

PHILIPS

Success Story

UMass Memorial



Key findings of the study:

- \$29.8 million annual improvement in direct contribution margin for the centralized tele-ICU
- \$52.7 million annual improvement in direct contribution margin for the centralized tele-ICU co-located with a logistical center
- Initial capital costs of \$7.12 million were recovered in less than three months of operation of the ICU telemedicine program

The Financial Case for Tele-ICU

How UMass Memorial's comprehensive tele-ICU improved care while driving substantial cost savings

Overview

There is little doubt as to the clinical value of tele-ICU, with proven reductions in length of stay and mortality.¹ Nonetheless, the capital costs and annual operating costs have often been considered a barrier to adoption. That mindset is changing, however, with the publication of a first of its kind study in the February 2017 edition of CHEST that shows how tele-ICU can improve case volume, improve contribution margins, and allow for recovery of capital costs within 3 months. The study, entitled "ICU Telemedicine Program Financial Outcomes," is the first to address in-depth the financial outcomes associated with implementing a tele-ICU, and confirms that there is a strong financial case to be made for wider adoption of telemedicine in the ICU.

Study results

Conducted by Craig M. Lilly, MD, director of the eICU program at UMass Memorial Medical Center, the study looked at more than 51,000 patients in seven adult ICUs and across three models of intensive care: traditional ICU care without telemedicine; centralized tele-ICU care; and tele-ICU care with a logistical center to improve ICU bed utilization. UMass Memorial uses the Philips eCareManager enterprise tele-ICU platform to provide remote

critical care services across its hospitals. The eICU program offers centralized, remote surveillance by intensivist-led teams, proprietary algorithms that provide early warnings for proactive care, and a dedicated team to support ongoing clinical transformation.

Researchers found that implementation of an ICU telemedicine program with proven clinical benefits was also associated with significant financial benefits that substantially exceeded the program capital and operating costs. The study demonstrated that:

A centralized tele-ICU:

- Improved case volume by 21% over traditional models
- Improved contribution margin by 376% (\$37.7 million compared to \$7.9 million)

A centralized tele-ICU with added Logistics Center and quality care standardization:

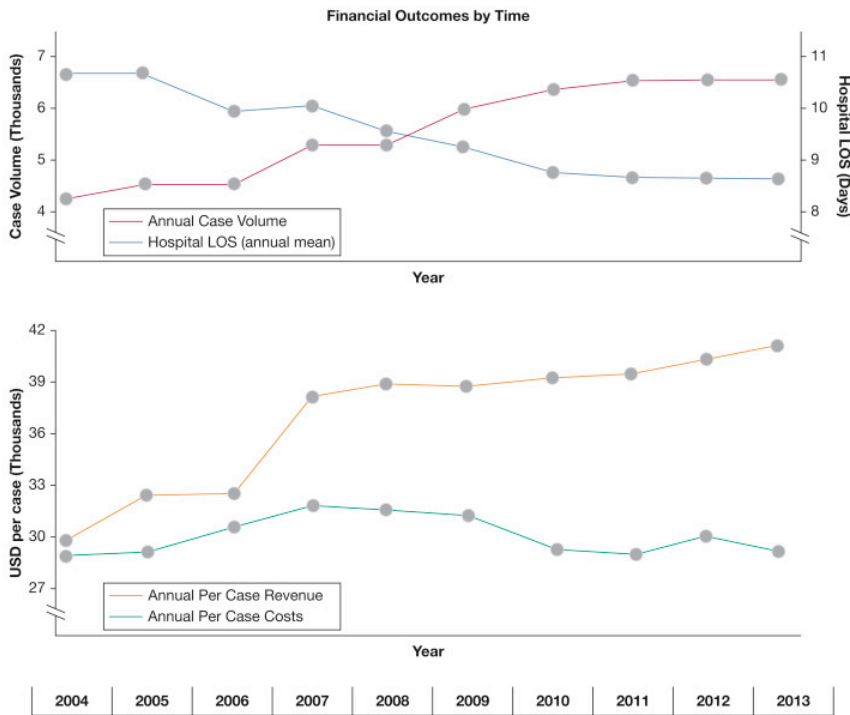
- Improved case volume by 38% over traditional models
- Improved contribution margin by 665% (\$60.6 million compared to \$7.9 million)²

This care delivery model allowed recovery of the \$7.12 million of initial capital costs in less than three months.

1. Lilly CM, Cody S, Zhao H, et al. Hospital Mortality, Length of Stay and Preventable Complications Among Critically Ill Patients Before and After Tele-ICU Reengineering of Critical Care Processes. *JAMA*. 2011; 305(21): 2175-83.

2. Lilly CM, Motzkus C, Rincon T, et al. ICU Telemedicine Program Financial Outcomes. *Chest*. 2017; 151(2): 286-297.

3. Philips. *New Study Demonstrates Improved Patient Flow and Financial Benefits of Philips' eICU Program for Managing Critical Care Population*. 2016. Web. 13 Dec. 2016.



UMass Memorial Health Care is the largest health care system in Central Massachusetts. It includes four hospitals with over 1,100 beds in the system. In 2006, UMass Memorial became the first health system in the state to implement an ICU telemedicine program that today supports adult patients admitted to intensive care units across the UMass Memorial Health Care System and several other Massachusetts hospitals.

Increased case volume allowed the existing ICU beds and staffing to be optimized while facilitating additional throughput of patients. Despite increased costs due to technology adoption and staffing, revenue increased at a greater rate because of the higher case volume and shorter lengths of stay. When the Logistics Center was added, the story became even more compelling. The Logistics Center acts as a gateway for proper patient admission to the right unit and type of care. Patient flow is enhanced by using eCareManager components more broadly to manage patients through greater visibility

and tracking. The centralized organization of resources coupled with eCareManager supported UMass in implementing care quality initiatives across the many ICUs involved in the study more efficiently, and standardized the implementation and management of such best practices uniformly.

Helping hospitals thrive in a value-based environment

What differentiates this study from others is that it presents a model of how an eICU program can integrate population management tools to support patient flow in the hospital. This is especially significant in this

era of value-based care when health systems everywhere are looking for more cost-effective ways to manage their populations. “An ICU bed costs approximately \$2 million to build, and this study demonstrates a significant increase in case volume by better utilizing existing resources,” said Tom Zajac, Chief Executive Office and Business Leader, Population health Management, Philips. “This shift enables care for expanding populations without having to build and staff additional ICU beds, thus helping hospitals thrive in a value-based care environment.”

“The ability of tele-ICU programs to increase case volume and access to high quality critical care while improving margins suggests a strong financial argument for wider adoption of ICU telemedicine by health systems and intensivists,” says Lilly. “It has been well-documented that properly implemented telehealth programs can have a significant impact on patient outcomes, and this study now supports the financial investment behind it.”³

