Perceived Need and Potential Applications of a Telehospitalist Service in Rural Areas

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Abstract

Background: *Rural hospitals struggle to staff inpatient services and may not have the clinical expertise to achieve optimal outcomes. Telehospitalist services could address these problems by bringing hospital medicine expertise to rural communities.*

Introduction: *Veterans Health Administration (VHA) rural hospitals need staffing alternatives to address gaps in inpatient coverage. This needs assessment identified perceived need for telehospitalist services as well as potential applications, benefits, and barriers from an administration perspective.*

Materials and Methods: *We used a rapid qualitative assessment approach based on semistructured interviews with 15 physician administrators at 12 rural and low-complexity hospitals in VHA in 2018.*

Results: *We identified a range of needs that could be addressed by telehospitalist services, including direct care delivery, support for local providers, and on-demand coverage to fill staffing gaps. Potential benefits included cost reductions, improved care quality, education, and addressing feelings of insular practice. Potential barriers included provider buy-in, cost, and technological limitations.*

Discussion: *Our findings suggest that telehospitalist services could address inpatient coverage gaps, but with a range of views on how the service could be deployed. Telehospitalist services providing intermittent coverage could meet unmet clinical needs at appropriate economies of scale. Administrators were enthusiastic about applying innovative inpatient telemedicine initiatives, but perceived staff reluctance. The dynamic and multidisciplinary nature of inpatient care requires program acceptance at multiple levels, which may account for why it traditionally lags behind outpatient telemedicine.*

Conclusions: *Rural hospital physician administrators perceived telehospitalist models as a viable option to address staffing needs and improve quality of care.*

Keywords: *hospitalist, telemedicine, telehospitalist, rural health, Veterans*

Introduction

Small and rural hospitals in the United States (U.S.) struggle to provide accessible and high-quality care with financial constraints and health care provider shortages challenging sustainability, especially of the inpatient services.[1–3] Hospitalist models have been adopted nationwide with dedicated inpatient medicine providers, sparing primary care from hospital duties and ensuring that expectations for expedited care of inpatients are met. This model has been fueled by improved patient outcomes and efficiency.[4,5] Rural communities have also seen a positive impact on primary care physician recruitment and retention by having dedicated hospitalists.[6] Yet, recruitment of hospitalists to rural areas remains a challenge, and the departure of a single inpatient physician in a small community can have far-reaching impacts and threaten the provision of acute services.[7]

Telehospitalist services, also known as virtual hospitalists, are an innovative staffing strategy to deliver specialized care to patients in remote facilities, and a few programs have successfully deployed services for rural facilities with promising results.[8–10] While telemedicine applications have experienced significant uptake in the last two decades, rural hospitals and physicians have been slow to adopt telemedicine particularly in more than one service area.[11] More so, telemedicine for acutely ill medical patients, specifically, has been less prominent than outpatient services. Outside of the tele-intensive care unit (ICU) and telestroke models, there are few examples of telemedicine applications for inpatient care.

The Veterans Health Administration (VHA) is uniquely positioned to leverage telemedicine given that reimbursement and interstate licensing issues that usually pose adoption

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barriers do not apply in this integrated health care system. Nevertheless, telehospitalist programs have not yet been adopted within VHA. In a national survey of rural and low-complexity VHA hospitals, 60% of respondent facilities were short-staffed in inpatient services for the current year, 84% relied on intermittent providers to cover inpatient services, and over two thirds were interested in participating in a telehospitalist pilot program.[12] The aim of this qualitative study was to conduct a needs assessment through in-depth analysis of administrators' perceptions of a telehospitalist service for rural and low-complexity VHA hospitals to inform its development and implementation.

Materials and Methods

We used individual or group semistructured interviews to evaluate administrators' perceptions regarding the need for and potential applications of telemedicine in acute medicine inpatient settings. The study was conducted as a preimplementation needs assessment of rural and low-complexity VHA hospitals and was approved by the Iowa City VA Institutional Review Board.

SETTING

Rural VHA hospitals, like non-VHA hospitals, have experienced significant challenges to ensure adequate staffing of physician services, especially 24/7 coverage. Despite telemedicine being implemented in outpatient settings to address staffing needs and bridge care gaps between urban and rural communities, there are currently no telemedicine applications within VHA for inpatient hospital care outside of the ICU or emergency department (ED). Participants were physicians with administrative roles, including direct oversight for inpatient care.

