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Quality Improvement In Intensive Care Units: ICU Physicians Ideally Positioned to Lead the Way

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Improvements in life-sustaining technologies in the past few decades have resulted in an increase in the number of intensive care units. Critical care is resource intensive, with 25 - 30% of the overall hospital budget allocated for the care of critically ill patients. However, increased financial and human costs, due to a lack of monitoring of processes, can have a detrimental outcome on the service. Improvement in quality of care in the ICUs at a tertiary care centre resulted in an estimated saving of \$2.6 million per year (Clemmer et al.1999). So how is quality improvement destined to improve ICU economics?

Physicians can be skeptical of quality improvement efforts and view them as a non-productive use of their time as well as interfering with their autonomy. However, it is well known that significant variation in the process of care delivery, based on physician training, preferences, and availability of resources causes inefficiencies that can be improved by QI initiatives. These studies provide clear evidence that monitoring and eliminating unexplained variations results in improved performance.

Negative physician opinions can be effectively countered by positive actions such as suggestions from a respected professional colleague/role model, appropriate provision to support development of necessary skills, reinforcement by colleagues, feedback from patients and visible results. Due to the multi-disciplinary nature of their work, intensive care physicians are well positioned to become leaders in quality improvement initiatives.

Measures for Success

The success of QI projects depends on the following measures:

- Identify projects all stakeholders agree on in terms of usefulness;
- clearly define measures and outcomes;
- incorporate data collection into daily work;
- build a team culture;
- ensure measures/projects are valid, reliable, and important to all stakeholders;
- provide leadership and a detailed plan on design/implementation;
- provide costs and a timeline to help obtain leadership buy-in;
- develop the team in necessary areas;
- define processes and outcomes, and follow with an iterative process of implementation, evaluation/analysis; and change the process based on the evaluation (Brock et al. 1998).

The structure of QI projects in the ICU setting depends on the type and size of ICU, nature of staffing (closed vs. open), and availability of technology. Relevant issues for analysis include:

- Communication between staff;

- use of available technology and guidelines; and
- supervision of trainees.

Outcomes include:

- Resource use as indicated by length of stay;
- procedures; and
- mortality.

Although outcome measures, such as length of stay and mortality, are easier to measure, they are influenced by multiple variables and it is difficult to attribute the outcomes to a single intervention. Interventions affecting the structure take longer to implement and are more expensive. So, initially it is easier to target processes of care, modifying them as needed, and measuring the outcomes affected by the process.

Quality Improvement Projects in the ICU

As patients in the ICU are heterogeneous in terms of acuity of the disease, co-morbidities and age, any evaluation of quality needs to consider these varied factors. Use of risk adjustment models such as Acute Physiology And Chronic Health Evaluation (APACHE) or Simplified Applied Physiology Score (SAPS) would adjust for these risk factors and allow comparison of different ICUs in the same hospital or different hospitals. Although not ideal, one could consider using data from a single ICU to evaluate the impact of the QI initiatives over time, if there is no significant change in the structure of the unit and assuming that the risk factors and patient population did not change significantly during the study period. As structural changes are resource intensive and would need a longer time, it would be more efficient initially to identify projects that affect processes.

An important consideration is to develop a concurrent database for quality data collection, since retrospective data collection is labour intensive. There are many evidence-based practices which improve outcomes, and a few examples with process and outcome measures are listed in Table 1. Some of the other QI measures that could be evaluated include family support and end-of-life care; use of low tidal volumes for acute lung injury; early and appropriate enteral nutrition; DVT prophylaxis and stress ulcer prophylaxis.

Conclusion

There can be no doubt that the assessment and improvement of performance will be a growing focus of the public. Physicians have a duty to drive forward informed and quantifiable measures that improve healthcare services. The Institute of Medicine in the US reported that there is a quality chasm in healthcare, and suggested that the delivery of healthcare should be improved so that it is safe, effective, patient-centred, timely, efficient and equitable. Both leadership and staff need to work together to achieve such a healthcare system, and intensivists are ideally suited for the job because of their experience.

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