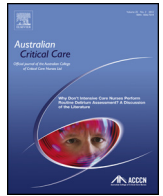




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# Clinical audits to improve critical care: Part 1 Prepare and collect data

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### ABSTRACT

Clinical audits are used to examine current practice, compare this with established best practice and implementing change, to ensure patients receive the most effective treatment. They are successful in improving the quality and safety of care provided, and thereby clinical outcomes. Clinical audits are ubiquitous throughout critical care practice, but without the necessary focus, engagement, preparation, method, evaluation and communication, they may be a waste of resources.

This article is the first of a two-paper series regarding audits in critical care. The article provides an overview of the structures and processes needed to prepare and collect data for clinical audits, to make them as effective as possible to improve patient outcomes. This is accomplished through a practical step-by-step guide, including links to valuable resources, which are relevant to all critical care clinicians planning on undertaking clinical audits.

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## 1. Introduction

For decades clinical audits have been integrated into local, national and international healthcare systems as a means to ensure that patients receive the most effective, up-to-date and appropriate treatment.<sup>1</sup> Clinical audits fit within the quality improvement domain, and involve measuring performance and comparing this with established best practice.<sup>2–4</sup> Aspects of clinical care are selected and systematically evaluated against explicit, defined criteria.<sup>5</sup> The purpose of clinical audits is to identify areas needing improvement, thereby directing the implementation of education, research and quality improvement strategies to improve patient care and outcomes. Clinical audits need to be undertaken within a continuous, cyclical framework, such as the Deming Cycle<sup>6</sup> (plan, do, study, act). Following the initial audit cycle, data associated

with the pre-defined criteria are collected again to evaluate the success of interventions aimed at improving care, and to inform future innovations.

Clinical audits in Australia are recommended by the Australian Commission on Safety and Quality in Healthcare,<sup>7</sup> where they fit within the priority designed to promote safe, high-quality health care driven by information. Internationally, the majority of health-care institutions recommend, and government agencies instruct, that clinical audits are performed regularly.<sup>7</sup> However, clinical audits are not consistently effective in improving practice quality and patient outcomes.

In a Cochrane systematic review<sup>8</sup> it was the extent to which clinical audits lead to small but important improvements in professional practice was demonstrated. However, the effectiveness of the audit depends upon baseline performance, the personnel undertaking the audit, the frequency the audit is repeated, and the feedback method.<sup>8</sup> Other authors have highlighted the importance of data quality; i.e., the accuracy, completeness, relevance, reliability, timeliness, and validity or making sure the data are 'fit for purpose'.<sup>9,10</sup> The methods used to conduct and communicate clin-

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**Table 1**  
Organisations providing resources on-line to support the undertaking of clinical audits of critical care practice.

Australian Commission on Safety and Quality in Healthcare <a href="http://www.safetyandquality.gov.au/national-priorities/australian-safety-and-quality-framework-for-health-care/">http://www.safetyandquality.gov.au/national-priorities/australian-safety-and-quality-framework-for-health-care/</a> iSixSigma <sup>®</sup> <a href="http://www.isixsigma.com/tools-templates/control-charts/a-guide-to-control-charts/">http://www.isixsigma.com/tools-templates/control-charts/a-guide-to-control-charts/</a>
National Health and Medical Research Council Guidelines (Australian Government) <a href="http://www.nhmrc.gov.au/guidelines-publications">http://www.nhmrc.gov.au/guidelines-publications</a>
National Institute for Health and Clinical Excellence (United Kingdom) <a href="http://www.nice.org.uk/">http://www.nice.org.uk/</a>
Scottish Intercollegiate Guidelines Network <a href="http://www.sign.ac.uk">http://www.sign.ac.uk</a>
United Kingdom Healthcare Quality Improvement Partnership <a href="http://www.hqip.org.uk/public/cms/253/625/19/191/HQIP-Guide-to-Ensuring-Data-Quality-in-CA-Reviewed%202011.pdf?realName=Zmh8bl.pdf">http://www.hqip.org.uk/public/cms/253/625/19/191/HQIP-Guide-to-Ensuring-Data-Quality-in-CA-Reviewed%202011.pdf?realName=Zmh8bl.pdf</a>
United Kingdom National Health Service: Institute for Innovation and Improvement <a href="http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/statistical_process_control.html">http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/statistical_process_control.html</a>
United Kingdom National Health Service: Clinical Governance Support Team <a href="https://www.bsuh.nhs.uk/EasySiteWeb/GatewayLink.aspx?allid=424764">https://www.bsuh.nhs.uk/EasySiteWeb/GatewayLink.aspx?allid=424764</a>

ical audits influences the way in which the data can be used to influence the clinical practice improvement cycle.<sup>3</sup>

