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Inpatient telemedicine can help address hospitalist pain points

COVID-19 has increased confidence in the technology

By Sareer Zia, MD, MBA

Since the advent of COVID-19, health care has seen an unprecedented rise in virtual health. Telemedicine has come to the forefront of our conversations, and there are many speculations around its future state. One such discussion is around the sustainability and expansion of inpatient telemedicine programs post COVID, and if – and how – it is going to be helpful for health care.

Consider the following scenarios:

Scenario 1

A patient presents to an emergency department of a small community hospital. He needs to be seen by a specialist, but (s)he is not available, so patient gets transferred out to the ED of a different hospital several miles away from his hometown.

He is evaluated in the second ED by the specialist, has repeat testing done – some of those tests were already completed at the first hospital. After evaluating him, the specialist recommends that he does not need

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Technology

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to be admitted to the hospital and can be safely followed up as an outpatient. The patient does not require any further intervention and is discharged from the ED.

Scenario 2

Dr. N is a hospitalist in a rural hospital that does not have intensivist support at night. She works 7 on/7 off and is on call 24/7 during her “on” week. Dr. N cannot be physically present in the hospital 24/7. She receives messages from the hospital around the clock and feels that this call schedule is no longer sustainable. She doesn’t feel comfortable admitting patients in the ICU who come to the hospital at night without physically seeing them and without ICU back-up. Therefore, some of the patients who are sick enough to be admitted in ICU for closer monitoring but can be potentially handled in this rural hospital get transferred out to a different hospital.

Dr. N has been asking the hospital to provide her intensivist back up at night and to give her some flexibility in the call schedule. However, from hospital’s perspective, the volume isn’t high enough to hire a dedicated

nocturnist, and because the hospital is in the small rural area, it is having a hard time attracting more intensivists. After multiple conversations between both parties, Dr. N finally resigns.

Scenario 3

Dr. A is a specialist who is on call covering different hospitals and seeing patients in clinic. His call is getting busier. He has received many new consults and also has to follow up on his other patients in hospital who he saw a day prior.

Dr. A started receiving many pages from the hospitals – some of his patients and their families are anxiously waiting on him so that he can let them go home once he sees them, while some are waiting to know what the next steps and plan of action are. He ends up canceling some of his clinic patients who had scheduled an appointment with him 3, 4, or even 5 months ago. It’s already afternoon.

Dr. A now drives to one hospital, sees his new consults, orders tests which may or may not get results the same day, follows up on other patients, reviews their test results, modifies treatment plans for some while clearing other patients for discharge. He then drives to the other hospital and follows the same process. Some of the patients aren’t happy because of the long wait, a few couldn’t arrange for the ride to go home and

ended up staying in hospital 1 extra night, while the ER is getting backlogged waiting on discharges.

These scenarios highlight some of the important and prevalent pain points in health care as shown in Figure 1.

Scenario 1 and part of scenario 2 describe what is called potentially avoidable interfacility transfers. One study showed that around 8% of transferred patients (transferred from one ED to another) were discharged after ED evaluation in the second hospital, meaning they could have been retained locally without necessarily getting transferred if they could have been evaluated by the specialist.¹

Transferring a patient from one hospital to another isn’t as simple as picking up a person from point A and dropping him off at point B. Rather it’s a very complicated, high-risk, capital-intensive, and time-consuming process that not only leads to excessive cost involved around transfer but also adds additional stress and burden on the patient and family. In these scenarios, having a specialist available via teleconsult could have eliminated much of this hassle and cost, allowing the patient to stay

locally close to family and get access to necessary medical expertise from any part of the country in a timely manner.

Scenario 2 talks about the recruitment and retention challenges in low-volume, low-resourced locations because of call schedule and the lack of specialty support. It is reported in one study that 19% of common hospitalist admissions happen

“When physicians are on vacation or there is surge capacity (that can be forecast by using various predictive analytics models), hospitals can make plans accordingly and make use of telemedicine services.”

between 7:00 p.m. and 7:00 a.m. Eighty percent of admissions occurred prior to midnight. Nonrural facilities averaged 6.69 hospitalist admissions per night in that study, whereas rural facilities averaged 1.35 admissions.² It’s like a double-edged sword for such facilities. While having a dedicated nocturnist is not a sustainable model for these hospitals, not having adequate support at night impacts physician wellness, which is already cost-

ing hospitals billions of dollars as well as leading to physician turnover: It could cost a hospital somewhere between \$500,000 and \$1 million to replace just one physician.³ Hence, the potential exists for a telehospitalist program in these settings to address this dilemma.

Scenario 3 sheds light on the operational issues resulting in reduced patient satisfaction and lost revenues, both on the outpatient and inpatient sides by cancellation of office visits and ED backlog. Telemedicine use in these situations can improve the turnaround time of physicians who can see some of those patients while staying at one location as they wait on other patients to show up in the clinic or wait on the operation room crew, or the procedure kit etcetera, hence improving the length of stay, ED throughput, patient satisfaction, and quality of care. This also can improve overall workflow and the wellness of physicians.

