



TELEREHABILITATION: CURRENT SERVICES AND THE BENEFITS OF TELEHEALTH IN PHYSICAL THERAPY

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- My comments are based on my own clinical experience as a physical therapist and do not represent the policy or views of the Department of Veterans Affairs.



Tele-PT Service Delivery model

- Virtual care can be adapted to meet the changing needs of our Veterans. Applications may include the following:
 - A supplement to an in-person visit, both inpatient and outpatient.
 - A hybrid model of both virtual and in-person sessions.
 - Pre-admission training and education.
 - Post-transition to home follow up.
 - Interdisciplinary visits.
 - Group education classes.
 - Home exercise instruction, either 1:1 or exercise groups.
 - Assistive device assessment and training*.
 - Modality and self-care equipment assessment and training*.
 - Tele- Emergency Care consultation.

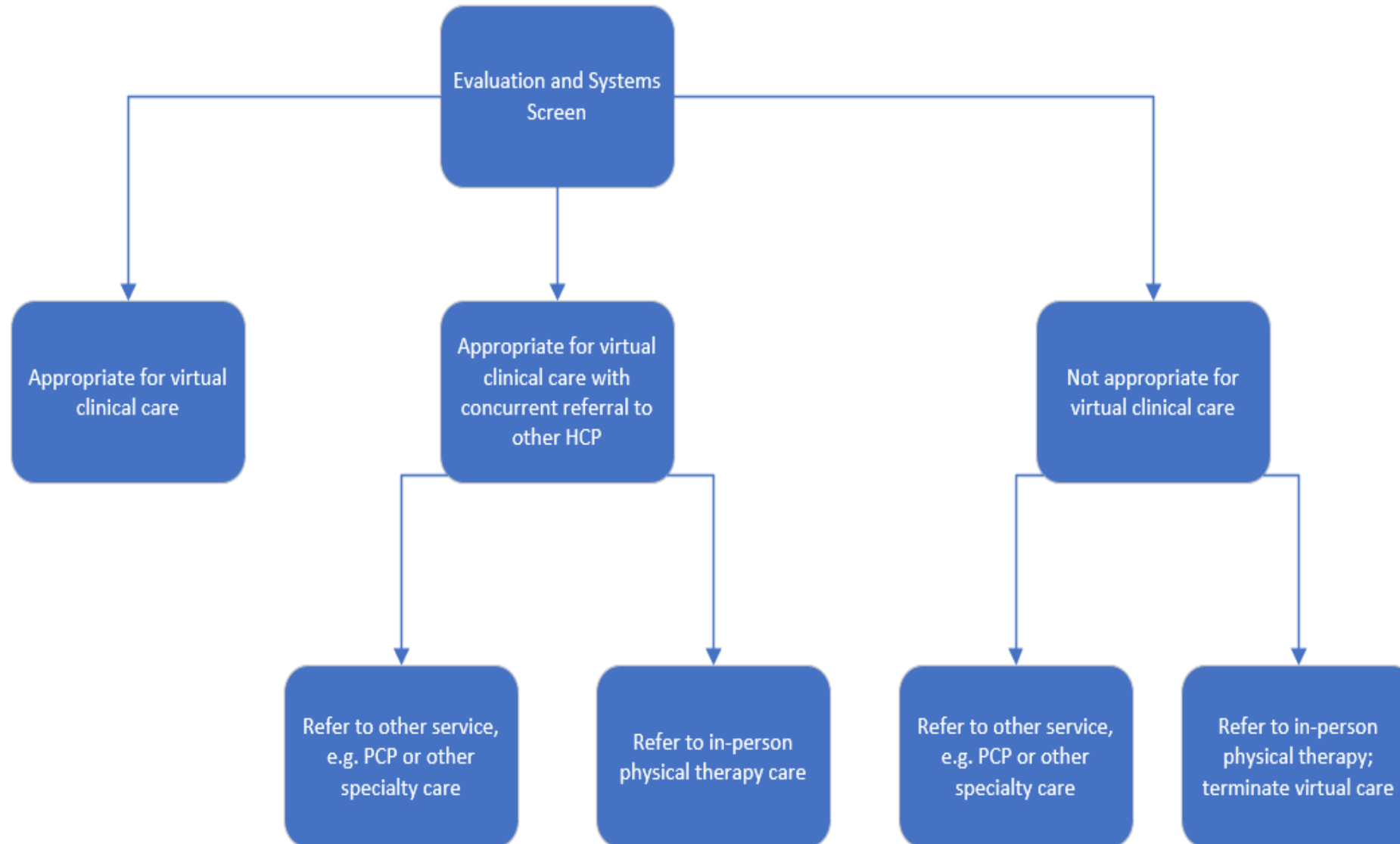


Who is appropriate for telerehabilitation?

