Commentary

Using Telehealth as a Tool for Rural Hospitals in the COVID-19 Pandemic Response

Jeydith Gutierrez, MD, MPH;[1,2,3] Ethan Kuperman, MD;[3] Peter J. Kaboli, MD, MS;[1,2,3]

[1] VA Office of Rural Health, Veterans Rural Health Resource Center – Iowa City (VRHRC-IC), Iowa City Veterans Affairs Health Care System, Iowa City, Iowa

[2] The Center for Access and Delivery Research and Evaluation (CADRE) at the Iowa City VA Healthcare System, Iowa City, Iowa

[3] The Department of Internal Medicine, University of Iowa Carver College of Medicine, Iowa City, Iowa

Disclosures: The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government. Two of the authors were employed by the Department of Veterans Affairs while working on the manuscript but have no other conflicts of interest regarding this study.

Funding: This material is based upon work supported by the Department of Veterans Affairs, Veterans Health Administration, Office of Rural Health, Veterans Rural Health Resource Center – Iowa City (Award #13368), and the Health Services Research and Development (HSR&D) Service through the Center for Access and Delivery Research and Evaluation (CADRE) (CIN 13-412).

For further information, contact: Jeydith Gutierrez, MD, University of Iowa Hospitals and Clinics, 200 Hawkins Drive, SE 636GH, Iowa City, IA 52242; Email: jeydith-gutierrezperez@uiowa.edu

Key Words: COVID-19, hospitalist, pandemic, telehospitalist, telemedicine

"*You never want a serious crisis to go to waste. And what I mean by that [is] it's an opportunity to do things you think you could not do before*." Rahm Emanuel

Rural hospitals represent an underutilized source of excess capacity at a time of severe need for acute-care hospital resources. Telehealth can help rural hospitals grow to meet the COVID-19 pandemic crisis using technology that is effective, accepted, and has been implemented successfully in multiple venues. Innovations tested and adopted during this

crisis also can advance systems of care in a post-pandemic world. While prior implementations have focused on mental health, primary care, and asynchronous store-and-forward applications, telehealth can expand into the acute-care hospital system. Rural hospitals can use telehealth systems to keep patients and avoid unnecessary transfers to tertiary care hospitals overwhelmed during this pandemic.

Obstacles to telehealth implementation (eg, limited reimbursement, HIPPA compliance, and interstate licensing restrictions) have been temporarily loosened.[1] Telehealth can evaluate large numbers of infectious patients while minimizing exposure to uninfected patients and health care personnel. Many systems are already using telehealth to promote social distancing, screen patients with respiratory symptoms, and offer telehealth to high-risk populations to limit contact with the health care system.

Over the last 3 years, we have developed and implemented 3 unique telehospitalist programs. Two link tertiary care centers with rural hospitals experiencing staffing shortages,[2,3] and a third provides hospital-to-home telehealth for patients recently discharged.[4] We have worked with rural health care systems to meet their needs. Our objective is to share our experiences and promote rapid adoption of telehealth partnerships between rural and tertiary hospitals. We discuss strategies for telehealth deployment, including applications, expanding rural health care capacity through facilitating containment, and promoting telework models that protect health care workers and patients.

Strategies for Telehealth Deployment

We believe the following 5 steps can minimize turbulence and accelerate implementation:

1. **Preparation and Training:** Learn as much as you can about the system, its needs, and expectations. Explore staff perceptions and roles to address concerns and barriers before implementation. Site visits between hub and spoke hospitals facilitate understanding the local culture and system issues. Interview spoke site staff both directly and indirectly

involved with the service, bringing everyone to the table to anticipate potential barriers. Train the team on the new system, ask for feedback, and incorporate it as much as possible.

