Virtual Rounds Offer a Glimpse into the Future of Healthcare

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It is nearly impossible to ride a bus, stroll through a park, or drink a cup of coffee in a cafe without seeing a great number of people fixated on their cell phones, iPads, or laptops.

This technology isn't trivial—it is how many connect with and understand their environment.

As a 23-year-old woman raised in the suburbs and currently living in the heart of Center City, Philadelphia, I am armed with at least three of these devices. For my parents and grandparents, the various methods of correspondence provided by these devices are nothing short of a miracle. But my generation is accustomed to features such as FaceTime and FACEBOOK, which allow for mobile video transmission, virtual photo sharing, and new apps and updates every day.

Editor's Note: A medical student asks: When patients live in a world of instantaneous communication, how can new tools help with age-old questions of decision-making and family support? The author's personal life is filled with smartphones, APPLE technology, and mobile laptops with camera capabilities to provide instantaneous audio and visual communication. Her first-person account details the initial trial of virtual rounds at JEFFERSON HEALTH in Philadelphia.

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This personal communication technology is spreading into healthcare as well.

Which means I was intrigued when THOMAS JEFFERSON UNIVERSITY launched a multifaceted telehealth program known as JeffConnect.¹ I learned about telehealth in the early months of my first year of medical school when **Dr. Judd Hollander**, a Jefferson Emergency Medicine physician, lectured my class about the new telehealth initiative. I immediately met with the telehealth program director, and we quickly decided I would join the center's novel "Telemedicine Virtual Rounds" arm.

► What Are Virtual Rounds?

For most patients, an overnight hospital stay is an overwhelming, uncomfortable, and foreign experience. If a patient lives close to the hospital or has family/friends with flexible schedules, their loved ones can be with them in their hospital room. Companionship of family and friends provides emotional support for patients, and it allows loved ones to receive medical information directly from the medical care team. However, this is not the case for all patients. At JEFFERSON, many patients travel to receive treatment. The hectic schedules of family members and friends, many living in different cities, prevent them from physically being at the patient's bedside. These patients do not have the same degree of emotional support, and their family/friends do not receive in-person medical information updates. Instead, the best that many family and friends can do is to speak randomly with a member of the medical care team via phone at some point during the day. Often, due to a hospital's rapidly changing environment, this call does not always include the same information presented during morning rounds.

The goal of "virtual rounds" is to assist patients whose off-site loved ones cannot be at the bedside, but still wish to be involved with medical planning and treatment. A virtual round begins with a telehealth coordinator bringing an iPad into a patient's room. All telehealth iPads use the HIPAA-compliant application "Blue Jeans" to initiate a video call between a patient's loved one and the patient's care team. Multiple people can call into the iPad app simultaneously, a feature that allows for efficient transmission of information to groups of individuals.

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Result: The iPad allows the patient's family and friends to be virtually present in the patient's room and engage in a normal, scheduled conversation with a member or members of the care team. Accurate, timely information helps family and friends offer support, participate in decisions, and even personally ask the hard question: Should we fly in?

► The Process: Initiating a Virtual Round

I joined the telehealth team in early June 2015, when the virtual round was a relatively new process for the hospital. At this time, the team was completing between one and three virtual rounds a day, primarily with oncology patients. Each morning, the virtual-rounds team reviewed the daily census and approached all new patients admitted to the oncology unit of the hospital. Initially, our domain of work was limited to this area, but as our manpower increased, we spread to different floors and thus different types of patients.

Approaching patients consisted of clear steps.

First, we explained what a virtual round would entail. After the patient was made aware of the process, we asked if they were interested and/or if they had any friends or family members who would like to be part of the video call. The telehealth coordinator recorded the names and telephone numbers of individuals whom the patient would like to be included in the video call.

That same day, the telehealth team called all of the friends and family members of patients who expressed interest in using the service. After receiving their consent, we explained how to download the Blue Jeans app on their smartphone, tablet, or camera-equipped computer, and recorded their e-mail address.

