

Standardization of tests for cardiac surgery

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Objective: The open heart surgeries require a wide range of tests and procedures throughout the pre-operative to post-operative period. There, however, has not been a explicit standard guideline for the application to and implement of the tests, and unnecessary or excessive tests were carried out in many surgical cases. Therefore, by setting up the standard guidelines of tests, we expect to increase the activity of QI, to decrease patient's discomfort and their medical consumption, to develop accurate protocols, and to create higher profit for the medical institutions.

Methods: The rate of Blood tests in the list of criteria-excessive cases based on Health Insurance Review & Assessment Service accounted for 65%. The test of arterial blood gas analysis (ABGA), C-reactive protein (CRP), Anti-Hbc IgG, Myoglobin and Troponin-I was relatively frequent. To investigate the causing factors and the accurate numbers of frequent tests, 450 patients with the open heart surgeries were approached from January, 2008 to June, 2008. Two indicators of activity were achieved, one was an excessive rate for ABGA and CRP and the other was the number of optional cases for Anti-Hbc IgG, Myoglobin and Troponin-I except appropriate diagnosis cases. There were detail plans that 1) to prescribe an accurate code for ABGA 2) to change the daily test schedule to the every other day for CRP 3) to study optional cases for Anti-Hbc IgG and Myoglobin 4) to follow up Troponin-I of a preventive myocardial ischemic indicator depending on the result of CK-MB or in the cases of possible acute coronary syndrome. The guideline of test criteria was informed to all medical and nursing staffs in the department of cardiac surgery, and conducted by them for a month of October, 2008. The results were evaluated at the end of October. To apply this guideline to all other rotating physicians in the cardiac surgery, it was set up as the Unit Protocol. Further evaluation was achieved for the next two months from November, 2008 to December 2008 throughout the review of the medical records by clinical nurse specialist (Figure 1).

(Figure 1)

| | 2008.7 | 2008.8 | 2008.9 | 2008.10 | 2008.11 | 2008.12 |
|-------------------------|--------|--------|--------|---------|---------|---------|
| Analysis | → | | | | | |
| Planning/Activation | | → | → | | | |
| Evaluation | | | | → | | |
| Guideline in department | | | | | | → |
| Further management | | | | | | → |

Results: The standard guideline was applied to 201 patients, age 13 year-old or above, who were hospitalized in the department of thoracic Surgery during the study period from October 1, 2008 to December, 31 2008. 52 patients ranked as the high risk patients population were excluded (length of hospital stay is over 15 days). 12.2 % of Criteria-Excessive Rate in a total of 3404 cases of ABGA decreased whereas, 25% was indicated before the application of the standard guideline. In 875 cases of CRP, Criteria-Excessive Rates decreased from 50.1% to 13.8%. In addition, there was a decrease by 5 tests per patient in the number of regular postoperative tests. Incidence of the postoperative infections such as Pneumonia or surgical wound infections had no difference in between 2 groups. In comparison of the optional tests before and after applying the QI activity over the study period, Troponin-I of Criteria-Excessive Rate decreased 33.7cases/month rather than 176.8 cases/month, Myoglobin decreased 3.3 cases/month rather than 33.8cases/month, and Anti-HBc IgG decreased 0.7cases/month rather than 20.5cases/month.

Conclusions: Establishing a guideline for application of the optimal test and accurate orders enabled health care professionals to improve the efficacy of medical and nursing activities. In the cases of ABGA which is an essential factor after the open hear surgery, ordering the accurate code according to the standard guidelines reduced the rate of the criteria-excessive orders. By decreasing the rates of excessive tests, the patients were able to expect the reduction of their medical expenses and the medical institution experienced an increase in its profit. A daily check of CRP changed to every other day test but it had no difference in the incidence of the infection rates. The result of this study, a decrease of the infection rates, released the level of health care professionals' anxiety, the study was, however, conducted over the short period of time and it requires consistent and further research in the future.