

Using information technology of CDSS to reduce the medication prescribing of infusion rate error in inpatient department in Taiwan

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INTRODUCTION

According to the Medication Without Harm - Global Patient Safety Challenge on Medication Safety (WHO, 2017), the goal of the third Global Patient Safety Challenge on Medication Safety is to gain worldwide commitment and action to reduce the level of severe, avoidable harm related to medications by 50% over 5 years, globally. The Challenge aims to make improvements at each stage of the medication process, including prescribing, dispensing, administering, monitoring and use.

AIM

Prescription errors of intravenous medications can cause serious adverse drug events. The use of information technology of clinical decision support system (CDSS) is an effective means of reducing prescription errors. The objective of this study was to evaluate whether implementation of CDSS system reduced medication prescribing of infusion rate error in inpatient department.

RESULTS

The percentage of medication errors was found about 36.43% (24,846/68,203) in hospital according to the Annual Report 2020 of Taiwan Patient-safety Reporting System. In our hospital, the rate of medication error is about 0.0148% and the infusion rate error of intravenous medications is 0.0013% in 2020.

The infusion rate error in prescribing of intravenous medications in inpatient department was significantly reduced from 0.0082% (Q1 2020) to 0.0001% (Q4 2022). The CDSS system was introduced into modified pop-out alerts of CPOE (computerized provider order entry), drug dose issued within the set range CDSS technology, drug dose automatically calculated according to body weight and renal function, and linked calculation of drug diluent solution from 1 January 2020 throughout to 31 December 2022.