- Willing to participate in telerehabilitation
- Telerehabilitation is appropriate for patient goals and plan of care
- Has the following skills:
 - Appropriate communication ability*
 - Appropriate cognitive ability*
 - Technical skills*
 - *or family/caregiver is available to assist



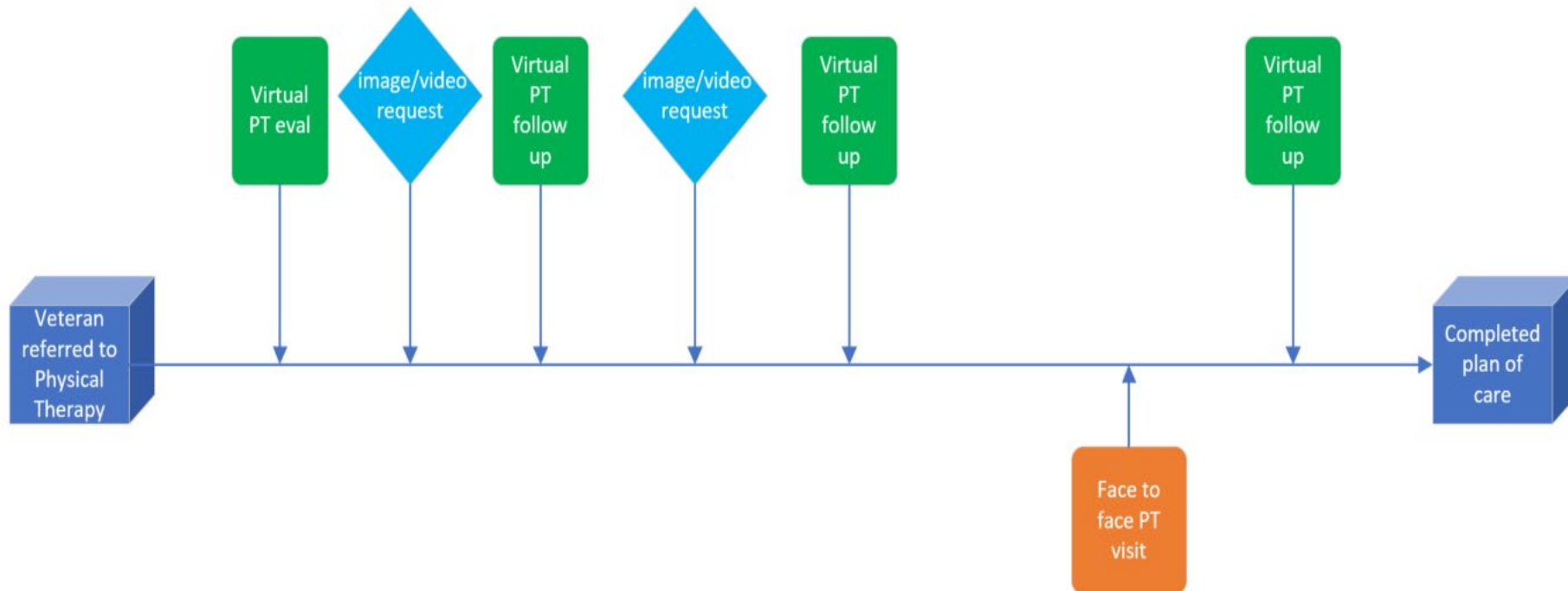
Telerehabilitation Physical Therapy





PT episode of care

- Multi-modal approach to meet our Veteran's needs





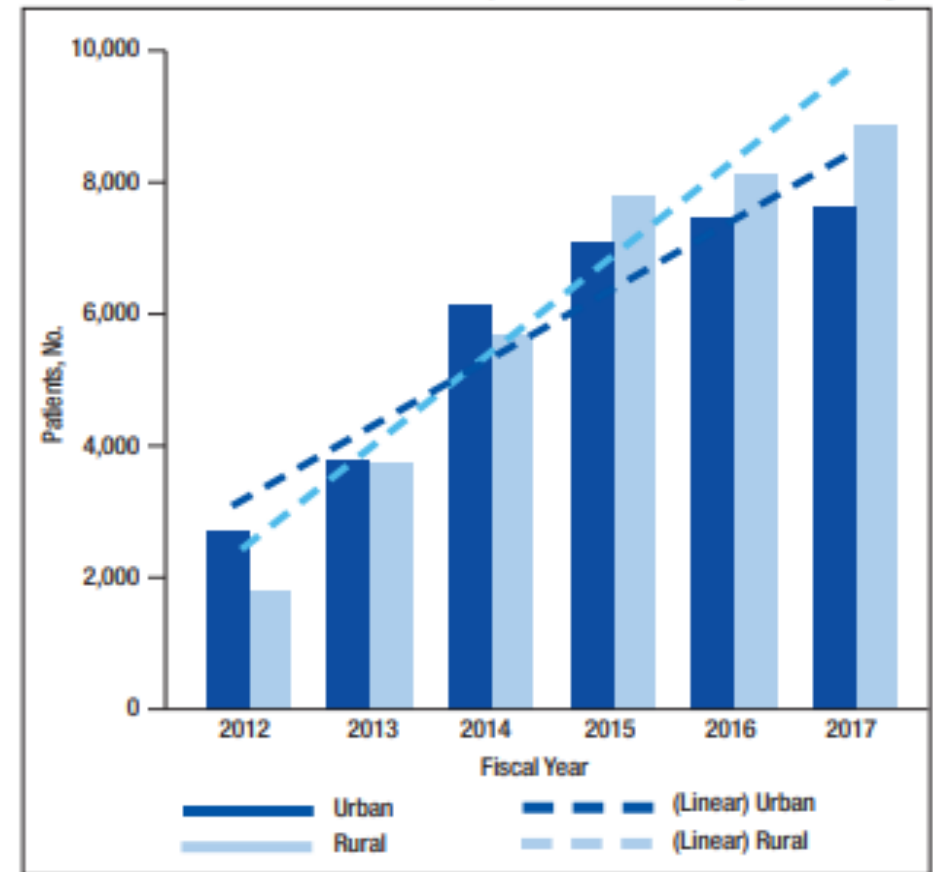
