



TBI-BH ECHO

Traumatic Brain Injury - Behavioral Health ECHO
UW Medicine | Psychiatry and Behavioral Sciences

Telemedicine: Use and Evidence in TBI Management

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Speaker disclosures

✓ None





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Objectives

1. Briefly review the current management and treatment of TBI
2. Current barriers to mental health management
3. Current use and benefits of telemedicine
4. Review the literature about telemedicine in TBI



The current state of the continuum of care

Emergency services

ICU/Critical Care (Neuroscience Critical Care Unit)

Acute Medical/ Surgical Care

General Acute Rehab Care

Inpatient Psychiatric Services

Outpatient Services

Neuropsychiatry Brain Injury program

Outpatient NeuroRehabilitation Program

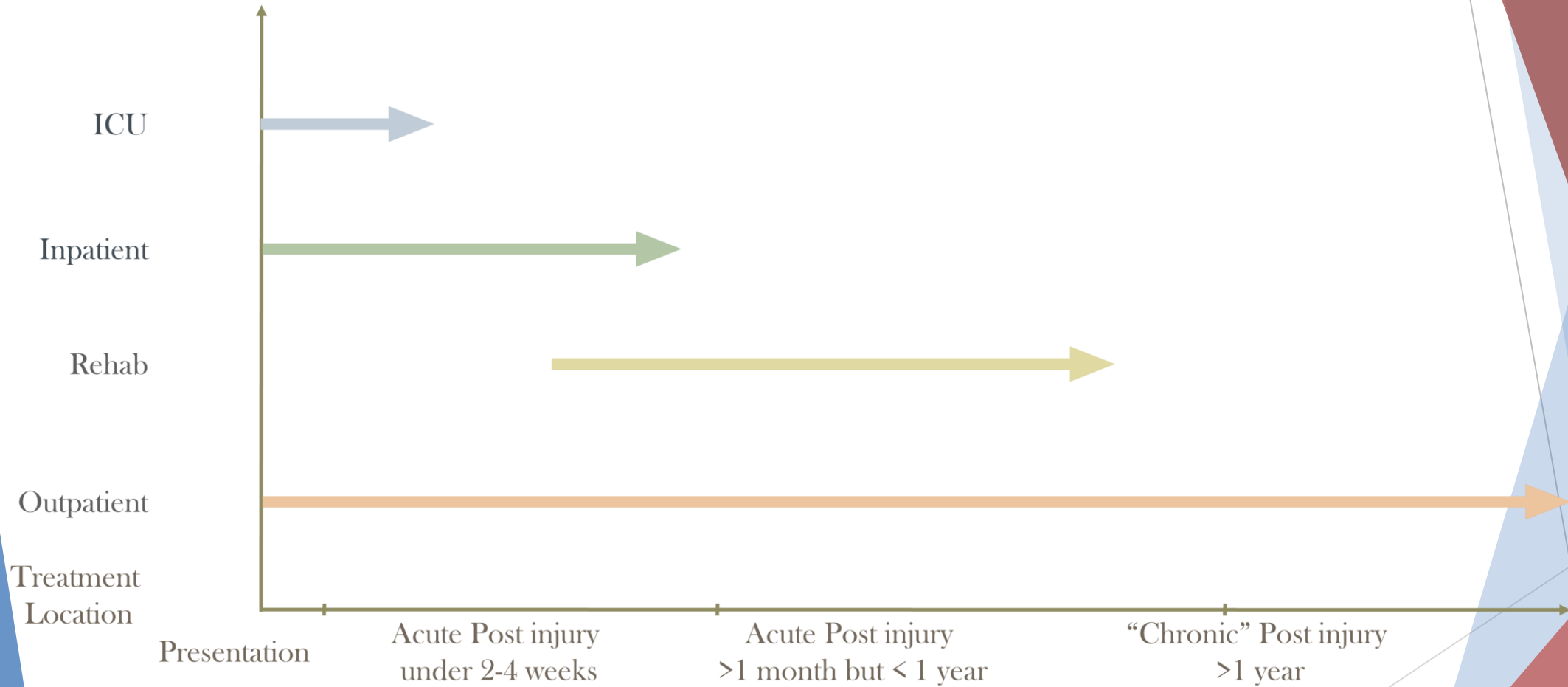


Treatment

Pharmacologic
Behavioral
Psychotherapy



“Simplified” TBI Timeline



Challenges Facing TBI Management

Specialty Providers

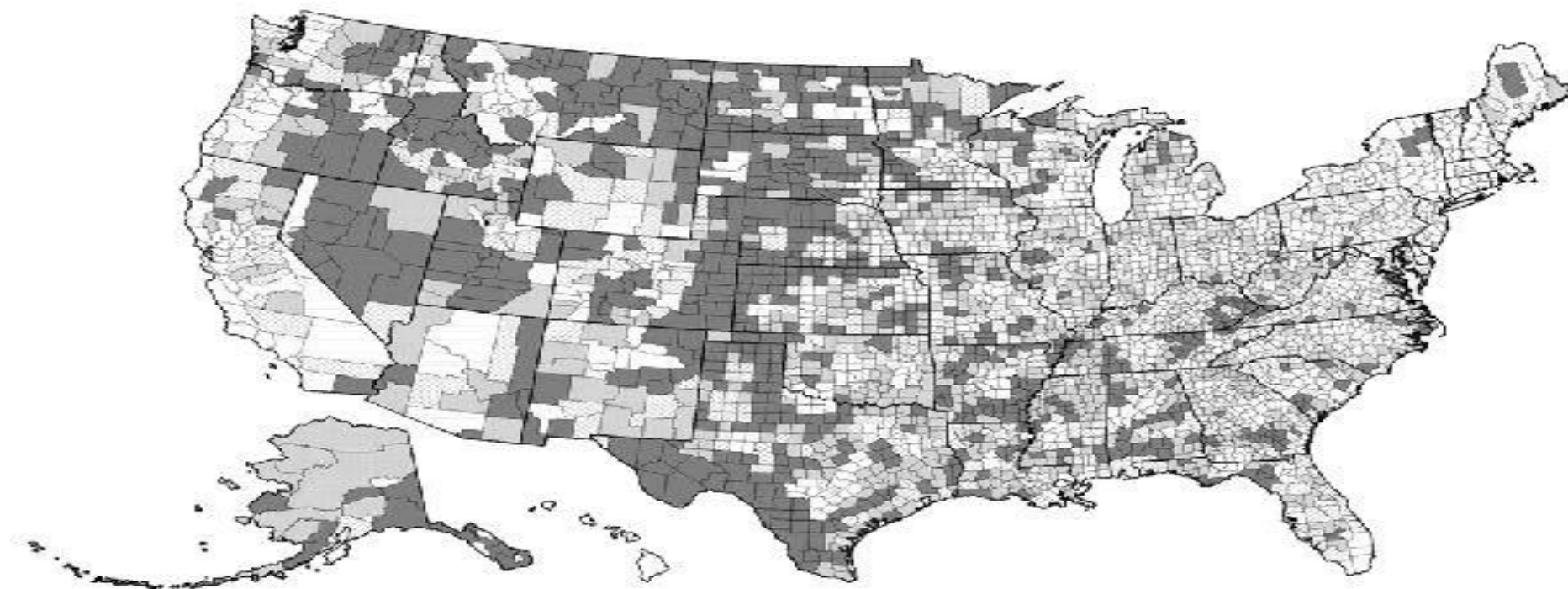
Patient barriers

Provider barriers



Figure 1

Unmet need for mental health professionals among counties with an overall shortage^a



^a Shading (from light to dark, indicating first to fourth quartiles, respectively) is intended to convey an overall pattern of unmet need for prescribers and nonprescribers combined. [For finer detail, this map is available as an online supplement to this article at ps.psychiatryonline.org.]

