

CLINICAL SUMMARY

Impact of implementing smart infusion pumps in a pediatric intensive care unit

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TYPE OF STUDY

Prospective, Observational

AIM

The impact of smart infusion pumps on intercepting intravenous drug administration programming errors in a pediatric intensive care unit (PICU).

METHODOLOGY

A systematic analysis of data stored by smart pump infusion devices during the designated study period (January 2010 – June 2011) was conducted using an infusion system software. Intercepted errors were determined based on the alerts detected by the software. The data was used to determine compliance rate defined as the number of infusions programmed through the safety software per 100 infusions started, percentage of infusions reprogrammed, and the number of alerts issued. A group of four clinical pharmacists and a group of four intensive care pediatricians independently classified the severity of each error using the Ruiz-Jarabo 2000 Group methodology.

RESULTS

A total of 624,252 infusions were started, of which 486,875 were programmed through the drug library, with a 78% overall user compliance rate with the safety software. The use of smart pump technology resulted in the interception of 92 programming errors: 97% of the errors resulted from user programming of doses or infusion rates above the hard limits defined in the smart pump drug library, 84% involved analgesics, antimicrobials, inotropes, and sedatives, and 49% of intercepted errors were considered to be of moderate, serious, or catastrophic severity.

CONCLUSION

The use of smart pumps in a PICU improved patient safety by enabling the interception of infusion programming errors that posed the potential for severe injury to pediatric patients.

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