DATA COLLECTION

Participants were selected through a cross-sectional survey distributed to 34 VHA hospitals considered either rural by the 2015 Rural Veterans Healthcare Atlas or low complexity by VHA hospital complexity rankings. The survey was emailed to an administrator (e.g., Chiefs of Medicine, Chiefs of Staff, or Chief Hospitalists) at each facility. Respondents could indicate interest in participating in a telehospitalist pilot and an interview. Responses were obtained from administrators representing 25 of 34 hospitals (74%); administrators representing 20 hospitals (80%) were interested in participating in a telehospitalist pilot.

Participants were contacted through email for a 45-min semistructured interview. The interview guide was designed to elicit responses in three main domains: (1) facility characteristics, resources, and gaps; (2) current staffing alternatives; and (3) perceptions about telehealth, potential applications, and barriers to implementation. Interviews were conducted by a qualitatively trained physician investigator and a social scientist (J.G. and J.M.). All but one interview was conducted through telephone from April to July 2018. In October 2018, an administrator that completed the survey but did not opt to participate in the pilot requested reconsideration for the pilot. Due to timeline considerations, J.G. and J.M. conducted a site visit and in-person group interviews. Telephone and in-person interviews were audiorecorded, transcribed, and audited. Handwritten interview and site visit fieldnotes were typed into word documents.

ANALYSIS

Interviews were summarized by the research team in separate computerized note templates, compared for accuracy, and interview transcripts were referenced to resolve discrepancies and capture supporting quotations. Templated summaries were combined into a single note, and a matrix analysis was conducted using a method adapted from Hamilton.[13] After comparing responses across facilities, responses were stratified into two groups based on number of beds covered by hospitalists (inpatient medicine plus ICU beds): smaller (<40 beds) and larger (>40 beds).

Results

Of 20 eligible hospitals, 15 administrators from a total of 12 rural and low-complexity hospitals (60%) participated in interviews. Results are categorized by three main domains: (1) facility characteristics, resources, and gaps; (2) current staffing alternatives; and (3) perceptions about telehealth, potential applications, and barriers to implementation.

FACILITY CHARACTERISTICS, RESOURCES, AND GAPS

Participants described a range of staffing needs for inpatient services in their rural settings. Most participants expressed problems with staffing "gaps"—intermittent periods of time when there were not enough providers for 24/7 staffing. The intermittent need for coverage included filling short-term gaps when, for example, multiple staff take medical leave, and long-term gaps, as facilities negotiate the hiring and credentialing process after staff leave or retire. Other participants described ongoing staffing shortages.

> "… I have three open positions and out of the six that I have, I anticipate that I could be needing to fill two to three of those positions in the future … I've pulled up some of my ER staff to help cover and … it's just a struggle to fill the schedule every

> month. And then, to not allow your providers to have leave, especially when they're good providers and you don't want to lose them because you're burning them out …. Or, we have to reduce services, which we don't want to do." (Chief of Acute Care service line, Site H)

Some participants did not experience staffing gaps, but rather wanted to supplement current staff and reduce burden on the medical officer of the day (MOD). Facilities struggled to authorize paid time off and leave for providers due to lack of alternative coverage. Concerns about provider dissatisfaction and burnout were driving all participants to look for staffing alternatives.

CURRENT STAFFING ALTERNATIVES

Participants reported four current strategies to address staffing needs: (1) *locum tenens* (i.e., a physician who works in place of a regular physician when they are absent or when the facility is short-staffed); (2) fee-basis services (i.e., non-VHA providers who have been issued formal approval to deliver care, a.k.a. "moonlighting"); (3) contract staff (i.e., physicians hired for short periods of time or who have been authorized overtime); or (4) cross-coverage by other staff, especially overnight.

Locum tenens was the most common strategy used to address gaps in staffing. Participants discussed that temporary physicians often were not able to meet their needs, of lower quality, or inflexible in their scheduling to adapt to last-minute changes. Some participants expressed concern about contractual and financial challenges associated with these alternatives, with a couple of sites unable to obtain approval or secure a contract.

Participants also reported cross-coverage by design or default. Although VHA policy requires two provider staff overnight to ensure ED coverage, smaller under-resourced hospitals can apply for exemptions. One participant reported their ED physician responds to floor emergencies in lieu of dedicated inpatient coverage overnight. Other sites noted their inpatient physician cross-covered the ED by default, resulting in slower care delivered in medicine inpatient units. Utilizing cross-coverage this way raised concerns about the impact on workflow for daytime physicians and about patient safety from personnel being stretched thin.

