The efficacy of human factors engineering model to improve the efficiency of pharmacist’s antibiotic assessment

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Introduction
To monitor the appropriateness of antibiotics usage in inpatient setting, pharmacists should actively involve in the monitor system to promote medication safety and reduce antimicrobial resistance.

Objectives
The aim of present study is to elucidate how to increase the efficiency of the pharmacist's assessment and ensure the quality of the antibiotic evaluation through human engineering model.

Material and Methods
A pilot trial was implemented to evaluate prescriptions of 3rd line antibiotics by pharmacists since July, 2014 in Taichung Veterans General hospital (VGHCT). Opinions from pharmacists participated in pilot trial were collected six months later. Using human engineering SHEL model, the process was intervened through three aspects: software, environment and liveware. To reform the software, simpler and faster operation system, cross system integration and a communication platform between pharmacists and physicians were established. To create an error reduction environment, physicians received information about hepatic dose adjustment, compatible infusion solution and infusion rate when prescribing related antibiotics. To increase efficiency of pharmacists intervention, we set up a decision support system that automatically determined patient’s drug allergy histories and drug interactions. After this process intervening, TVGH made new policy to evaluate prescriptions of all controlled antibiotics since February 2015.

Results
Evaluation rates within 24 hours of prescription: from 10% to over 50%
Inappropriate antibiotic prescription rates: decreased to less than 2% through timely communication platform

Conclusions
This project revealed human factors engineering model significantly increased work efficiency, decrease inappropriate antibiotic prescription and strengthen timely cooperation between professional teams.