Feasibility and Patient Perceptions of Tele-Videoconferencing Visits for LVAD Patients (TeleLVAD Study)

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MEDICINE *of* THE HIGHEST ORDER

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Disclosures

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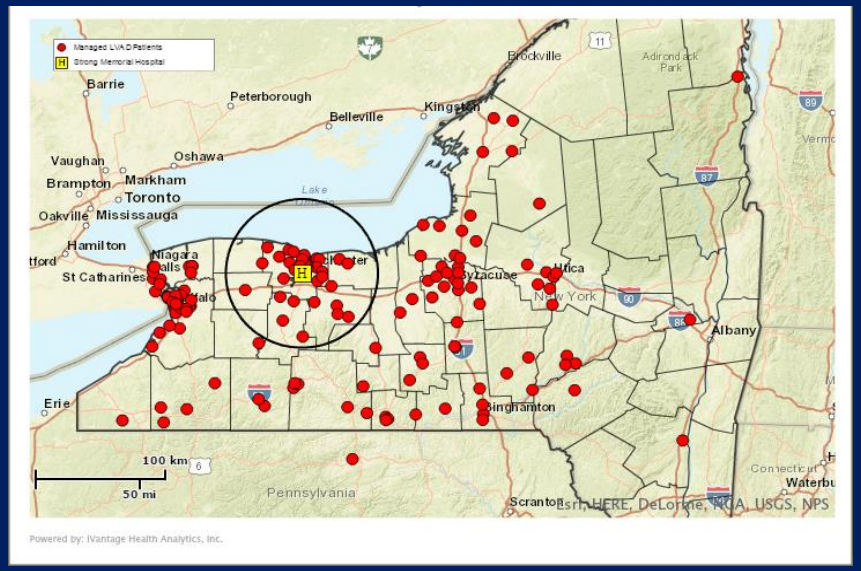
- Other co-authors have no relationships to disclose.

Background

- The number of patients supported by an LVAD is increasing around the world.
- Patient access to LVAD providers is limited by distance and distribution of specialists.
- The use of telehealth videoconferencing visits for comprehensive management aimed to *replace* in-person visits at the VAD implantation center has not been previously studied.

Background: University of Rochester Medical Center (URMC), Rochester, New York

Current URMC LVAD Recipients



- Currently manage ~235 outpatients supported by an LVAD
- Patients live up to 260 miles away from URMC and return every 4-16 weeks for VAD Clinic visits
- During the first year after index discharge, patients are seen in VAD Clinic a mean of 9 times (mean of 2 unplanned visits for more urgent issues)

Background: Telehealth

Telehealth has the potential to:

1) Increase access to specialized medical care for complex patients
2) Allow more convenient delivery of healthcare
3) Reduce medical costs

- Telehealth is especially essential during the current COVID-19 pandemic to reduce in-person clinic visits and risk of infection

Background: What is unique about a LVAD Clinic Visit?

- Measurement of blood pressure using Doppler ultrasound
- Auscultation of LVAD
- LVAD is interrogated by connecting to a VAD monitor
- Driveline is examined and dressing changed/culture performed as needed

TeleLVAD Study: Aims

We conducted a prospective single-center study (TeleLVAD Study):

- Evaluate the feasibility and safety of videoconferencing visits vs. conventional in-person clinic visits for LVAD patients

- Assess patient perceptions of videoconferencing visits

TeleLVAD Study: Methods

Patient eligibility criteria:

- Supported by an LVAD for at least one month
- Reside in a remote location from URMC

*No exclusions related to baseline risk factors or clinical risk

TeleLVAD Study: Methods

- Following enrollment, study patients were scheduled for one videoconferencing visit at a remote site and outcomes were compared to the subsequent standard in-person office visit at URMC after 2-4 months.

