Impact of IPMOE on nursing tasks in the medical ward – A time-motion study

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Introduction
The In-patient Medication Order Entry System (IPMOE) was first implemented in the medical ward of Princess Margaret Hospital, Hong Kong. It was a local developed close-loop system including prescription, dispensing and administration modules. Evaluation on its impact on nursing tasks would be important for practice improvement and subsequent system enhancement.

Objectives
The study was conducted to quantify the nursing times across medication-associated tasks for paper-based MAR and computer-based IPMOE, including change in the tasks and time patterns before and after IPMOE implementation.

Methodology
This was a prospective observation study in medical wards before (Jan 2014–Jun 2014) and after (Mar 2015–Jun 2015) the implementation of IPMOE. We conducted 8-h observation studies of individual nurses with a customized application to time various pre-categorized nursing tasks. Statistical inferences and interrupted time series analysis was performed to identify the change in the intercept and trends over time after implementation.

Result
The average number of medication-related tasks was significantly reduced from 61.07 to 29.81, a reduction of 31.26 episodes per duty (P < .001, 95% CI 22.9–39.63). The time for the medication-related tasks was reduced from 32 min (SD = 21.57) to 26.57 min (SD = 11.35) and the medication administration time increased from 37.93 min (SD = 14.78) to 44.37 min (SD = 19.45), but there was no overall significant difference in the time spent on each duty (P = .315) between the two groups. An improving trend in the delayed effect was observed (P = .03), which indicated a run-in period for new application was needed in clinical setting. Our study had shown the time motion observation could be applied to measure the impact of the IPMOE in a
busy clinical setting. Through classification of activities, validation, objective measurement and longitudinal evaluation, the method could be applied in various systems as well as different clinical settings in measure efficiency.