Telerehabilitation History & Trends

Rural Veterans Telerehabilitation Initiative

- Established 2009
- Funding from the VA Office of Rural Health.



FIGURE 3 Number of Unique Patients by Rurality



Cowper-Ripley, D. C., Jia, H., Wang, X., Freytes, I. M., Hale-Gallardo, J., Castaneda, G., ... Romero, S. (2019). Trends in VA Telerehabilitation



U.S. Department
of Veterans Affairs

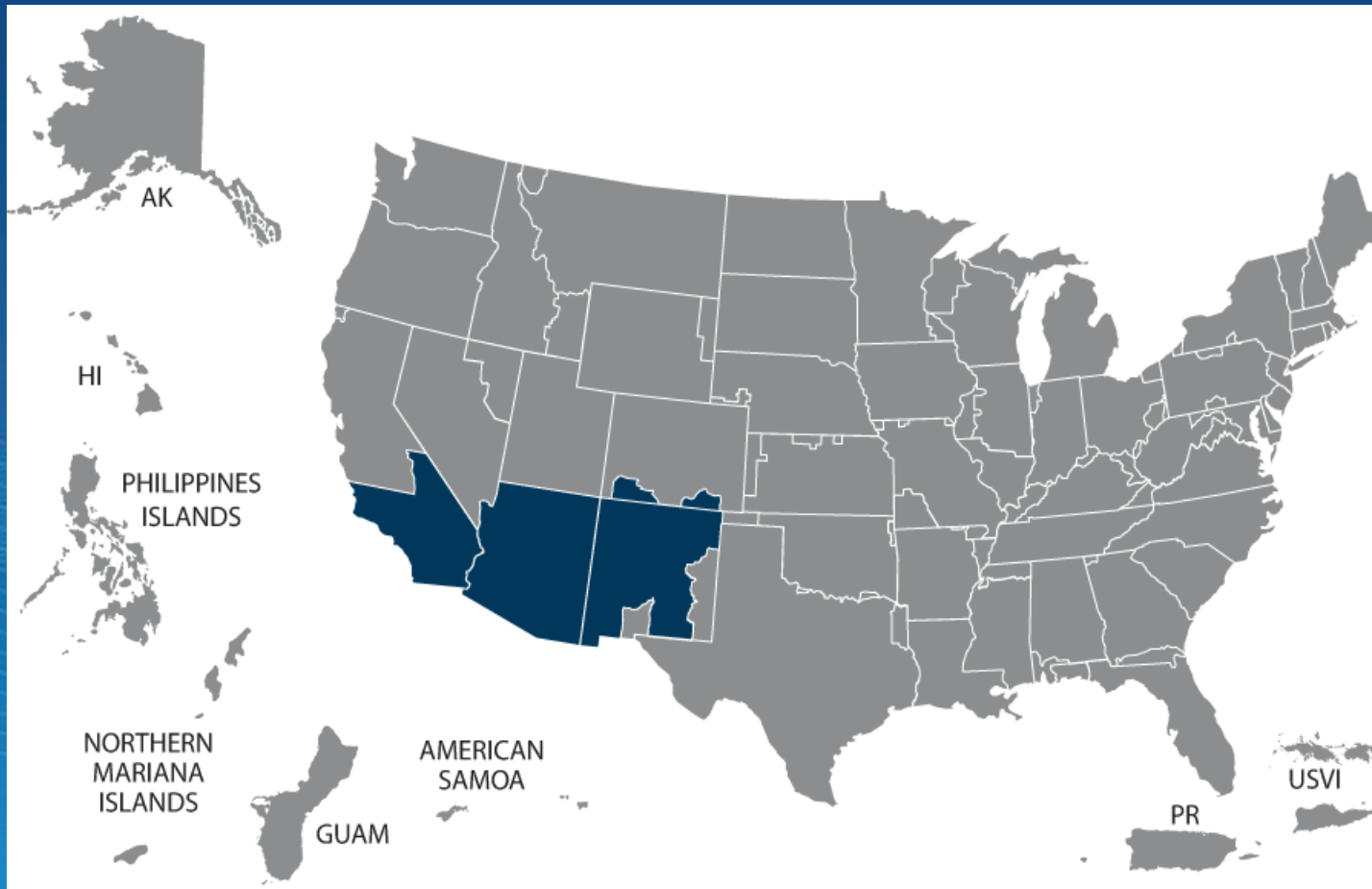
VISN 22: Desert Pacific Healthcare Network