2. **Standardize and Expedite Credentialing:** Credentialing delays implementation, and sometimes providers can be surprised when they lack prescribing privileges or electronic health record (EHR) access. Standardize the process and hold mock sessions with test patients to ensure complete access and functionality before their first shift.
3. **Technology:** A fundamental rule of telehealth is to use the simplest technology to achieve the need. A variety of products provide HIPPA-compliant technology for synchronous video-conferencing visits through the EHR, online platforms, or smartphones. We have found basic systems are adequate in most clinical scenarios. If additional physical examination is needed, having on-site providers or higher-tech equipment with auscultation might be appropriate. Most hospital encounters can be accomplished with a smartphone video connection, an application most carry in their pockets. Although HIPPA compliance should be considered, health systems have given temporary waivers to use standard video-conferencing platforms (eg, Skype, FaceTime) during the COVID pandemic. Regardless of the technology used, have a backup plan. If something can fail, it will.
4. **Broadband:** It is critical to have broadband capabilities with unlimited data. Communicate with local information technology (IT) support to ensure adequate Internet connection in all patient and provider locations. If providers are working from home, test the Internet connection speed and ensure it will support your system.
5. **Feedback and Rapid Improvement:** Input from frontline staff at both ends of a telehealth program is vital. Collect feedback after a few days of deployment and address concerns quickly. Use the Plan-Do-Study-Act method for rapid quality improvement.

Collect patient feedback consistently. Track balancing quality metrics to ensure that your care is not inferior to face-to-face care.

Telehealth Applications to Expand Rural Hospital Capacity and Facilitate Containment and Quarantine

Telehospitalist: The adoption of the hospitalist model has created numerous quality and efficiency improvements in the care of hospitalized patients.[5,6] Hospitalists are on the frontlines to care for the increased number of patients requiring hospitalization with COVID-19-related illness while maintaining high-quality care for the other hospitalized patients. Additionally, with rapidly changing treatment and screening guidelines, the hospitalist from a tertiary hub can facilitate rapid dissemination to spoke sites. There are 4 telehealth applications that hospitals could adopt to increase rural health capacity and limit transfers to tertiary care centers.

1. **Direct Patient Care Remotely with On-Site Support:** A tertiary hospital (hub) provides oversight and medical decision-making in collaboration with an advance practice provider (APP-nurse practitioner or physician assistant) at rural spoke sites. This hub-and-spoke model was adapted from tele-ICU and has been well-received by patients and care delivery teams.[7] Our experience with these telehospitalist models suggests they are as efficient and high quality as the prior model of on-site physicians.[2,8]
2. **Nocturnist or Cross-Cover Role:** Under this model, the telehospitalist provides cross-cover and/or admitting services at night, with or without an on-site APP, based on the needs and level of technology used. The on-site provider verifies physical exam findings, attends emergencies, and cares for sicker patients while the telehospitalist formulates the plan, places orders, and responds to calls. They also provide APP oversight and assist with complex patients during busy hours. Some companies offer full admitting services using sophisticated telehealth equipment with the assistance of a tele-presenter. Although the

latter might have some benefits, implementation logistics, training of tele-presenters and providers to use telehealth peripherals, and technology costs might be prohibitive and delay implementation. Nocturnist-based telehospitalist services can be useful in small rural hospitals in which financial and staffing constraints may not justify having dedicated on-site 24/7 hospitalists.[9,10]

3. **Collaborative Team-Based Care:** Because of the administrative burden of documentation, order writing, and communication with consultants, a remote telehospitalist can work as part of the team. On-site staff perform physical exams and attend to critically ill patients, while using the off-site provider to place orders and document encounters, like a scribe, but with prescribing abilities. This could facilitate keeping the most vulnerable workforce at home.
4. **Triage:** As the number of triages to tertiary centers increases, off-site hospitalists can triage remotely with appropriate communication with the bed-management department and inpatient care team.

Consultants and Collaborators: The inpatient care team has several members who perform cognitive tasks that do not require face-to-face care with patients. Radiologists have been performing teleradiology for years and should be encouraged to work from home. Clinical pharmacists support medication reconciliation, antibiotic stewardship, and optimal medication management. While vital team members, they could provide these services through telehealth. Other specialties (eg, nephrology, endocrinology, infectious disease, critical care) could provide consultation through electronic consults and video telehealth encounters either with patients or hospitalists, avoiding contact with infected patients.

