Italian clinical audit: Centro Cardiologico Monzino di Milano

The Centro Cardiologico Monzino of Milano, Italy, will soon publish its tenth consecutive annual clinical audit on surgical activity. The report included data on over 16,500 patients over a 12-year period (1997–2008) who underwent cardiac and vascular surgery at the Centre. The report concluded that the Centre had developed and maintained a high level of clinical audit and that its outcomes were in line with (and often better than) those of the most recent, regarded and reliable cardiac surgery databases and surveys, such as the STS Cardiac National Database (USA) and the National Adult Cardiac Surgical Database Report from the Society of Cardiothoracic Surgeons of Great Britain and Ireland.

However, historically, the Centre was not always able to produce rigorous clinical audit to such high standards. From 1997 to 2004, the Centre utilised a 'homemade' database based at first on Microsoft Superbase, then on Microsoft Access. According to Dr Stefano Salis, Consultant Cardiac Anaesthetist, and Clinical Audit Lead at the Centro Cardiologico Monzino, the statistical analyses the 'homemade' systems could perform were limited to mean ±standard deviation (or median).

Although the homemade system could report single patient volume and outcomes, the hospital required a system that could provide:

- More advanced data analysis and reporting
- Outcome tracking and risk modelling
- Inbuilt risk stratification algorithms
- Logistic regression models

The overall aim of clinical audit is to improve patient outcomes by improving professional practice and the general quality of services delivered. The Centro Cardiologico Monzino tried to achieve this by reviewing patient care against agreed standards. Unfortunately, the homemade system utilised by the Centre restricted its ability to do so as the current system did not have a mechanism to perform advanced statistical analyses or implement a robust method for risk adjustment. The institution was eager to identify software that could be easily implemented into the Centre and which would allow a systematic and critical analysis of the quality of surgical activity provided.

The solution

Dr salis, who had previously worked with Dendrite in 1999, when he worked as a cardiac anaesthetist at Bristol Royal Infirmary, UK, identified the company database as the preferred solution. The company had developed sophisticated software

Dr Stefano Salis

that had inbuilt risk stratification algorithms including Bayes and logistic regression models, allowing individual clinicians or institutions to benchmark their results against regional, national or international standards, adjusted for severity of illness using well-established statistical methods.

Implementation

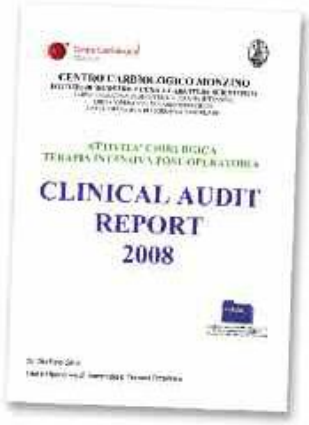
For the Centro Cardiologico Monzino, it was not only Dendrite's highly flexible software that supported multi-specialty applications that was appealing, it was also the company's expertise and extensive experience in planning and executing complex clinical database configurations for hospitals across Europe. Moreover, the company provided the hospital with several visits from their dedicated trainers for all those involved with inputting data, however simple or complex the level of data input required.

In addition to site visits, the hospital was also provided with the necessary literature that outlined the different operational aspects of the Dendrite solution. Although there were some minor initial difficulties, these problems were easily solved through further cooperation between the company's technical team and the hospital's IT department.

Outcomes

The installation at the Centro Cardiologico Monzino di Milano, has dramatically improved the hospital's ability to perform a comprehensive clinical audit for cardiac and vascular surgery. According to Dr salis, such audits are being considered more and more important at the hospital, and in the summer of 2008 the centre received accreditation by the European Cardiovascular and Thoracic Surgery Institute of Accreditation (ECTSIA).

The comprehensive, 100-page, 2008 report will document that the total peri-operative in-hospital mortality in 2008 was 2.85% for cardiac surgery and 1.1% for vascular surgery (cumulative cardiac and vascular 2.18%). Using the Logistic Euroscore as a risk-adjustment method the observed mortality was very much lower than the expected mortality in all risk classes.



Furthermore, this latest report noted that the medium Logistic Euroscore for 2008 was 6.33, the highest in the last four years. The main post-operative complications were not cardiacrelated and were composedof renal insufficiency, respiratoryinsufficiency, neurologicalcomplications, intestinalischaemia and necrosis.

Interestingly, prior to the installation of the Dendrite system at the Hospital, data collection was only performed by anaesthetists. However, since its installation surgeons, perfusionists and anaesthetists input data onto the hospital's system – allowing data collection from the hospital's cardiac and vascular departments. This not only demonstrates the inherent flexibility of a system that can be utilised across different surgical departments, but also the system's ability to create an environment in which the analysis and reporting of data becomes easier and clinically meaningful, whatever the specialty.

