



Critical Care, Critical Choices: The Case for Tele-ICUs in Intensive Care

PROBLEM: HIGH STAKES INTENSIVE CARE

Intensive care units (ICUs) are a vitally important component of health care in U.S. hospitals, treating six million of the sickest and oldest patients every year. The choices about how to manage ICUs carry high stakes: ICUs have both the highest mortality and the highest costs in health care, accounting for 4.1 percent of the nation's \$2.6 trillion in annual health care spending, or nearly \$107 billion per year.

Adding to the complexity of these ICU management decisions is the collision of two strong trends: the increasing number and severity of critical care patients as the U.S. population ages and the decreasing supply of intensivists (physicians who are board certified to practice critical care medicine) available to manage the growing number of ICU patients (see Figure 1).

PROPOSED SOLUTION: THE PROMISE OF TELE-ICU TECHNOLOGIES

Tele-ICU, a telemedicine technology, has the potential to address this critical care staffing shortage by enabling intensivists in one "command center" to remotely monitor, consult and care for ICU patients in multiple and distant locations. By increasing the number of ICU patients that critical care teams can manage, tele-ICUs effectively extend and leverage both the productivity and the reach of the specialists.

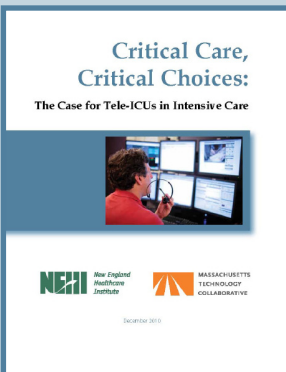
SLOW ADOPTION OF TELE-ICU

Despite the potential of tele-ICUs to provide remote intensivist coverage to critical care patients, the adoption of the technology by hospitals both in Massachusetts and nationally has been slow and uneven (see Figure 2). There are a number of barriers, not only capital and operating costs, but also organization and physician resistance, technical incompatibilities, cross state licensure issues and lack of payment for the tele-ICU services.

It is estimated that it costs from \$6 million to \$8 million in one-time capital costs to set up a command center, acquire and install the tele-ICU systems, and pay the initial salaries for the tele-ICU staff. The one-time capital implementation costs for a satellite hospital to acquire and install the tele-ICU technology range from \$300,000 to \$500,000. These costs may be a challenge for hospitals and health systems that lack significant financial reserves or borrowing capacity for capital.

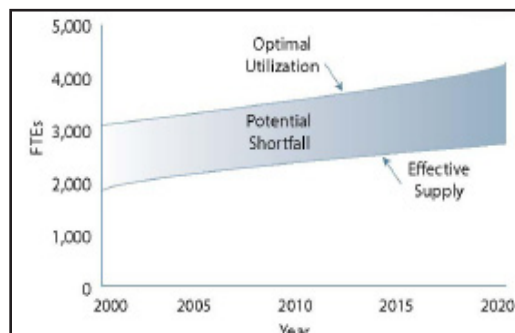
Study in Brief:

Critical Care, Critical Choices: The Case for Tele-ICUs in Intensive Care was published by NEHI and the Massachusetts Technology Collaborative (MTC). The report examines the potential for tele-ICU systems to improve quality of care, reduce mortality and length of stay for patients, and provide substantial reductions in hospital charges for patients in ICUs.



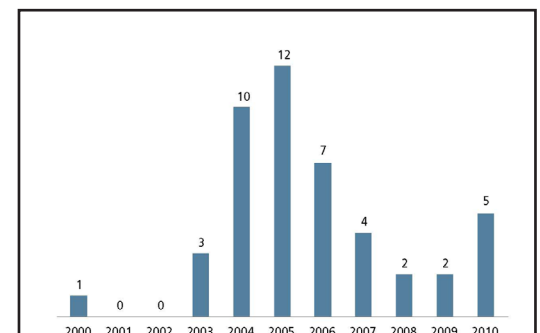
To read the full report, visit www.nehi.net.

Figure 1: The Supply and Demand for Critical Care Physicians



Source: HRSA Report, 2006, "The Critical Care Workforce: A Study of the Supply and Demand for Critical Care Physicians."

Figure 2: Number of ICU Command/Support Installations in the U.S., 2000 to 2010



Source: NEHI, 2010



About NEHI

NEHI is an independent, not-for-profit research and health policy organization dedicated to transforming health care for the benefit of patients and their families. In partnership with members from all across the health care system, NEHI conducts evidence-based research and stimulates policy change to improve the quality and the value of health care.

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About MTC

The Massachusetts Technology Collaborative (MTC) is a public economic development agency that fosters a more favorable environment for the formation, retention, and expansion of technology-related enterprises in Massachusetts. The agency brings together leaders from industry, government, and academia to advance technology-based solutions that improve the healthcare system, expand high-speed Internet access, and strengthen regional economies.

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NEHI, MTC AND UMMM: A TELE-ICU EXPERIMENT

It is against this backdrop that the Massachusetts Technology Collaborative (MTC) and the NEHI determined in 2008 that a rapid demonstration project was warranted to assess the value of tele-ICU technology. The project was a collaboration between MTC and NEHI as part of their Fast Adoption of Significant Technologies (FAST) initiative.

The study collected data on two basic clinical metrics — patient mortality and ICU lengths of stay — from three sites: an academic medical center (the University of Massachusetts Memorial Medical Center or “UMMMC”) and two community hospitals. UMMC provided an ideal site for the demonstration project because it had installed the only tele-ICU command center in the Commonwealth and was extending coverage to the medical center’s seven adult ICUs. MTC and NEHI also partnered with PricewaterhouseCoopers for the analysis of the financial findings.

TELE-ICU: LIVES SAVED, COSTS REDUCED

The report’s findings, published in December 2010, demonstrate that tele-ICU technology has significant clinical and financial benefits. The major findings are:

- **Tele-ICUs save lives.** In the academic medical center, patient ICU mortality decreased by 20 percent and total hospital mortality rates (representing time spent in ICU plus the remainder of the hospital stay) declined by 13 percent. At one of the community hospitals, ICU-adjusted mortality rates decreased 36 percent.
- **Tele-ICUs shorten ICU stays.** Patient ICU stays were reduced by 30 percent or an average of two days in the academic medical center. Community hospital stays were also reduced.
- **Tele-ICUs save money.** Hospitals recovered the up-front investment costs for tele-ICUs in less than one year. Health insurers saved \$2,600 per patient treated in the academic medical center. Tele-ICUs also enabled the community hospitals to care for a substantial portion of patients who would have been transferred to teaching hospitals. Retaining these patients in community hospitals saves the payers approximately \$10,000 per patient.
- **Tele-ICUs enable community hospitals to treat more patients because of improved efficiency.** Both community hospitals were able to care for an average of 50 percent more patients with tele-ICU monitoring. The improved efficiency could mitigate the need for additional, costly ICU beds and allow patients to remain in their community hospitals for care.

Given these clinical and financial benefits, the effective implementation of tele-ICU technology should be seriously considered in hospitals around the country.

“Tele-ICUs can improve the quality and lower the costs of intensive care. Together, these benefits offer a win-win opportunity for patients, hospitals and payers across the country.”

Wendy Everett, ScD
NEHI President