One common outcome in all these scenarios is emergency department overcrowding. There have been multiple studies that suggest that ED overcrowding can result in increased costs, lost revenues, and poor clinical outcomes, including delayed administration of antibiotics, delayed administration of analgesics to suffering patients, increased hospital length of stay, and even increased mortality.⁴⁻⁶ A crowded ED limits the ability of an institution to accept referrals and increases medicolegal risks. (See Figure 2.)

Another study showed that a 1-hour reduction in ED boarding time would result in over \$9,000 of additional revenue by reducing ambulance diversion and the number of patients who left without being seen.⁷ Another found that using tele-emergency services can potentially result in net savings of \$3,823 per avoided transfer, while accounting for the costs related to tele-emergency technology, hospital revenues, and patient-associated savings.⁸

There are other instances where gaps in staffing and cracks in workflow can have a negative impact on hospital operations. For example, the busier hospitals that do have a dedicated nocturnist also struggle with physician retention, since such hospitals have higher volumes and higher cross-coverage needs, and are therefore hard to manage by just one single physician at night. Since these are temporary surges, hiring another full-time nocturnist is not a viable option for the hospitals and is considered an expense in many places.

Similarly, during day shift, if a physician goes on vacation or there are surges in patient volumes, hiring a locum tenens hospitalist can be an expensive option, since the cost also includes travel and lodging. In many instances, hiring locum tenens in a given time frame is also not possible, and it leaves the physicians short staffed, fueling both physicians’ and patients’ dissatisfaction and leading to other operational and safety challenges, which are highlighted above.

Telemedicine services in these situations can provide cross-coverage while nocturnists can focus on admissions and other acute issues. Also,

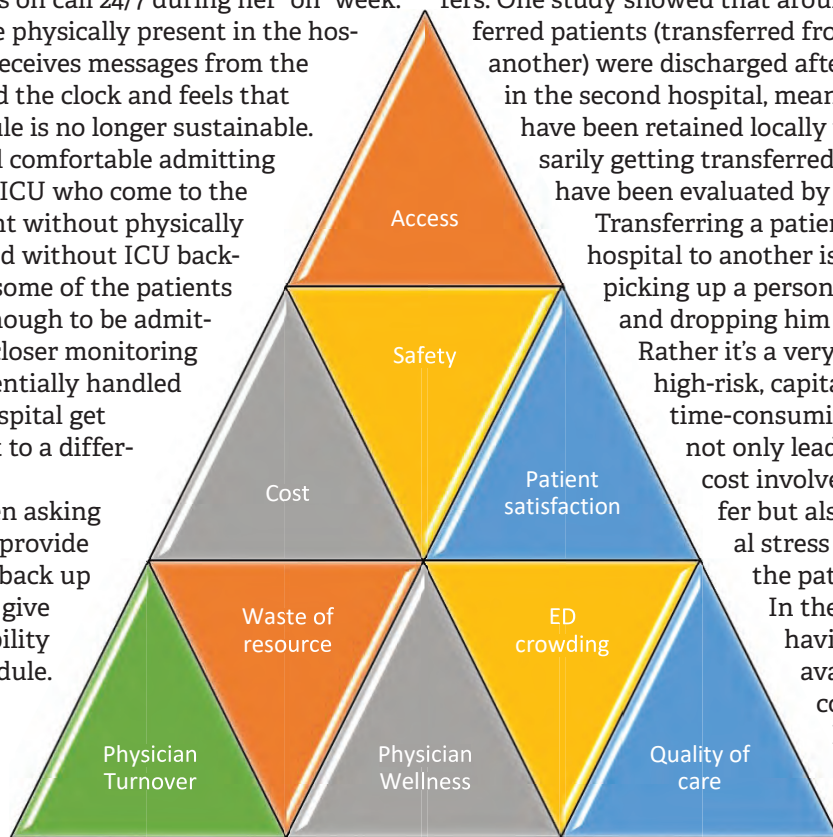


Figure 1: Pain points in health care

	Scenario 1	Scenario 2	Scenario 3
	Avoidable Transfer		
Safety and Quality Issues	Delay in Care		Delay in Care
	Transport related Injuries		Delay in Discharge
Increased Cost	Transportation Cost		Increased LOS
		Physician Turnover	Reduced ED Throughput
Increased Waste	Redundant Test		Increased Avoidable Days
Decreased Revenue	Reduced Patient Retention		Cancellation of Office Visits
Decreased Access			
Reduced Physician Satisfaction	Impact on Physician Wellness		
ED OVERCROWDING			
Quality and Safety Issues	Medical Errors		
	Delay in Care including decreased administration of antibiotics and analgesics, increased ICU length of stay, increased mortality		
Reduced Patient Satisfaction	Patient Leaving Without Being Seen		
Decreased Access	Ambulance Diversion		
Reduced Revenues			

