A Method of Improving Clinical Pathway Based on Analysis of Large and Structured Electrical Medical Record

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This thesis has discussed an efficient method of data analysis to improve a clinical pathway (CP). CP is a standard procedure of medical treatment, and many hospitals create and revise CPs to improve quality of medical service. There are many research articles which discuss an effect on creating or revicing CP. However, it is impossible to clarify essensial problems of hospitals from these articles, because these articles analyzed only single disease. Therefore, this thesis has analyzed electrical medical records which incude all disease, because this approach is more efficient than accumulating results of data analysis per one disease (near to recent research articles).

This thesis has analyzed the electrical medical record collected in University of Miyazaki Hospital from April 2013 to March 2016. The data for analysis were limited to patients who were hospitalized only one time and CP applied to keep stability of the data, because patients who were hospitalized over two times have complex background.

The main topic of data analysis was to compare a clinical indicator with a completion rate of CP (CRCP). Three clinical indicators were assigned for data analysis: mortality rate, length of hoptital stay, and comprehensive-volume ratio. Moreover, there were two kinds of CRCP to analyze multiply:

CRCP(not implemented)={all clinical orders-clinical orders (described on CP and were not implemented)} / all clinical orders

CRCP(added)={all clinical orders-clinical orders (not described on CP and were implemented)} / all clinical orders

The results of data analysis sugesstted that the clinical indicators improved by increase of CRCP (both CRCP(not implemented) and CRCP(added)), while we focus on all patients. However, there were several cases which a signfinance difference by number of medical treatment was not indicated, while we focus on individual CP or disease. If these cases were indicated, it will be necessary to do something for improveing CP.

When we want to convert the results of data analysis into an imrovable activity, it is important that medical staffs shold decide a detail of the activity by classifying the results into these three kinds of patients.

1. A treatment that is effectively necessary (should be included in CP)
2. Except main disease (e.g. comlications, a chronic illness, in the middle of 1. and 3.)
3. Others (should be decreased)

Moreover, it is adviseable that both medical staffs and data analysts deal with the improvable activity, because of a restriction on medical resource. Firstly, data analysts analyze large and structured electrical medical record, and suggest issues based on results of data analysis to medical staffs. Secondly, medical staffs convert the issues to concrete activity based on their specialized knowledge.

In conclusion, it is important that both data analysts and medical staffs deal with data analysis to improve CP. Particually, CP will be improved efficiently by conversion of results of data analysis into concrete activities which medical staffs indepently deal with.