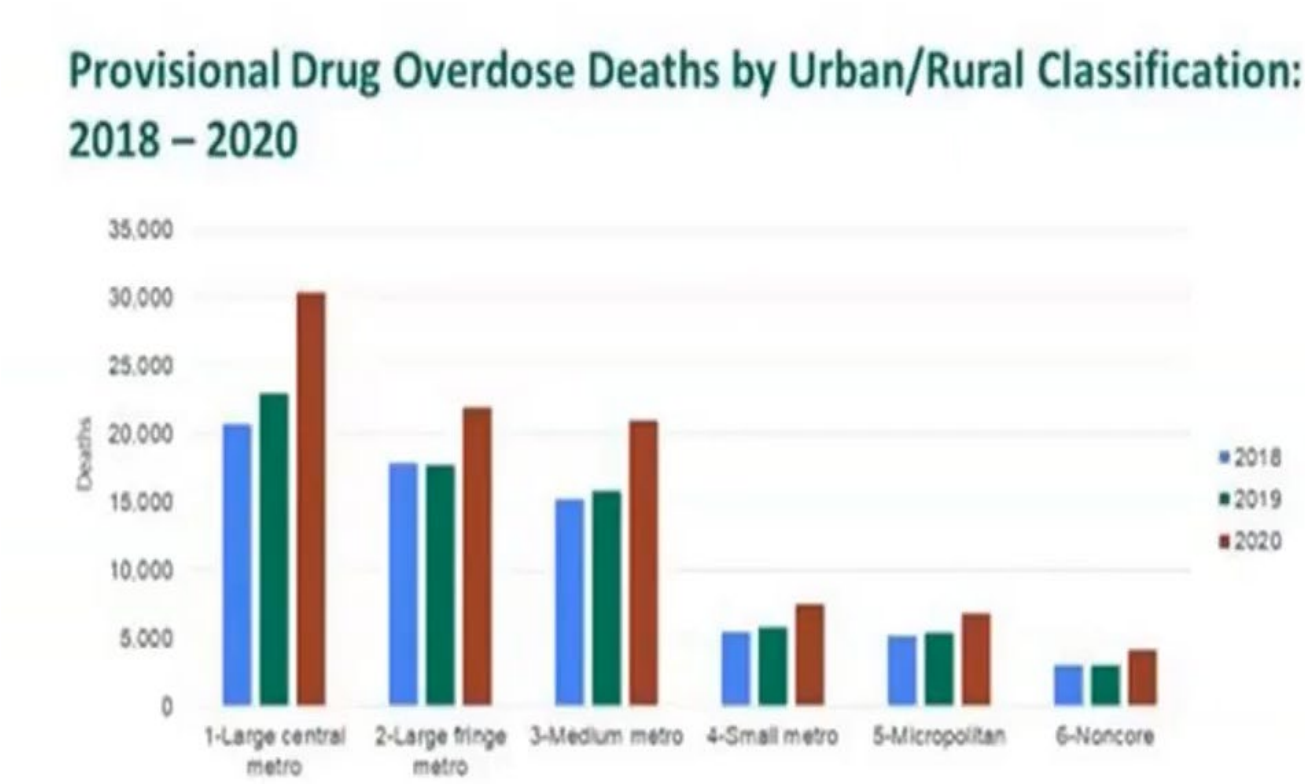
- Suicide and drug overdose are on the rise following the pandemic
- Difficulty sleeping and stress during the COVID pandemic
- More likely to be hospitalized or die due to non COVID disease
- Health disparities –
  - Increased mortality
  - More prevalent chronic disease
  - Reduced life expectancy (~ 3 years less)
- Technological developments give us hope

Opioid Epidemic in Rural Communities during a Pandemic

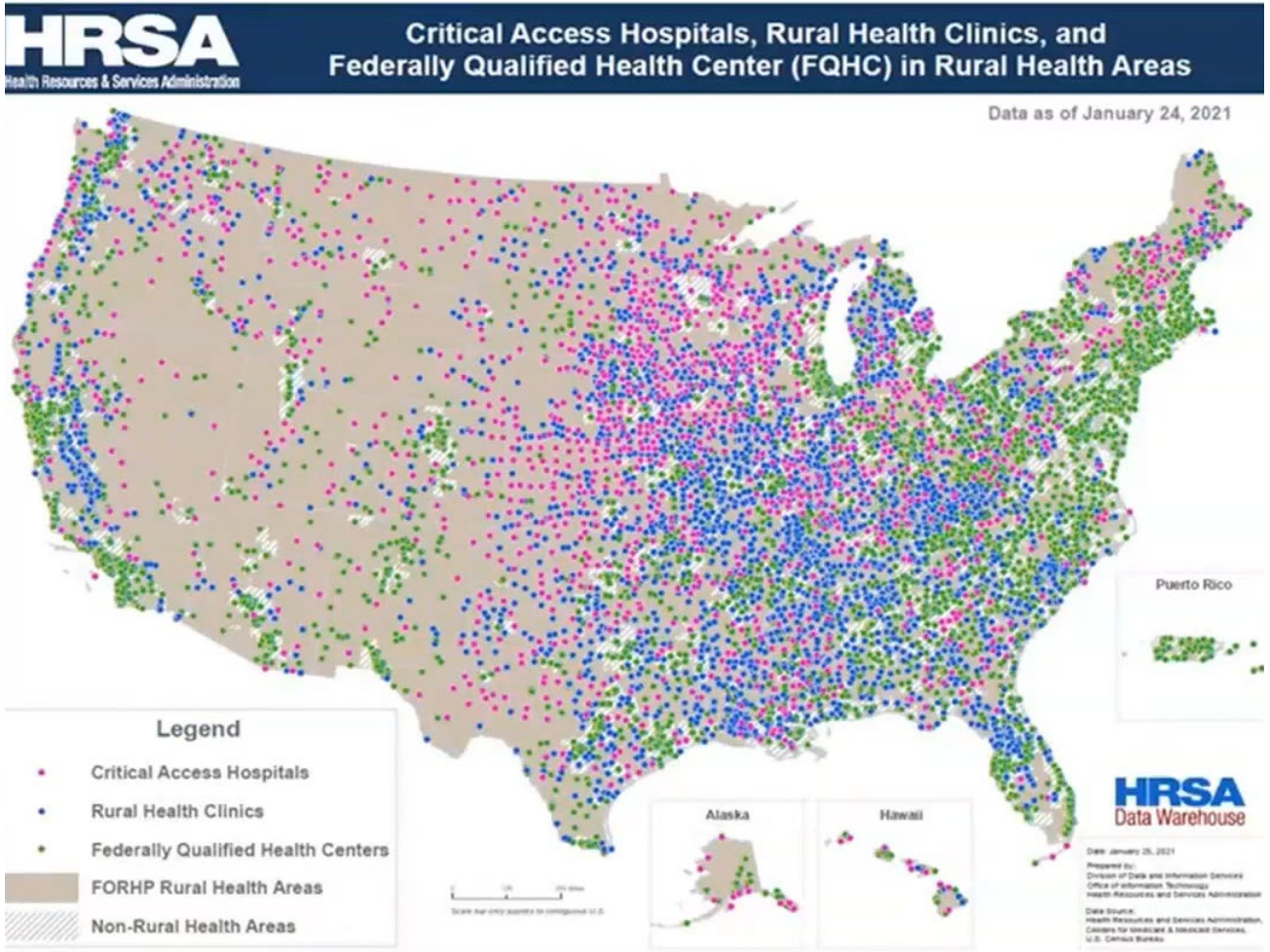
Pandemic has driven increases in death

Rural areas have limited infrastructure

Other substance issues beyond opioids



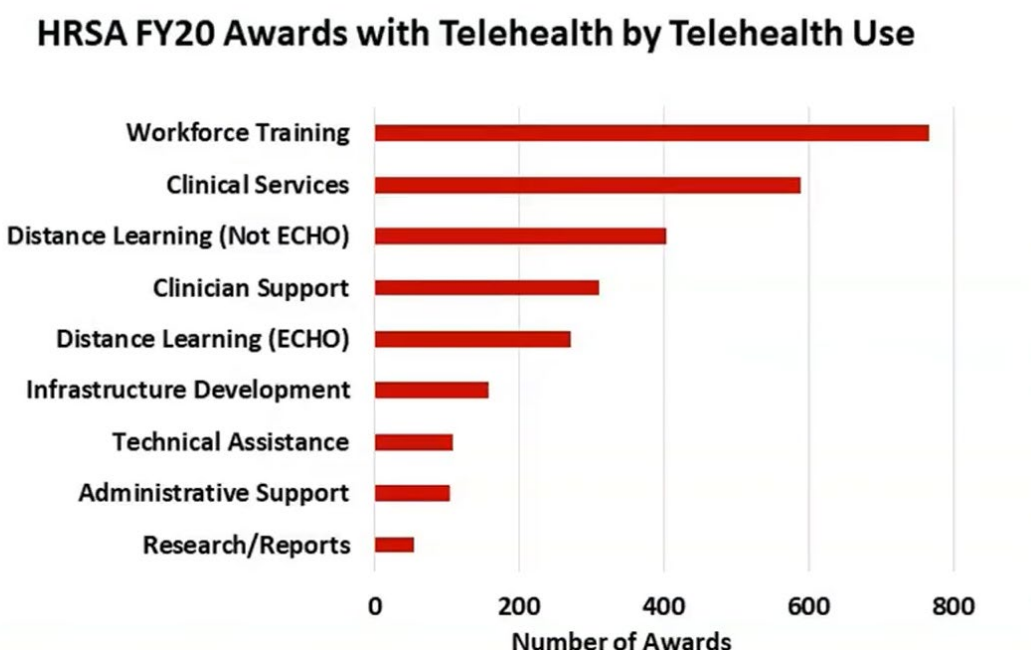
Regional variation in availability of healthcare resources



Which rural area you live in may affect your access to clinical Resources:

- Critical access hospitals
- Rural Health Clinics
- FQHCs

Current status



- **Scientific evidence**
- **Adoption and workforce training**
- **Infrastructure**
- **Specialty care**

BRIEFING ROOM

Fact Sheet: Biden Administration Takes Steps to Address COVID-19 in Rural America and Build Rural Health Back Better

AUGUST 13, 2021 • STATEMENTS AND RELEASES

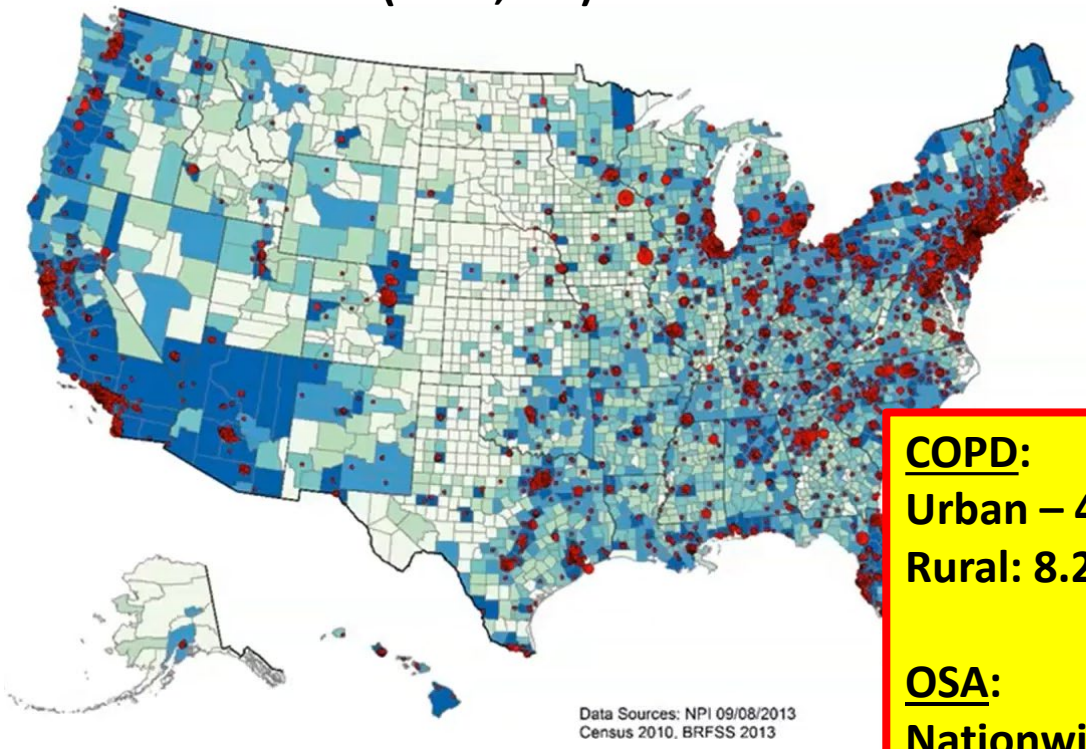
Today, the Biden Administration is taking action to improve the health of rural communities by making billions of dollars in American Rescue Plan funding available to meet immediate COVID-19 needs. This funding, which will also help rural hospitals stay open in the long run and improve the care

- **Reimbursement (fee-for-service /value based care)**
- **Access to broadband**
- **Licensure**

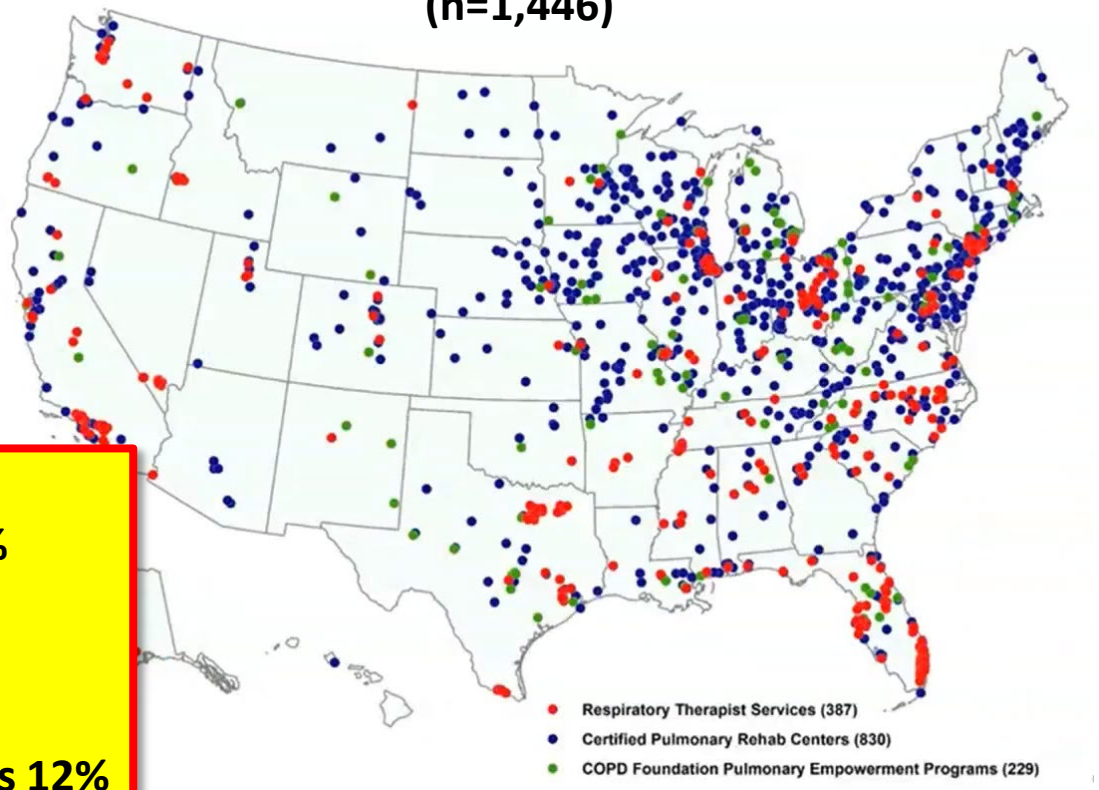
Geographic Access

Specialists and Resources

Pulmonologists (n=12,392)



Pulmonary Rehabilitation (n=1,446)



COPD:
Urban – 4.7%
Rural: 8.2%

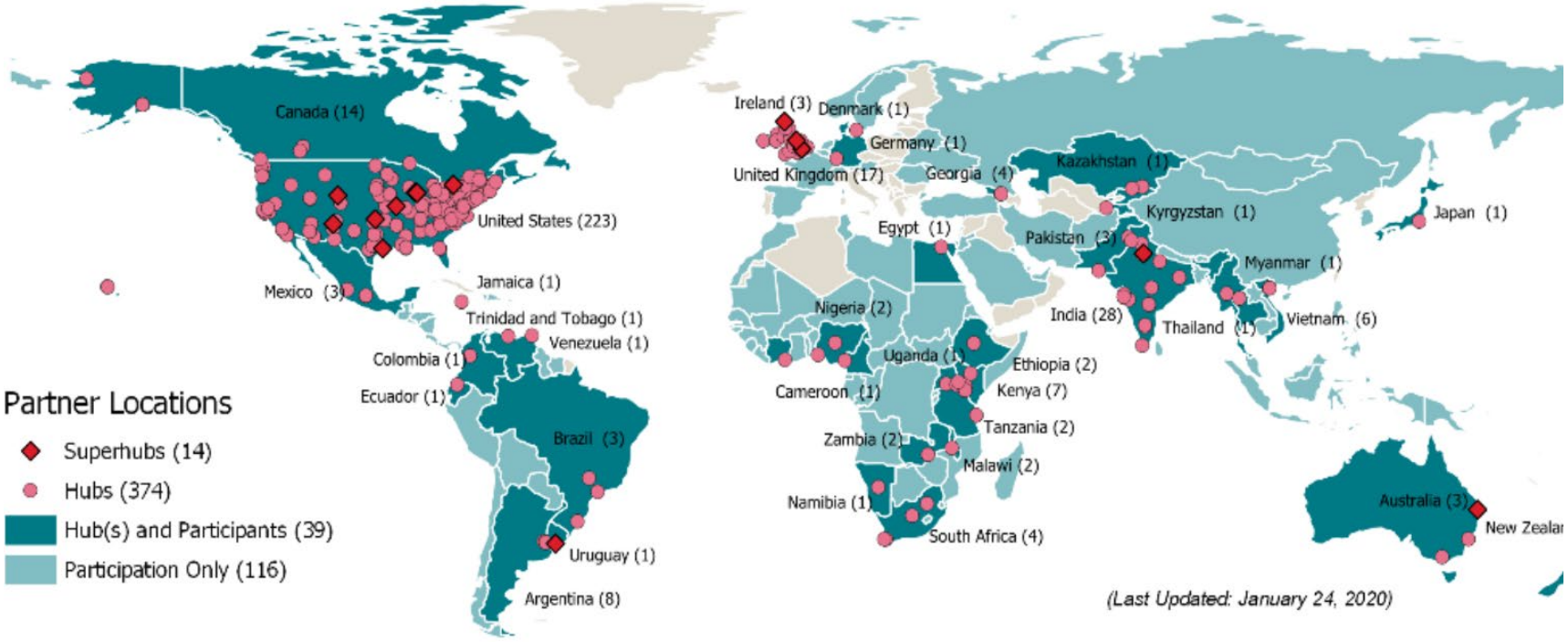
OSA:
Nationwide is 12%

Questions?

1. **What is the uptake of different types of provider-to-provider telehealth in rural areas?**
2. What is the effectiveness of provider-to-provider telehealth for rural patients?
3. What strategies are effective and what are the barriers and facilitators to implementation and sustainability of provider-to-provider telehealth in rural areas?
4. What are the methodological weaknesses of studies of provider-to-provider telehealth for rural patients and what improvements in study design (e.g., focus on relevant comparisons and outcomes) might increase the impact of future research?

