



College of Intensive Care Medicine of Australia and New Zealand

ABN: 16 134 292 103

QUALITY IMPROVEMENT

1. INTRODUCTION

- 1.1 Clinical Quality Improvement can be defined as "an interdisciplinary process designed to raise the standards of the delivery of preventive, diagnostic, therapeutic and rehabilitative measures, in order to maintain, restore and improve health outcomes of individuals and populations."
- 1.2 The objective of Quality Improvement programs is to ensure that high standards of clinical practice are maintained by individuals, units, and hospitals or institutions through regular assessments using quality indicators. The results of such assessments should be reported to appropriate departmental meetings for evaluation and action as necessary.
- 1.3 All Intensive Care Units should participate in Quality Improvement activities. Smaller units may link their programs with appropriate larger departments.
- 1.4 It is essential that senior ICU staff promote a culture of quality improvement within the ICU, whatever its size and role.
- 1.5 All Intensive Care Units should appoint a Quality Improvement Coordinator, who will be responsible for the implementation and supervision of the Quality Improvement program.
- 1.6 Staff who collect and process the data should have dedicated time allocated for Quality Improvement activities
- 1.7 Wherever possible, the Intensive Care Quality program should be interfaced with, or part of an institution-wide Quality Program.
- 1.8 Quality Improvement programs must evaluate clinical care as being consistent with the available evidence and accepted professional standards, including relevant Documents issued by the College of Intensive Care Medicine.

2. MEASURING QUALITY IN INTENSIVE CARE MEDICINE

The "standard" of care is assessed using quality indicators or measures. These quality indicators assess three different components of clinical care.

- 2.1 *Structure* measures whether the ICU functions according to its operational guidelines and conforms to the policies of the College of Intensive Care Medicine.
- 2.2 *Process* measures the way care is delivered (or not delivered) to patients and families.
- 2.3 *Outcome* measures the results achieved.

Comprehensive ICU Quality Improvement programs will usually address measures in each of these categories. Examples of quality indicators that are useful in intensive care medicine are shown in Appendix 1.

3. THE QUALITY IMPROVEMENT PROCESS

The steps in a Quality Improvement project can be considered as *Planning*, *Implementation*, *Evaluation*, and *Ensuring Sustainability*. In a Quality Improvement program a number of projects are undertaken concurrently or sequentially.

- 3.1 *Planning* involves careful design and preparation of a project, including identification of the indicator to be improved, and development of a method to improve it. It also involves determination of the data to be collected, and the methods employed to collect and analyse data.
- 3.2 *Implementation* involves the introduction of strategies to change behaviour and create the change that will produce improvement.
- 3.3 *Evaluation* involves determination of whether the indicator is changing as a result of the behaviour change using ongoing observation, data collection and interpretation to determine whether it is successful and sustainable ("closing the loop").
- 3.4 *Ensuring Sustainability* involves modification of behaviour to sustain the improvement and incorporation of the improvements achieved into new official regulations, guidelines, or standards. There should be a focus on sustaining clinical leadership and collaboration, and developing support from the hospital administration

An example of a Quality Improvement Project is shown in Appendix 2.

4. QUALITY IMPROVEMENT PROGRAMS

A comprehensive Intensive Care Quality Improvement program consists of a number of different activities.

Activities that assess *structure* might include audit of the number of suction outlets available to each bed or perhaps an audit of staff qualifications.

Activities that assess the *process* of patient care include clinical audit (morbidity and mortality meetings, delayed transfer out of ICU etc), compliance with protocols, guidelines and checklists, and critical incident reporting.

Activities that assess outcomes are calculating risk-adjusted mortality using a scoring system (such as the Acute Physiology and Chronic Health Evaluation II (APACHE II) and calculation of SMR), measurement of rates of adverse events such as central venous catheter associated blood stream infection rate or serious adverse drug event rate and surveys (eg patient or relative satisfaction).

Risk management is a closely related field. In the ICU, risks can be identified from critical incident reports, morbidity and mortality reviews and complaints from staff, patients or family members. Using similar methodology to the Quality Improvement process risks must be identified, assessed and analysed, managed and re-evaluated.

4. **AUDIT OF QUALITY IMPROVEMENT PROGRAMS**

All Units should review their Quality Improvement programs from time to time. Programs should be consistent with the size and capabilities of the Unit. Remedial steps must be taken whenever problems are identified and continued review should follow.

5. **QUALITY IMPROVEMENT COORDINATOR**

- 5.1 The Unit should appoint a Quality Improvement Coordinator. Appropriate time, secretarial, data collection and other support should be allocated to this Coordinator.
- 5.2 The Quality Improvement Coordinator should ensure that these College guidelines are implemented within the limits of the size of the Unit.

Appendix 1 **Examples of Intensive Care Quality of Care Measures**

1. **Structure Measures**

- The size of the ICU
- Whether the ICU is open or closed
- The type and amount of technology available
- The number and roles and responsibilities of ICU staff (as described in IC-1, IC-2, IC-3)
- Clinical work load and case mix
- Levels of supervision

2. **Process Measures**

- Rate of DVT prophylaxis
- Rate of stress ulcer prophylaxis
- Early enteral feeding
- Delayed discharge from ICU
- Appropriate transfusion threshold
- Blood glucose control
- Hand washing

Time to administration of antibiotics
 Low tidal volume ventilation in ALI/ ARDS
 End of Life Management

3. Outcome Measures

Severity-adjusted mortality rate
 Health-related quality of life
 Unplanned readmissions to ICU
 Serious adverse drug event rate
 Ventilator-associated pneumonia rate
 CVC bloodstream infection rate
 Family satisfaction

Appendix 2

1. Planning	
a. Identification of indicator to be improved	High ventilator-associated pneumonia rate
b. Development of method to improve it	Devise Checklist
2. Implementation of method to improve it.	Requirement to tick off the checklist on the morning ward round
3. Evaluation of the indicator	Re-measure ventilator-associated pneumonia rate to determine whether the intervention has improved the outcome.
4. Ensure sustainability	Print checklist on the ICU Chart

These guidelines should be interpreted in conjunction with the following Documents of the College of Intensive Care Medicine:

- IC-1 "Minimum Standards for Intensive Care Units"
- IC-2 "Intensive Care Specialist Practice in Hospitals Accredited for Training in Intensive Care Medicine"
- IC-3 "Guidelines for Intensive Care Units seeking Accreditation of Training in Intensive Care Medicine"

*Promulgated by FICANZCA: 1995
 Reviewed: 2008 (JFICM)
 Republished by CICM: 2009*

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