Post-Discharge Transitions of Care: Triaging patients will become necessary during the pandemic, both sending patients home earlier than might be optimal and triaging patients from the ED back home with close follow-up. We have performed this through a virtual post-

discharge "transitions of care clinic" communicating directly to a patient's home via video conferencing.[4]

Hospital-at-Home for Low Acuity and Elderly Patients: As hospitals reach capacity, there are opportunities to select patients that could be cared for at home with visiting nurses and a physician rounding via telehealth. The hospital-at-home concept has been studied in elderly populations who would also benefit the most from avoiding potential exposures, regardless of infection status.[11]

Tele-ED and Respiratory Illness Triage Clinic: Triage of patients, initially completed by nurses followed by physicians or APPs using telehealth can avoid overwhelming EDs with lower acuity patients. This can be done for clinic patients with respiratory illnesses and other conditions that could be managed at home if they do not require hospitalization or in-person care. In our prior work evaluating a nurse practitioner (NP) embedded in a nurse call center, patients had a lower rate of ED and primary care visits. We have also developed a telehealth service in a VHA ED to provide tele-mental health for patients who need psychiatric evaluation and can safely be managed remotely.

Rural hospitals need to embrace innovative strategies to respond to the COVID-19 pandemic, while striving to guarantee high-quality care for all patients. Telehealth will be proven useful not only to care for infected patients, whether at home or at the hospital, but also for patients with other diseases to prevent their exposure. Similarly, allowing providers to work from home or remote hub sites will help maintain and distribute health care workforce adequately. Remote providers can support most affected areas, even across state lines, and work during quarantines. Finally, we can keep vulnerable health care workers (ie, pregnant, immunosuppressed, and elderly) safe by facilitating telework opportunities. These are unprecedented times, but with coordination and rapid deployment, telehealth may finally live up to the expectations in supporting rural communities and those with the highest needs.

References:

1. Parmar A, Baum S, DeArment A, Dietsche E, Truong K. CMS loosens telehealth laws after national emergency declared for COVID-19. https://medcitynews.com/2020/03/cms-loosens-telehealth-laws-after-national-emergency-declared-for-covid-19/?rf=1. Published 2020. Accessed March 24, 2020.
2. Kuperman EF, Linson EL, Klefstad K, Perry E, Glenn K. The Virtual Hospitalist: A Single-Site Implementation Bringing Hospitalist Coverage to Critical Access Hospitals. *J Hosp Med.* 2018:E1-E5.
3. Gutierrez J, Moeckli J, McAdams N, Kaboli PJ. Perceptions of Telehospitalist Services to Address Staffing Needs in Rural and Low Complexity Hospitals in the Veterans Health Administration. *J Rural Health.* 2019. doi: 10.1111/jrh.12403. [Epub ahead of print]
4. Agarwal N, Gutierrez J, Schweitzer A, et al. Post discharge follow up: Our experience in implementing a virtual transition of care clinic. Poster accepted for presentation at: Society of Hospital Medicine Annual meeting, San Diego, California, April 2020.
5. Rachoin JS, Skaf J, Cerceo E, et al. The impact of hospitalists on length of stay and costs: systematic review and meta-analysis. *Am J Manag Care.* 2012;18(1):e23-e30.
6. Kisuule F, Howell EE. Hospitalists and Their Impact on Quality, Patient Safety, and Satisfaction. *Obstet Gynecol Clin North Am.* 2015;42(3):433-446.
7. Moeckli J, Cram P, Cunningham C, Reisinger HS. Staff acceptance of a telemedicine intensive care unit program: a qualitative study. *Journal of critical care.* 2013;28(6):890-901.
8. Gutierrez J, Moeckli J, Kaboli P. USE OF TECHNOLOGY TO ADDRESS STAFFING CHALLENGES: DEVELOPMENT AND IMPLEMENTATION OF A TELEHOSPITALIST SERVICE BETWEEN VETERANS HEALTH ADMINISTRATION HOSPITALS. Poster accepted for presentation at: Society of Hospital Medicine Annual Conference, San Diego, CA, April 2020.
9. Telemedicine E. EAGLE TELEMEDICINE NIGHT COVERAGE SOLUTIONS: Why They Work for Hospitals and Physicians. http://www.eagletelemedicine.com/wp-content/uploads/2016/11/EHP_WP_Telenocturnist_FINAL.pdf. Published 2016. Accessed May 28, 2018.
10. Sanders RB, Simpson KN, Kazley AS, Giarrizzi DP. New hospital telemedicine services: potential market for a nighttime telehospitalist service. *Telemed J E Health.* 2014;20(10):902-908.
11. Leff B, Burton L, Mader SL, et al. Hospital at home: feasibility and outcomes of a program to provide hospital-level care at home for acutely ill older patients. *Ann Intern Med.* 2005;143(11):798-808.