Telemedicine Shakes Up the ICU Experience

Ryan Chang; Laura Gerik, MS

HOUSTON METHODIST DEBAKEY HEART & VASCULAR CENTER, HOUSTON, TEXAS

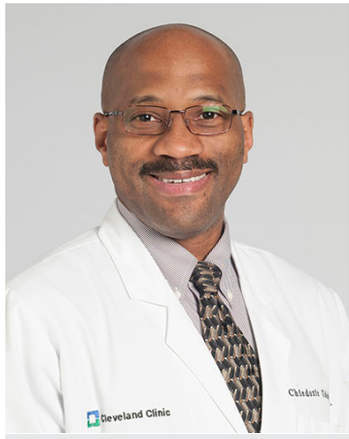
"Excerpta" columns are editorials to supplement reviews in each journal issue with author interviews and a look at the practical aspects of the science reviewed in the Journal. Any opinions stated are the author's own. Quotations reflect the ideas of the persons interviewed and do not represent their respective institutions.

Published online December 10, 2018; Updated June 11, 2021

As the United States population ages, demand for critical care services is rising, and it is unlikely that the supply of ICU intensivists can keep up. Already, ICUs are feeling the strain; in a 2016 Leapfrog survey, only 47% of medical systems met the organization's standard for ICU physician staffing.[1] To address this shortage, some hospitals have introduced tele-ICU, wherein offsite intensivists support or manage patient care using telemedicine, which includes video chat software, real-time patient vitals monitoring, and electronic medical records. Tele-ICU allows intensivists to extend their reach and act as a second set of eyes for far-away patients. However, although studies have shown encouraging patient outcomes related to tele-ICU implementation, including reduced ICU mortality and length of stay,[2] it is less clear how this new management paradigm affects the ICU experience for providers—or whether they will buy into the new system.

IMPROVING INTENSIVIST QUALITY OF LIFE

Proponents of tele-ICU say that the technology has the potential to not just improve patient outcomes, but also quality of life for physicians. Chiedozie Udeh, M.B.B.S., medical director of Cleveland Clinic ICU Operations and eHospital (the Clinic's tele-ICU service) notes that telemedicine may help prevent burnout in intensive care units. In a job characterized by long, irregular hours and frequent high-stakes decisions, intensivists experience the highest levels of burnout across medical specialties (tied with neurologists at 48% according to Medscape's National Physician Burnout & Depression Report 2018).[3] Many telemedicine advocates see tele-ICU as one way to alleviate this stress. With tele-ICU, offsite specialists can process and review pages of data, allowing hospital staff to go home and truly take a break from the job—a rare prospect for an intensivist. In fact, the Cleveland Clinic reported a 60% decrease in overnight calls to on-call intensivists in ICUs participating in the eHospital program within one year of implementation.[2]



Chiedozie Udeh, MBBS

"This allows doctors to actually sleep at home, and not be interrupted every 20 to 30 minutes," Udeh says. "Imagine what that does to their quality of life."

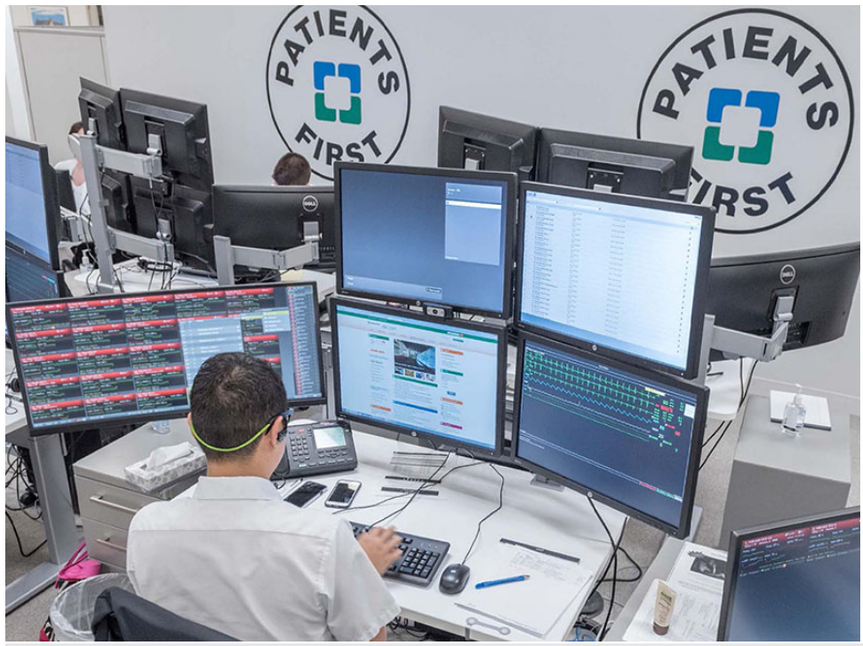
Some U.S. hospitals are leveraging telemedicine technology to creatively eliminate the night shift for tele-physicians. For instance, Emory Healthcare in Georgia uses "complimentary time zones," stationing remote intensivists and ICU nurses in Sydney, Australia. In effect, the intensivists in Atlanta and Sydney always work the day shift, thus reducing the stress and burnout associated with working overnight while still providing 24/7 care.[4]

