



# Accreditation standards and operating room efficiency: achieving a balance

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*Comment on:* Inomata T, Mizuno J, Iwagami M, *et al.* The impact of Joint Commission International accreditation on time periods in the operating room: A retrospective observational study. *PLoS One* 2018;13:e0204301.

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Inomata *et al.* set out to evaluate the influence of Joint Commission International (JCI) accreditation on specified time periods in the operating room relating to elective and emergency surgery under general anaesthesia at a busy acute hospital (>10,000 surgical cases/year) before and after December 12, 2015 (the date the hospital received JCI accreditation) (1). The period studied was December 2014–June 2016, during which 13,228 patients underwent surgery under general anaesthesia. Overall surgery/procedure time for patients matched for age, gender and type of surgery were similar before and after the date of accreditation, although pre-anaesthesia time was greater and anaesthesia induction time less after accreditation. The authors concluded, “*Quality improvement initiatives associated with time periods in the operating room can be achieved without undermining efficiency.*”

The study addresses an important question that is relevant not just to surgery but to healthcare in general and does so in a substantial and timely manner. Concerns regarding hospital accreditation expressed by clinicians and administrators (in our experience) generally take three forms:

- (I) the resources consumed in acquiring and maintaining accreditation could be better deployed in delivering care;
- (II) the benefits which arise from accreditation may be offset by a loss of efficiency, which in turn carries health and economic costs;
- (III) measurable benefits of meeting accreditation criteria may be artefactual, referring to “process” rather than to meaningful patient outcome.

The mission statement of JCI is “*to improve the safety and quality of care in the international community through the provision of education, publications, consultation, and evaluation services*” (2). Other reported benefits of healthcare accreditation include increased team work and internal cohesion, motivation to standardize clinical and administrative procedures, integration and revision of quality agenda, development of internal self-assessment, learning from experiences of reviewers, improvements in hospitals image, and in consumer, purchaser and staff satisfaction (3). Several detrimental effects of accreditation have also been proposed, such as deviation of the hospital mission and resources away from patient care, increased workload on staff leading to inefficiency, increased staff anxiety and stress levels relating to reviews, discouragement from failure to improve functionality scores pre accreditation and a lack of innovation due to system preference for accreditation standard methods (4). There are also conflicting reports regarding the impact of accreditation on cost with some reporting overall cost saving, while others report diversion of hospital finances away from patient care towards acquiring and maintaining accreditation (5,6).

The International Society for Quality in Health Care defines accreditation as “*A self-assessment and external peer review process used by health and social care organisations to accurately assess their level of performance in relation to established standards and to implement ways to continuously improve the health or social care system*” (7). The concept of hospital accreditation was proposed approximately 100 years ago by Ernst Codman and the American College

of Surgeons, who identified the need to improve hospital conditions and to track patients in order to verify that their care had been effective (8). Since then the number of accreditation systems has expanded rapidly and is now an essential part of healthcare systems in more than 70 countries (9).

Accreditation usually involves a voluntary program in which trained external peer re-viewers evaluate a healthcare organisation's compliance with pre-established performance standards (10). JCI is a division of Joint Commission Resources, a not-for-profit affiliate of The Joint Commission (<https://www.jointcommission.org/>). JCI was established in 1994 to provide leadership in healthcare accreditation and quality improvement for organisations outside the United States (11); today JCI operates in five continents and accredits more than 600 hospital programs (12). Achieving JCI accreditation is typically a ten-step process, which takes on average 18–24 months to complete (13). Accredited organisations undergo re-assessments on a 2–3 yearly basis to retain their status.

Despite widespread uptake of accreditation programs internationally, the means by which accreditation programs impact quality and outcomes is poorly understood (14). Systematic reviews demonstrate the lack of high-quality evidence linking hospital accreditation to measurable changes in quality of care, as measured by quality metrics and standards (15,16). A recently published retrospective observational study investigated if patients admitted to accredited hospitals have better outcomes compared to those admitted to hospitals reviewed through state survey agencies (17). In this US cohort of over four million patients admitted between 2014 and 2017, treatment in a hospital accredited by an independent organisation was not associated with lower mortality (10.2% *vs.* 10.6%). However, a response from The Joint Commission questions the methodology of the study and highlights that, given the large number of patients, the difference in reported mortality could potentially represent 12,000 fewer patient deaths (18).

The study by Inomata *et al.* is a useful addition to the growing literature on the impact of healthcare accreditation (16). This study has a number of positive attributes. The setting of a large university hospital with a busy surgical service is ideal for investigation of the impact of accreditation on operating room efficiency. The large sample size ( $n=13,288$ ) which included all patients that presented for surgery under general anaesthesia during the study period decreases the likelihood of Type I or II

error. Data collection appears to have been precise and comprehensive enabling accurate calculation of peri-procedural time periods. The matching of patients for age, sex and type of surgery allowing the direct comparison of 3,222 patients, pre and post JCI accreditation, mitigated certain confounding. Subgroup analysis was focused on three procedures, total hip replacement, total knee replacement and laparoscopic cholecystectomy, each of which is commonly performed around the world, and from which other institutions may usefully extrapolate to their settings.

There are several limitations to the Inomata *et al.* study. The study was conducted at a single site, which limits its external validity. As the authors acknowledge, the periods compared were contiguous; certain policies and standards were implemented during the pre-accreditation period, creating an attribution error, which has not been quantified. Only patients undergoing general anaesthesia were included which may limit the generalisability of the study, specifically for other institutions in which neuraxial and regional anaesthetic techniques are performed. Inclusion of ASA classification in the patient characteristics matched, may have offered greater insight into changes in clinical decision-making and practice resulting from accreditation. The study design created an opportunity to examine more patient centered outcomes in tandem with the periods studied. It would also enable readers to interpret the results more completely if some reference had been made to factors known to influence operating room efficiency (such as the role of a preoperative assessment clinic, and participation of trainees in care delivery). Likewise, the reader would benefit from some information on the magnitude of change in pre-existing “standard operating procedures” or routine which was necessary in order to achieve compliance with JCI standards.

The magnitude of the changes observed in pre anaesthesia time (difference in means of 0.3 minutes or 18 seconds) and the anaesthesia induction time (difference of means of 0.8 minutes or 48 seconds) are small. These small changes are consistent with the authors' overall conclusion that the implementation of JCI accreditation is compatible with maintaining operating room efficiency.

In conclusion, the Inomata article is a useful addition to the healthcare accreditation literature, in that it addresses an important question in a thorough and scientifically rigorous way. However, its findings should be viewed in the context of certain limitations, which its authors and we have identified. The authors have demonstrated that

a thorough hospital accreditation process can take place without necessarily prolonging operating room surgical times. Future research is required before such a conclusion can be justified in other clinical care settings and at other institutions. Such work might also address the role of clinician engagement or “buy in”, changes in compliance over the accreditation cycle and concurrent changes in operating room efficiency and patient outcomes.

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