Application of Business Intelligence in Bed-Management Decision Support System
-in a Health Care System in Central Case
Yen-Tsun Chang, Kuan-Yi Liu
Department of Healthcare System Operation Center, Changhua Christian Hospital

Introduction:
Making a good use of bed is important for hospitals. With the rise of business intelligence, hospitals try hard to provide patients an appropriate medical care by data analysis.

Material:
This study analysis the bed management and patients’ big data of the Health Care System, turning the data out from the warehouse by the Oracle and through the Extract-Transform-Load into SQL Server. Aides help decision-makers to build Business-Intelligence Model. It automatically updates the storage information daily through the cloud-based SharePoint Server, giving hospital-management leaderships grasp the information quickly and correctly, improving the decision-making’s quality.

Methods:
Time Series Analysis is used to understand the impact of bed-management decision-support system on hospital bed scheduling, system operation and patient care. The study maintains the hospital occupancy-rate to a certain level to figure out the key of emergency patients referral from the health care system due to bed factors.

Results:
The system has completely replaced the daily manual collection of data sheet operations. Through the real-time bed supply and demand informations, it helps the decision-making of bed management. For medical centers' emergency bed, the rate of stay above the hospital for more than 48 hours has been reduced from 2.4% before construction to 1.3% after construction (according to 2016 Emergency Retention Data from MHW). A significant improvement of the emergency congestion has been seen, and help the 1+2 triages in ER Examination patients stay in medical centers for better treatments.

Conclusions:
The bed-management decision-support-system highly support decision-makers through the Business-Intelligence big-data analysis. To ensure data accuracy and continuity, cloud-based regulation automatically update data-scheduling, providing immediate support for operational-management decisions. Meanwhile, it provides decision-making information anywhere, and the patient friendly and appropriate medical care.