History of Telemedicine

- Tohono O'odham Nation
- Funded by NASA
- Satellite technology
- Physician consultation
- Newborn



In 2013, when Project ECHO first rolled out Zoom, ECHO had 13 Domestic Hubs, 1 International Hub, and one multi-site VA program.

ECHO now has over 220 hubs, more than 135 domestic hubs, and over 80 international hubs in 32 countries

Provider-to-Provider Consultations $

(Falls outside Telehealth – per CMS*)

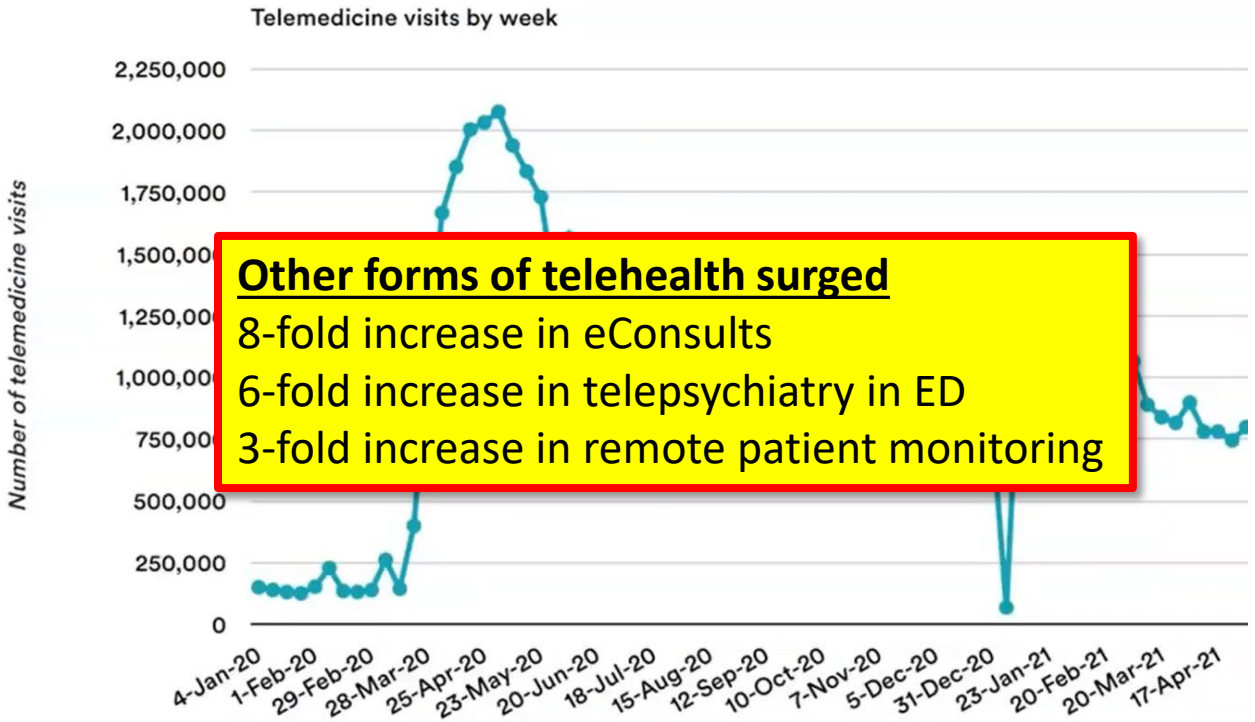
- Code 99452 devalues primary care time
  - 5 min of consultant's time (code 99451) has the same 0.70 RVU as 30 min of primary care (code 99452)
- For codes 99446-99449, greater than half of the time must be spent in "medical consultive verbal or internet discussion"
- Code 99451 may be billed if **more than** 50% of time is spent in data review/analysis
- Major issues include perceptions of fraud, and increased burden for primary care

Code	Description #; @	2021 wRVU	Total National non-facility RVUs	Total National facility RVUs	
99446	Interprofessional telephone/Internet/electronic health assessment and management service provided by a consultative physician, including a verbal and written report to the patient's treating/requesting physician or other qualified health care professional; 5-10 minutes of medical consultative discussion and review	0.35	0.54	0.54	MD, DO
99447	11-20 minutes of medical consultative discussion and review	0.70	0.97	0.97	MD, DO
99448	21-30 minutes of medical consultative discussion and review	1.05	1.54	1.54	MD, DO
99449	31 minutes or more of medical consultative discussion and review	1.40	2.10	2.10	MD, DO
99451	Interprofessional telephone/Internet/electronic health assessment and management service provided by a consultative physician, including a written report to the patient's treating/requesting physician or other qualified health care professional, 5 minutes of medical consultative discussion and review	0.70	1.04	1.04	MD, DO
99452	Interprofessional telephone/Internet/electronic health record referral service(s) provided by a treating/ requesting physician or other qualified health care professional, 30 minutes	0.70	1.05	1.05	NP, PA

<u>Provider-to-Patient telemedicine:</u>
Patient needs to be in a facility (2020 US Congress)
CMS Support – A major barrier for Adoption
Category 3 codes – Permanence of telehealth codes

