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Remote ICU Care in the US

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Remote ICU care programmes have become more prevalent in the US over the past 3 years as hospitals try to leverage clinician expertise and improve quality.

Introduction

There are insufficient numbers of intensivists, critical care nurses and other healthcare professionals to achieve consistent, high quality care for all high acuity patients. Despite data demonstrating improved outcomes with the dedicated intensivist care model, < 15% of US ICUs have this model in place during daytime hours. Moreover, the simple presence of intensivists does not translate into standardized care processes and routine use of best practices. Recognizing that significant restructuring of clinical care represents the only viable approach to achieving quality goals, many health systems across the US have implemented remote ICU care programmes.This caremodel centralizes select elements of ICU care to increase provider efficiency and effectiveness.

Structure

Thirty-two health systems, representing more than 4000 ICU beds, 300 ICUs and 150 hospitals, have elected to establish remote ICU care programmes. The remote care model links ICU beds in multiple hospitals to a centralized care centre. The remote care centre is staffed with intensivists and critical care nurses from the health system implementing the program. The size of the remote team varies with the number of beds in the network.Most sites have a single intensivist and a variable number of critical care nurses (~ 1 for every 30-35 patients). Hours of operation range from 12 per day (nights) to 19-24 per day (ICUs without dedicated intensivists). Most programs include a flagship centre (academic medical centre or major tertiary care facility) and several smaller facilities. Some service a single metropolitan area; others cover large geographic catchment areas.

Technology

The technology infrastructure includes high-resolution, in-room cameras, speakers and microphones, remote bedside monitor viewers, an ICU clinical information system, an automated alerting system and local and wide area networks. This configuration allows the remote team to access all relevant clinical data and interact with on-site providers. It also provides them with tools to manage the population of patients in the ICU network.

Services

ICU clinicians at the remote site work in concert with onsite providers to provide consistent, round-the-clock, quality care. The on-site clinicians are responsible for establishing a comprehensive daily care plan for each patient.The remote team is responsible for ensuring that all goals of the care plan are achieved. This entails frequent review of clinical data (e.g. virtual rounding) and titration of therapies, as needed. The remote team, through regular rounding and automated alerts, is also charged with identifying new problems promptly and initiating timely countermeasures. Many sites have centralized quality improvement activities as well (e.g. ventilator and sepsis bundles).

Operations

Implementation of a remote care program requires significant changes in how ICU care is organized and delivered. In addition to individual practitioners mastering new skills and new technologies, there is often a need for major cultural change. Collaboration and standardization are central to the care model; unfortunately, these concepts are not universally embraced. Even in academic medical centres there are often practice variations among the different sub-specialty ICUs, and crossdepartmental collaboration is uncommon. Sites that have successfully implemented

remote care programmes have recognized the scope of the clinical transformation and allocated the resources to manage the change process. This includes strong executive support, enlistment of key thought leaders, extensive advance education and effective program management.

Outcomes Data

The first remote care program, implemented 5 years ago, reported decreases in mortality, ICU LOS and hospital LOS of 27%, 17%and 13%, respectively (Breslow et al. 2004). The other programmes are < 3 years old, and thus there is a paucity of published data. A recent abstract reported a significant decrease in cardiopulmonary arrests and deaths from cardiopulmonary arrest after program implementation (Shaffer et al. 2005). Another observed a decrease in ventilator days, with the magnitude of the decrease correlated with the degree of autonomy granted to the remote team (Cowboy et al. 2005). Sites that have centralized best practice oversight have reported significant increases in compliance rates.

Conclusion

Remote ICU care programmes are becoming more common in the US, driven by both the shortage of intensivists and other healthcare professionals and the desire of health systems to improve the quality of ICU care across all their facilities. The health systems implementing these programmes are changing how healthcare is delivered and through their efforts are discovering how best to implement these programmes and maximize their effectiveness.

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