Duke | MARGOLIS CENTER *for* Health Policy

Duke Orthopaedic Surgery
Duke University School of Medicine

To Scale Or Not To Scale

Do we have the building blocks to answer this question for tele-rehabilitation?

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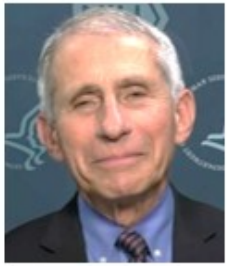
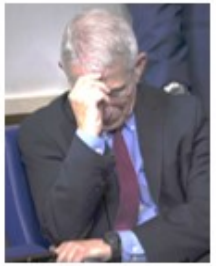
Checking in

How is everyone doing?

Please use the chat box to identify

your current level of Dr. Fauci

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DISCLOSURES

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1R03AG069848-01
1P30AG064201-02

What perspective do you bring?

In this presentation, we will

- Select outcomes from which to anchor exploration, change or improvement.
- Apply frameworks for building and scaling telerehabilitation to your local context.
- Organize a plan for assessing barriers and using data to reach goals for different stakeholders.

THE HISTORY OF TELEMEDICINE

From 1924 to 2016
a look at telemedicine over the century.

1876 — **Alexander Graham Bell** patents the telephone and launches the beginnings of our telecommunications field.

1924 — **Dr. Hugo Gernsback envisions the "teledactyl,"** a tool with robotic fingers and a projected video feed to examine the patient from afar. Back then, the idea was a fantasy.

1950's — Medical personnel start doing experiments with close-circuit television.

1959-1964 — **The first interactive video link.** Nebraska Psychiatric Institute in Omaha and the Norfolk State Hospital created the first video link to provide medical care across the 112 miles between them.

1960's — **NASA Takes on Telemedicine.** The 1960's Space Age pushed money into the telemedicine field as NASA researched ways to provide healthcare to astronauts and improve telecommunications technology.

Television is broadcast in color! Television and video really starts to take off in the U.S.

1964 — **AT&T releases the Picturephone.** AT&T's Picturephone was once of the earliest examples of videochat technology, transmitting interactive video over telephone lines. While it never gained commercial popularity, it opened the door to tech advancements in the telecommunications field.

1967 — **The first telehealth system is created that connects paraprofessionals to physician-patient encounters.** The system linked a medical station at the Boston Logan Airport to the Massachusetts General Hospital 2.7 miles away using two-way audiovisual microwave circuit.

1970's — **The late 60's and 70's brought a golden age of telemedicine research and expansion in the U.S.** The federal government funded a range of telemedicine programs to improve healthcare access in rural areas.

1972 - 1975 — **Space Technology Applied to Rural Papago Advanced Health Care (STARPAHC)** NASA partners with the Indian Health Services to deliver remote healthcare to the Papago Indian Reservation in Arizona. They stuffed a van with medical devices like an x-ray machine, and submitted medical results to the nearby hospital with two-way microwave transmission.

1974 — **NASA study tests how to use video for telemedicine.** NASA pairs up with SCI Systems of Houston to test out the minimum video requirements to do a remote medical diagnosis.

June 25, 1989 — **The first time a patient was successfully defibrillated by telephone!** An alarm went off in Jewish Hospital of St. Louis, alerting everyone in the telemetry unit that a patient was just successfully remotely defibrillated.

1993 — **The American Telemedicine Association (ATA)** is created as a non-profit organization to help push for better resources, standards, and legislation for telemedicine.

2000's — **videochat programs and apps like Skype take-off,** making virtual videochat an everyday technology for many.

2010's — **The decade brings rapid expansion in telemedicine as the U.S.** looks for ways to improve healthcare cost, cut down on costs, and provide more convenient care for patients.

2015 — **Healthcare goes mobile. Pew Research Center reports that in 2015,** 2/3 of Americans own a smartphone, and many are using smartphones to research medical information or access health tools and resources.

2020 — **Telemedicine is projected to be a $34 billion industry and a key part of modern healthcare delivery.**

Indian Reservation in Arizona. They stuffed a van with medical devices like an x-ray machine, and submitted medical results to the nearby hospital with two-way microwave transmission.

1989 — **First International Telemedicine Project.** NASA launches Space Bridge to Armenia, to offer U.S. medical support after a devastating earthquake struck the Soviet Republic of Armenia.

1989 — **Invention of the World Wide Web expands the capabilities of telemedicine.** ...And changes the world as we know it! While it would take a few more years for the internet to become a commonplace thing, 1989 saw English scientist Tim Berners-Lee write the first web browser and help bring the beginnings of our modern Internet to life.

1999 — **Medicare gets in the Telemedicine Game.** Starting in 1999, CMS begins paying for telehealth consultations for patients who live in underserved rural areas.

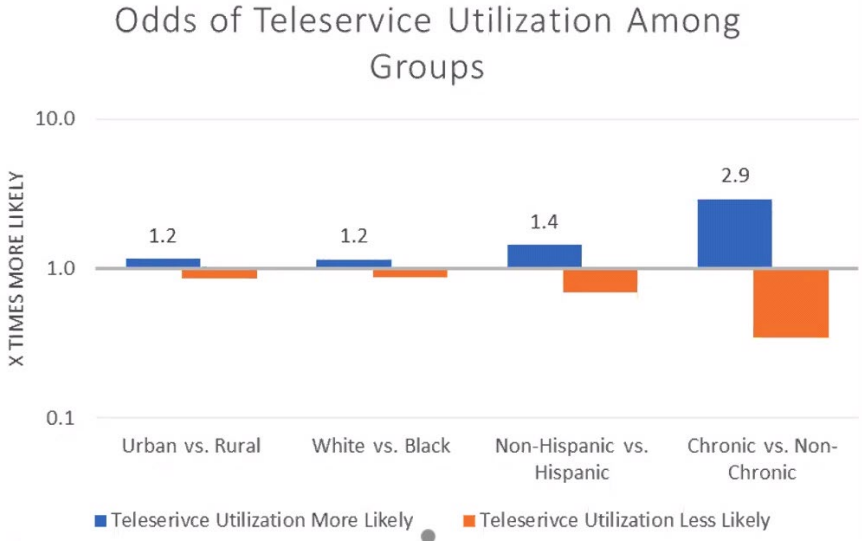
2009 — **ARRA helps stimulate the telemedicine sector.** The American Recovery and Reinvestment Act (ARRA) includes health IT and telemedicine to stimulate business in the industry.

2014 — **eVisit Launches!** The eVisit team of tech experts and physician leaders create a platform that allows healthcare providers to securely videochat their patients anytime, anywhere.