8 VA Healthcare System locations

- Greater Los Angeles
- Loma Linda
- Long Beach
- San Diego
- Northern Arizona
- Phoenix
- Southern Arizona
- New Mexico

60 Community Based Outpatient Clinics

- Telehealth clinical technicians (TCT)



VA
HEALTH
CARE

Defining
EXCELLENCE
in the 21st Century



MODES OF TELEREHABILITATION

- Synchronous Clinic to clinic
 - clinical video telehealth (CVT)
- Synchronous Clinic to home
 - VA Video Connect (VVC)
- Asynchronous
 - My VA Images



Benefits of Clinic-to-Clinic Connection

➤ **Provider**

- Can more readily include family/caregivers in teaching/education
- Attracts new patients
- Reduces No-Shows
- Ease of set-up/clean-up in-between
- Optimizes space of a smaller clinics

➤ **Veteran**

- Convenient - Frequently occurs after working with primary care provider
- Reduce resource burden (e.g. time - long commute)
- Improved remote access to a specialist
- Provides timely follow-up to facilitate carry-over
- Co-Pay exempt



Clinic-to-Clinic Connection - Clinical Video Telehealth (CVT)

- Schools – one time education class
- Group exercise classes
- One-on-one appointment
 - Durable medical equipment assessment
 - Assistive device assessment
 - Pain management and modulation treatment options
 - Follow-up from prior appointment
 - Guide primary care provider for specialized referral





Staying Active & Staying Connected



<https://www.youtube.com/watch?v=l7z9FBDALvk&feature=youtu.be>



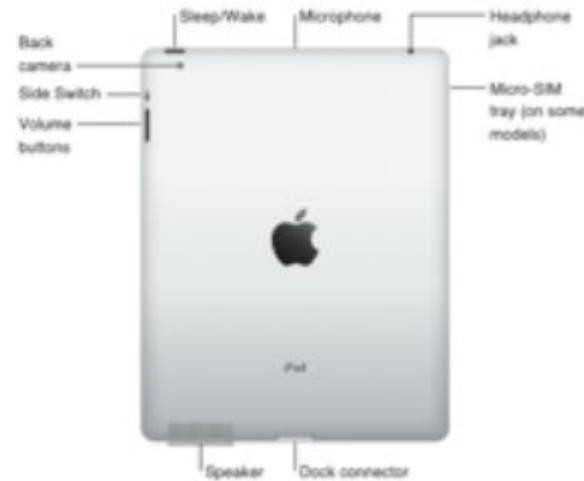
Benefits of Video-to-Home Telehealth

- Improved access and reduced no shows
- Improve continuity of care
- Convenient
- Home Environment
 - Able to assess function and mobility in patient's home
 - Inclusion of family and caregivers
- Optimize use of resources
 - Co-Pay exempt
 - No transportation needed
 - Time





Video-to-Home Telehealth Services – VA Video Connect



“Anywhere to Anywhere”



Video-to-Home Telehealth Services

- Specialty PT Providers available:
 - Amputee, Chronic Pain, Geriatrics, Orthopedic, Neurologic, Pelvic Floor, and Vestibular
- PT Telehealth services:
 - AD training or retraining
 - Pain management or modality training
 - Home exercise program review or progression
 - Fall recovery in home and education
 - Post discharge follow-up (example: TKA)
 - Patient and family education
 - Consult with home primary care team





Asynchronous tele-imaging application – My VA Images

My VA Images application

- Provider can request photos/videos
- View patient submissions
- Send messages about their photos/videos
- Write progress notes in electronic medical record (CPRS)
- Save media in the medical record

Benefits

- Veterans access health care remotely from home, saving them time and travel.
- High quality images, submitted securely, and at Veteran's convenience.
- Enhances flexibility in providing patient care.
- Review of images and follow-up with the patient when convenient for the Veteran and provider.





