Feasibility of remote multidisciplinary rehabilitation during acute care at home

Joseph Tolland PT, Mari Taylor PT, Elizabeth Powers PT, Lauren Miccile PT, Brittany Morris CCC-SLP, Reg B. Wilcox III PT, David M. Levine MD, MPH, MA

Mass General Brigham

Background: Home hospital traditionally provides rehabilitation services to acutely ill patients via in-home therapists. Remote physical therapy has been shown to be feasible, effective and cost-saving in both outpatient settings and skilled-nursing facilities.[1-3]

- **Problem:** Timely access to therapy and sufficient frequency via in-home therapists are challenges. Whether remote therapy can be delivered during a home hospital admission is unclear.

Intervention: We developed a remote rehabilitation therapy team to provide physical therapy (PT) and speech therapy (SLP) services to acutely ill adults at home. Therapy team consisted of 5 PTs, 1 SLP and 1 Practice Assistant. The medical team consisted of physicians, nurses and paramedics. The medical team applied standardized criteria to ensure remote therapy was reasonable and placed an electronic referral

- A warm briefing occurred between medical team and therapy team to identify evaluation/treatment goals and perform scheduling.
- During the scheduled visit, the therapist called the patient using the home hospital video communication system and provided treatment per individual patient presentation.

Outcomes:

- From start of remote home hospital rehab on 2/1/21 to 9/1/22, there were 932 patients admitted and 3.3% of patients received rehabilitation referrals. PT received 24 referrals and SLP received 7 referrals. *See Table 1*
- 63% of patients referred to PT were admitted with congestive heart failure and 63% required PT for issues related to mobility/endurance. *See Tables 2-3.*
- 71% of patients referred to SLP were admitted with PNA and 100% of patients required SLP for issues related to swallowing. *See Tables 2-3.*
- The plan of care after evaluation for most PT patients was to follow up if needed. *See Table 4*
- The plan of care for most SLP patients was discharge after evaluation. *See Table 4*
- Most patients (for both PT and SLP) did not require follow up and no patients required more than 3 visits. *See Table 1*
- When discharged, most PT patients were recommended to continue with home PT. Most SLP patients did not require follow up. *See Table 5.*

Rehab services provided remotely to home hospital patients were safe, feasible and effective.

Next Steps: We plan to identify factors related to unsuccessful remote connection and identify strategies to increase percentage of successful connection attempts. We will survey technology options that can facilitate patient compliance with exercise/physical activity recommendations, develop rehabilitation protocols to optimize patient selection and intervention, and examine the effect of remote rehabilitation on outcomes in this population.

References:

1. Lee ACW, Billings M. Telehealth implementation in a skilled nursing facility: case report for physical therapist practice in Washington. *Phys Ther*. 2016;96(2):252-259.
2. Levine DM, Cueva MA, Shi S, et al. Skilled nursing facility care at home for adults discharged from the hospital: a pilot randomized controlled trial. *J Appl Gerontol.* 2022;41(6):1585-1594.
3. Miller MJ, Pak SS, Keller DR, Barnes DE. Evaluation of pragmatic telehealth physical therapy implementation during the covid-19 pandemic. *Phys Ther*. 2021;101(1):pzaa193.

- Making virtual connections with patients was the greatest challenge.
- Of patients referred for PT, 41% were unable to been seen virtually. *See Table 6*
  - 15% due to digital health literacy (n=4)
  - 11% were determined to be more appropriate for in-person PT due to cognition, patient preference or required physical assist (n=3)
  - 7% had established discharge plans (n=2)
  - 1 patient did not have a home environment appropriate for virtual therapy
- Of patients referred to SLP all were eventually seen remotely, though 1 patient did require multiple attempts to connect virtually. *See Table 6*

Table 1. Therapy Patient Volume	PT (n=24)	SLP (n=7)
Patients referred	24	7
Patients evaluated	14	7
Patients deferred/not seen	10	0
Total visits performed	18	8
Patients requiring > than 1 visit	3	1
Maximum # of visits a patient received	3	2
Total number of unsuccessful remote visit attempts	26	2

Table 2. Medical Diagnosis	PT (n=24)	SLP (n=7)
Heart failure	15	0
Obstructive pulmonary disease	1	0
Venous Insufficiency	1	0
Hypertension	1	0
Pulmonary embolism	1	0
Urinary tract infection	1	0
Diabetic ketoacidosis	1	0
Pneumonia	2	5
Osteomyelitis	1	0
Choledocholithiasis	0	1
Colitis	0	1

Table 3. Reason for Therapy Referral	PT (n=24)	SLP (n=7)
Mobility/Ambulation	12	0
Endurance	3	0
Fall	2	0
Back pain	1	0
Balance	2	0
Leg pain	1	0
History of stroke	1	0
Plantar fasciitis	1	0
Weightbearing restriction	1	0
Dysphagia	0	5
Aspiration risk	0	2

Table 4. Therapy Plan	PT (n=14)	SLP (n=7)
Follow up if needed during Home Hospital admission	10	2
Patient declined services	2	0
Discharge	2	5

Table 5. Therapy Discharge Recommendation	PT (n=14)	SLP (n=7)
Home PT	7	0
Outpatient PT	3	0
Rehab facility	2	0
Exercise with trainer	1	0
Pending weightbearing restrictions	1	0
No services	0	6
Video swallow as outpatient	0	1

Table 6. Barriers to Remote Therapy	PT (n=10)	SLP (n=0)
Unable to connect virtually	4	0
In-person therapy determined more appropriate	3	0
Patient discharging to rehab	1	0
Patient discharging from home hospital	1	0
Unstable housing	1	0