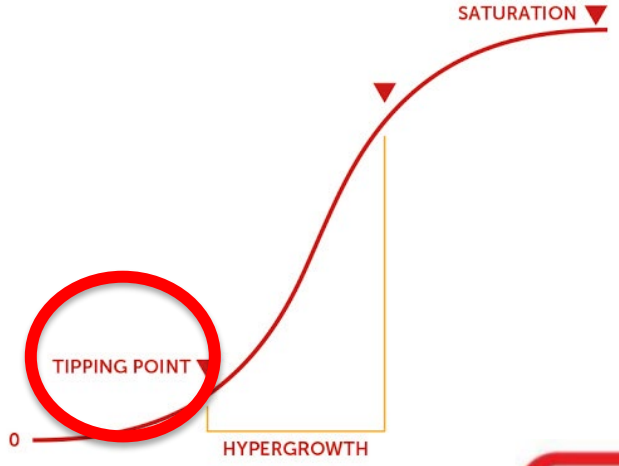
https://www.dhat.com/Blog/More-examples/Masonry-layout-1/ArtMID/656/ArticleID/45/The-Value-of-Telemedicine-in-Today%E2%80%99s-Healthcare-Landscape

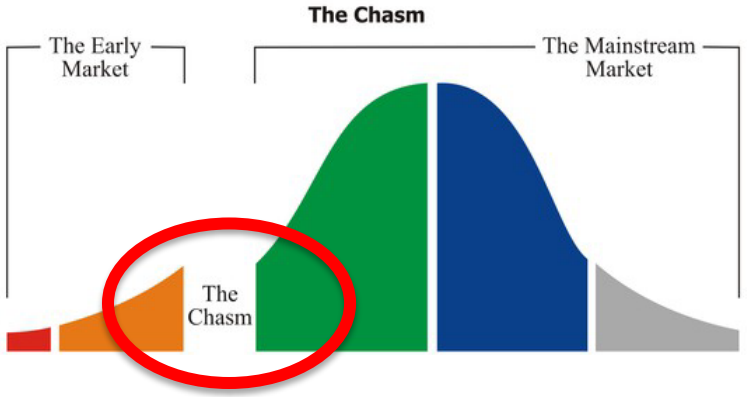
How is telehealth for rehab going in the US?