$ 2018 CMS; * 1834M Social Security Act; # 14-day rule; @ Patient consent

Provider-to-Patient Telemedicine COVID-19 pandemic



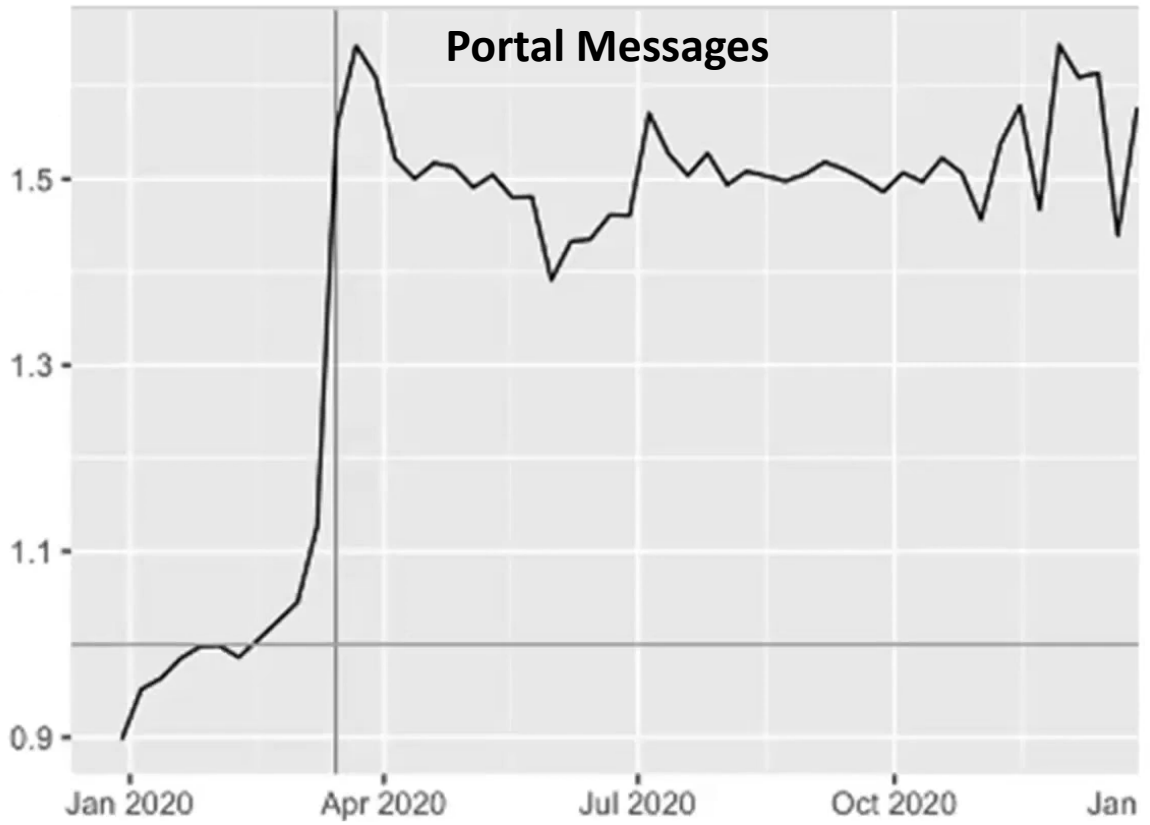
Other forms of telehealth surged

8-fold increase in eConsults

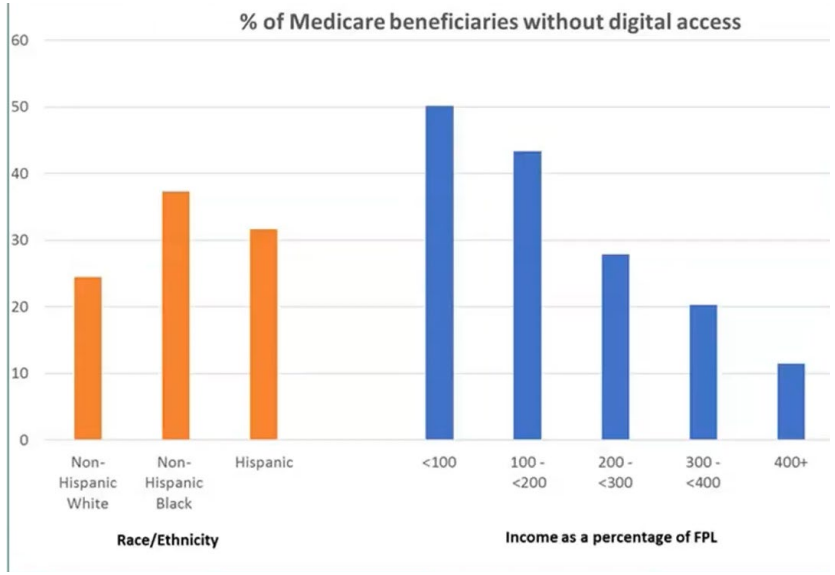
6-fold increase in telepsychiatry in ED

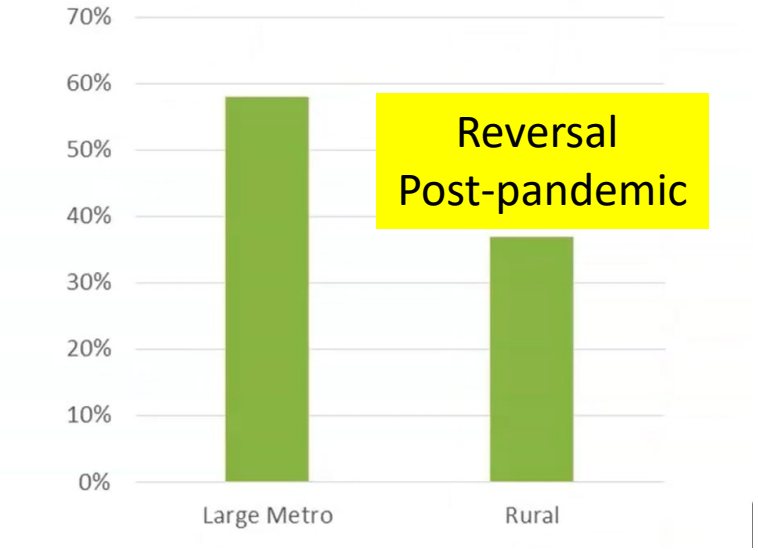
3-fold increase in remote patient monitoring

Variations in Telehealth Use by Specialty



Digital Divide

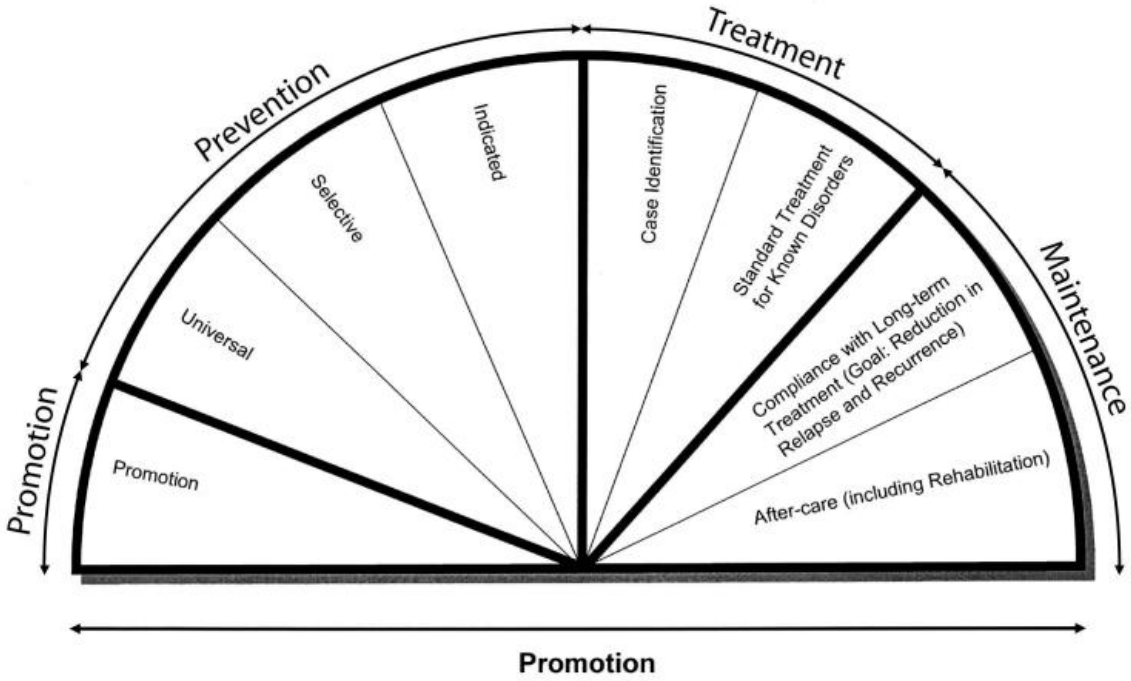




Reversal
Post-pandemic

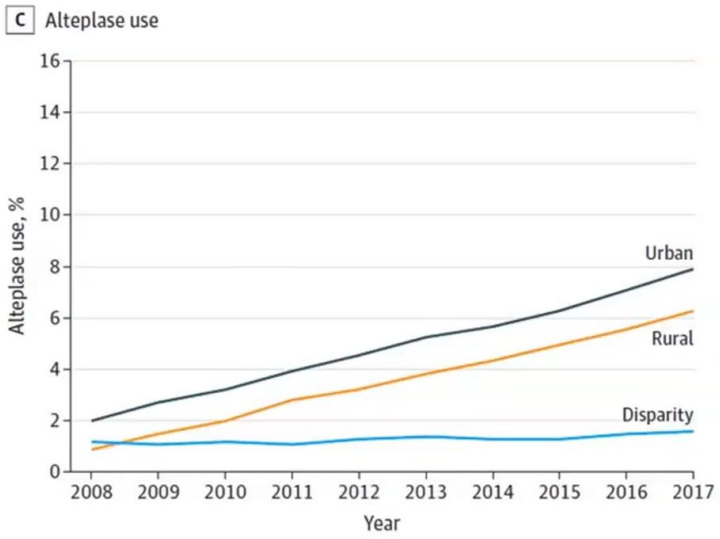
Roberts ET, Mehrotra A. *JAMA Intern Med*. 2020;180(10):1386-1389.; Josh Gray, STAT News

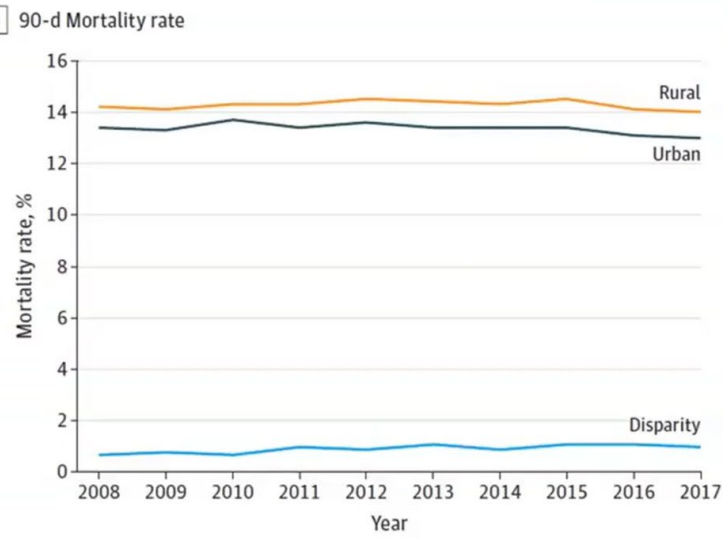
Inexhaustible resource of telehealth to reduce mental health disparities



Muñoz RF. *J Med Internet Res*. 2010;12(5):e60.

P2P for Tele-stroke





- ED makes referral
- Video visit for interview and exam along with local provider
- Remote review of CT scan and other imaging

Wilcock et al, JAMA Neurol 2020; May 1;78(5):527-535.

COVID Pandemic

Acute clinical care

- Surge line
- Admin triage
- Emergency P2P communication
- Discussion of care/stabilization
- Transfer for management

Current COVID Management

- P2P Warmline
- P2P COVID Grand Rounds

P2P For COVID related Information

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Professor, Medicine
Professor, Immunobiology
Professor, BIO5 Institute
Program Director, Infectious Diseases Fellowship

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Clinical Assistant Professor, Medicine - (Clinical Series Track)

Nirav Merchant
Director, UA Data Science Institute (Data7) Co-PI for NSF CyVerse Interim Director, CB2

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Clinical Assistant Professor, Medicine

Sairam Parthasarathy, MD
Professor, Medicine
Chief, Division of Pulmonary, Allergy, Critical Care and Sleep Medicine
Director, Center for Sleep and Circadian Sciences, UA Health Sciences

ADHS; AzCRH; CDC-RFA-OT21-2103

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PROVIDER EDUCATION

Provider Education

Provider to Provider (P2P)

COVID Grand Rounds

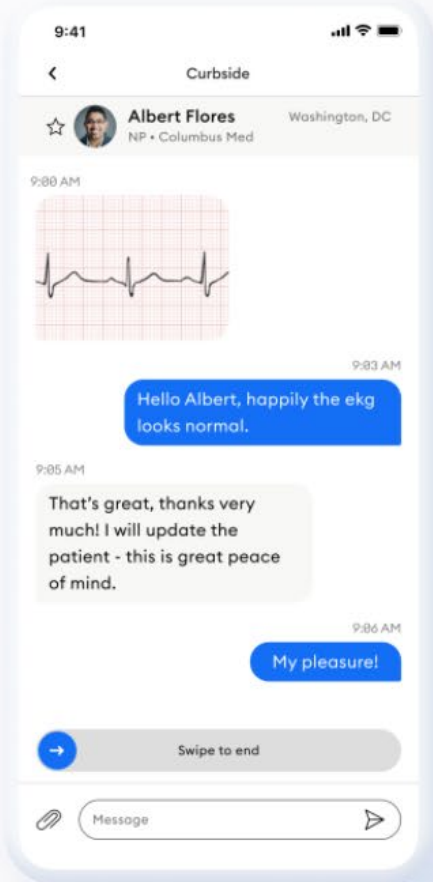
Overall description: The COVID Grand rounds is aimed to be a virtual grand rounds that is held monthly with an innovative format that aims to educate healthcare providers in Arizona regarding the latest developments regarding the SARS-CoV-2 pandemic. Emphasis will be placed on the epidemiology of the disease, public health policies, prevention (including vaccination), and

https://ceal.arizona.edu/provider-education

Triage.
Transition.
Trust.

PicassoMD instantly connects healthcare providers for clinical decision support, referrals and care coordination.