- 2 different remote sites used for videoconferencing visits (40 and 90 miles away from URMC)

TeleLVAD Study: Methods

Physician at URMC

Patient at Remote Site with General Nurse

TeleLVAD Study: Methods

Clinical components of a LVAD patient visit:

- Vital signs including Doppler blood pressure
- Auscultation of heart/LVAD and lungs
- Visual assessment of JVP and edema
- Driveline inspection (and culture of any drainage/dressing change)
- LVAD interrogation using LVAD monitor

TeleLVAD Study: Methods

Outcome measures:

- 1) Technical feasibility and ability to complete a comprehensive clinical examination and reach management decisions
- 2) Adverse events within two weeks of the visit
- 3) Patient perceptions evaluated by the validated Telehealth Usability Questionnaire (TUQ)

TeleLVAD Study: Methods

Telehealth Usability Questionnaire for Patients

Questionnaire Item	Yes	No
Telehealth improves my access to healthcare services.		
Telehealth saves me time traveling to University of Rochester Medical Center (Strong Memorial Hospital).		
Telehealth provides for my healthcare needs.		
I could easily talk to the clinician using the telehealth system.		
I could hear the clinician clearly using the telehealth system.		
I felt I was able to express myself effectively.		
Using the telehealth system, I could see the clinician as well as if we met in person.		
I think the visits provided by the telehealth system are the same as in-person visits.		
I feel comfortable communicating with the clinician using the telehealth system.		
Telehealth is an acceptable way to receive healthcare services.		
I would use telehealth services again.		
Overall, I am satisfied with this telehealth system.		

1) How much time in minutes did it take you to travel to this visit today?
2) How much travel time in minutes did this save you compared to coming to the University of Rochester Medical Center (Strong Memorial Hospital)?
3) We welcome any feedback or comments you would like to share that have not been covered in the survey.

TeleLVAD Study: Results

- 5 visits completed in Wellsville, New York
- 6 visits completed in Batavia, New York

Patient Characteristics at Enrollment

Variable	N = 11
Age (years)	59 (35-72)
HMII LVAD	4 (36%)
HM3 LVAD	7 (64%)
Duration of LVAD support (months)	17 months (3-58)
History of rehospitalization	7 (64%)
Right heart failure	1 (9%)
History of driveline infection	2 (18%)

TeleLVAD Study: Results

TeleLVAD Study Outcomes

Variable	Video visit	In-person visit
Technical feasibility	100%	100%
Medication changes	8 (73%)	5 (45%)
LVAD speed changes	1 (9%)	0 (0%)
Rehospitalization within 2 weeks	0 (0%)	0 (0%)
TUQ positive response	131 (99%)	N/A
Travel time saved (min)	118 ± 60	N/A

TeleLVAD Study: Results

- Aim #1 (Feasibility):
  - 100% technical feasibility
  - Medication and LVAD speed changes were conducted remotely at a similar or somewhat higher rate compared to the in-person office visits
- Aim #2 (Adverse events):
  - No rehospitalizations within 2 weeks of the videoconferencing visits
- Aim #3 (Patient Perceptions):
  - 99% positive responses to all questions on the Telehealth Usability Questionnaire
  - Saved a mean of 118 minutes of travel time

TeleLVAD Study: Conclusions

This pilot study demonstrates for the first time that videoconferencing visits can be *safely* used to complete a comprehensive clinical exam in LVAD patients who reside in a remote location with *high patient satisfaction.*

TeleLVAD Study: Implications during the COVID-19 Pandemic

- We transitioned our remote TeleLVAD Program to complete videoconferencing visits at home using a web-based videoconferencing tool (Zoom).
- Patients are given a BP cuff and Doppler ultrasound for home BP measurements and use a smartphone app (Twistle) to send photos of driveline complications or LVAD alarms to VAD providers between visits.
- If patient assessment suggests a need for LVAD speed change, the patient is scheduled for a visit at URMC or a remote site closer to the patient.
- Further study is needed to evaluate long-term outcomes of this program.

Thank you

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