No one really knows

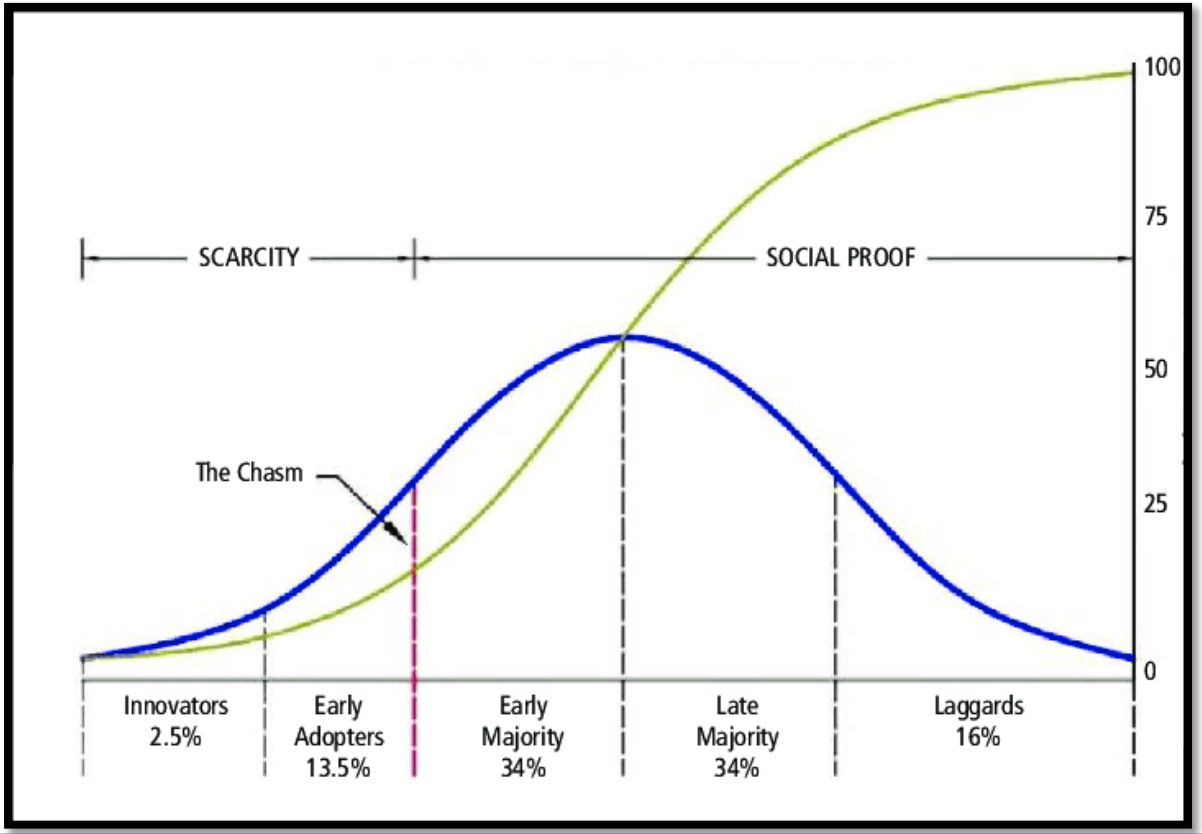


In reality, we're on the cusp of





TELEREHABILITATION



Foundation for reaching the tipping point

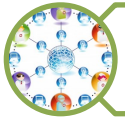
BUILDING BLOCKS

WHO Health Systems Framework


Workforce


Service delivery

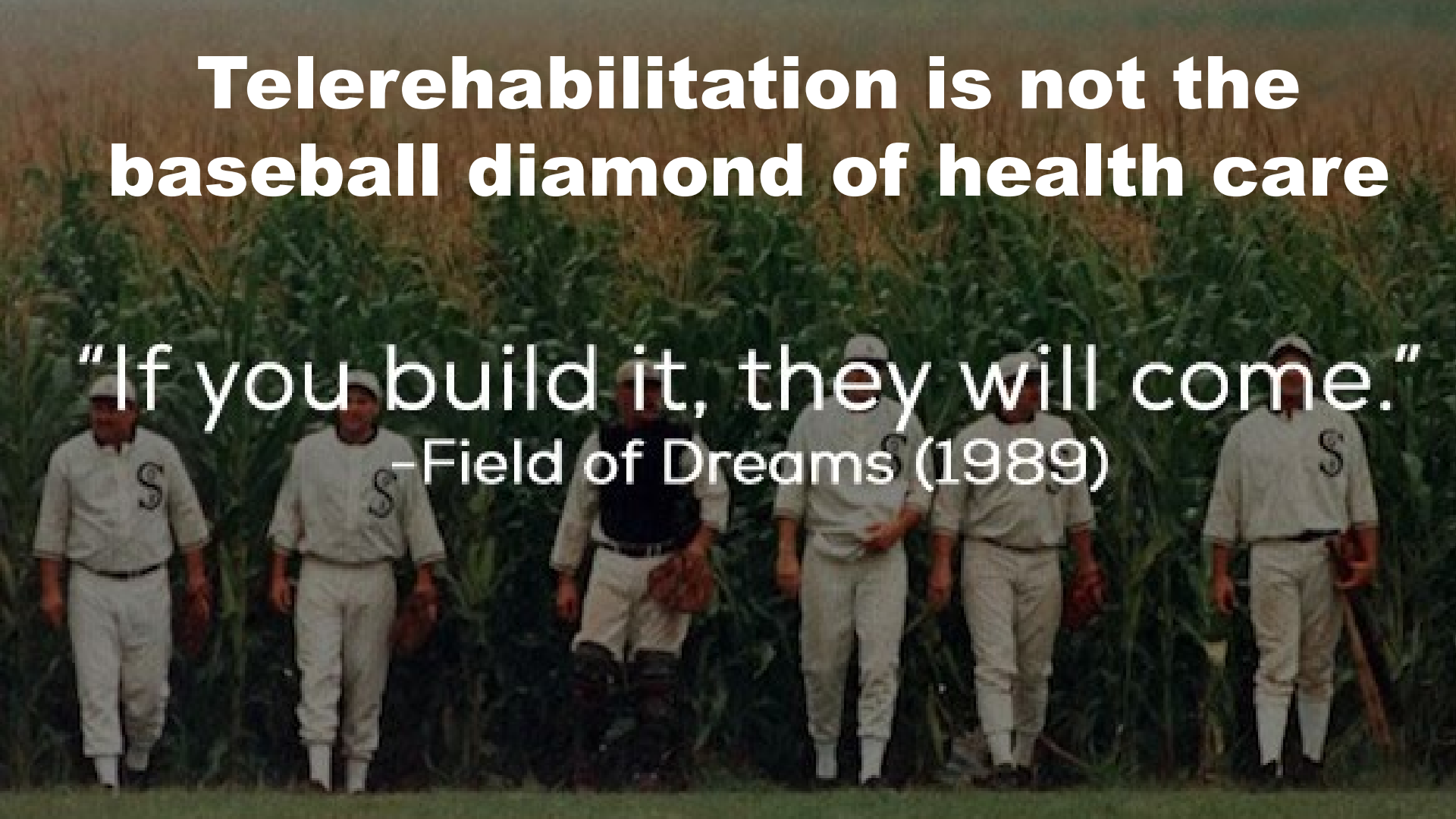

Access to technology


Health information systems

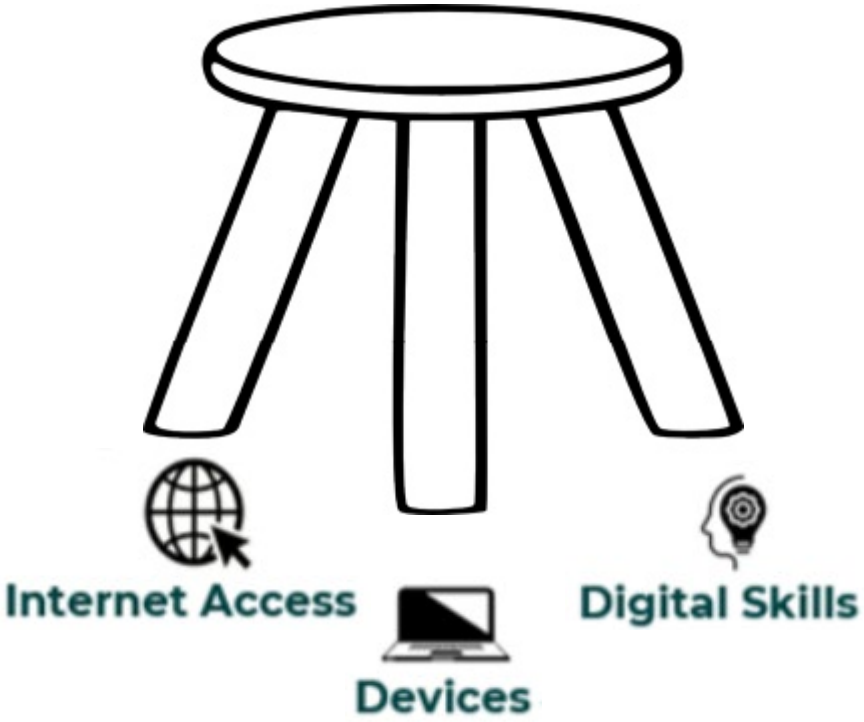

Financing


Leadership / Governance

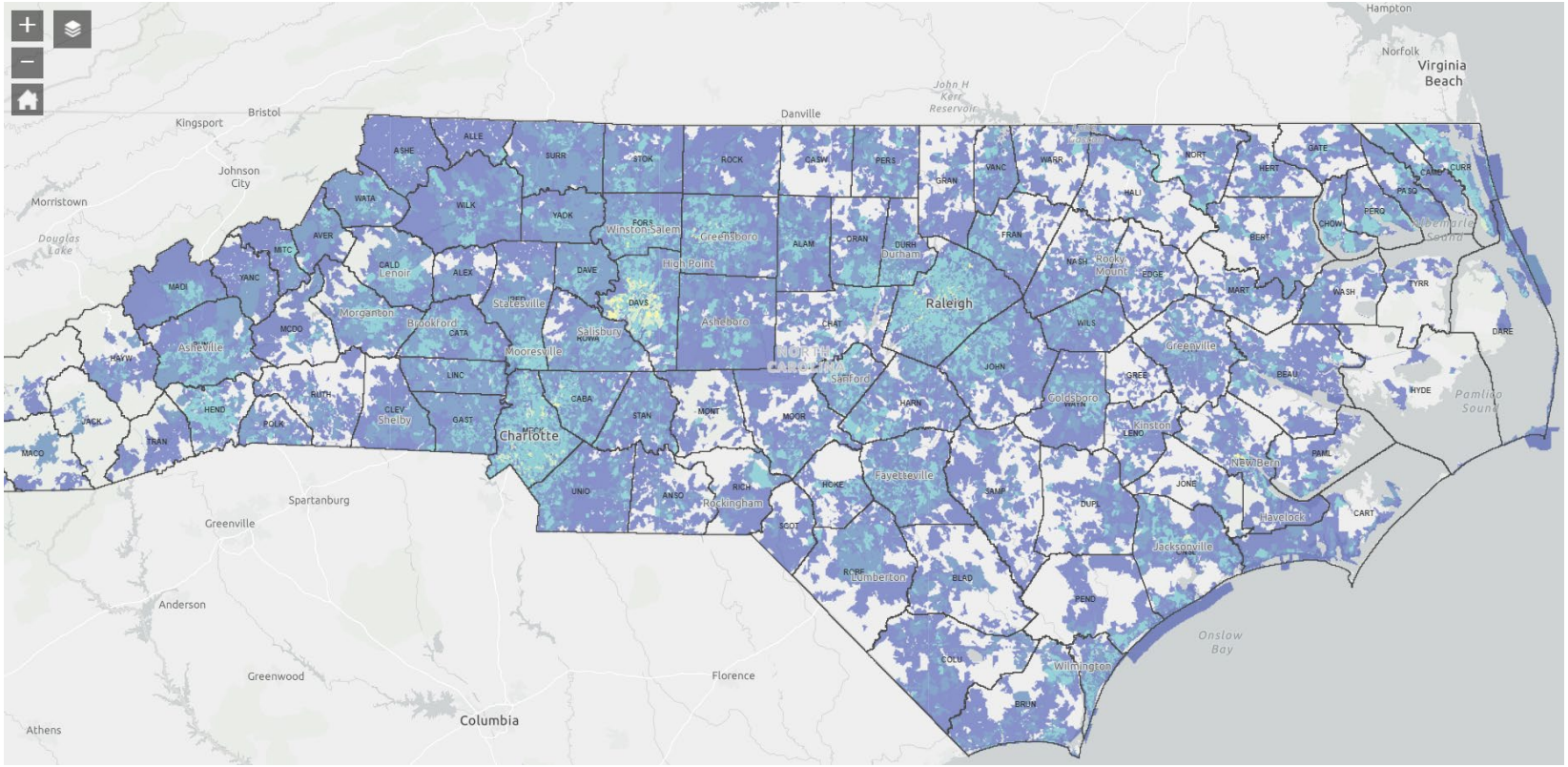
Telerehabilitation is not the baseball diamond of health care