"The software has significantly improved our ability to perform a comprehensive clinical audit for cardiac and vascular surgery. I think the software is a relatively complex one, and requires a considerable amount of time and commitment to fully use its potential," added Dr Salis. "However, the in-built capability of performing even complex analysis is a great help. Without this software I do not think we would be able to perform clinical audit in such a rigorous manner."

A copy of the 2008 report into surgical activity at the Centro Cardiologico Monzino di Milano, Italy will soon be available at www.cardiologicomonzino.it/

National and International database reports

The fourth VERITY report was published in 2007 and documents the diagnosis and treatment of 12,500 cases of venous thromboembolism from 56,000 patient entries.

Published in conjunction with the European Society for Vascular Surgery, the report contains the records of 33,000 patients with abdominal aortic aneurysms in six countries from a ten-year period. A second VASCUNET Report was published in 2008.

To be published in October 2010 under the auspices of the European Society for Cardio-Thoracic Surgery, the latest installment will record in excess of 700,000 patient entries from some 260 hospitals in 22 countries.

Published in conjunction with the British Society for Interventional Radiology, the Registry of Oesophageal Stenting reports on some 400 patient cases from 17 centres in the UK.

The latest report released in July 2008 documents over 400,000 operations and is the most comprehensive self-audit ever undertaken by a single medical specialty.

Single-centre reports

The Centre published its eighth consecutive annual clinical audit on surgical activity. The report included data on over 13,500 patients over a ten-year period (1997–2006) that underwent cardiac and vascular surgery.

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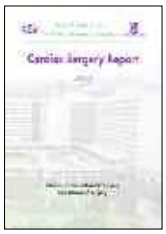

This annual report was first published in 2007 and has evolved to reporting both the hospital's own 'risk-adjusted' data and 'observed' vs. 'expected' outcomes.

Session 36: Hall D **Coronary – Optimising outcomes in coronary surgery (16:12)**

Prevalence of vitreous haemorrhage following coronary revascularisation among patients with diabetic retinopathy

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Epidemiological evidences demonstrate that diabetic retinopathy (DR) is associated with an increased risk of CAD death and myocardial infarction in diabetic population.[1] Previously, we demonstrated that the survival benefit of coronary artery bypass grafting (CABG) over percutaneous coronary intervention (PCI) is more apparent in patients with DR than in diabetic patients without it.[2] Furthermore, our recent study revealed that 25% of DR patients receiving ophthalmologic care as outpatients have significant stenotic CAD, indicating that a large number of DR patients who show strong indications of CABG may well go unrecognised.[3] These findings suggest that DR patients could be the new focus for cardiac surgeons.

Vitreous haemorrhage is a sight-threatening complication in DR patients. Progression of DR involving vitreous haemorrhage can take place spontaneously in diabetic patients after coronary revascularisation, with either PCI or CABG. Approximately 40% of diabetic patients requiring coronary revascularisation have been diagnosed as having DR. Therefore, the issue of post-revascularisation vitreous haemorrhage is an important issue for both cardiologists and cardiac surgeons, but the prevalence of vitreous haemorrhage following coronary revascularisation is unknown. The present study revealed that vitreous haemorrhage is a common complication following coronary revascularisation in DR patients. During the average follow-up of 1.5 years after revascularisation for DR patients (59 non-proliferative DR patients and 91 proliferative DR patients), vitreous haemorrhage occurred in 19 (12.7%) patients, and 11(7.3%) patients experienced vitreous haemorrhage within six months. Three (5%) patient with non-proliferative DR experienced vitreous haemorrhage, and 16 (17.5%) with proliferative DR did. The one-year prevalence of vitreous haemorrhage was higher in patients with proliferative DR than those with non-proliferative DR (16.5% vs. 4.4%, P=0.027). Stopping of antiplatelet therapy is usually followed by disappearance of vitreous haemorrhage, but vitreous surgery is required in persistent cases. The difficulty in treating vitreous haemorrhage following PCI with drug-eluting stents is that prolonged dual antiplatelet therapy is mandatory because of potential risk for stent thrombosis. In addition, ophthalmologists often hesitate to perform vitreous surgery in patients with continued dual-antiplatelet therapy. We conclude that DES implantation might not be indicated in patients with DR, especially in those with proliferative DR.

References
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2 Ohno T, Ando J, Ono M, et al. The Beneficial effect of coronary-artery-bypass surgery on survival in patients with diabetic retinopathy. Eur J Cardiothorac Surg 2006;30:881-886.
3 Ohno T, Kinoshita O, Fujita H, et al. Dectecting occult coronary artery disease followed by early coronary artery bypass surgery in patients with diabetic retinopathy: Report from a diabetic retinocoronary clinic. J Thorac Cardiovas Surg in press.

Vitreous Haemorrhage after drug-eluting stent (DES) implantation in a diabetic retinopathy patient. Three weeks after DES implantation, a fundus photograph revealed a considerable degree of vitreous haemorrhage which showed no tendency to subsided with continued dual-antiplatelet therapy