> "So, once we leave there's really nobody in house. I mean we have an MOD but they're pretty much stuck in the ER. Their job description, title, and expectations have morphed over the years to where they were supposed to be in house in the hospital to help with admissions and answering calls and with difficulty finding ER providers in the rural areas it has morphed into more of an ER position. They're taking care of ER patients, [and] they're very difficult to get out of the ER to respond to patients on the floor." (Chief Hospitalist, Site N)

PERCEPTIONS ABOUT TELEHEALTH, POTENTIAL APPLICATIONS, AND BARRIERS TO IMPLEMENTATION

Responses for how telehospitalists could address staffing needs or improve quality of care ranged from the telehospitalist having a primary role in care delivery to providing support for local providers on an as-needed basis. For participants who thought that telehospitalist physicians could provide direct patient care, partnerships were proposed between the telehospitalist and an on-site nurse or advance practice provider (i.e., nurse practitioner or physician assistant). Telehospitalists would be responsible for rounds and chart documentation as if they were present locally, with advanced practice providers doing physical exams and addressing in-person needs. Some participants suggested that telehospitalists could substitute for on-site inpatient physicians in situations where patient volume might not justify in-person staffing.

For participants who favored a supportive telehospitalist role, three possibilities were suggested: (1) a consultative/supervising; (2) a cross-covering; or (3) an overnight admitting role. A consultative or supervising role consisted of the telehospitalist being available for consultation to provide expertise, help with diagnosis and management decisions, and provide evidence-based information. Several participants noted a perceived benefit of the consultative role of helping counter professional isolation for staff practicing in rural areas.

> "Our doctors have been working in a vacuum. And I don't say that in a negative way. It's just how the nature of the business [has] become for us. They go to have their CME and their time, they come back [refreshed]. And they bring those ideas that they learn. We need that camaraderie that helps the discussion, like the morning reports type of thing? To bounce ideas off each other." (Deputy Chief of Staff, Site C)

Some participants noted that advanced practice providers could cover some of the shifts with a supervising telehospitalist available.

Proposals for a cross-coverage role included telehospitalists as a dedicated inpatient provider that cross-covers the acute inpatients admitted to the hospital, answers nurse calls, and responds to overnight events or results that need action (e.g., culture results, antibiotic stewardship). In facilities where there was an overnight inpatient provider who also had multiple cross-coverage responsibilities, telehospitalist cross-coverage

was perceived as an opportunity to help refocus the in-house hospitalist on appropriately scoped and defined roles.

> "There's a bit of mission creep beyond just taking care of your 10 patients. They're doing admissions. They also carry the Code pagers. They carry the Rapid Response pager, and until recently they were expected to respond to these crisis calls, … which is mental health… But, there has been … mission creep and that places the hospitalists under a lot of stress. They feel like they're treading water just trying to keep on top of the medicine patients for which they're responsible and they perceive that … more and more has been demanded of them. … I think it definitely affects their morale." (Chief of Medicine, Site L)

For those hospitals with no dedicated overnight inpatient staff, respondents identified discussing admissions with the ED physician as well as conducting a history and physical exam and placing orders for new patients overnight as important tasks for a telehospitalist. At some hospitals, duties associated with the overnight admitting role were deferred to daytime staff. Using a telehospitalist has potential to expedite patient care and improve workflow for daytime staff.

> "It's challenging when we … come in in the morning and see a patient that got admitted that really didn't need to be admitted and to take the time to have to do an H&P and then turn around and have to do a discharge as well. … But having a strong nocturnist here to be able to negotiate a little bit better with the ER physicians as to what really needs admissions would be helpful." (Chief Hospitalist, Site N)

Smaller facilities conceptualized using a telehospitalist service differently compared with larger facilities. Participants from smaller sites proposed using telehospitalist services to address primary staffing needs and provide direct patient care; whereas for larger sites the value of a telehospitalist service was as a consulting or supportive role to local staff, especially to reduce in-house provider burnout and improve job satisfaction. Additionally, larger facilities addressed motivations to reduce cost, which was discussed less among smaller sites that struggled more with staffing.

The primary facilitator to implementing a telehospitalist service was the normalization of telemedicine within the facility and with patients through past implementation of telemedicine programs. In VHA, tele-ICU and telestroke provide pathways for understanding and preparing for unique implementation issues associated with inpatient, compared with outpatient, telemedicine programs. Facilities with experience implementing one of these programs were confident in their approach to building staff buy-in. They were also uniquely aware of technical challenges in inpatient settings, especially connectivity.