Influencers of Telehealth Utilization



Barriers

- Slow Internet speed
- Poor audio/video quality
- Internet access and wireless coverage
- Low provider communication skills
- Resistance to use or perceptions
- Difficulty with camera position
- Security and privacy concerns
- Reimbursement issues
- Policy and laws

Facilitators

- Cost savings
- Reduced wait time
- No travel time
- Easy to use
- Motivation and engagement
- Family involvement
- Convenience
- Privacy
- Better management



Telerehabilitation for patients with COVID-19

2022 Systematic Review
& Meta-Analysis -
Telerehabilitation was
found to be...

- Effective to improve:
 - physical function
 - Exercise perception
 - Level of dyspnea
- Seid, Aychiluhm, & Mohammed, 2022

2022 meta-analysis of
randomized controlled trials –
Telerehabilitation was found
to be...

- Superior to no treatment or usual care for dyspnea, muscle strength, ambulation capacity.
- No significant difference in anxiety or quality of life.
- Haung, Fan, Zhao, Yang, Zhau, Chen, Yang, Wang, & Qu 2022



Cardiac Telerehabilitation

2022 Systematic review and meta-analysis-Telerehabilitation as an alternative to phase 2 cardiac rehab of coronary heart disease was found to be...

- Associated with an increase in functional capacity, physical activity (PA) behavior, and improvement in depression when compared with usual care (UC).
- When compared to Center based cardiac rehab (CBCR), an equivalent effect on functional capacity, PA behavior, QoL, medication adherence, smoking behavior, physiological risk factors, depression, and cardiac-related hospitalization was observed.
- Ramachandran, Jiang, Tam, Yeo, & Wang, 2022

2023 Systematic Review & meta-Analysis - Telerehabilitation following percutaneous coronary intervention – “one of the promisingly effective cardiac rehabilitation strategies that improve cardiorespiratory fitness and reduce cardiovascular disease risk factors.”

- Statistically significant difference between HBCTR and the control group in 6MWT
- No significant difference Quality of life.
- Significant improvements in triglycerides and in low density lipoprotein cholesterol
- No significant differences in diastolic blood pressure, total cholesterol or high-density lipoprotein cholesterol
- Zhong, Fu ,Xu, Sun, Wang, He, & Wei, 2023



2020 Systematic
Review -
Telerehabilitation
was found to
be...

- As effective as traditional in-person rehabilitation for older adult patients:
 - After stroke, chronic obstructive pulmonary disease (COPD), and Total Knee Replacement (TKR)
 - With comorbidity of COPD and Chronic Heart Failure
- Velayati, Ayatollahi, & Hemmat, 2020



Musculoskeletal Telerehabilitation

2021 Systematic review and meta-analysis of RCTs- Technology-supported exercise programs were found to be...

- Associated with significant improvements in knee pain and quality of life, improvement in physical function dependent on program features
- Chen, Or, & Chen 2021

2017 Systematic Review & Meta-Analysis - Telerehabilitation was found to be...

- Effective to improve physical function and pain
- More favorable than in-person care alone
- Equivalent to in-person care
 - Cottrell, Galea, O’Leary, Hill, & Russell, 2017

2016 Systematic Review - Telehealth PT assessment - “feasible with overall good concurrent validity and excellent reliability”

- Assessment of pain, swelling, range of motion, muscle strength, balance, gait and functional assessment.
 - Mani, Sharma, Omar, Paungmali, & Joseph, 2016



