Development and Expanding Use of Cardiovascular Surgery Database in Japan

JMAJ 53(5): 319–320, 2010

Noboru MOTOMURA,*1 Shinichi TAKAMOTO*2

As cardiovascular surgery involves the routine practice of treatment connected directly with patient life, the awareness of the importance of quality control is considered particularly high in this field. The Japanese Society for Cardiovascular Surgery, in cooperation with the Japanese Association for Thoracic Surgery, launched the Japan Cardiovascular Surgery Database (JCVSD) project to develop a nationwide database on cardiovascular surgery starting from 2000. The aim of this endeavor was to construct a database on operations related to cardiovascular surgery in Japan, so that we may analyze the risk of cardiovascular surgery in collaboration with Western and Asian countries, improve the quality of cardiovascular surgery in Japan, and thereby provide better healthcare to the public in Japan. This project sprouted from a discussion at the Council Meeting of the Asian Society for Cardiovascular Surgery held in 1999 in Singapore. Triggered by the success of the STS National Database[1] and the EuroSCORE system[2] in North America and Europe respectively, a wish to develop a similar database in Asia was expressed. Because it would be difficult to set up a system covering entire Asia from the beginning, Japan was asked to start with a pilot study. We decided to use the same set of input items as that in the STS National Database and selected a web-based data entry method. The JCVSD, started with the participation of 5 institutions, gradually expanded to cover more than 300 sites at the present, including more than 80 specializing in congenital heart disease. Participating institutions ardently carried out the strenuous work of registering more than 200 data items for each case, and the cumulative number of input data has so far exceeded 110,000. Risk models were completed in 2006 for the 3 categories of coronary bypass operations, valvular disease operations, and thoracic aortic operations. This enabled the calculation of not only crude death rate but also risk-adjusted mortality, and a risk calculator ("JapanSCORE") was developed for each of these categories. These were published in major international journals and become widely accepted.[3–5]

In the past, cardiovascular surgery in Japan had much to learn from Western countries, and due to the small number of cases treated at each institution, cardiovascular surgeons in Japan have tended to underestimate their performance. The analysis of the Japanese database showed that the performance in Japan was as good as that in leading countries despite the small number of cases per institution,[6] and the presentation of this fact commanded international recognition as the proof that Japan could provide useful information.[7] This scientific demonstration of performance inspired Japanese cardiovascular surgeons to play leading roles in the international arena.

The success in the database in cardiovascular surgery prompted the development of a national database covering various fields of surgery in general. Linked to the Board Certification scheme, Japan Surgical Society and related academic societies jointly launched the National Clinical Database (NCD), a general incorporated association. The data concerning the Board Certified Surgeon's registration are entered using a common platform (the "first floor" part of

*1 Associate Professor, Department of Cardiothoracic Surgery, Faculty of Medicine, University of Tokyo, Tokyo, Japan (noboru@motomura.org).
*2 CEO of Mitsui Memorial Hospital, Tokyo, Japan.

the database) developed by the 9 participating organizations.*3 Building on this part, each society develops the "second floor" part containing more detailed, society-specific surgery database. We are now going ahead with this project at a high pace, aiming at data entry starting from the cases of operations on January 1, 2011. Once completed, this would be the largest medical database in Japan. With the advancement of medicine and the need for transparency, the nation-wide databases are expected to serve as a means to depict real world of medicine on a scientific basis and to return the outcome to the public. We strongly look forward to seeing further development of these projects.

References

1. Ferguson TB Jr, Dziuban SW Jr, Edwards FH, et al. The STS National Database: current changes and challenges for the new millennium. Committee to Establish a National Database in Cardiothoracic Surgery, The Society of Thoracic Surgeons. Ann Thorac Surg. 2000;69:680–691.
2. Nashef SA, Roques F, Michel P, Gauducheau E, Lemeshow S, Salamon R. European system for cardiac operative risk evaluation (EuroSCORE). Eur J Cardiothorac Surg. 1999;16:9–13.
3. Motomura N, Miyata H, Tsukihara H, Takamoto S. Risk model of thoracic aortic surgery in 4707 cases from a nationwide single-race population through a web-based data entry system: the first report of 30-day and 30-day operative outcome risk models for thoracic aortic surgery. Circulation. 2008;118:S153–159.
4. Motomura N, Miyata H, Tsukihara H, Okada M, Takamoto S. First report on 30-day and operative mortality in risk model of isolated coronary artery bypass grafting in Japan. Ann Thorac Surg. 2008;86:1866–1872.
5. Motomura N, Miyata H, Tsukihara H, Takamoto S, JCVSDO. Risk Model of Valve Surgery in Japan Using the Japan Adult Cardiovascular Surgery Database. J Heart Valve Dis. In press.
6. Miyata H, Motomura N, Ueda Y, Matsuda H, Takamoto S. Effect of procedural volume on outcome of coronary artery bypass graft surgery in Japan: implication toward public reporting and minimal volume standards. J Thorac Cardiovasc Surg. 2008; 135:1306–1312.
7. Shahian DM, Normand SL. Low-volume coronary artery bypass surgery: measuring and optimizing performance. J Thorac Cardiovasc Surg. 2008;135:1202–1209.

*3 9 NCD organizations: the Japan Surgical Society, the Japanese Society for Cardiovascular Surgery, the Japanese Association for Thoracic Surgery, the Japanese Society of Gastroenterological Surgery, the Japanese Association for Chest Surgery, the Japanese Society for Vascular Surgery, the Japanese Society of Pediatric Surgeons, Japan Association of Endocrine Surgeons, and the Japanese Breast Cancer Society.