1 in 5: unmet need for non-prescribers

96%: unmet need for prescribers

Thomas KC et al, 2009



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Patient Barriers

Cognitive impairment

Complex treatment regiment

Limited mobility

Limited public awareness of TBI

Setnik, L., & Bazarian, J. J. (2007). Brain injury, 21(1), 1-9.
Flanagan SR, Bell K, et al. (2012) Brain Injury 12(2).



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Provider Barriers

Limited time for complex patients
Complex coordination care needs
Limited knowledge and experience
with TBI and TBI related concerns
Limited access and support in rural
communities



Provider Barriers

Pacific Northwest for example...
27% of US land mass
4% of US population

Rural Communities
1 in 4 residents lives in a rural community
Experiencing economic decline
An aging population base



Jukkala AM, Henly SJ, et al. RJ Contin Educ Nurs. 2008
Rourke JT, Incitti F, et al. Can Fam Physician. 2003



Provider Barriers

Limited time for complex patients

Complex coordination care needs

Limited knowledge and experience with TBI
and TBI related concerns

Limited access and support in rural
communities



Provider Barriers

Rural primary care providers:

~27% of will retire in the next 10 years

New grads less likely to go into primary care, especially in rural areas

Retention issues:

Low rates of job satisfaction

Professional isolation

Poor access to specialty referral networks

Lack of access to continuing medical education





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Slide Adapted from C. Towle, MD

Telemedicine Vs Telehealth

No clinical difference

ATA = Telemedicine

HRSA = Telehealth



What is considered telemedicine?

Catch all term:

Electronic reminders

Remote monitoring

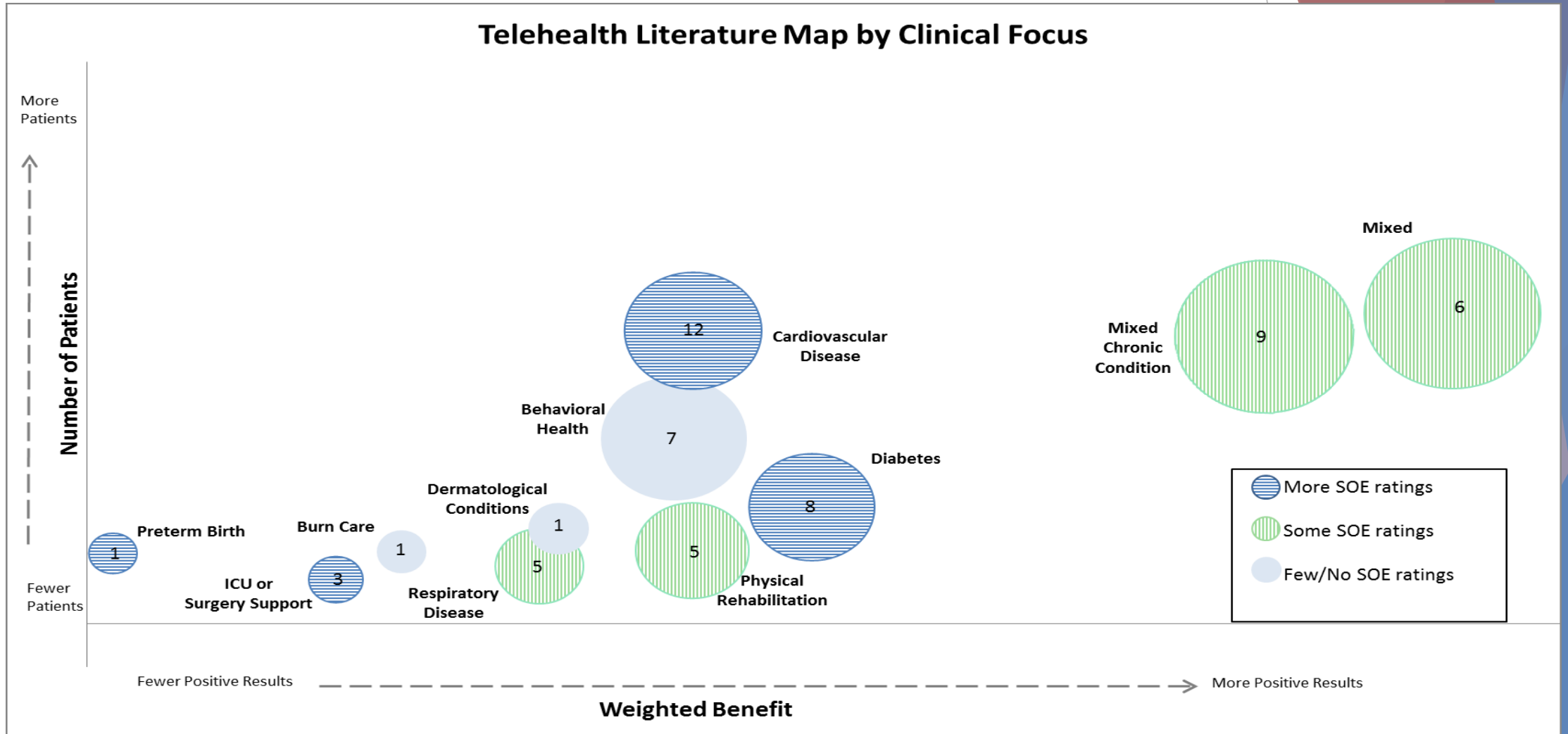
eConsult

Phone interviews

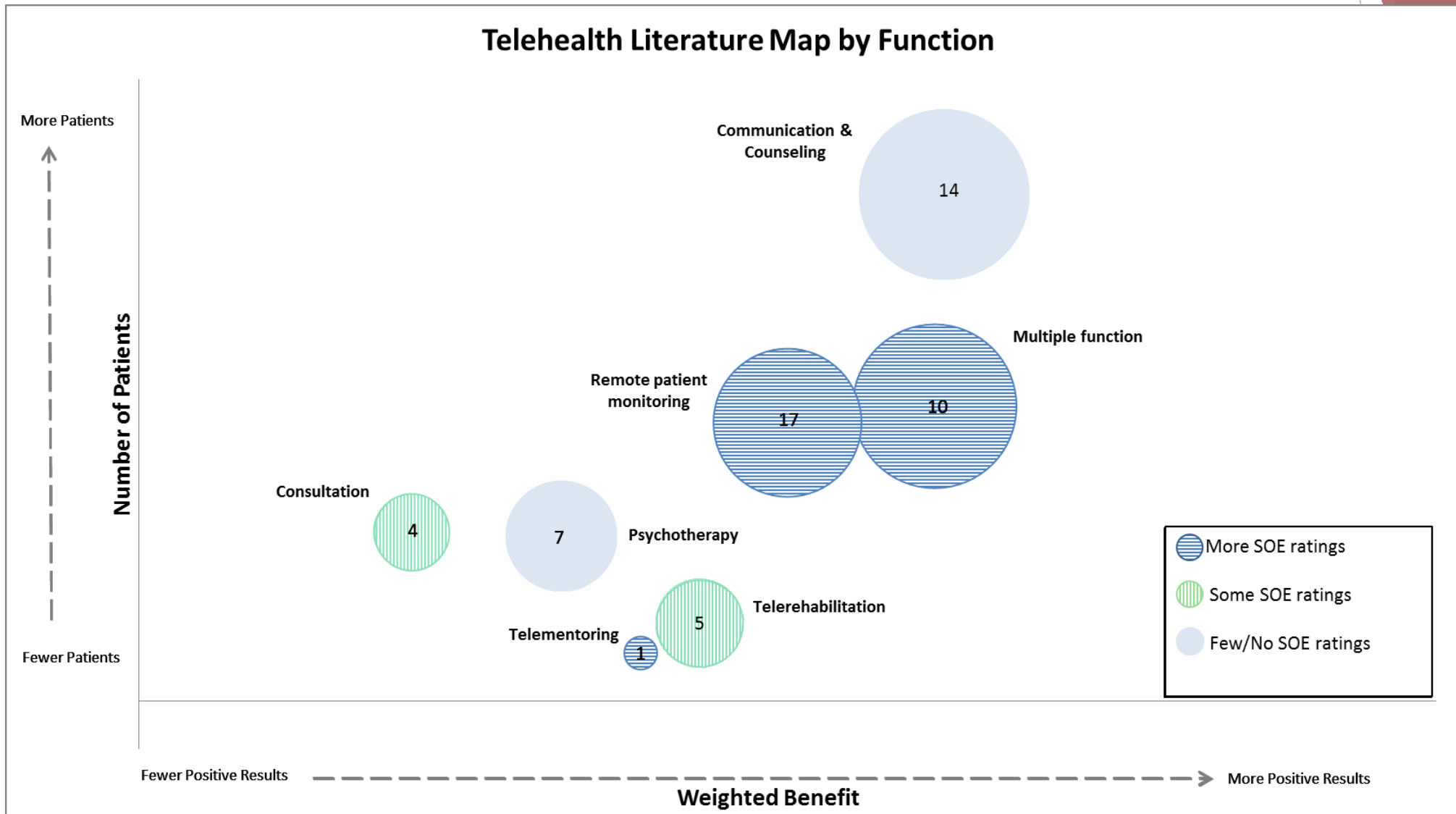
Person to person video conference
(Project Echo)