The Digital Divide is Real



Know Your Market & How to Help

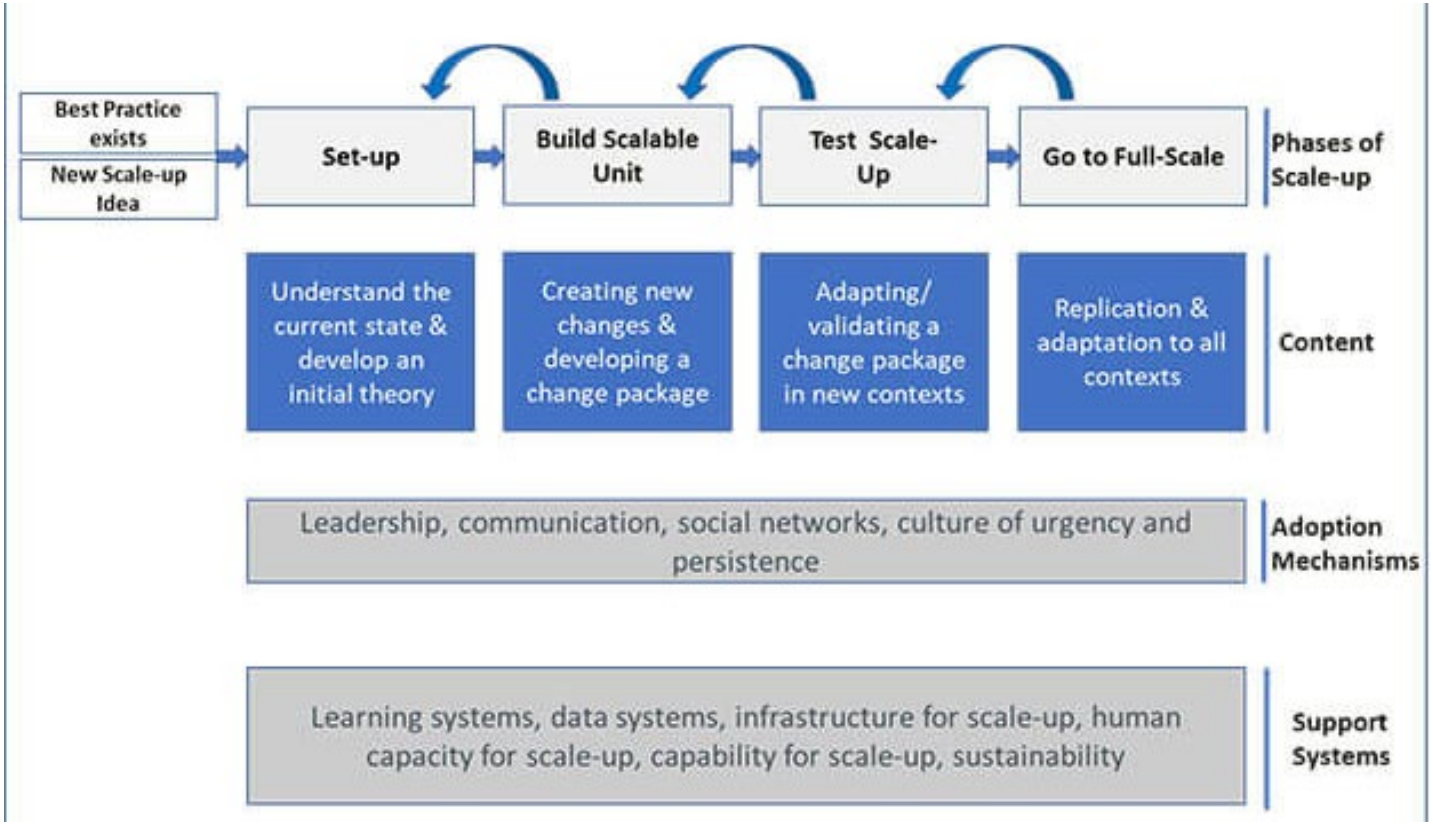


Telehealth = the use of telecommunications technology to evaluate, diagnosis or treat patients who are at a distance from the healthcare professional

Your opportunity: **Strategy Looking Out and Looking In**

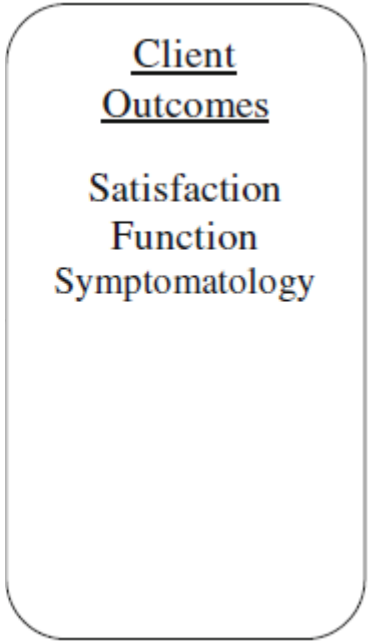
ORGANIZATIONAL LEVEL

IHI Scale-up Framework



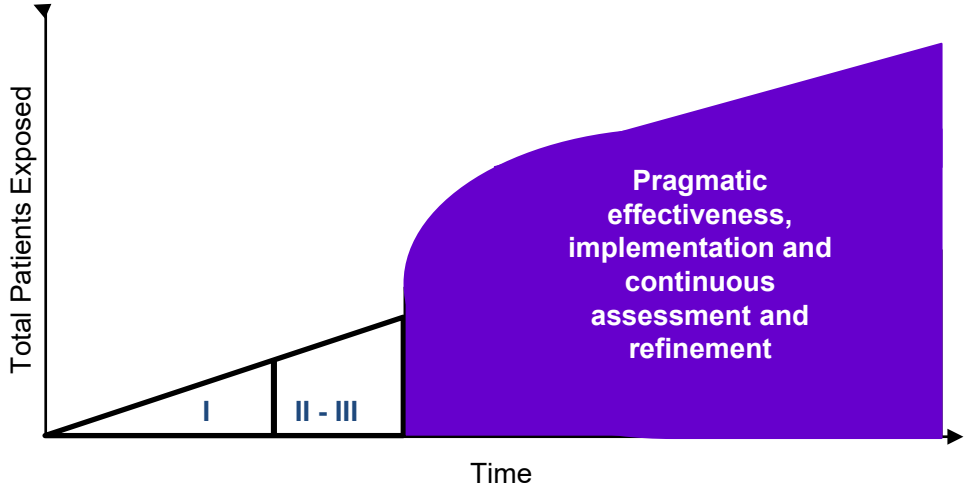
Defining Value

Defining Value as Outcomes



Proctor et al. Adm Policy Ment Health (2011) 38:65–76

Consider the Path Less Taken: Possible with Planning



Developing real world evidence in practice

LEARNING HEALTH SYSTEM APPROACH

LHS defined: ability to continuously, routinely, and efficiently study and improve

Learning

- capability for continuous improvement through collection and real-time analysis of data
- creating new knowledge, and the application of the new knowledge to influence practice