PHYSICIAN BUY-IN AND OPPOSITION

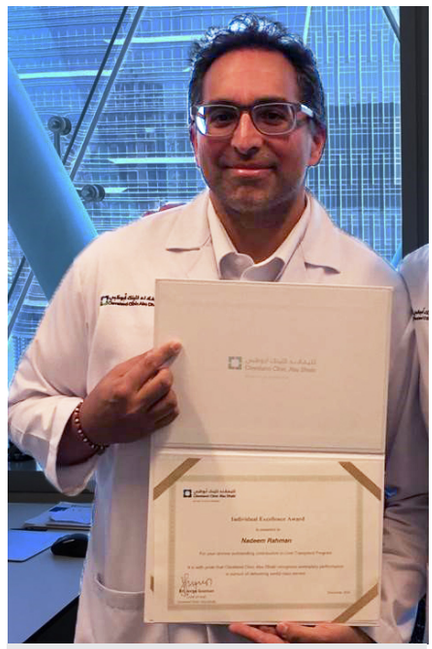
However, not everyone is sold on tele-ICU—and selling ICU staff on new technological systems remains a critical barrier to its implementation and long-term success.[5] The main obstacle to integrating tele-ICU into more hospitals is physician buy-in, says Nadeem Rahman, M.D., critical care specialist and anesthesiologist who is currently the Institute Chairman of Critical Care at Cleveland Clinic Abu Dhabi.

"Clinical acceptance can be challenging due to perceptions of increased workload, continuous monitoring, and potential conflict between bedside providers and the ICU telemedicine staff," he says.

Yet, despite those drawbacks, most studies indicate that staff acceptance for tele-ICU is relatively high—and improves with tele-ICU experience. Positive perceptions seem to depend



Cleveland Clinic eHospital Operations Center



Nadeem Rahman, MD

largely on whether a particular ICU had gaps in coverage in the first place (the idea that understaffed ICUs benefit more from implementing tele-ICU)[6] and how the system is rolled out. Researchers have identified several strategies linked to improved staff experience and acceptance of tele-ICU: (1) perform in-depth needs assessment to define and communicate expectations for how tele-ICU can cover specific gaps in care[5-7]; (2) involve ICU physicians and staff early in tele-ICU planning and implementation[6]; (3) provide clear, standardized guidelines for procedures for both remote and bedside staff[7]; (4) and have remote staff visit in person to humanize the tele-ICU and build meaningful staff relationships.[6,7]

"It's important to build trust between providers and the telemedicine team to gain support at the monitored sites," says Rahman. "This can take some time as tele-ICU programs can initially feel intrusive and foreign. True collaboration in workflow planning, education and implementation may remove some of the barriers to acceptance."

Udeh says that, in the slow-to-change medical world, reframing the tele-ICU concept can help put it in perspective for skeptics. He points out that this model of care is not entirely new; rather, he sees it as an improvement on the old phone and pager system. Before tele-ICU, the night-shift nurse might have to call an intensivist at home, relaying test results over the phone and describing what he couldn't see with his own eyes. Telemedicine cuts out the middleman and puts all the test results and vitals on a computer screen in front of the intensivist, making it easier to parse data and improving rapid response in critical situations.

"We're not claiming that we're better than the doctor at the bedside," Udeh says, "but we're definitely better than the doctor at home waiting for a phone call."

In swapping the telephone for telemedicine, tele-ICU has the potential to address many of the problems faced by critical care services, but its effects on the critical care experience vary, and physician and staff buy-in remains a major obstacle. Administrators need to take staff perceptions into account in when designing and implementing the tele-ICU program. Although current evidence is promising for tele-ICU, further research on provider experiences, buy-in, and the benefits of tele-ICU is currently lacking, and further investigation is needed to better understand the efficacy of the technology and successfully implement telemedicine in intensive care units.

For a deeper look at tele-ICU structures, operations, outcomes, and costs, strategies, read Udeh and Rahman's tele-ICU review in the *Methodist DeBakey Cardiovascular Journal.*

Corresponding Author:
lgerik@houstonmethodist.org

Conflict of Interest Disclosure:
Ryan Chang is an intern at the *Methodist DeBakey Cardiovascular Journal* and Laura Gerik is assistant managing editor.

REFERENCES

1. Intensive Care Unit Physician Staffing. The Leapfrog Group. http://www.leapfroggroup.org/sites/default/files/Files/Castlight-Leapfrog-ICU-Physician-Staffing-Report-2016.pdf. Published July 14, 2016. Accessed November 27, 2018.

2. Udeh C, Udeh B, Rahman N, Canfield C, Campbell J, Hata JS. Telemedicine/Virtual ICU: Where Are We and Where Are We Going? Methodist DeBakey Cardiovasc J. 2018;14(2):126-133.

3. Peckham C. Medscape National Physician Burnout & Depression Report 2018. Medscape Log In. https://www.medscape.com/slideshow/2018-lifestyle-burnout-depression-6009235. Published January 17, 2018. Accessed November 7, 2018.

4. Working day for night using international remote medical care. Emory News Center. http://news.emory.edu/stories/2016/11/hspub_hsupdate_day_for_night/. Published November 16, 2016. Accessed November 7, 2018.

5. Shahpori R, Hebert M, Kushniruk A, Zuege D. Telemedicine in the intensive care unit environment— A survey of the attitudes and perspectives of critical care clinicians. Journal of Critical Care. doi:10.1016/j.jcrc.2010.07.013.

6. Young LB, Chan PS, Cram P. Staff acceptance of tele-ICU coverage: a systematic review. Chest. 2010;139(2):279-288.

7. Moeckli J, Cram P, Cunningham C, Reisinger HS. Staff acceptance of a telemedicine intensive care unit program: a qualitative study. J Crit Care. 2013 Dec;28(6):890–901.