

ORIGINAL ARTICLE

Cardiac surgery benchmarking: a quality improvement initiative

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ABSTRACT

Background: Benchmarking programs help in reviewing and validating clinical practice and improves quality of care

Methodology: Fifteen accredited hospitals participated in International cardiac surgery benchmarking (ICSB) project from eight different countries including ours, Aga Khan University Hospital, a “clinical data coordinator” was trained to facilitate data collection, verification and eventual submission. The data was collected prospectively for preoperative characteristics, intraoperative variables and postoperative outcomes. Onsite data validation was also performed by a JCI representative for the accuracy of data. Data analyzed and reported on six quarters starting from October, 2009 to March, 2011.

Results: A total of 4761 isolated CABG including 474 from our hospital entered into ICSB. The postoperative complication rate for ICSB and our hospital were calculated showing a higher rate of reopening (2.5 vs. 1.7%), higher postop renal dysfunction (5% vs. 1%) and a higher RBC transfusion (61vs 36%) but the incidence of stroke, myocardial infarction and deep sternal wound infection were low at our hospital. Risk factors that predict surgical death for CABG in this model are very similar to those used in New York state hospitals. The overall risk adjusted 30-day mortality was 3.4% at our hospital compared to 1.9% for ICSB.

Conclusion: By benchmarking program our practice and data collection methodology has been reviewed and validated. Feedback will serve as regulatory function leading towards self-assessments to improve quality of care.

Key words: Quality; Benchmark; Cardiac Surgery; Database

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INTRODUCTION

Benchmarking projects play major role in setting standards for others to follow as a quality initiative.¹ Along with benchmarking an important element towards improvement of healthcare quality is a concept of external evaluation and accreditation of health sector on specific standards.² Research into health sector accreditation revealed the usefulness of accreditation, its positive impact and also identified several accrediting organisations.³ The Joint Commission International (JCI) is one of such organisation. International cardiac surgery

benchmarking (ICSB) project was launched by the JCI for accredited hospitals performing high volume of cardiac surgical procedures like coronary artery bypass grafting (CABG). The objectives of participation were to review our practice and data collection tool in view of this project, to assist and support in improving the quality of care and outcomes of cardiac surgical patients.

Our hospital was able to participate by virtue of it being the only hospital accredited with JCI in Pakistan and has large volumes of cardiac surgical procedures required to be part of this project. This

cardiac surgery benchmarking

project was designed to provide an opportunity to the participating hospitals to improve preoperative risks assessment and postoperative outcomes.

METHODOLOGY

A total of fifteen hospitals participated from eight different countries including our hospitals. Criteria for selection included completing online survey regarding ICSB project, the organisation was required to have participated in JCI accreditation program for certification and lastly the JCI hospitals that were performing high volume CABG and valve related procedures. Each hospital was required to assign a "clinical data coordinator" who is meant to be knowledgeable in cardiac surgery to lead this project. A training session was conducted for clinical data coordinators from the participating hospitals to become acquainted with the New York State Department of Health (NYSDOH) program, gain understanding of ICSB project and be able to explain its expected uses and benefits and acquire knowledge of data elements to be collected for ICSB. This facilitated data entry, verification and eventual submission to JCI platform for analysis and reporting using their data collecting tool. The data was collected prospectively including patients preoperative characteristics, intraoperative variables and postoperative outcomes. The intraoperative steps of surgical strategies are described elsewhere.⁴⁾ Further clarification continued during the project through emails, webinars and telephonic communications. Participating Hospitals were also invited to share the experience of project in an "executive briefing" organised by JCI and issues related to the projects discussed and resolved. An onsite data validation was also performed by a JCI representative for the accuracy of data and was found in accordance with the recommendations.