Learn More



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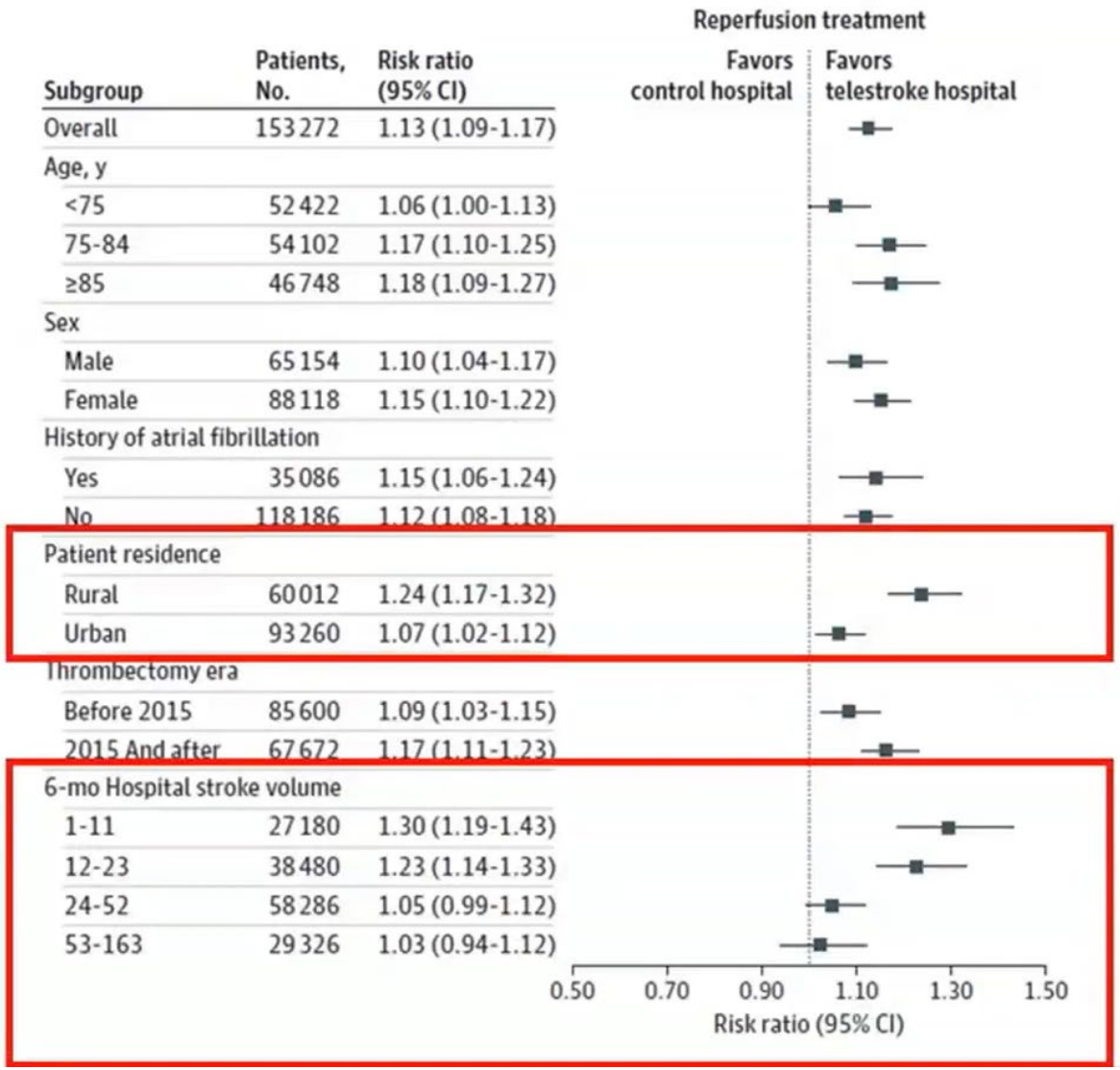
Provider-to-Provider Telehealth Models

- **ECHO/ECHO like models**
  - Provider presents a case to panel of specialists
- **Store-and-Forward**
  - Capture of information and sent to another provider (specialist)
  - Asynchronous and used to replace a service that would take place in-person
- **eConsult**
  - Information regarding a patient's condition sent to another provider (specialist) to evauate
  - Asynchronous and not replacing in-person service, curbside consult
  - Communications Technology-Based Services (CTBS)

P2P for Tele-stroke



Hospital Characteristics	With Telestroke Capacity	Without Telestroke Capacity	p-value[1]
	N=1306	N=3445	
Location of Hospital			
Urban	856 (30.2%)	1979 (69.8%)	<0.01
Rural	450 (23.5%)	1466 (76.5%)	
Number of Beds (Quartile)			
0-25 (Quartile 1)	201 (14.8%)	1154 (85.2%)	<0.01
26-72 (Quartile 2)	167 (22.2%)	586 (77.8%)	
73-186 (Quartile 3)	415 (38.4%)	666 (61.6%)	
187+ (Quartile 4)	523 (33.5%)	1039 (66.5%)	
Ownership			
For-Profit	303 (37.1%)	514 (62.9%)	<0.01
Non-Profit	780 (28.2%)	1984 (71.8%)	
Government	194 (19.3%)	809 (80.7%)	
Intensive Care Unit in Hospital			
Yes	843 (33.5%)	1672 (66.5%)	<0.01
No	434 (21.0%)	1635 (79.0%)	

Barriers:
Administrative costs
Distortions
Out of pocket costs for patients,

Wilcock et al, JAMA Neurol 2021;78(5):527-535

Richards et al, JAMA Neurol 2020

Setting

	Inpatient	Outpatient	Emergency Care	Education/ Mentoring
KQ2- Effectiveness	12 (14%)	28 (33%)	25 (30%)	19 (23%)

Study Designs and Risk of Bias

Study Design	Number of Studies	%
RCT	19	23
Before-After	19	23
Prospective Cohort	18	21
Retrospective Cohort	14	17
Pre-Post	14	17
Risk of Bias		
Low	5	6
Medium	60	71
High	19	23

Clinical Topic N studies	Patient Outcomes: Mortality	Patient outcomes: Hospital use	Patient outcomes: Other clinical	Provider outcomes/ Payer outcomes
Multiple conditions 3	~ Mortality in hospital[69,70]	~ Transfers[70] ~ Length of stay[69,70] ~ Readmission[69]	~ Drug prescribing outcomes[71]	+ Communication ratings[70]
Infectious Disease 2	+ Mortality[65]	~ Transfers[65] – Length of stay[65†] ~ 30-day Readmission[65]	+ Improved antimicrobial use or infection rate[65,66]	None reported
Stroke 1	None reported	~ Length of stay[68]	None reported	+ Cost[68]
Spinal fracture 1	None reported	+ Length of stay[67]	None reported	+ Knowledge, skills, confidence[67]

+ = Improved Outcome with telehealth; ~ = Similar outcome with telehealth; - = Worse outcome with telehealth. M = Outcomes were not consistent across studies

Clinical Topic N studies	Patient Outcomes: Mortality	Patient outcomes: Hospital use	Patient outcomes: Other clinical	Provider outcomes/ Payer outcomes
Neonates 4	None reported	+ Transfers[62] ~ Length of stay[63,64]	~ Enteral feeding[63,64] ~ Ventilation/ oxygen [63,64] ~ Proportion of deliveries at community hospitals[61]	None reported
ICU 1	~ Mortality in high dependency unit[72] ~ Mortality in hospital[72] ~ Mortality total[72]	+ Transfers[72]	None reported	None reported

Education / Mentoring

Modality	Clinical Topic # of Studies	Provider outcomes	Patient outcomes
ECHO Video-conference	Antibiotic therapy 1	+ Antibiotic prescribing[142]	~In-hospital mortality[142] ~ Mean length of stay[142]
	Diabetes 2	+ Self-efficacy in patient coaching/education; identification of psychosocial treatment barriers[128]	+ A1c[141]
	Liver disease 2	+ Hepatitis C Virus awareness, knowledge, abilities and intention to recommend screening for at-risk patients[135]	~ Sustained viral response[125] ~ Serious adverse events[125]
	Mental health 5	+ Change in prescribing[130 132] + Provider knowledge and self-efficacy[140] + Autism-specific screening[126] + Pediatric behavioral health management[132] + Satisfaction with sessions[132,140,143]	None Reported

+ = Improved Outcome with telehealth; ~ = Similar outcome with telehealth; - = Worse outcome with telehealth, **M** = Outcomes were not consistent across studies

Summary of Evidence

- Provider to Provider Telehealth to support direct patient care **may provide benefits** for:
  - Inpatient care
  - Neonates in rural hospitals
  - Outpatient management of depression and diabetes
  - Emergency care for stroke/heart attack/chest pain as well as trauma