Critical care is a unique, interdisciplinary, high-intensity, and high-risk healthcare environment. Adverse events and serious errors are common because of patient and environmental complexity,<sup>11–13</sup> and are estimated to cost \$853,000 USD per Intensive Care Unit (ICU) annually.<sup>13</sup> Many of these adverse events and errors are considered preventable, with the consistent, timely application of evidence-based practice.<sup>14,15</sup> Clinical audits, as a quality improvement initiative, are frequently used in critical care to promote the application of evidence-based practice.<sup>16</sup> However, if incorrectly developed, clinical audit programmes can be ineffectual and a waste of resources.<sup>17</sup>

This is Part One of a two-paper series regarding clinical audits in critical care. The aim of this article is to provide an overview of the skills and resources needed to prepare and undertake clinical audits, to make them as effective as possible to improve patient outcomes. It will provide a step-by-step guide to:

- 1) Identify appropriate audit topics;
- 2) Engage relevant stakeholders;
- 3) Develop appropriate methods and audit criteria;
- 4) Determine effective sample sizes;
- 5) Develop reliable data collection tools; and
- 6) Establish consistent data collection procedures.

Part Two of the series will complete the guide to comprehensive clinical audits in critical care, across the remaining stages of data analyses, benchmarking, improvement implementation and re-auditing.

Throughout this article, resources from leading healthcare institutions are referenced to facilitate effective clinical audit development (see Table 1). Specifically, the United Kingdom (UK) National Health Service (NHS) Clinical Governance Support Team has developed simple criteria to ensure quality clinical audit structures and processes, which are relevant at a local level (see Table 2). These criteria form the basis for this step-by-step guide.

## 2. Step One: Identification of clinical audit topics

Prior to undertaking an audit there should be a clear understanding of why the audit is planned and necessary.<sup>10</sup> Audits are most effective in areas where current practice and/or healthcare

**Table 2**  
“The Top Dozen Criteria for “Good Local Clinical Audit” by Copeland (2005) p.16.

1.	Should be part of a structured programme
2.	Topics chosen should in the main be high risk, high volume or high cost, or reflect national health priorities
3.	Service users should be part of the clinical audit process
4.	Should be multidisciplinary in nature
5.	Clinical audit should include assessment of process and outcome of care
6.	Standards should be derived from good quality guidelines
7.	The sample size chosen should be adequate to produce credible results
8.	Managers should be actively involved in audit and, in particular, in the development of action plans from audit enquiry
9.	Action plans should address the local barriers to change and identify those responsible for service improvement
10.	Re-audit should be applied to ascertain whether improvements in care have been implemented as a result of clinical audit
11.	Systems, structures and specific mechanisms should be made available to monitor service improvements once the audit cycle has been completed
12.	Each audit should have a local lead

outcomes are poor.<sup>8</sup> The balance is to ensure that the audit topic is in accordance with international and national priorities, as well as targeting local areas of clinical priority and interest.<sup>5</sup> For example, while the reduction of ventilator-associated pneumonia in critical care has been identified as an international health priority by many institutions, it may not be an area of local need if current rates are very low. An interdisciplinary approach to assessing audit priority areas should include assessment of whether the practice is high volume, high risk, high profile or high cost.<sup>5</sup> If these criteria are met, it will ensure high levels of interest by institutional management, clinicians, patients and family members.<sup>5</sup>

## 3. Step Two: Engagement of stakeholders

Identifying the area requiring improvement in the local critical care unit should be a collaborative process with engagement by local stakeholders, including interdisciplinary clinicians, patient and family representatives, safety and quality experts, and institutional management.<sup>18</sup> Early engagement with local stakeholders will show benefits throughout the auditing process, safeguarding relevance and effectiveness.<sup>10</sup> These stakeholders should be involved in all stages of the clinical audit, including the audit preparation, tool development, data collection, result dissemination and practice improvement planning.

It is also important to clearly identify a leader who is responsible for driving the clinical audit programme, to ensure overall programme integrity and timeliness.<sup>5</sup> This clinical audit leader should have leadership skills including collaboration, emotional intelligence, advocacy, organisation, communication and mentorship,<sup>19,20</sup> as well as a high profile within the organisation, in order to champion and link with organisational resources.<sup>5</sup>

## 4. Step Three: Audit method and criteria

The types of information collected in clinical audits that lead to systematic improvements are based upon the Donabedian Model.<sup>21</sup> The Donabedian Model states information about quality of care can be derived from three categories: structure, process, and outcomes. For example, if the critical care unit leadership team is concerned about the incidence of catheter-related bloodstream infections, it is possible to audit the:

- Structure: clinical equipment available to support practice, such as the type of skin antisepsis and sterile drapes;
- Process: the skin decontamination and catheter insertion procedures; or the

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