Health

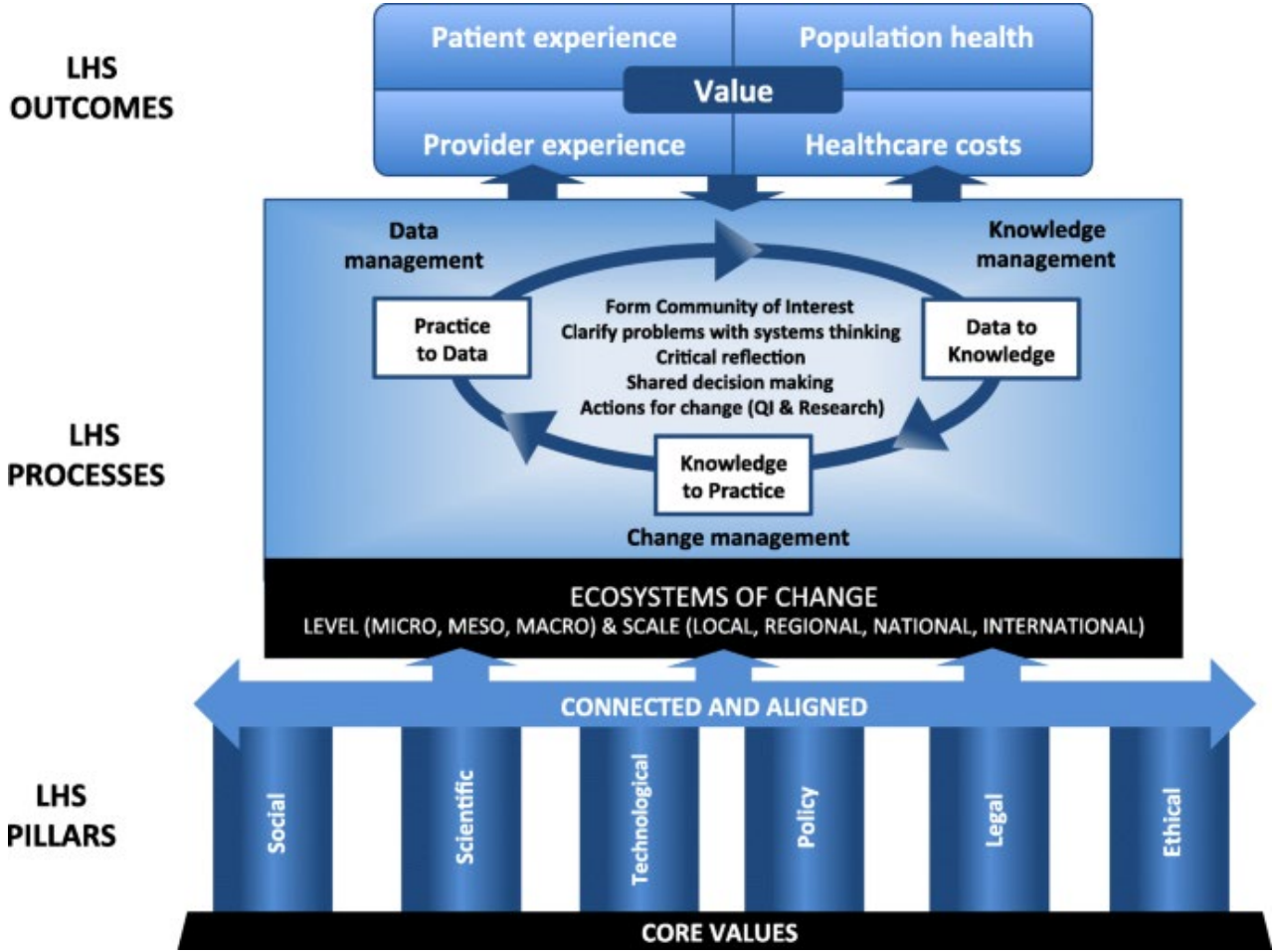
- an end goal of universally recognized benefit to humanity
- a domain of human endeavor seeking to achieve that end

System

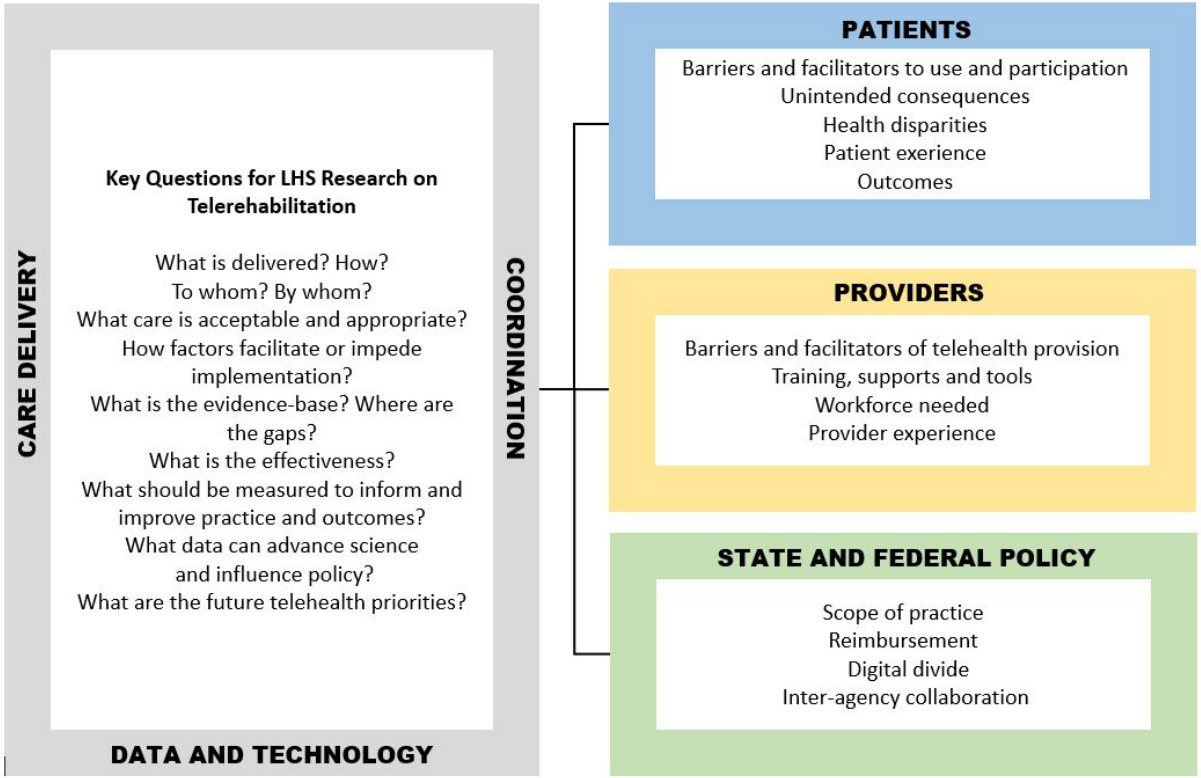
- parts acting in unison to achieve goals not attainable by any subset of the components

IOM 2007

Learning Health System (LHS)