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The next morning, the telehealth team contacted those same individuals to confirm their interest in setting up a video call for that day. After acquiring confirmation, the telehealth team contacted the care team to inform them which of their patients wished to participate in a virtual round. If the attending physician was unable to participate in the call, he/she typically referred us to a resident physician, nurse practitioner, or medical student who would take his/her place. After verifying this time with the patient's loved one, a virtual round was scheduled via iPad by sending the contact an e-mail invite.

Fifteen minutes before the scheduled call, a member of the virtual-rounds team brought the iPad into the patient's room and initiated the video call with the friend/family member. This window of time allowed the telehealth coordinator to establish a solid connection on the iPad. It also gave the patient time to speak with his/her loved one, and it ensured the video call was successfully running prior to the care team member entering the room. The third aspect of this set-up was especially critical, as we always aimed to disrupt the care team's routine as little as possible. By having the video call established prior to their arrival, core members of the care team could simply proceed through rounds according to their regular schedules.

Ultimately, this multi-step process was devised to achieve one goal: to eliminate the barriers—usually distance or busy work schedules—that impede the ability of a patient's family and friends to stay informed about their sick loved one's care.

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► Which Patients Preferred Virtual Rounds?

There were notable trends among the different floors and units of the hospital. For example, oncology and recovering surgical trauma patients were most likely to enlist in our services due to their extended hospital stays. Alternatively, patients with anticipated one- to two-day admissions who were likely to be discharged often declined participation in virtual rounds. Nevertheless, the telehealth team followed a systematic pattern and routinely spread to all types of units regardless of their patients' length of stay.

Although, some units of the hospital consistently yielded few virtual rounds opportunities, we spoke with all newly admitted patients for two reasons: first, in case a patient would be interested regardless of their short stay, and second, to increase the telehealth presence on the hospital floors. In the beginning, nurses, medical students, residents, and physicians were relatively uninformed about JEFFERSON's new telehealth initiative, let alone its virtual-rounds arm. But as the team continued to approach an increasing number of patients, our program and its mission were accepted and embraced.

► The Obstacles

Despite the systematic routine established by telehealth coordinators, the process was not without difficulties. The obstacles faced by the telehealth team can be divided into those embedded within the daily workflow and those imposed from outside sources.

Hindrances, and their potential to lead to failure, existed throughout every step of the virtual-rounds process. First, while we attempted to approach all new admissions in our designated units, various situations often prevented our team from even entering patient rooms. Although the telehealth team would make a note to visit such patients the following day, inevitably these patients would “slip through the cracks” and never be approached during their hospital stay. Second, even after receiving patient consent for their participation in virtual rounds, phone calls with loved ones were not always successful. My teammates and I left numerous text messages and voicemails, which were frequently unanswered. Sometimes, the patient's loved one was uninterested in using the service, although this response was rare. Third, we periodically faced difficulties establishing contact with a member of the patient's care team. Finding a virtual-rounds time that was convenient for both the medical staff and the patient's family members/friends was not always possible.

Other obstacles intrinsic to the virtual-rounds process were rooted in technology issues. In order to complete a video conference, the patient's contact needed a smartphone, iPad, or computer with a webcam. Although the majority of patients had loved ones with access to at least one of the above options, we did encounter individuals who lacked such devices. The process also required users to have baseline knowledge of how to use such technology. Furthermore, having the ability to download an application

and navigate through e-mail were skills needed by participants. Finally, despite our team's efforts to explain each step carefully, poor Internet connection and malfunctions with downloading the Blue Jeans app were periodic occurrences. For these reasons, we regularly performed test calls with patient contacts prior to the scheduled video conference. These “practice runs” allowed my co-workers and I to ensure that any technological issues could be avoided when the care team later performed the call.

