Telehealth scenario: Tele-intensive care units (Tele-ICUs)

The entity (Grand Plains Community Hospital) referenced in this illustrative case is fictional. Individuals, businesses, events and scenarios referenced are influenced by interviews and review of publicly available literature. Any resemblance to actual individuals, entities or events is purely coincidental.

Overview

Grand Plains Community Hospital, a small rural hospital affiliated with the Grand Plains Health System, is seeking to join a centralized tele-ICU program recently launched by the system’s academic medical center.

The hospital’s 10-bed ICU serves a patient population primarily comprised of low-income, older adults. The hospital faces a shortage of intensivists and ICU nurses and often hires traveling nurses to meet demand. The system’s academic medical center recently started offering a tele-ICU program to regional community hospitals, which would enable ICU staff at Grand Plains Community Hospital to connect via live video to a team of intensivists at Grand Plains University Medical Center who can remotely access patient data, conduct real-time monitoring of patient vital signs, and advise Grand Plains Community Hospital's ICU staff on clinical decision-making and evidence-based care.

Strategic goals

Grand Plains Community Hospital is planning to implement a tele-ICU program to:

- Retain more acute patients by reducing unnecessary transfers.
- Improve ICU patient outcomes.
- Address intensivist staffing shortages.

Program impact on health care value streams
Clinical outcomes, quality and safety

Clinical quality and safety outcomes

**Relevant measures** Mortality rate  
**Impact goals** Reduce mortality among ICU patients by 10%

Access to care

Availability of care

**Relevant measures** Availability of ICU-level care in the community  
**Impact goals** Reduce transfers to tertiary facilities by 35%

Patient, family and caregiver experience

Clinical and/or technology experience

**Relevant measures** Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)  
**Impact goals** Increase HCAHPS by 10%

Clinical experience

**Relevant measures** Reported ease of using technology, obtaining clinical information, consulting with virtual ICU intensivists  
**Impact goals** Aim for greater than 95% of ICU staff reporting comfort using the technology; aim for clinician satisfaction levels greater than 80% with support provided by tele-ICU

Financial and operational impact

Direct revenue, direct expenses

**Relevant measures**  
- Operating margin per ICU admission  
- Malpractice costs  
**Impact goals**
Improve operating margin per ICU admission by 5%
Reduce annual ICU-related malpractice costs by 25%

Health equity
Equity in clinical outcomes, quality and safety

**Relevant measures**  Relative reduction in mortality by race
**Impact goals**  Decrease mortality rates for Black men compared with those of white men by 15%

Health equity
Equity in clinical outcomes, quality and safety

**Relevant measures**  Relative reduction in adverse postoperative outcomes by geography
**Impact goals**  Reduce the geographic gap in postoperative infection rates for rural versus urban residents by 25%

Examples of tele-ICU programs

**Dignity Health:** The Dignity Health Telemedicine Network provides high-speed data lines and InTouch Health wireless remote robots to support physicians to quickly evaluate, diagnose and treat patients in the ICU. The program has been operational since 2014.
**St. Luke’s Health System:** Launched in 2018, the St. Luke’s Virtual Care Center offers tele-ICU services throughout Idaho and Eastern Oregon.
**UMass Memorial Medical Center:** UMass Memorial Medical Center’s tele-ICU program has provided tele-ICU support to all three UMass Memorial Health Care system hospitals since 2007.
**Penn Medicine:** Penn E-lert eICU is an intensive care unit that provides support for critically ill patients located at the Hospital of the University of Pennsylvania, Penn Presbyterian Medical Center and Pennsylvania Hospital.

Relevant literature supporting illustrative impact estimates

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Clinical outcomes, quality and safety

- A 2013 study of 56 ICU units found that ICU mortality dropped by 26% and overall hospital mortality fell by 16%.
- A literature review on tele-ICUs found numerous studies citing higher rates of ICU staff adherence to critical care best practices.

Financial and operational impact

- Studies have found that tele-ICU programs reduce costs by $2,600 to $3,000 per patient.
- At UC Irvine Health, prior to tele-ICU implementation, average annual ICU-related malpractice costs totaled $6 million. After implementation of tele-ICU, annual malpractice costs dropped to less than $.5 million.

Download the scenario (PDF) and read other Return on Health telehealth case studies and scenarios.