A Deep Dive on How Things are Going



Bettger & Resnik 2020

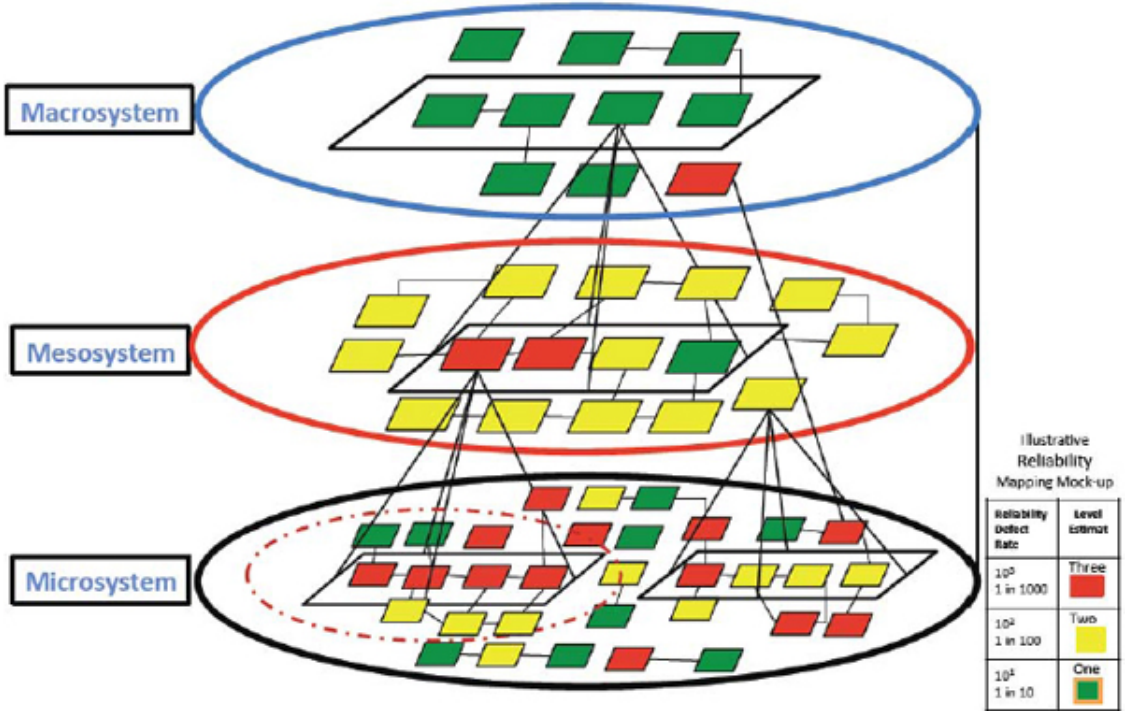
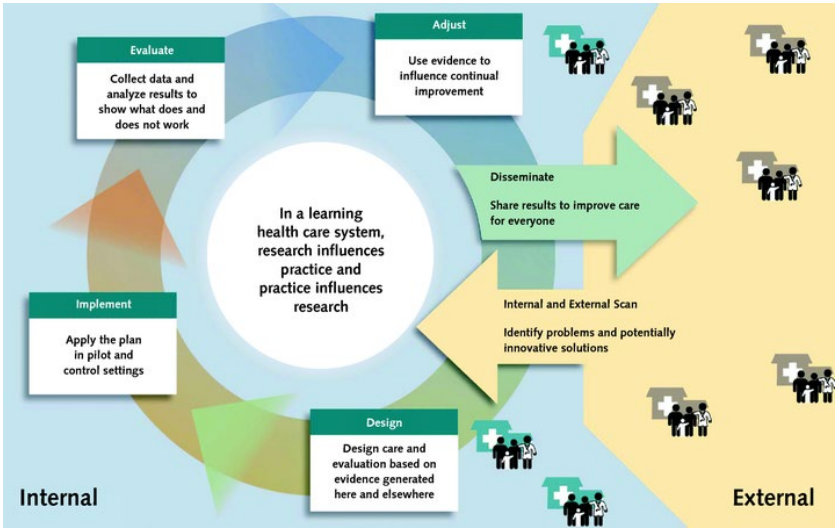


Figure c/o Mary Applegate, medical director of the Ohio Dept. of Medicaid

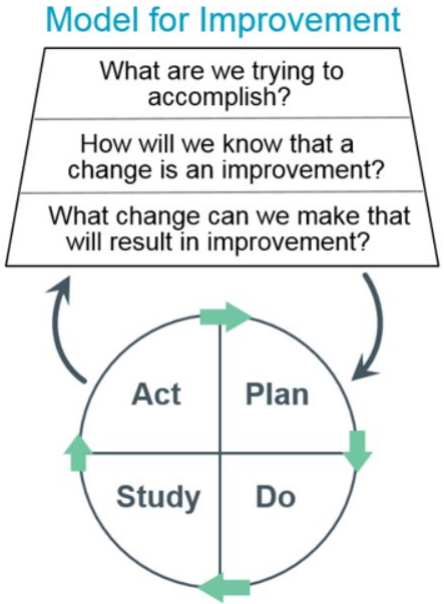


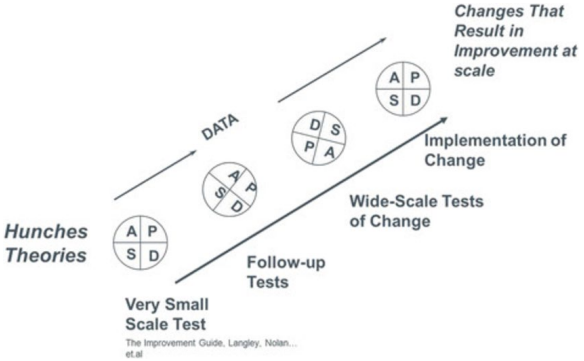
Ann Intern Med. 2012;157(3):207-210.

Quality Improvement, Observational Research, Implementation Research, or PCT

LEARNING HEALTH SYSTEM APPROACH

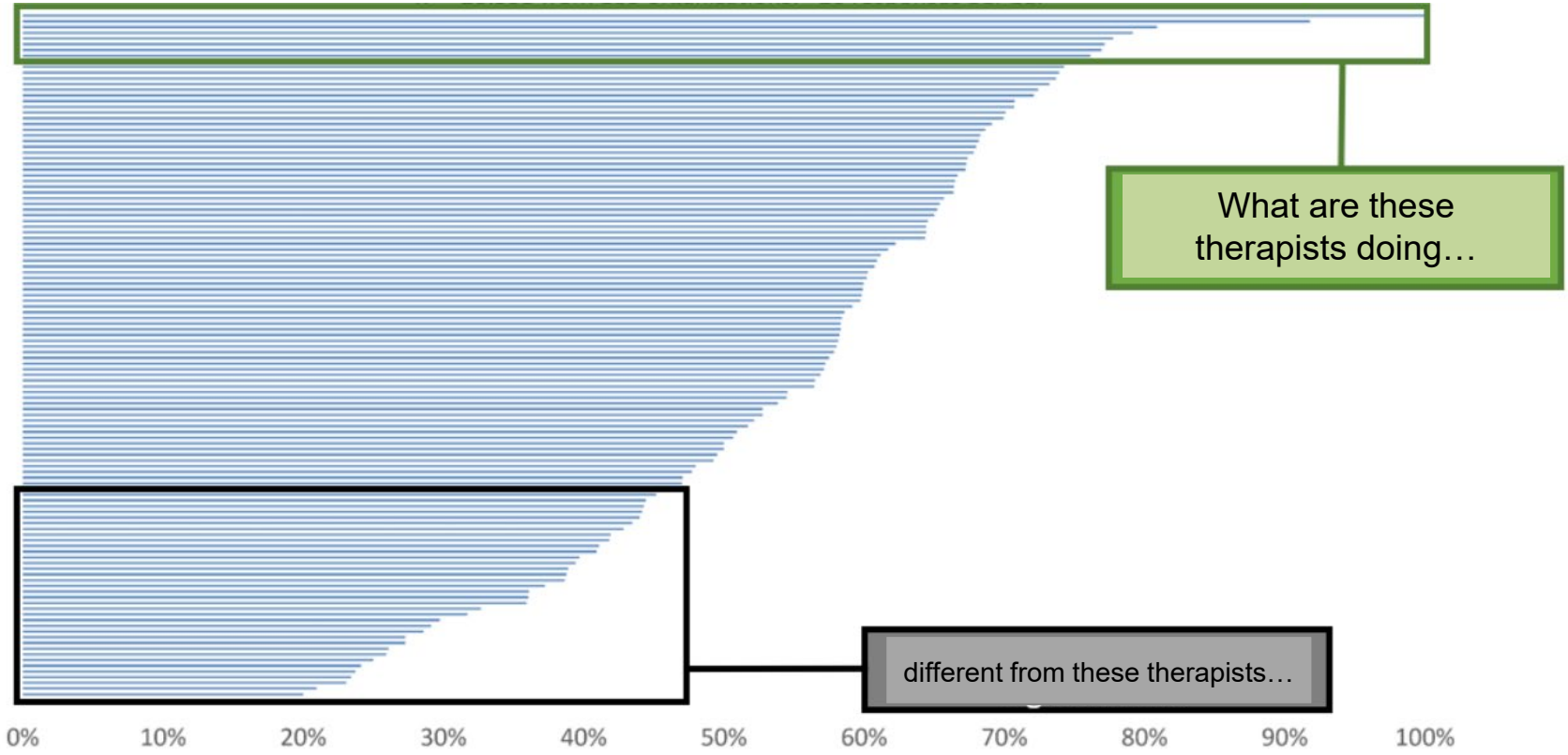
Learning Health System and Continuous Quality Improvement





