The development of a pharmacist-led intravenous-to-oral antibiotic switching therapy notification system in Khon Kaen Hospital

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Abstract

Objective: This research was to develop a pharmacist-led intravenous-to-oral antibiotic switching therapy notification system through the Plan-Do-Study-Act (PDSA) concept. Method: The study was a three-step action research. First, we performed a situation analysis and developed a system with the PDSA concept. Third, we evaluated the outcome before and after applying the system in two target groups: group 1 (physicians in Khon Kaen Hospital involved in the system development) and group 2 (pneumonic patients admitted in two pediatric wards). The system's development was divided into two phases. In phase I, data was collected from January to March 2020 before developing. In phase II, after the system had been developed, data from September to November 2020 was collected. The development of the system was evaluated using value-stream mapping (VSM), time measurement, the rate of switching intravenous to oral, length of intravenous therapy, and length of stay display using descriptive statistics (percentages). Results: Developing the model system by increasing access to essential information and integrating a drug information service technology on dispensing helped reduce total process time from 95 minutes to 88 minutes and reduced total lead time from 175 to 159 minutes before and after applying the system. The overall time reduction was 16 minutes, which increased the activity ratio between total lead time and process time from 54.28% to 55.34%. The development system also reduced the length of intravenous therapy and length of stay. Conclusion: The PDSA concept allowed step-by-step analysis, and identification of areas for improvement on the workflow and dataflow. Integrating a drug information service technology to rapidly screen patients who pass the criteria can help reduce the time-consuming process. This system can be used to develop a localized system and extend to the organization to reflect areas that need to be improved, suggested in the form of policies.

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Figure 1 Value-stream mapping demonstrating the performance workflow and switching therapy before applying it.

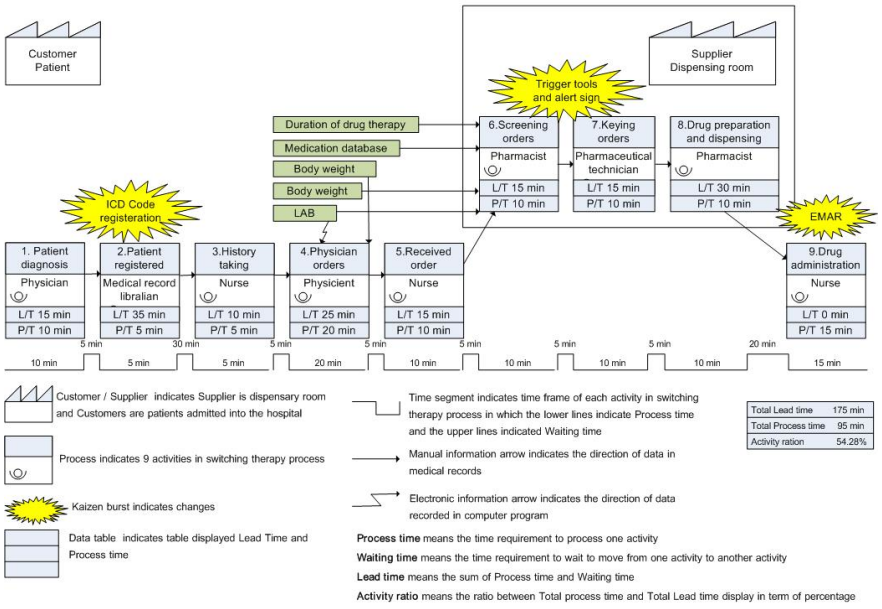
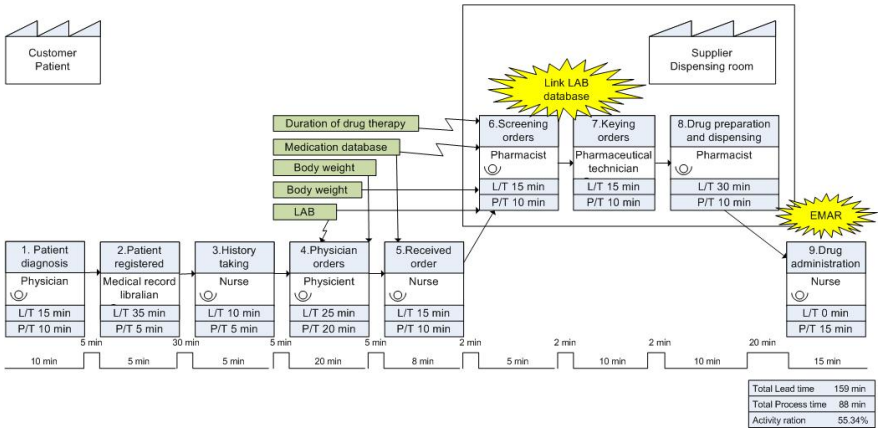


Figure 2 Value-stream mapping demonstrating the workflow of performing switching therapy after applying the development (Model 1)



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