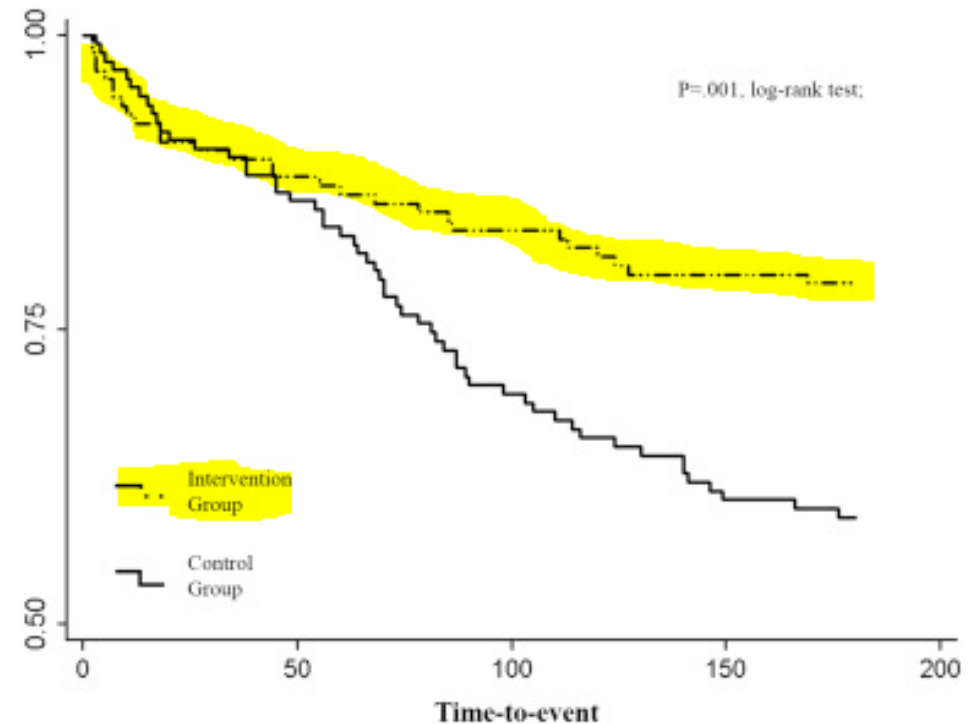
Fall Prevention Telehealth Program

Participants with 1 fall

- Telehealth group 20.6%
- Conventional 39.4%

Participants with 2 or more falls

- Telehealth group 8%
- Conventional group 17%



Bernocchi et al., 2019



Total Joint Arthroplasty

- 2020 Systematic Review –
Telerehabilitation for post-op lower limb
total joint
 - Improved physical function, similar to
that of in-person outpatient physical
therapy, without an increase in adverse
events or resource utilization.
–Jansson, Rantala, Miettunen, Puhto, &
Pikkarainen, 2020
- Is there acceptance of telehealth after
surgery?
 - 44% preferred a virtual visit
 - Satisfaction associated with feeling heard
 - Helpful for self management
 - Clear communication pathway
 - Parkes, Palmer, Wingham, & Williams, 2019

April 26, 2019

Assessment of Outcomes of Inpatient or Clinic-Based vs Home-Based Rehabilitation After Total Knee Arthroplasty A Systematic Review and Met- a-analysis

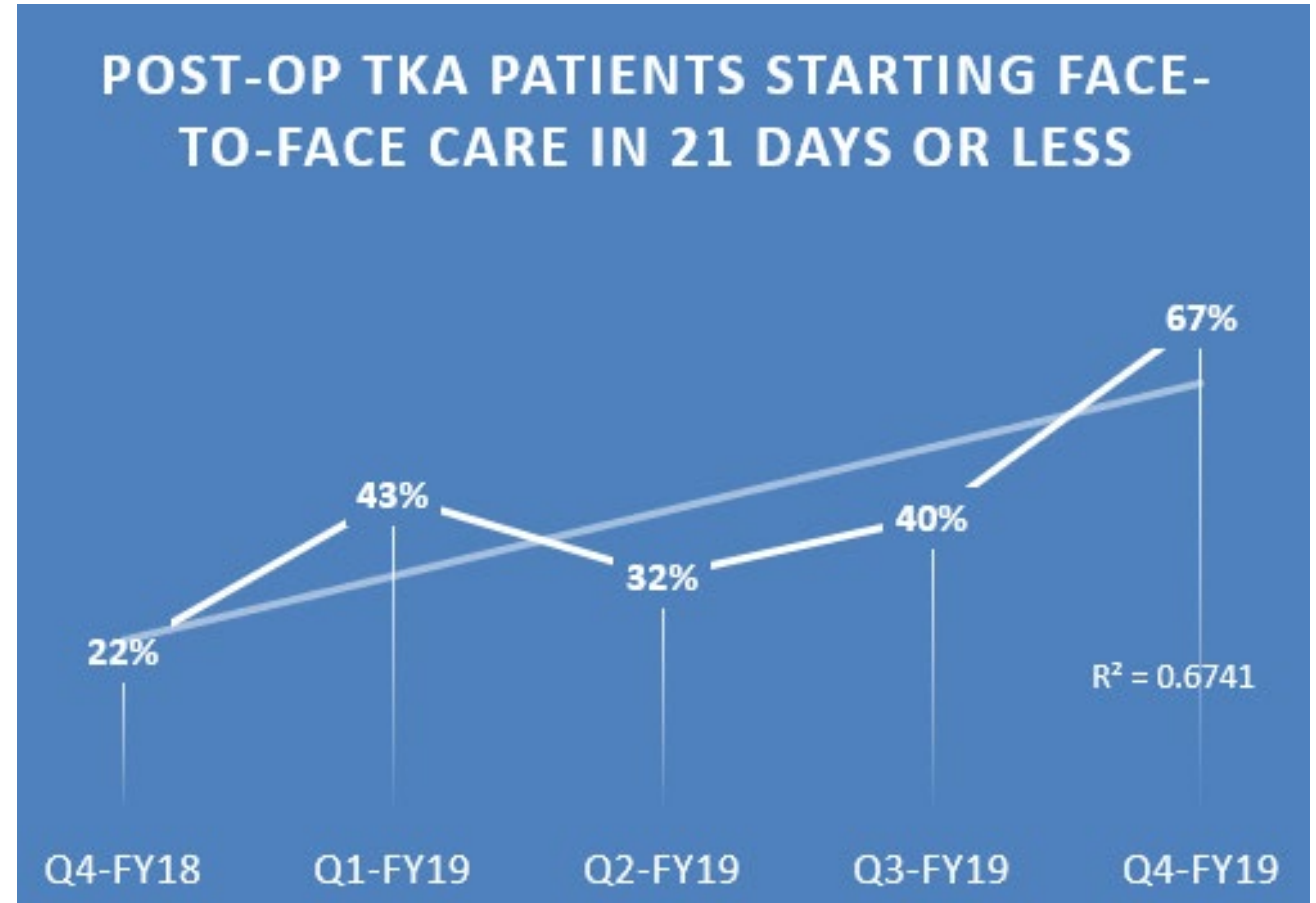
Mark A. Buhagiar, PhD, MHM, BAppSc^{1,2}; Justine M. Naylor, PhD, BAppSc^{2,3,4}; Ian A. Harris, MBBS, MMed, PhD, FRACS, FAHMS^{2,3,4}; et al