Langley et al. The improvement guide; 2009

Observational Research: learn from variation

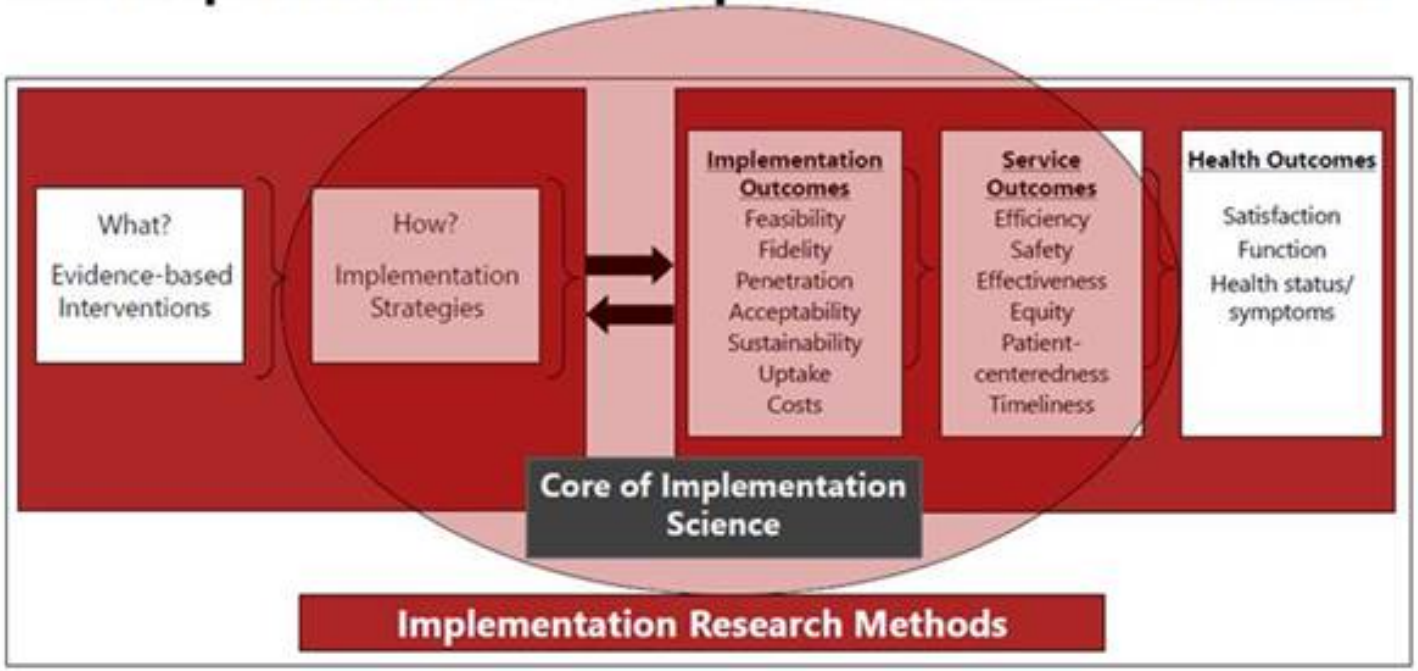


Implementation Research

Implementation research *is the scientific study of the development and use of strategies to adopt and integrate evidence based health interventions into clinical and community settings in order to improve individual outcomes and benefit population health*