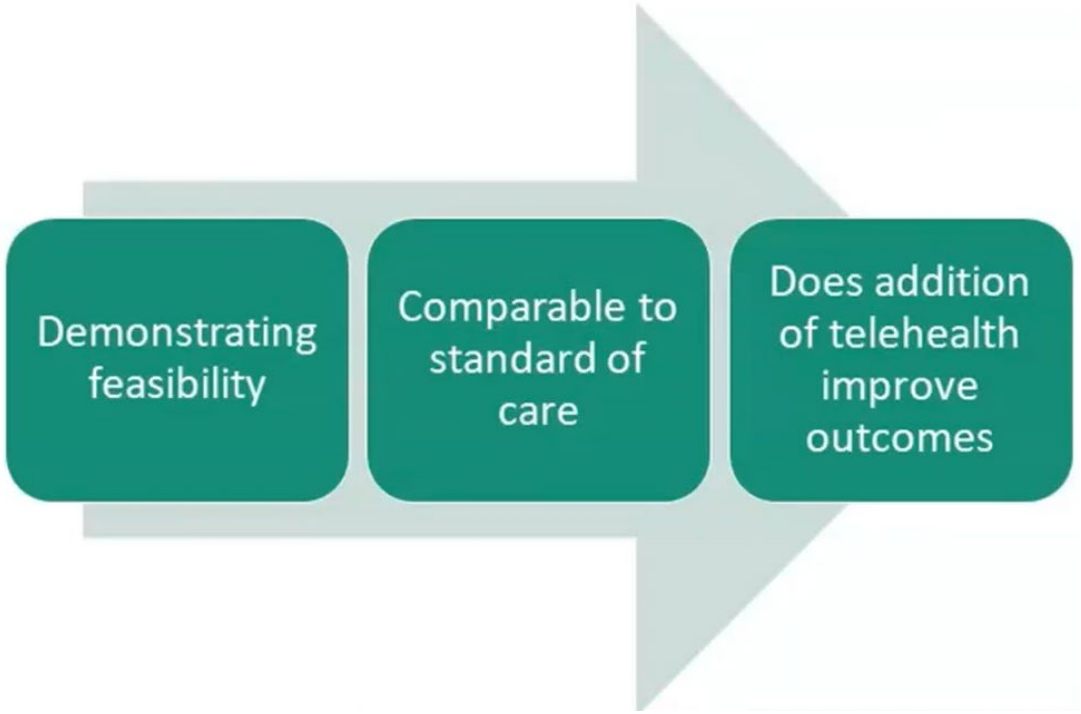
- Telehealth for **provider education and mentoring** (including ECHO programs/video for instruction and collaboration) may
  - **improve** patient outcomes
  - **change** provider behavior
  - **increase** provider knowledge and confidence in treating specific conditions

- Other uses, outcomes or populations: Insufficient evidence to support conclusions

- Harms or unexpected negative outcomes: Not reported

What if the evidence for effectiveness?

Need RCTs to drive health policy!



Replacement:
RCT telehealth
vs
in-person

Complement:
RCT (telehealth + in-person) vs. in-person

Which condition?

Which Patient?

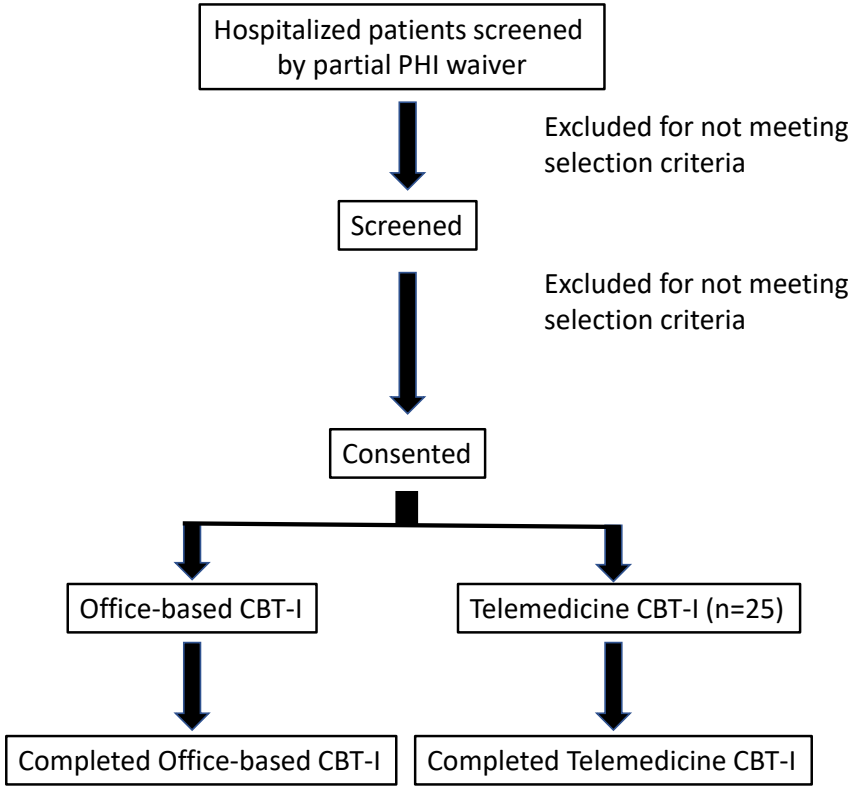
What type of telehealth?

Outcomes?

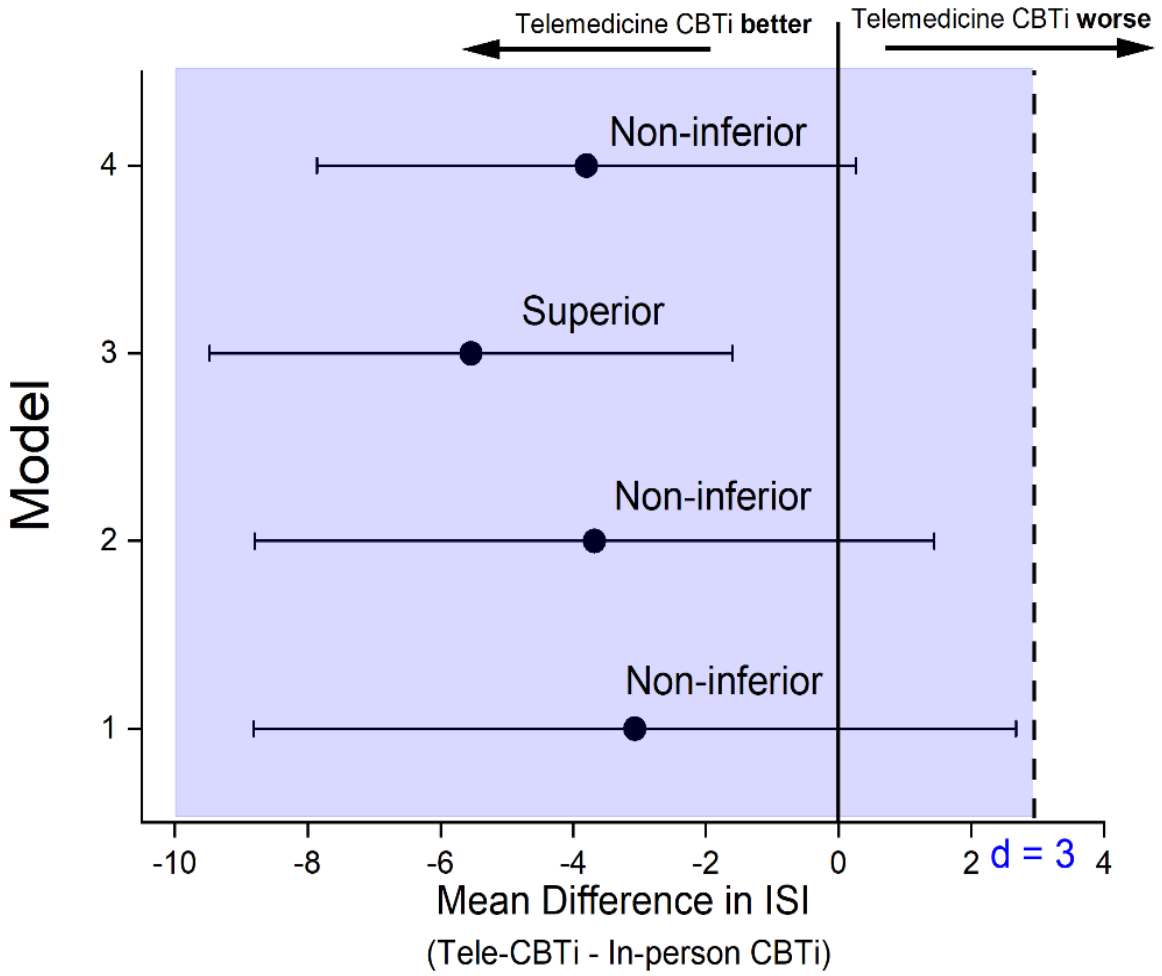
Mixed methods?

Qualitative + Quantitative

Non-inferiority study of telemedicine vs in-person CBTi for insomnia



	Baseline	Week 2	Week 6
Telemed CBT-I	18.7 (5.3)	12.5 (4.3)	8.3 (8.0)
CBT-I	20.7 (4.4)	16.6 (4.0)	14.5 (7.1)



Berryhill et al [Unpublished]

Comparing Three Ways to Treat Insomnia in Adults Living in Rural Areas – **COZI-R study**

Seeks adult volunteers, ages 18 – 80 with chronic insomnia for a research study.

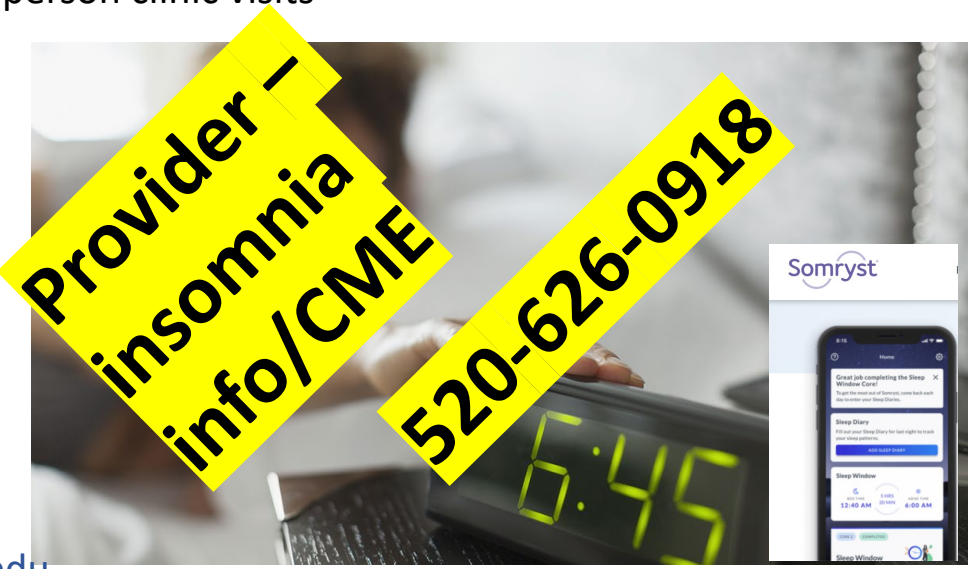
The purpose of the study is to learn which type of treatment is most effective at treating chronic insomnia; 1) Cognitive Behavioral Therapy (CBT-i), 2) Medication (Trazadone or Zolpidem), or 3) Combination of both, CBT-I + Medication.