Figure 2: Relationship of limited human capital (physicians) to pain points of health care

when physicians are on vacation or there is surge capacity (that can be forecast by using various predictive analytics models), hospitals can make plans accordingly and make use of telemedicine services. For example, Providence St. Joseph Health reported improvement in timeliness and

“There are barriers to the integration and implementation of inpatient telemedicine, including regulations, reimbursement, physician licensing, adoption of technology, and trust among staff and patients.”

efficiency of care after implementation of a telehospitalist program. Their 2-year study at a partner site showed a 59% improvement in patients admitted prior to midnight, about \$547,000 improvement in first-day revenue capture, an increase in total revenue days and comparable patient experience scores, and a substantial increase in inpatient census and case mix index.⁹

Other institutions have successfully implemented some inpatient telemedicine programs – such as telepsych, telestroke, and tele-ICU – and some have also reported positive outcomes in terms of patient satisfaction, improved access, reduced length of stay in the ED, and improved quality metrics. Emory Healthcare in Atlanta reported \$4.6 million savings in Medicare costs

over a 15-month period from adopting a telemedicine model in the ICU, and a reduction in 60-day readmissions by 2.1%.¹⁰ Similarly, another study showed that one large health care center improved its direct contribution margins by 376% (from \$7.9 million to \$37.7 million) because of increased case volume, shorter lengths of stay, and higher case revenue relative to direct costs. When combined with a logistics center, they reported improved contribution margins by 665% (from \$7.9 million to \$60.6 million).¹¹

There are barriers to the integration and implementation of inpatient telemedicine, including regulations, reimbursement, physician licensing, adoption of technology, and trust among staff and patients. However, I am cautiously optimistic that increased use of telehealth during the COVID-19 pandemic has allowed patients, physicians, nurses, and health care workers and leaders to gain experience with this technology, which will help them gain confidence and reduce hesitation in adapting to this new digital platform. Ultimately, the extent to which telemedicine is able to positively impact patient care will revolve around overcoming these barriers, likely through an evolution of both the technology itself and the attitudes and regulations surrounding it.

I do not suggest that telemedicine should replace the in-person encounter, but it can be implemented and used successfully in addressing the pain points in U.S. health care. (See Figure 3.)

To that end, the purpose of this article is to spark discussion around different ways of implementing telemedicine in inpatient settings to solve many of the challenges that health care faces today.

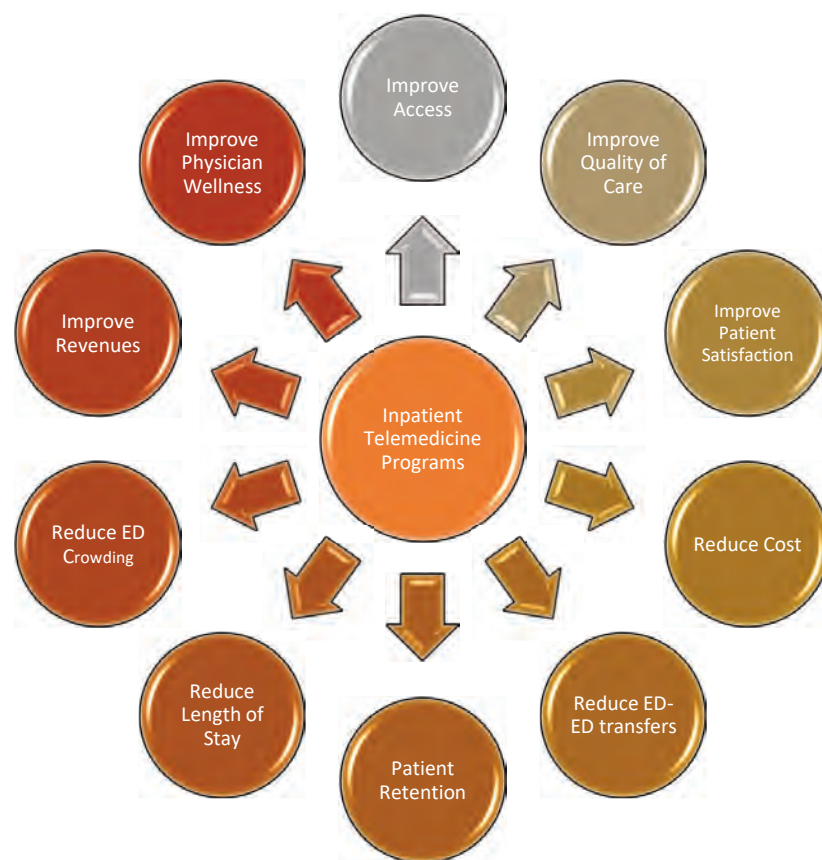


Figure 3: Likely impact of inpatient telemedicine programs on health care industry

Dr. Zia is an internal medicine board-certified physician who has worked as a hospitalist in a medically underserved area. She is a founder of a telemedicine company called Virtual Hospitalist. She has served in various leadership roles including medical director of the department of hospital medicine, medical staff president, and physician adviser. She has a special interest in improving access to health care in physician shortage areas by leveraging technology.

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