RESULTS

Data analysis was performed and reported on six quarters starting from October 1, 2009 to March 31, 2011. The results of our hospital were then compared to other hospitals in the project. The project was successfully completed with participation of fifteen hospitals from eight different countries. A total of 4761 cases of isolated CABG including 474 from our hospital entered into ICSB. This data included CABG procedures performed irrespective of the priority of surgery. The prevalence of demography and preoperative characteristics were recorded. The postoperative

complication rate for ICSB and our hospital were calculated showing a higher rate of reopening (2.5% vs. 1.7%) at our hospital. Similarly the postop renal dysfunction (5% vs. 1%) was observed to be more and a higher RBC transfusion rate (61% vs 36%) at our hospital compared to the ICSB. However, the incidence of stroke, myocardial infarction and deep sternal wound infection were found to be low at our hospital. Risk factors that predict surgical death for CABG in this model are very similar to those used in New York State Hospitals. The overall risk adjusted 30-day mortality was 3.4% at our hospital compared to 1.9% for ICSB.

DISCUSSION

In the current era the concept of quality assurance and improvement have gained immense popularity. This has led to external evaluation and accreditation as a major consideration in health care practice. The International Organization for Standardization provides standards that can be applied in health care against which organisations or functions may be certificated or accredited. The hospitals and related institutions get certified by International Standard Organisation (ISO) or accredited by organisations like the Joint Commission International (JCI) that do so on certain standards of health services.⁵ These standards of health care practice are set by health care professionals associated with these accrediting organisations. The standards are revisited regularly and revised continuously.

Along with other quality initiatives JCI launched an international cardiac surgery benchmarking ICSB project for accredited hospitals performing large volume of cardiac surgeries annually. The ICSB was modelled after the New York State Cardiac Surgery Reporting System (CSRS), the first and longest running program in the United States that provides data on risk adjusted mortality to doctors, hospitals and the public. This quality improvement program brought a significant change in outcomes after coronary artery bypass grafting and a decrease of 41% was observed in the mortality rate.⁶ One of the most important prerequisite of quality journey is to have an adequate registration of data, which is in fact essential for a major procedure like CABG, performed in a standardised fashion all over the world and hence needs regular monitoring of outcomes.⁸ The Society of Thoracic Surgeons National Adult Cardiac Surgery Database (STS NCD) is the largest and most comprehensive single-specialty clinical database in health care providing risk adjusted outcomes to the participating members

and has enormous information that can be used to improve perioperative care of cardiac surgical patients by constantly redefining benchmark.⁹ Cardiac surgeons realizing the importance of performance measurement systematically collected and analysed outcomes data along with clinical quality indicators in order to continually enhance the quality of care they deliver.⁹

In our section, cardiothoracic surgeons always strived for maintaining the data and over the years crude record keeping transformed into a computerised database. It helped us to participate in the ICSB project bringing refinement in our database and redefining our bench mark. The database can also be used to contrast outcome research to larger databases like STS and critically appraise the clinical practice.¹⁰ The ICSB project was conducted smoothly and successfully in the participating hospitals after initial short training of designated clinical data coordinators. We were also able to complete this project without onsite support; however we were continuously helped through electronic communications and webinars.

The importance of such benchmarking projects is enormous and has been extensively used for evaluation, reporting and revisiting the clinical practice for improvement. Malcolm and Colleague elaborated benchmarking project on a large scale by European Association of Cardiothoracic Surgeons (EACTS) involving data on outcomes to define benchmarking and low performers can learn and work towards raising the standard of care.¹ Same author further acknowledged that

although EACTS usually collect data for European countries but recently it has extended the database across the globe and reported striking differences in demographic characteristics between different regions. This reflects that the risk stratification needs validation in different population according to their regional characteristics.¹¹

Our participation led to identification of our weaknesses as shown in the results. These along with reported feedback will help us in working towards betterment.

LIMITATIONS

There are certain limitations of the study including small sample size during a specific time period and the results cannot be generalised. It is applicable only to the participating hospitals.

CONCLUSION

In summary this report highlights that as an initiative towards quality improvement, participation in such benchmarking projects is of utmost importance in the field of cardiac surgery. Our practice and data collection methodology has been reviewed and validated. Feedback of contrasted results provided to us will help to critically analyse our practice to rectify our weaknesses and improve quality of care. Thus regular feedback of performance from such programs is desirable to enhance quality of care in cardiac surgical patients.

Disclosure of Interest: None

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