Total Joint Arthroplasty

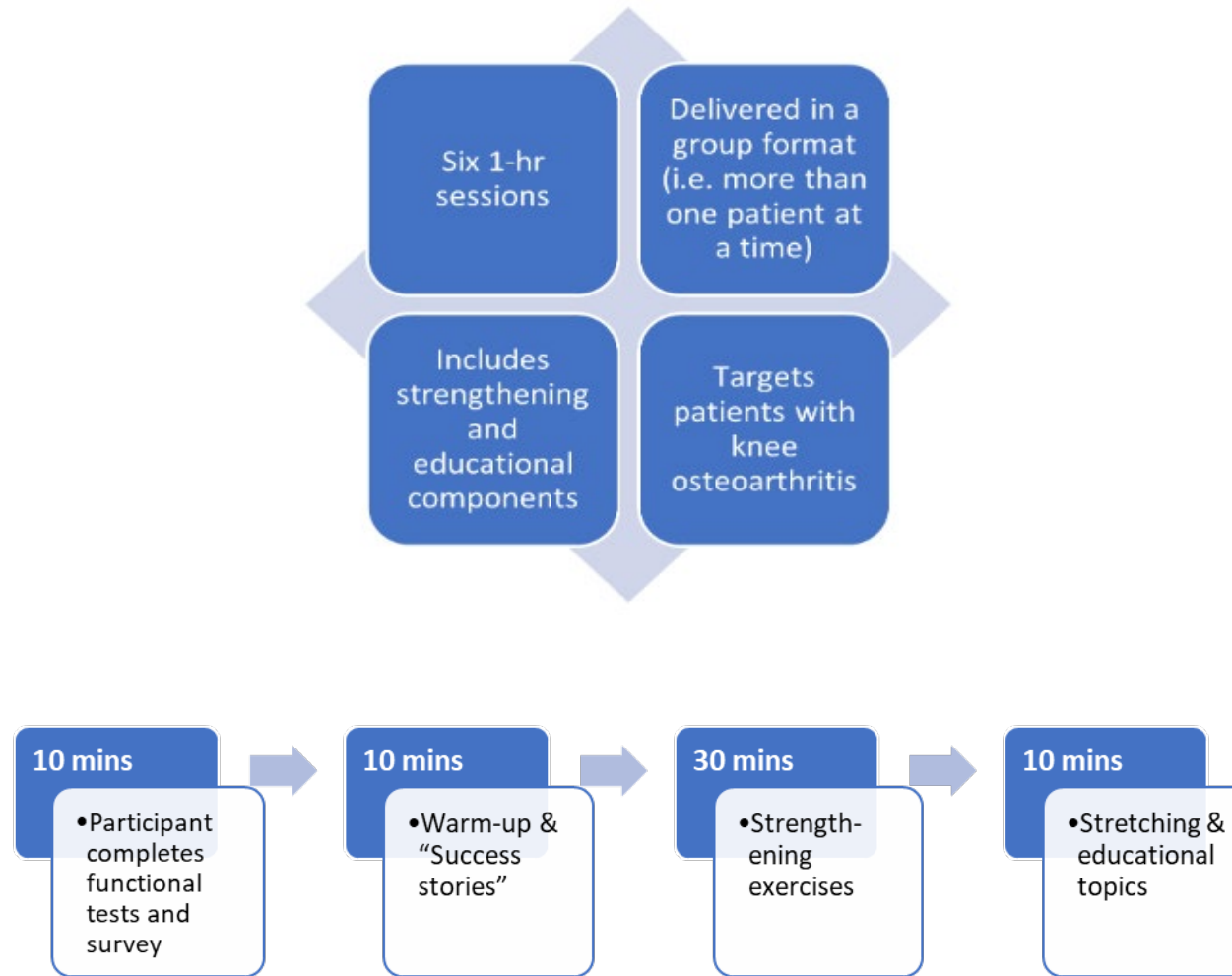
Potential Telehealth Impact on Post-Op Care