https://grants.nih.gov/grants/guide/pa-files/PAR-19-274.html

Conceptual Model of Implementation Research

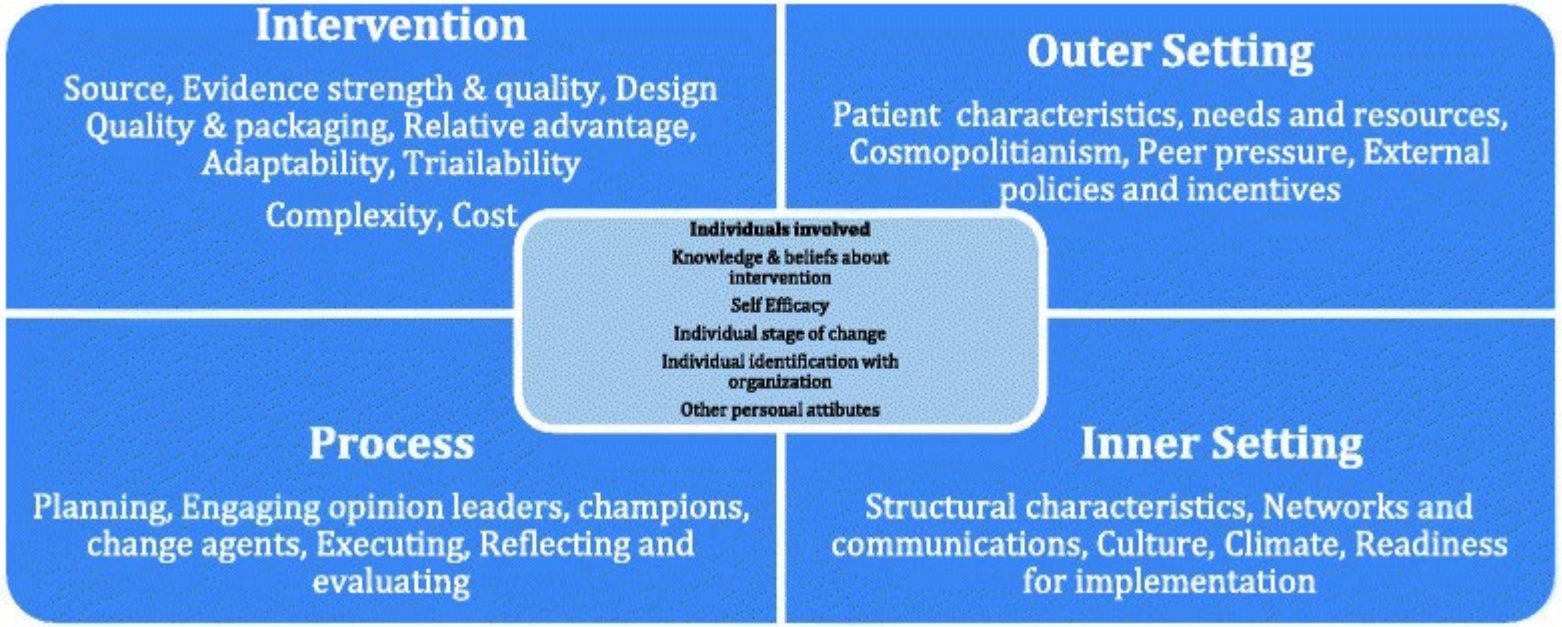


Adapted from Proctor et al 2009 Admin. & Pol. in Mental Health Services

Leadership Ranking of Outcomes to Prioritize for Improving Uptake of Telehealth

Implementation Outcome	What we would study and at which level?	Total Score	Rank
Acceptability	Patient and Provider Level: would you recommend it? (Satisfaction, Complexity, Relative Advantage)	25	Highest
Appropriateness	Patient and Provider Level: fit of telehealth for physical and occupational therapy and the activities therapists need to do, relevance, suitability, usefulness	24	Highest
Sustainability	Organization Level: continuation, durability, persistent use and uptake, integration, routinization, institutionalization	20	Moderate
Adoption	Provider and Clinic Level: initial uptake, intent to trial, use	18	Moderate
Penetration	Patient Level: describe reach (of patients in need, geography, by telehealth type, etc.)	18	Moderate
Feasibility	Provider Level: everyday utility, practicability, compatibility	16	Lowest
Implementation Cost	Patient, Provider, Organization Costs: could be at start up, while implementing, or what is needed to sustain	16	Lowest
Fidelity	Provider Level: delivered and quality as intended, adherence to clinical guidelines, integrity	15	Lowest

Barriers? Enthusiasm? Pain Points? Interest?



https://cfirguide.org/constructs/

Survey the Stakeholders: Therapists, Managers, …

INNER SETTING		SHOULD WE LOOK INTO:	
A	Structural Characteristics	How implementation looks with respect to the size of the department, Duke,	17

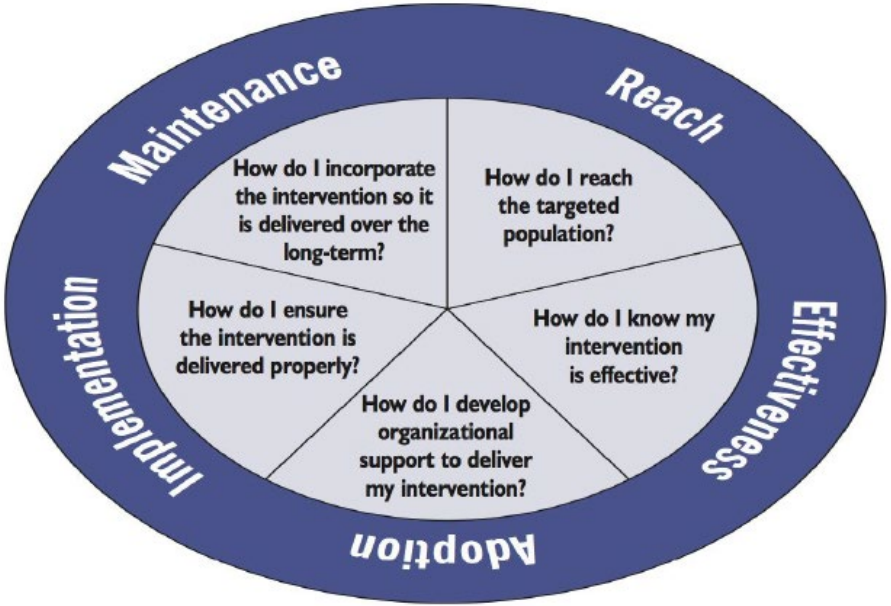
PROCESS		SHOULD WE LOOK INTO:	
A	Planning	The tasks for implementing telehealth (what was already done, newly developed, revised in process) and the quality of those schemes or methods.	18
B	Engaging	Who was involved in communicating, teaching, role modeling, training, and other similar activities. These could include opinion leaders, people appointed, champions, etc.	19
C	Executing		
D	Reflecting		
D	Adapta		

CHARACTERISTICS OF INDIVIDUALS			
A	Knowledge & Beliefs about the Intervention	Individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention.	19
B	Self-efficacy	Individual belief in their own capabilities to execute courses of action to achieve implementation goals.	16
C	Individual Stage of Change	Characterization of the phase an individual is in, as he or she progresses toward skilled,	15

OUTER SETTING			
A	Patient Needs	The extent to which patient needs are known and prioritized for being addressed by telehealth strategies	24
B	Patient Resources	The extent to which barriers and facilitators to participating and benefiting from telehealth are explored and later addressed	18
C	Cosmopolitanism	The degree to Duke and Duke providers is networked and learning / can learn from others.	15
D	External Policy & Incentives	A broad construct that includes policy and regulations (governmental or other central entity), external mandates, recommendations and guidelines, reimbursement, pay-for-performance, and public or benchmark reporting.	18

RE-AIM

FIGURE 1. Elements of the RE-AIM Framework



Implementation Considerations to Scale

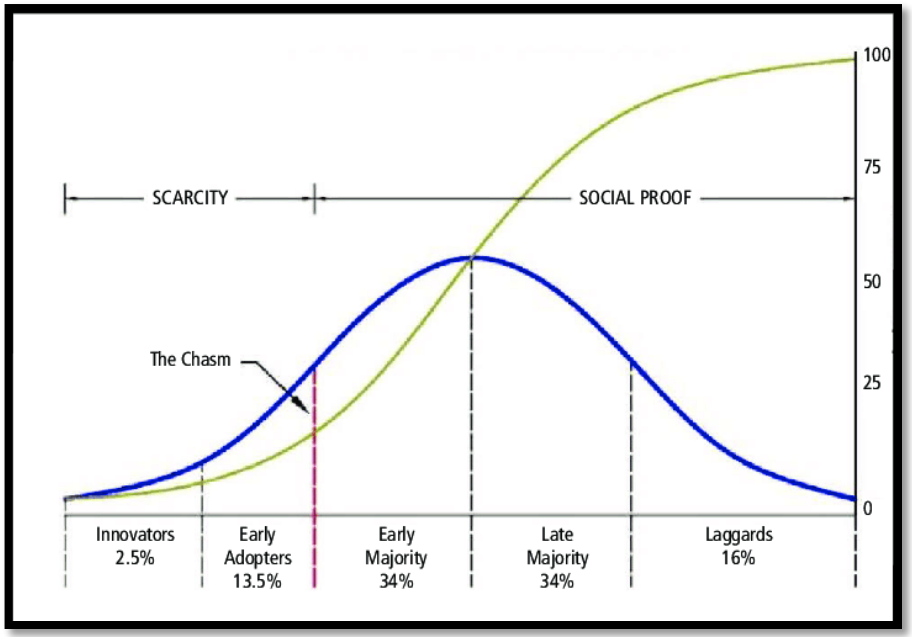
Reach	• Consider adopter:innovation characteristics • Policies for reach across state lines
Effectiveness	• PT supported use of technology • Evidence for multiple components, not just 1
Adoption	• Payer • Provider (Systems and/or Individual Providers)
Implementation	• In-person visits: when, how many, how often • Hub or spoke
Maintenance	• PT turnover • Support for longer-term behavior change

To scale or not to scale?

Yesterday

14%
17 Years

Today



Tomorrow

?

Let's Discuss

Please contact me or reach out to others often and always

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