Development of Monitoring System for Outcome Assessment in Off-Pump Coronary Artery Bypass(OPCAB)

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Abstract and Objective

Introduction: The coronary artery bypass graft surgery was performed 4,000 cases annually in Korea and was rapidly increasing. Moreover, the Off-Pump Coronary Bypass (OPCAB) was one of the important clinical indicators in evaluating quality of care. Objectives: In order to monitor and manage the outcome of the OPCAB, we developed the EMR, CDW based monitoring system. Methods: It consisted of 4 systems; the mortality predicting system, the specified medical record, the warning pop-up and the Clinical Data Warehouse. Results: The monitoring systems were available in predicting the risk of the operation, explaining to patients, preventing the miss of the medical services and records, assessing the outcomes of the OPCAB. Conclusion: Our monitoring systems were useful in managing the quality of care in the OPCAB.

Keywords:

Outcome assessment, Off–Pump Coronary Artery Bypass, Hospital mortality, Risk adjustment

Methods

The professor and doctors of Thoracic Surgery, the quality improvement team decided the outcome indicators of the OPCAB via the several evaluation standards of clinical quality. The monitoring systems were developed step by step from June 2008 to September 2009.

They were consisted of 4 systems: the mortality predicting system, the specified medical record, the warning pop-up and the Clinical Data Warehouse.

1. The mortality predicting system

To predict the OPCAB patients' hospital mortality, we selected the EuroSCORE as the famous severity adjustment tool in cardiac surgery. The EMR based EuroSCORE checklist was built in May 2008. It included the 17 risk factors and the predicted mortality.

2. The specified medical record

To prevent the miss of the important laboratory test, medication and treatment, we made the EMR based data interworking medical record form in May 2009.

3. The warning pop-up

To increase the long term survival rate of the OPCAB, we added the warning pop-up when doctors didn't prescribe aspirin. It was implemented in June 2009.

4. The Clinical Data Warehouse(CDW)

To assess and manage the outcome of the OPCAB, we integrated all related data into CDW in September 2009.

Results

The EuroSCOREs of 289 patients who underwent the OPCAB were recorded from May 1 2008 to September 15 2009. The mortality was 2.77%, the severity adjusted mortality rate was 6.57%. Our professors explained the risk of the OPCAB to the patients with this system, shared them with doctors and nurses. In addition, other professors who operate valve and other cardiac surgery also have been applied this system since November 2008.

After constructing the warning pop-up, the prescription rate of aspirin maintained 100% by August 2009. Furthermore, it was effective that the doctors of other departments concentrated their attention on giving aspirin to the OPCAB patients.

Through the CDW, we could check the results of the outcome indicators continuously. The post-op length of stay was 8.3days, the extubation rate within 24hrs of operation was 92.6%, the reoperation rate related to postoperative bleeding was 0% during January 2009 - August 2009. The professors, doctors, nurses, the quality improvement team and the medical informatics team held a conference every other month and discussed the problem case, the method of the quality improvement with the results from the CDW.

Conclusion

Our EMR, CDW based monitoring systems were useful in assessing and managing the outcome indicators as the quality of care in the OPCAB. In the future, we will apply these like monitoring systems to many diseases and operations.