- Connecting Phoenix VA Veterans that are post-operative total knee arthroplasty
 - Start conversation at pre-op
 - Facilitate access & connection
 - See virtual provider within 1 week from discharge
 - Significantly more patients started out-patient services in the recommended time.





PT KNEE OSTEOARTHRITIS GROUP





Patient Outcome Measures

- **Qualtrics link sent by secure messaging prior to class or asked individually during class:**
 - **PROMIS Physical Function**
 - 4 item scale
 - **PROMIS Pain Interference**
 - 4 item scale
 - **Satisfaction/Ability to deal with knee pain**
 - i. How satisfied are you with the Group PT program from 0 (Not satisfied) to 10 (completely satisfied)?
 - ii. Compared to before you before you started the Group PT program, how would you rate your ability to deal with daily problems with knee function and pain now?
 1. Much worse
 2. A little worse
 3. About the same
 4. A little better
 5. Much better

- **Completed at the beginning of class:**
 - **Function Test**
 - 30 Second Chair Rise
 - **Pain Scale**
 - What level pain did you experience while completing the chair rise test from 0 (No pain) to 10 (extreme pain)?



OUTCOMES

- The average patient satisfaction was 9.72, range 6-10, out of 10.

Patient Outcomes

Patient outcomes are calculated on patients that have been enrolled in Group PT for at least 21 days (3 weeks) and have attended at least 4 visits

Number of Chair Rise Repetitions in 30S

0 was entered if a patient did not attempt the chair rise

Measure	n	Mean	SD	Median	Min	Max
Number of Repetitions - 1st visit	13	13.31	6.13	12	6	30
Number of Repetitions - last visit	13	16.54	3.41	17	10	23
Number of Repetitions change (last - 1st visit)	13	2.62	6.17	4	-15	8

Maximum Pain During Chair Rise

Measure	n	Mean	SD	Median	Min	Max
Max pain during chair rise - 1st visit	13	4.23	2.77	4	0	9
Max pain during chair rise - last visit	13	2.77	1.92	3	0	6
Max pain during chair rise change (last - 1st visit)	13	-1.46	2.47	-1	-7	3



OUTCOMES

PROMIS Pain Interference

Lower scores are better

Clinically meaningful improvement for PROMIS Pain Interference t-scores for Knee OA: 2.35-2.4 (Lee et al., 2017)

Measure	n	Mean t-score	SD of t-scores	Median t-score	Min t-score	Max t-score
PROMIS Pain Interference - 1st visit	13	60.6	5.8	59.9	53.9	75.6
PROMIS Pain Interference - last visit	13	55.6	5.7	55.6	41.6	63.8
PROMIS Pain Interference change (last - 1st visit)	13	-4.8	3.8	-4.0	-13.1	0.0

PROMIS Physical Function

Higher scores are better

Clinically meaningful improvement for PROMIS Physical Function t-scores for Knee OA: 1.9-2.2 (Lee et al., 2017)

Measure	n	Mean t-score	SD of t-scores	Median t-score	Min t-score	Max t-score
PROMIS Physical Function - 1st visit	13	38.8	6.6	36.7	31.9	57.0
PROMIS Physical Function - last visit	13	43.4	8.5	41.9	33.2	57.0
PROMIS Physical Function change (last - 1st visit)	13	4.4	5.4	4.0	0.0	17.8



“Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning.”

~Albert Einstein~

Thank you!