Study involves filling out online questionnaires, sleep diaries, and follow up assessments AFTER 9 weeks, 6 months, and 12 months and surveys at 1 and 9 months, after taking medication and completing internet based cognitive behavioral therapy, or both. All visits/questionnaires are completed online. There are no in-person clinic visits

Cognitive Behavioral Therapy is provided free of charge.

Participant's insurance company will be billed for medication.

Compensation for study completion is ($75.)



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Principal Investigator: Sairam Parthasarathy, MD spartha1@arizona.edu

https://cozi.medicine.arizona.edu/

PCORI-CER-2018C2-13262

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Definitions

Telehealth:

Use of information and telecommunications technology to provide health care across time and/or distance; many possible combinations:

- Modes (asynchronous, real-time video, and many others)
- Functions (consultations, mentoring)
- Clinical indications (from mental health to remote surgery)

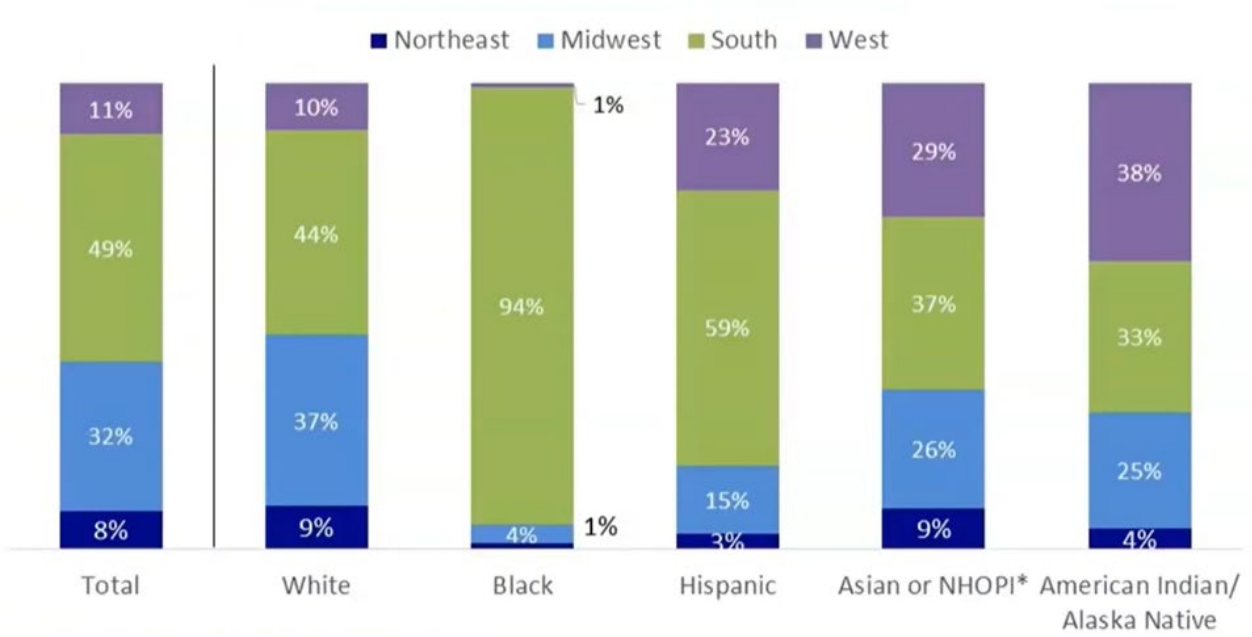
Provider-to-Provider:

Any form of interactive support using telecommunications technology provided to health care professionals while they are caring for patients and populations.

Barriers

- Not reimbursable (R)
- Regulatory limitations (R)
- Not covered
- Patient location ineligible
  - Alaska and Hawaii for CTBS [Medicare]);
  - 17 states for eCpnsults
  - ECHO - NM
- Provider ineligible
- Low fees

Disparities by race/ethnicity and region

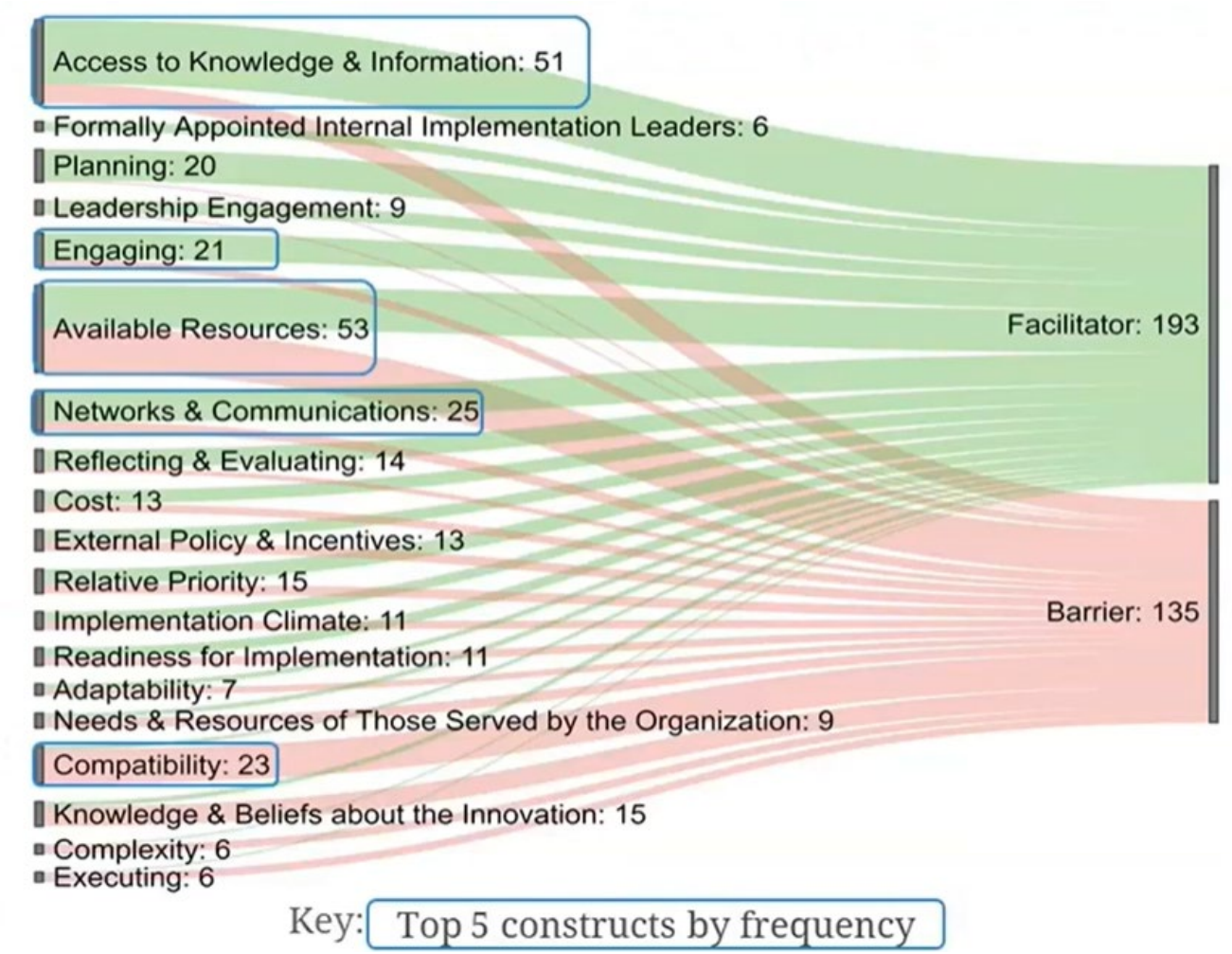


- Accessible technology (e.g., disability, language access)
- Initial investment and upgrades
- Training and maintenance
- Where you live matters
- Provider availability for distant sites
- Reimbursement
- Patient needs
- Data collection, analysis and reporting

