NHS National Services Scotland

Scottish Intensive Care Society Audit Group

Quality Indicators for Critical Care in Scotland

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Scottish Intensive Care Society Quality Improvement Group

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Introduction

Written by Drs Brian Cook, Andy Longmate and Willis Peel on behalf of the Scottish Intensive Care Society (SICS) Quality Improvement Group (QIG) (See Appendix for members).

The Scottish Intensive Care Society Audit Group (SICSAG) has reported on ICU activity and outcomes since 1995. We have worked with the Scottish critical care community and other NHS bodies to promote patient safety and improve quality and outcomes[1]. Through this process we have developed indices of quality in critical care. The healthcare quality agenda has matured in recent years with the Scottish Patient Safety Programme (SPSP), the NHS QIS Data Advisory Group and publication of the NHS Scotland Healthcare Quality Strategy[2].

The SICS Quality Improvement Group first met in January 2011. This was in response to requests from NHS QIS Data Advisory Group both directly to SICSAG and through the Scottish Standing Committee of the Association of Anaesthetists of Great Britain and Ireland. These requests were for the development of a set of Quality Indicators for Critical Care in Scotland. SICSAG already collects and publishes some quality measures[1]. Similar work has been going on in other UK groups, most notably the Intensive Care Society (ICS) whose Standards, Safety and Quality Committee recently published a set of 20 quality indicators[3]. This followed a long consultation process and literature reviews for supportive evidence. Their document ranks structure, process and outcome quality indicators in order of approval by ICS members. We acknowledge, and are grateful for the groundwork done by this group. This Scottish document borrows heavily from this in content and structure.

NHS quality indicators are defined by being person-centred, safe, effective, efficient, equitable and timely. The indicators we have put forward meet those criteria.

Aims and definitions

The ICS quality indicators are presented as a suite of measurement tools for local implementation. The nature of the Scottish critical care community has always been unified in how we measure quality, and for this reason we diverge from the ICS in recommending a common set of quality indicators (QIs) for all Scottish critical care patients collected by all units. However, this document remains consistent with the ICS principles.

We intend this as a starting point for continued development of these QIs as we gain experience. Many are already published in the SICSAG annual report and this will be developed further with more frequent feedback of data for local improvement.

QIs may be confused with minimum standards and for this reason we make clear distinctions on their definitions.

Minimum Standard: this is a measurement of a structure, process or outcome that is viewed as a non negotiable assurance to patients, public and clinicians alike that certain quality standards are being measured with local endeavours to maintain or improve them.

Quality Indicator (QI): This is a measure of a structure, process or outcome that could be used by local teams to improve care. The reason this is viewed as an indicator (not a minimum standard) is that experience in using this as a measure for driving improvement is less well established, because those areas with interdependent relationships (eg discharges) are more difficult to change or experience and acceptance in Scotland is limited. A QI helps to understand a system, compare it and improve it but they all will have limitations. They can only serve as flags or pointers, which summarise and prompt questions about complex systems of clinical care and they must be understood in that context

We also acknowledge that some quality indicators for intensive care (level 3) patients may not be relevant to high dependency (level 2) patients. Some may be regarded as minimum standards for level 3 units and quality indicators for level 2. Each indicator has these caveats in place as necessary. These should be measurable, realistic, achievable, but for many, stretching.

We present Scottish Critical Care Quality Indicators in 3 groups: structure, process and outcome.

Section 1: Structure

1.1 Units participate in a national comparative audit

All Scottish Critical Care Units (ICUs and HDUs) should participate in, and submit data to, the Scottish Intensive Care Society Audit Group.

Indicator Type: Minimum Standard

Data Collection: WardWatcher and SICSAG.

Rationale: The SICSAG audit is the only national benchmarking structure in Scotland. It is already virtually 100% inclusive of all critical care level 2 and 3 patients. This was recommended as a standard in the Scottish Medical and Scientific Advisory Committee report: HDU beds.[4]

1.2 Daily review and written management plan by an appropriately trained consultant

All patients in ICU or Combined ICU/HDU are seen every day by a consultant who has regular weekday commitments to intensive care. This consultant will ensure there is a written management plan each day.

All patients in HDU are seen every day by an appropriately trained consultant. This may be a critical care consultant or another medical or surgical specialty depending on the service model for a particular unit. This consultant will ensure there is a written management plan each day.

Indicator Type: Quality Indicator

Denominator: 365 days per year

Numerator: Days per year consultant rotas provide an appropriate consultant.

Data Collection: Annually by SICSAG

Rationale: We recognise that continuity of care and setting management goals are important. This reinforces the setting of daily goals driven by SPSP and is consistent with ICS recommendations which recognise the importance of staffing patterns on outcome. Some evidence exists mainly from the USA where extremes of staffing models show that “closed” ICU’s have better outcomes.[5]

1.3 Healthcare Associated Infection (HAI) surveillance system

ICU and HDUs have an HAI surveillance system in place which reports incidence of important infections on a monthly basis to unit staff and SPSP.

ICUs and Combined ICU/HDUs report Ventilator Associated Pneumonia (VAP) and Catheter Related Bloodstream Infection (CRBSI) incidences.

HDUs report Catheter Related Bloodstream Infection (CRBSI) incidence.

Indicator Type:

(a) ICU and Combined ICU/HDU: Minimum Standard

(b) HDU: Quality Indicator

Data Collection: ECDC (previously known as HELICS) defined VAP and CRBSI incidences collected.

Rationale: These HAI's are important, measurable and with an effective quality improvement programme can be reduced. The SPSP and SICSAG have introduced these nationally in conjunction with care bundles to reduce infection rates since 2008. This is consistent with the ICS recommendations.

