Sri Lankan Journal of Anaesthesiology **16(2)** : 91 – 93 (2008)

QUALITY ASSURANCE IN CRITICAL CARE

Muhammad Qamarul Hoda*

Professor, Department of Anaesthesia, Aga Khan University, Karachi, Pakistan
**Corresponding author: E-mail : qamar.hoda@aku.edu*

Key words: Critical care; quality measures; system-oriented approach

Critical care, being a unique area, providing specialized health care delivery to critically ill patients, has the greatest potential for medical errors. Bringing quality improvement into the critical care setting and demonstrating satisfactory outcomes present many challenges. According to the landmark report from Institute of Medicine, *To Err Is Human*, ninety eight thousand deaths were due to preventable medical errors. Another report by Juran indicated that only 15% of errors were the result of inadequate individual performance compared to 85% due to flaws in the institutional systems and processes.

This has resulted in the shift of paradigm from the one that concentrates on individual performance, to a systems-oriented approach and have introduced the concept of Total Quality Management (TQM), an organizational approach, based on participation of all and aim for long term benefits not only to the organization but to community.

The essences of quality in health care are the care that is safe, timely, effective, efficient, equitable and patient-centered. Quality improvement process, a multidisciplinary task needs motivation, leadership and continuity. The most important step is to choose "quality measures" which are important, valid, reliable, and responsive to reflect a change and should be interpretable as well as feasible for the institution to implement.

Quality improvement and assurance in critical care is vital and improvement in performance requires a multidisciplinary approach, motivation, change in attitude and culture, strong and effective leadership. The importance of multidisciplinary efforts and change in attitude and culture is the foundation of any quality improvement programme, as this can be a major barrier to any improvement initiative by the individuals or groups who believe they do not need to improve. They may not believe in the process, may feel threatened by it, or may have constructive ideas for how to improve the process that can be uncovered by engaging them. Potential motivators for quality improvement programme include; local expertise and interest, patient specific issues, institutional initiative, and hospital accreditation organizations like Joint Commission on Accreditation of Healthcare Organizations (JCAHO).

According to continuous quality improvement, quality is a process that can be managed and requires ongoing evaluation and change. Shifting the focus from identification and remediation of defective workers, to identifying and reengineering defective structures and processes is necessary, as majority of errors are not caused by individual inadequacies but are due to flaws in the institutional systems and processes.[1,2]

The Plan-Do-Study-Act (PDSA) methodology is the best practical approach to develop a quality improvement programme. This needs commitment, strong leadership and a team work. In the setting of critical care, the ICU Clinical director can play an effective role, as the leader along with other members of the team including risk managers and patient's safety officers. This interdisciplinary team should meet on regular basis to choose "quality measures" followed by its development, implementation, evaluation and sustainability.

The important points to consider before selecting a "quality measure" is its validity, reliability, responsiveness to reflect a change and interpretability, as well as its feasibility for the institution to implement it.[3] Quality measures in critical care areas can be considered as; structural

measures, process measures and outcome measures.[4]

Structural Measures: Number of ICU beds, physical lay out and location of ICU, type of ICU, organizational structure of ICU (open vs closed), ICU staffing, nurse-to-patient ratio, and many others, are among some potential areas for change. To reduce human errors standardization of equipment and technology is essential. Reliance on the open model of ICU is slowly waning and a "closed" ICU run by a multidisciplinary team with dedicated intensivist physicians has shown to reduce cost, improves resource utilization, risk-adjusted length of stay and standardized mortality ratio.[5]

Process Measures are those measures that transform "input" into "output". Among these, most important one is to control and reduce practice variation, by increasing use of evidence-based best practices (EBBPs).

Key quality measures to reduce the practice variation may be the introduction of written protocols, patient specific reminders, prefabricated orders set, care bundles, guidelines and protocols or combination of these interventions. There is growing evidence[6] that protocol implementation associated with education and performance feedback does change clinician behavior and may improve outcome and reduce costs of treatment.[7]

A performance improvement programme using Surviving Sepsis Campaign guideline-based "sepsis bundles" have established a global best practice for the management of critically ill patients with severe sepsis[8]. Similarly Joint Commission on Accreditation of Healthcare Organizations (JCAHO)[9] have also recommended five "Core" measures based on EBBPs; Ventilator Associated Pnuemonia (VAP) prevention: patient positioning, Stress Ulcer prophylaxis, Deep vein Thrombosis (DVT) prophylaxis, and central catheter-associated bloodstream infection for implementation in all healthcare organizations and two additional "test" measures; the risk adjusted ICU length of stay, and Hospital mortality for ICU patients as outcome measures.

Outcome Measures: ICU Quality Improvement Programme require evaluation of programme itself, and should be evaluated through a scientific approach rather than a formal evaluation to see whether the target in the form of "outcome measures" have been achieved or not.

ICU and hospital mortality, readmission within 24-48 hours of ICU discharge, unplanned extubation or re-intubation, length of ICU stay, catheter related blood stream infection, VAP, serious adverse drug reactions, and patient and family satisfaction etc. are highly recommended outcome measures.

Measuring the actual mortality rate can be misleading. Severity adjusted mortality or Standardized Mortality Rate (SMR) can avoid this and may be a better reflection of ICU performance. Similarly, length of stay (LOS) may be influenced by the availability of appropriate high dependency units to discharge patients, local discharge criteria and rates of mortality in any given ICU. LOS, as an appropriate outcome measure is still under consideration as "test measure" by the Joint Commission on Accreditation of Healthcare Organizations.

In summary, every ICU should have a multidisciplinary systems-oriented quality improvement programme supported by hospital and ICU leadership. The patient care paradigm should move away from the attitude of blame to openness, finding the system fault rather than individual, culture of responsible reporting rather than silence and creation of effective communication among care providers.

References:

1. Kohn LT, Corrigan JM, Donaldson MS (Eds): To Err is Human: Building a safer Health system. Washington, DC, National Academy Press, 2000.
2. Juran JM, Godfrey AB. Juran's quality Handbook. 5th ed. New York, NY: McGraw-Hill.1998.
3. Curtis JR, Cook DJ, Wall RJ, et al: Intensive care unit quality improvement: A "how-to" guide for the interdisciplinary team. Crit Care Med 2006; 34:211-218.
4. Donabedian A: Continuity and change in the quest for quality. Clin Perform Qual Health Care 1993;1:9-16
5. Pronovost PJ, Angus DC, Dorman T, et al: Physician staffing patterns and clinical outcomes in critically ill patients: A systematic review. JAMA 2002;288:2151-2162.
6. Kortgen A, Niederprum P, Bauer M: Implementation of an evidence-based "standard operating procedure" and outcome in septic shock. Crit Care Med 2006;34:943-949.

7. Shorr AF, Micek ST, Jackson WL Jr, et al:Economic implications of an evidence-based sepsis protocol: Can we improve outcomes and lower costs? Crit Care Med 2007;35:1257-1262.
8. International Surviving Sepsis Campaign Guidelines Committee. Crit Care Med 2008;36:296-327
9. JCAHO: http://www.jcaho.org/pms/core+measures/index.htm. Accessed October 31, 2005