In addition to weaknesses with the workflow and technology, we occasionally faced resistance from hospital staff themselves, mainly in the form of resistance to change. Accustomed to their well-established routines, participating in a video conference during rounds added another element to their daily practices. As previously mentioned, the goal of the virtual-rounds department was to integrate the video call smoothly into the rounding process and minimally disrupt workflow. However, inevitable factors such as “audio delay” and faulty Internet reception were regularly experienced during the iPad connection—this meant conversing with the patient's loved one was not as seamless as it would be if they were physically present in the room. The conversation with the patient's friend/family member was slower, undoubtedly increasing the duration of the team's rounding time.

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If the video call demonstrated poor visual or audio connection, or if the call was “dropped” altogether, some physicians attempted to reconnect the video conference, but more often than not, time constraints required the care team to complete the conference through our telehealth iPhone (audio only). Furthermore, knowing that hospital staff members commonly work under chaotic conditions, it was sometimes not possible to initiate a video call when unforeseen circumstances arose.

A related obstacle we continually encountered was the unpredictable nature of the care teams’ rounding times. A minority of the video conferences were actually performed while care teams completed their morning rounds. For those who rounded regularly in the late morning, with predictable schedules, coordinating a time for a virtual round was simple. However, for patients whose care team typically rounded before sunrise, attempting to coordinate a convenient video conference time with their friends and family members was significantly more difficult. As a result, we often had to ask a member of their care team to return and perform the virtual round later in the day. Here, there were often three outcomes: first, some attending physicians, residents, nurse practitioners, and so on would return and round on the patient again in order to complete the video call. This was a testament to the extremely patient-centered care provided at THOMAS JEFFERSON HOSPITAL. Some care teams would ask to reschedule the video conference the following day. Others, however, would cite their overloaded schedules and insist on simply contacting the loved one through a phone call at a later time.

Although my teammates and I stressed that virtual rounds was a service the patient had requested and therefore would have been nice to fulfill, we were sometimes met with resistance and noncompliance. In the latter situation, I found myself struggling to weigh the concerns of a patient’s loved one against the time-sensitive schedules imposed upon physicians. As an incoming second-year medical student, I as yet had little exposure to the rigorous schedules followed by most clinicians. Therefore, it was difficult for me to comprehend why some physicians, residents, or nurses could not carve out 10 minutes in their schedule to participate in the virtual round. In reality, my teammates and I were not always provided with a reason as to why the care team member was unable to participate in the call—meaning we did not know whether refutation was due to a medical emergency or simple passivity. Nevertheless, I’m sure when I eventually don the long white coat and become immersed in my own daily

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clinical schedule, I will better understand how significant a mere 10 minutes can be in a typical workday.

The last, and unfortunately most common, obstacle encountered by the virtual-rounds team was patient refusal. There are a number of reasons why patients deferred from using the virtual-rounds service. Some recurrent situations included the patient's family visiting the hospital daily, the patient anticipating their discharge in the upcoming 24 hours, or the patient using their own technology to communicate updates about their medical care to their loved ones. But the most common response from patients was simply, "Not interested," leaving the telehealth team with questions at the crossroads. Do we push further and ask why? Should we attempt to explain the service again? Has the patient not understood what it is exactly that we are offering? Do we accept the defeat and move on? In our minds, accepting the virtual-rounds service was a no-brainer. Having trained individuals orchestrate a privacy-protected video call between patients' loved ones and their care team was an efficient way to transmit

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important medical information. In addition, this video call eliminated the “chain” of phone calls friends and family members often have to make later in the day to find out medical information. Instead, patients’ family and friends would have a direct line of communication with the care team, receiving the most up-to-date medical information directly from the most reliable source. For these reasons, my teammates and I did our best to communicate the benefits of the virtual-rounds service, and remained perplexed when disinterest was the response.

► The Victories

By the end of my first week with the virtual-rounds department, I had learned how to navigate iPads, the Blue Jeans app, and other technological operations involved with telemedicine. I mastered these aspects of the virtual-rounds system fairly easily, as they were rooted in basic technological knowledge I encounter on a daily basis. Other facets of the routine, however, were, though exciting, very daunting. The process of simply entering a patient’s room and initiating conversation, effortlessly done by seasoned hospital staff, was foreign to me, a first-year medical student. Fortunately, I quickly became acclimated to approaching hospitalized patients: learning how to “gown up” properly before entering a contact patient room, mastering the in-hospital paging system, and gaining confidence communicating with attendings, residents, nurses, and so on.