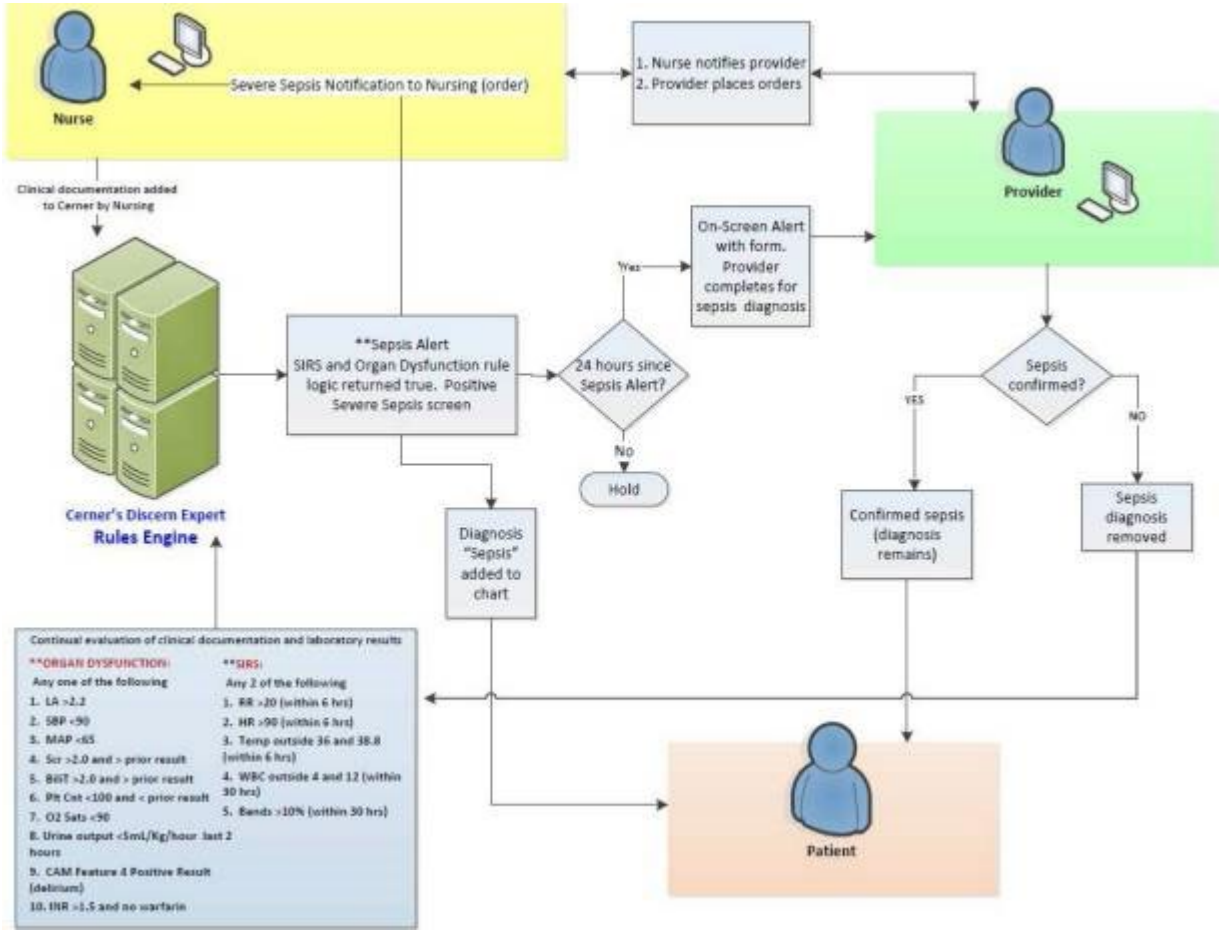
Barriers - Summary

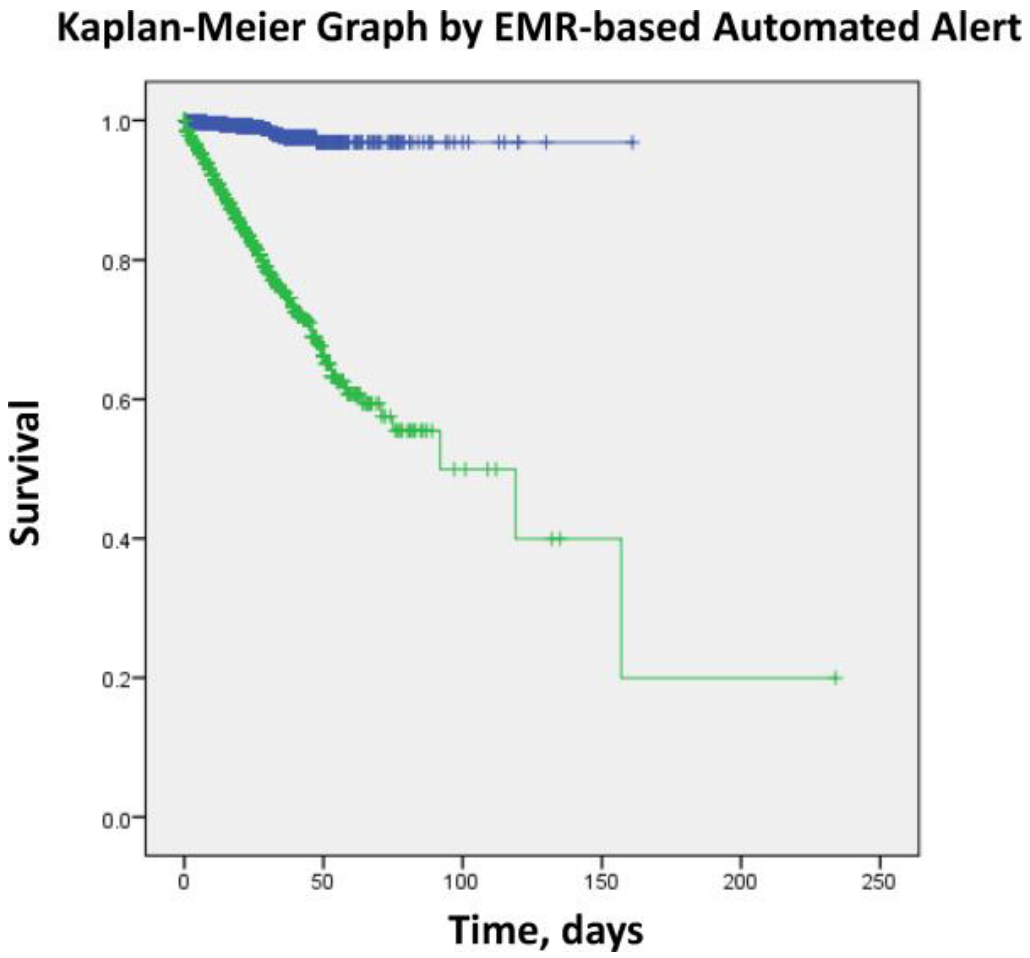
- Facilitators and Barriers are similar across settings and uses
- 2 Most frequently cited barriers
  - Level of resources available for implementation and on-going operations
  - Access to digestible information and knowledge about the intervention and how to incorporate it into work-flow
- Unique to rural P2P telehealth
  - Lack of consulting providers' familiriarity with limitations in rural areas
  - Resources and commitment required may be difficult to rural provider
  - Technology and support must be tailored for frequency of use

Barriers – Summary - 2



Real-time Automated Sampling of Electronic Medical Records Predicts Hospital Mortality





Khurana et al, Am J Med 2016; 129(7); 688-698

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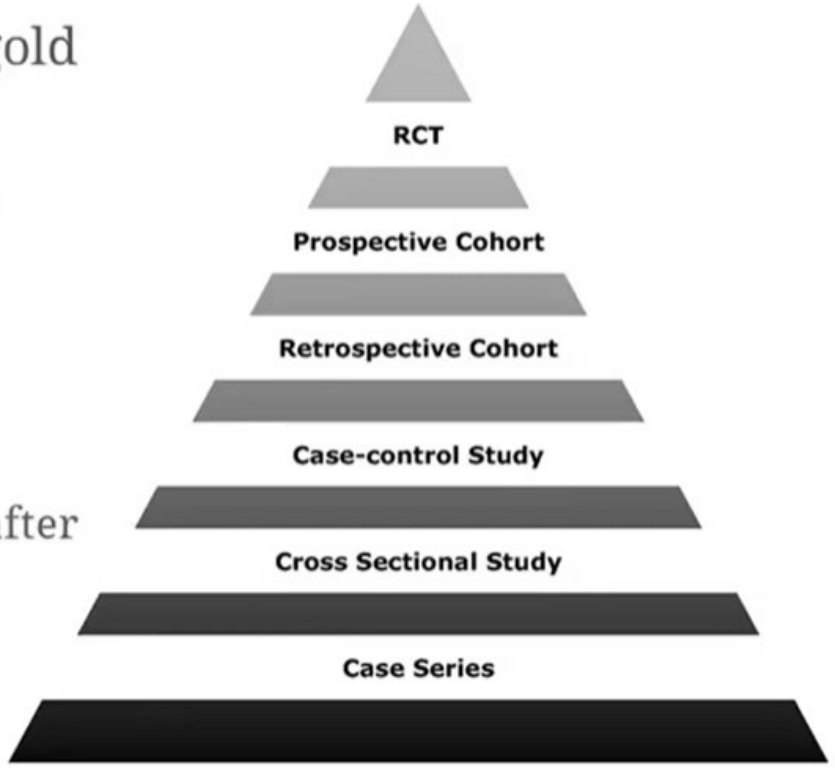
Challenges Researching Telehealth

- Telehealth can facilitate a wide range of very different health services and interventions
  - Example: remote ICU vs. SMS remote education
  - Comparisons across uses may not be appropriate
- Limited outcomes
  - Studies are often designed to assess impact on access
  - Not as frequently designed to assess
    - impact on patient, provider or payer outcomes
    - quality of services provided via telehealth

- Individual study design
  - RCTs versus other designs
  - Sample sizes
  - Single-site versus multi-site studies
  - Biases not addressed or minimized
  - Examples: selection, performance, detection, attrition and analysis bias
- Individual study conduct
  - Clarity and fidelity of telehealth intervention and comparator
- Confidence in a body of evidence
  - Across studies
  - Not about whether telehealth works; about whether the conclusion seems stable—will it change with future studies?

Study Design Considerations

- RCT considered the gold standard design for reducing risk of bias
- Included studies
  - 23% RCTs
  - 38% cohort studies (prospective or retrospective)
  - 39% pre-post/before-after design



- Use strongest possible research designs
  - Adequate sample sizes for primary, important outcomes
  - Multisite, cluster-randomization if appropriate
- Detailed descriptions of telehealth interventions and comparators
- Clear agreement on telehealth goals and corresponding outcomes
  - If 'as good as', use noninferiority (equivalence) design
  - What are the most important outcomes?
    - Is access sufficient or must clinical outcomes improve?
- Outcomes measurement and analysis
  - at multiple time points and/or contemporary comparison groups
  - long-term sustainability of outcomes

Methodological Weaknesses - Summary

- Studies of provider-to-provider telehealth for rural areas could be improved by addressing methodological weakness
- Key weakness: **Difficult to attribute impact to telehealth** because
  - Most common: Weaker study designs are common
    - Lack of control for confounders
  - Next most frequent: small sample sizes
    - lack of power to detect differences or confirm equivalence
- Data limitations
  - use of retrospective data
  - data produced for care delivery and billing purposes and not research may be incomplete or coded differently across organizations

Thank you

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