How Has Medicine Used it?



How Has Medicine Used it?



Risks vs Benefits of Telemedicine

Risks?

No clear studies to date that show risks of telemedicine



Risks vs Benefits of Telemedicine

Benefits?

Literature overall is not good quality

May decrease ICU mortality & length of stay

May increase appropriate transfers from the ED

Clinical outcomes are similar between telemedicine and in person visits in the outpatient setting and patients are generally satisfied with them

Psychiatry specifically has higher treatment adherence and patient satisfaction



TBI & telemedicine

Specialist

Patients

Primary care providers



Specialist

Direct consults for psychiatry & care coordination

Diagnosis and outcomes are accurate and comparable to in-person visits.

Psychotherapy

PST

BA

CBT

Sheeran T, Dealy J, Rabinowitz T. Geriatric telemental health. Elsevier, New York, NY.
Hilty et al. *Telemedicine Journal and e-Health*. 2013;19:444-454.
Archer, K. R., Coronado, R. A., et al. (2015). *Trials*, 16(1), 244.
Fann, J. R., et al. (2015). *Journal of neurotrauma*. 32(1), 45-57.



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Patients

Appointment & medication reminders
Decreases travel?
Decreases patient cost?

Pavliscsak, H., et al. (2015). *Journal of the American Medical Informatics Association*, 23(1), 110-118.

Little, J. R., et al. (2017). *Military medicine*, 183(3-4), e148-e156.

Totten et al. Telehealth for Acute and Chronic Care Consultations. AHRQ Sept 2018



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Providers

In general:

Patients and providers generally satisfied

Providers concern > patients

≥ UC ≈ Face-to-Face (FTF)

↓ cancellations (3.5% vs 4.8%), ↓ no shows
(4.2% vs 7.8%)

Generally ↓ cost?

Totten et al. Telehealth for Acute and Chronic Care Consultations. AHRQ
Sept 2018

Hubley et al. (2016). Review of key telepsychiatric outcomes.



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Telephones & TBI

Telephones

- Bell et al 2005. N = 171 discharged from acute rehab. 1 yr later those with scheduled phone calls fared better on scales & functional status
- Fann et al 2015 N = 100. In-person and Telephone CBT were acceptable and feasible



Other tech & TBI

Smith et al. 2022

- Scoping review
- 40 studies identified
- Telephones, short messages, smartphones, videoconferencing, digital assistants, and custom devices
- It may help capture fluctuating symptoms
- Large variation across studies and more studies needed



Other tech & TBI

Juengst et al. 2021

- Scoping review looking at monitoring with mobile tech
- 12 studies identified
- post-concussive, depressive, and affective symptoms, fatigue, daily activities, stroke risk factors, and cognitive exertion.
- Found it feasible & acceptable
- Schedule/timing of intervention unclear



Other tech & TBI

Christopher et al. 2019

- Looked at Mobile applications
- Limited evidence base
- No specific apps



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