Many care teams permitted me to stay in the room while they performed virtual rounds, exposing me to medical knowledge regarding specific illnesses and their respective treatment plans. Most importantly, I attained invaluable human experience by interacting with various personality types. I cultivated strong communication skills by interacting with a diverse patient population, even confronting unique situations involving translators and interpreters. Being exposed to this element of my volunteer work prepared me for my future practice of medicine.

Throughout my time in the virtual-rounds experience, countless video conferences were completed with various clinicians, nurse practitioners, residents, and medical students. There were patients who participated in more than 15 calls during their stay, and those who participated in only one. Some days were exceptionally frustrating: after

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approaching 50 patients, 10 would express interest in using the service. Of those 10, only two would translate into a virtual round the following day. But, regardless of the quantity, each successful video conference was an incredible victory. Only my co-workers and I knew of the intricate planning required to carry out each virtual round. Thus, when all of the pieces neatly came together, we were ecstatic. Furthermore, the feedback we received from the patient's family members and friends was almost always positive. They would frequently send us "thank you" messages and voice how appreciative they were of our service. Realizing how grateful a patient's loved ones were at our efforts to facilitate their entire hospital experience, one successful video call overshadowed 10 failed ones. Their appreciation was conveyed to all hospital staff members who participated in virtual rounds. **Dr. Jesse Edwards**, a physician who regularly performed virtual rounds, remarked, "The response from friends and family members has been very positive ... they've enjoyed seeing us enhance communication, and they've benefited from the ability to speak with physicians as well as their loved one at the same time without having to come to the hospital."

I distinctly remember one patient, located on the oncology floor, who had a particularly long length of stay. Throughout her admission, she participated in many virtual conferences, enabling her off-site son and daughter to speak with the care team during their morning rounds. I was responsible for orchestrating her virtual rounds, so I set up the iPad and initiated each video call. In doing this, I was able to speak with both her and her husband for a few minutes every day. Through our brief interactions, I formed a bond with her family as they shared their frustrations, hopes, and goals with me. Although I had no role in her medical care, I believe her family felt better simply communicating their concerns to a listening ear. Each day, when the virtual round was complete, I re-entered her room to retrieve the iPad. Regardless of her cancer diagnosis, she and her husband always expressed appreciation for our service and requested its use for the following day. For patients such as this one, virtual rounds proved to be invaluable: we regularly created an efficient form of communication between this patient's loved ones and her care team, and this act undoubtedly optimized her hospital experience. In an ever-changing healthcare environment, where unpredictability and uncertainty may be the norm for some patients, the virtual-rounds team can perhaps provide some form of peace and consistency amid daily chaos.

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► Looking Toward the Future

Although some obstacles, such as predicting the rounding time of care teams, appeared to be an unresolvable hurdle in the virtual-rounds process, the future of telehealth at JEFFERSON is bright. Suggestions are continuously made regarding refinement of the virtual-rounds process: approaching patients prior to planned admission, requiring care teams to set aside a routine period of time every day to do video conferencing, and having the nursing staff become more involved in the video-conferencing process are all methods that may facilitate the integration of virtual rounds into the hospital staff member's daily workflow. I predict it will take trial and error to truly discover which method will be most efficient and effective in the hospital setting. When the system is finally perfected, it will be a remarkable patient satisfier. JEFFERSON endeavors to administer high-quality care, satisfy patient needs, and provide all patients with the best possible hospital experience. By creating a technological channel that encourages family communication and promotes the sharing of pertinent medical information, virtual rounds do just that. ■■■

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► References

1. Papanagnou D, Sicks S, and Hollander JE. Healthcare Transformation. December 2015, 1 (1): 52–63.