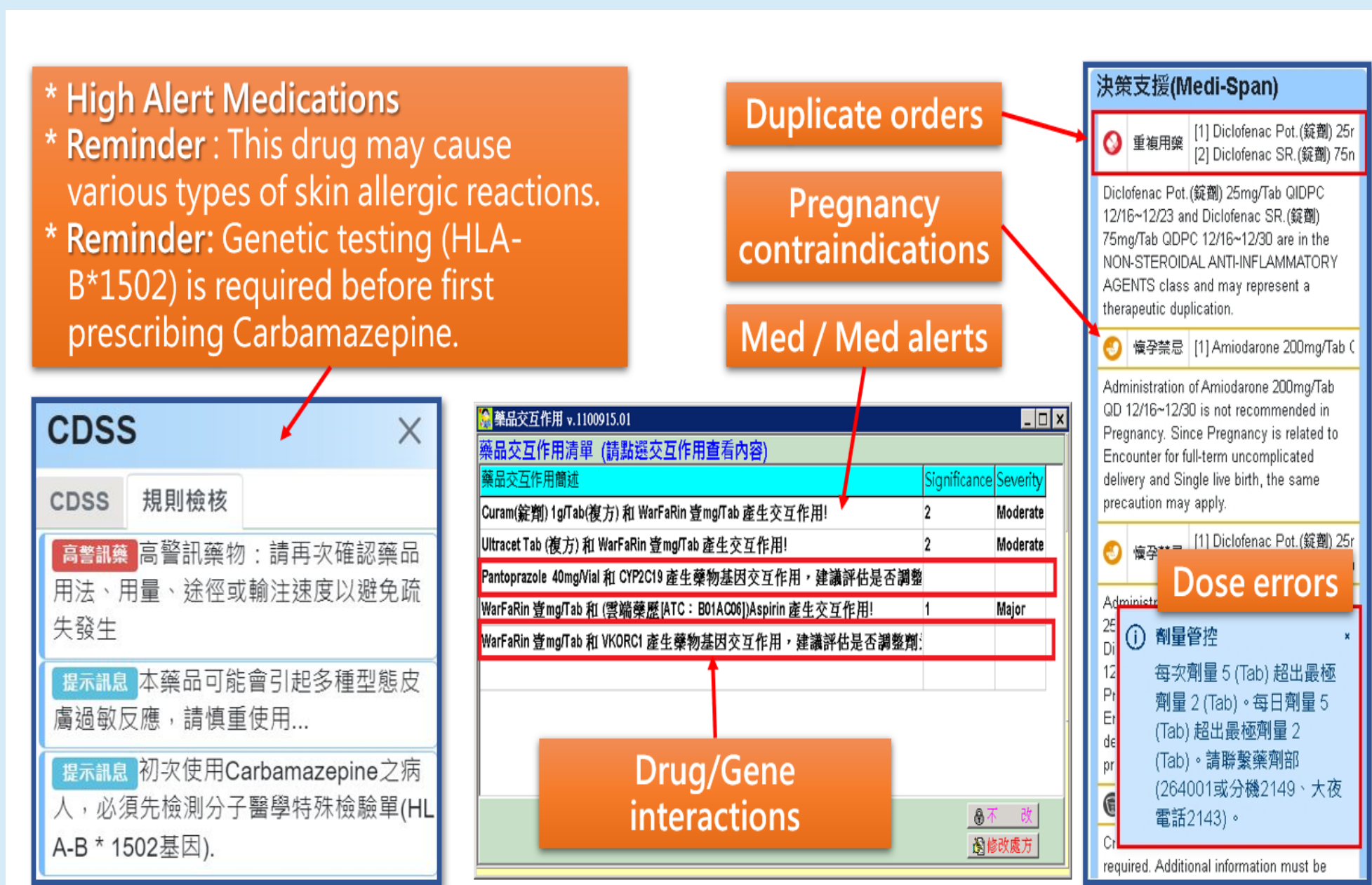


Figure 1 The CPOE system has built a CDSS to assist in the correct prescription

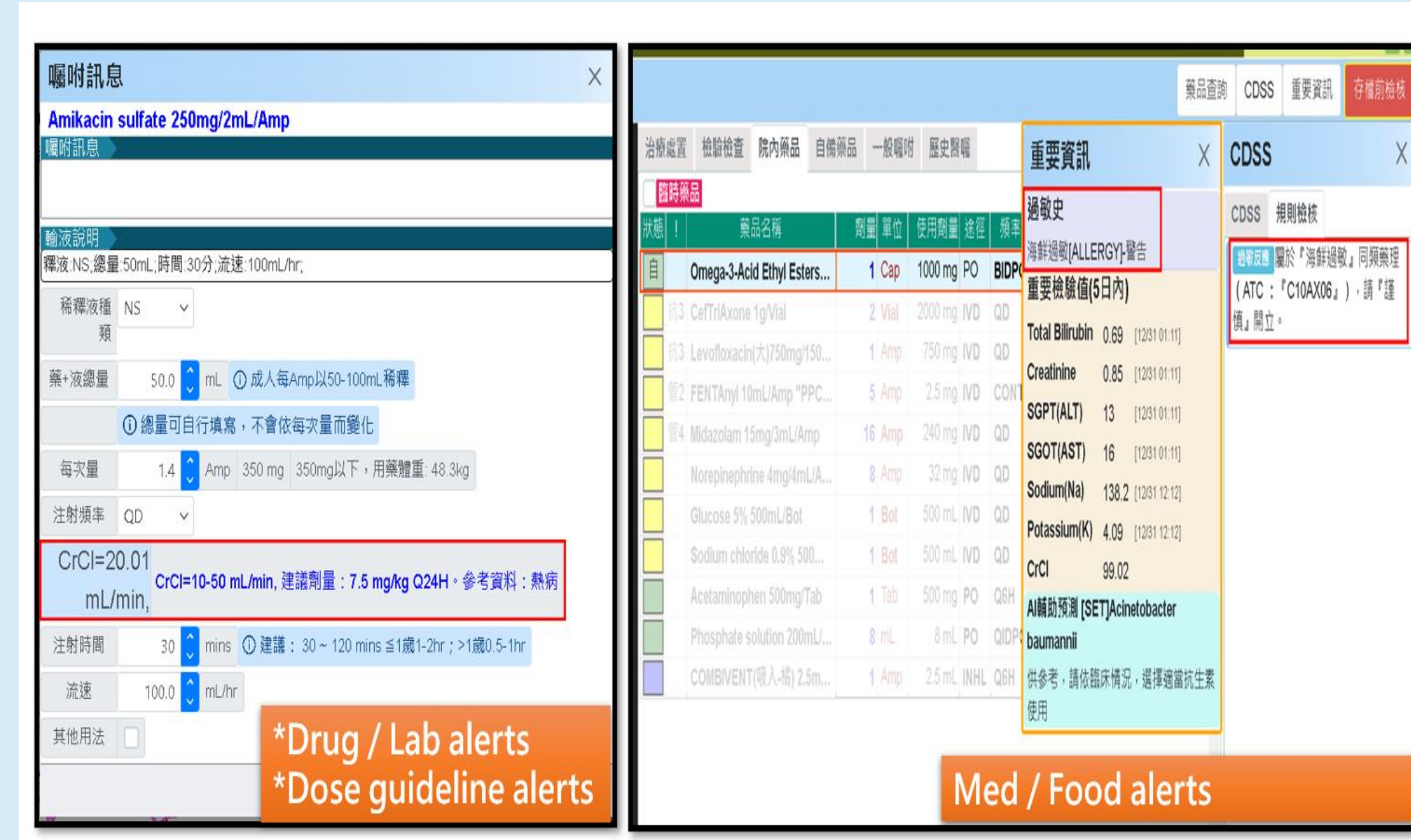


Figure 2 Advanced decision-making support functions, i.e. using renal function test values, body weight and other parameters to assist in calculating the appropriate drug dose.

METHOD

We conducted a before-and-after in a 2,111-bed care academic medical center that was implementing the CDSS system to improve patient medication safety. We assessed rates of infusion rate error in prescribing of intravenous medications before and after implementation of the CDSS system, including all inpatient prescriptions from 1 January 2020 to 31 December 2022.

CONCLUSIONS

The modified CDSS system technology significantly reduced the infusion rate error in prescribing of intravenous medications in our hospital. Overall, our results suggest that the modified CDSS system can deserve strong consideration as a tool to improve patient safety.

ACKNOWLEDGEMENT

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