Section 2: Process

2.1 Night time discharges from critical care

All Scottish ICUs and HDUs should participate in, and submit data to, the Scottish Intensive Care Society Audit Group to measure night time discharges. The aim is to encourage and support local improvement to reduce night time critical care discharges.

Indicator Type: Quality Indicator

Denominator: All live unit discharges

Numerator: Discharges between 20.01 and 07.59 hours

Data Collection: WardWatcher and SICSAG.

Rationale: Night time discharges from intensive care units are associated with worse outcomes.[6,7] Discharge from critical care to a ward is most safely performed during the day when parent ward teams are still accessible and before transfer of care to a "Hospital at Night" team. Night time discharges are forced early discharges to accommodate another patient or delayed from earlier in the day due to inadequate ward beds. They may be poorly planned and/or communicated.

NICE Guideline 50: Acutely Ill Patients in Hospital 2007 recommended that this should be avoided.[8]

A pragmatic definition in keeping with the existing data collection is discharge between 20.01hrs and 07.59hrs creating a measurable numerator along with a denominator of total discharges per unit of time. This also fits with the majority of Scottish hospitals' staff handover time to night shift.

2.2 Care bundles are in place: (a) Ventilator Associated Pneumonia (VAP) prevention, (b) Central Venous Catheter (CVC) insertion and maintenance, (c) Peripheral Venous Cannula (PVC) insertion and maintenance

All ICUs and HDUs should measure and submit data to SPSP and feedback to unit staff on delivery of VAP prevention bundle [9,10,11] (ICU or Combined ICU/ HDU only), CVC insertion and maintenance bundle [12] and PVC insertion and maintenance bundle.

Indicator Type: Minimum Standard

Data Collection: Agree and define local bundle and exclusion criteria and measure against this using all or none methodology [13]. Data collection verified by SICSAG annually.

Rationale: Reducing unwanted variation for these processes improves outcomes and is supported by international and Scottish studies for VAP [14, 15] and CRBSI [16, 17, 18]

2.3 End of Life Care

All ICUs and HDUs have a written end of life care policy. The two important elements are to ensure that patients are both identified and then cared for appropriately.

Indicator Type: Quality Indicator

Data Collection: Annually by SICSAG, of evidence for processes to identify and care for patients in critical care who are dying or would benefit from palliation rather than curative intent.

Rationale: Seven domains for providing quality end-of-life care in the intensive care unit have been described [19]; these are: a) patient- and family-centered decision making; b) communication; c) continuity of care; d) emotional and practical support; e) symptom management and comfort care; f) spiritual support and g) emotional and organizational support for intensive care unit clinicians.

The Department of Health has defined quality markers for the end of life as part of its National End of Life Care Programme [20].

Known examples are, the Liverpool Care Pathway (LCP) or equivalent, checklist for the dying patient, use of a local process or checklist to define escalation or palliative intent.

Section 3: Outcomes

3.1 Standardised mortality ratio (SMR)

Definition: The SMR is the ratio between the observed (O) and the expected (E) hospital mortality rates. It is calculated for critical care patients after case mix and illness severity adjustment using a statistical model eg APACHE II. If the O/E ratio (SMR) is less than 1 then the performance is considered better than expected. Comparisons between units can be used to identify outliers which are reported and published by SICSAG annually.[1]

Indicator type: Quality Indicator

Data Collection: WardWatcher and SICSAG

Rationale: Mortality for patients with similar illnesses of similar severity should be broadly comparable between units.

Not applicable to HDUs as the statistical models are not validated in this population and the diverse nature of the case mix in these units in Scotland renders any mortality outcome comparison uninterpretable.

Not applicable to Cardiothoracic ICU as APACHE II excludes patients following coronary artery bypass grafts, which is a large proportion of their admissions.

3.2 Early discharges from critical care

Early discharges from critical care may be a marker of insufficient resource. This has been reported by SICSAG in annual reports for some years.

Indicator type: Quality indicator

Denominator: All live unit discharges

Numerator: All patients being assessed as having been discharged early by the discharging clinical team member.

Data collection: WardWatcher and SICSAG.

Rationale: Early discharge from Critical Care is by definition unplanned, and usually forced by the need to admit another acutely ill patient. Patients who are judged as being discharged early from critical care units may not receive care at an appropriate level on ward areas. As a result their condition may deteriorate resulting in adverse outcomes.

3.3 All unit deaths are discussed at a Morbidity and Mortality meeting

Every unit should discuss in open forum significant critical incidents and the care of all patients who die in a critical care ward.

Indicator type: Minimum standard

Data Collection: Annually by SICSAG through return of questionnaire.

Rationale: Reviewing adverse events and the care of patients that have died is good reflective practice. The objectives are to learn from complications and errors, to modify behavior and judgment based on previous experiences, and to prevent repetition of errors leading to complications. When deficiencies in care are recognised this can lead to measurable change.

3.4 Units should undertake regular patient/family experience surveys

Critical Care units should undertake patient/relative experience surveys on an annual (or more frequent) basis.

Indicator type: Quality indicator

Data Collection: Unit based questionnaire checked annually by SICSAG

Rationale: Family members appreciate timely and honest information, even if it is upsetting. By feeling the staffs' empathy and receiving clear and intelligible information, the family members feel that their emotional needs are met. Assessing and analysing family experience in the ICU ultimately will support healthcare professionals in their continuing effort to improve care of critically ill patients and their families.[21]

Summary

These proposed indicators and standards are the beginning. As this process evolves, we envisage it will help to improve the well being of critical care patients in Scotland.

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Appendix

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