The most common barrier was the potential lack of buy-in due to providers feeling their autonomy would be threatened, and general reluctance among some providers to incorporate new technology into patient care. It was perceived that providers will be supportive of telehospitalists if they see value in the service, and hesitant to incorporate a telehospitalist within their practice if it would increase their workload or demand significant time away from other duties that were beneficial for patients or workflow.

Many participants also noted concerns about the inability to perform a physical examination through telemedicine and potential to miss important findings. These concerns assumed the telehospitalist could practice without the assistance of local providers (i.e., nurse, physician, or advance practice provider). Technology costs were also a concern with several participants from hospitals currently using the tele-ICU, which is delivered through sophisticated and costly hardware and software.

Discussion

Interviews with stakeholders and needs assessments are indispensable steps in developing novel telemedicine programs. DeGaetano and Shore note that most successful telemedicine programs take time to identify and define program needs before beginning.[14]

Our findings reiterate the importance of a detailed needs assessment before implementing a telemedicine program by clarifying key elements of the organizational context and perceived needs. All participants agreed there was a need for additional hospitalist support, but current approaches, most notably use of *locum tenens*, presented financial, clinical, and scheduling challenges. This was echoed in published work showing that *locum tenens* have higher average gross income than regular hospitalists,[15] with concerns about quality of care, longer lengths of stay, higher spending, and difficulty with care transitions.[16] Many rural and critical access hospitals lack patient volume to justify this expense, yet it is often the better of two difficult choices: transferring patients to other hospitals can have a negative impact on patient care, increase patient burden of already busy facilities, and incur additional costs.

Our findings show that telehospitalist services could address inpatient coverage gaps. However, how the service could fill care gaps varied widely from telehospitalists assuming a primary role in care delivery to providing a consultative role. Such variation has been described in other telemedicine applications (e.g., tele-ICU), where Ward et al. state that "multiple delivery models are warranted to meet disparate needs"

of rural hospitals.[17] With most participants expressing difficulties with staffing gaps as opposed to persistent staffing shortage, developing a program that provides continuous coverage might not meet the immediate needs of most sites. Sanders advocates for implementing telehospitalist services to cover small, low-volume hospitals to increase efficiency and save costs.[18] In the VHA context, telehospitalist services that provide intermittent coverage for rural and low-complexity hospitals might meet most unmet needs at an appropriate economy of scale.

Some authors have noted that poorly understood challenges at the organizational and provider level have been identified as barriers to adoption of telehealth services.[19] Additional insight into contextual factors that impact decisions to adopt telemedicine applications, particularly in inpatient medicine that has lagged in adopting this care model, is necessary for program development and implementation.

Regarding readiness to change, administrators were enthusiastic about applying innovative inpatient telemedicine initiatives but perceived that staff may be reluctant to change. Provider buy-in was highlighted as a pre-requisite for program adoption, as well as an anticipated barrier. Our findings are similar to those reported by Zapka et al. in a study about readiness to change in rural hospitals.[19] In small organizations "selling the idea" to providers and staff and showing which workflows may be directly affected by program implementation is important. This may be one explanation why inpatient telemedicine initiatives have traditionally lagged far behind outpatient adoption, given that the dynamic and multidisciplinary nature of inpatient care teams require program acceptance at multiple levels (e.g., patients, providers, nurses, social workers, administrative personnel, utilization management, consultants, ancillary services, unit and service management).

This project had several limitations. First, interviewing physician administrators in one health care system limits generalizability although staffing shortages in inpatient medicine are not unique to VHA. Second, in limiting our interviews to physician administrators we were not able to hear how frontline staff perceived staffing shortages, needs, and alternatives, including the telehospitalist model. Third, our findings are based on self-reports of administrators' perceptions of a telehospitalist model. Other data external to participants' reported perceptions were not used to validate their impact on administrator or staff acceptance or readiness to change.

Results of this study show that physician administrators at rural VHA hospitals perceived the telehospitalist model as a viable option to address staffing needs and potentially improve quality. Future work should evaluate staff perceptions of telehospitalist programs and create implementation tools for facilitating the adoption of this model of care when it becomes necessary to meet the staffing and clinical needs of rural and lower resourced hospitals that might otherwise be faced with closure.

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Disclaimer

This article is not under review elsewhere and there is no prior publication of article contents. 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.

Disclosure Statement

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