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HAITOOL – USING INNOVATIVE DESIGN SCIENCE TO COLLABORATIVELY IMPLEMENT AN ANTIBIOTIC STEWARDSHIP DECISION-SUPPORTING SMART SYSTEM

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I want to apply for a travel fellowship: No
I am submitting my abstract for the ICPIC Clip award: No

Introduction: Healthcare-associated infections (HAI) caused by antibiotic-resistant pathogens are linked with high-levels of morbidity and mortality. To prevent and control antibiotic-resistant HAI, strategies based on surveillance/monitoring systems are imperative, especially if they are well-matched with the local social-cultural background.

Objectives: To decrease antimicrobial-resistant HAI an antibiotic-prescription decision-supporting-system (HAITool) was co-designed to reduce antibiotic misuse and HAI.

Methods: Three public hospitals participate in the research, following the Design Science Research Methodology: (i) problem identification; (ii) solution definition by eliciting an Antibiotic Stewardship information system (IS); (iii) design, collaboratively with healthcare workers (aligning working processes), a toolkit that assist physicians and infection control team to manage antibiotic use and antibiotic-resistant HAI; (iv) implementation of the toolkit in the hospitals; and (v) toolkit evaluation in the control of antibiotic-resistant HAI.

Results: To feed the toolkit, patient, microbiology and pharmacy data are extracted, from the current hospitals IS by web services, in real-time. The information is then processed and aggregated in a unique database. A display module allows real-time visualization through innovative graphics presentation: Inform about the accuracy of antibiotic prescription, providing timely and appropriate information related with antibiotics use; monitoring the data about antibiotic use and resistant bacteria. The evaluation of the toolkit, based on a focus group questioner about the toolkit functionalities, revealed that it was considered helpful in monitoring antibiotic use, helping antibiotic prescription, and can be used to improve infection control interventions (e.g. improve communication between professionals).

Conclusion: This toolkit brings digital innovation to support health professionals' performance and it is an important step forward for the reduction of antibiotic misuse and in the control and prevention of antibiotic-resistant HAI, and overall patient safety.