Implementation of smart-pumps in NICU and PICU a safety improvement?

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Introduction

Drug administration errors involving infusion systems are frequent in NICU and PICU. Smart-pumps including a drug library may increase patient safety by preventing programming errors.[1]

Objectives

To implement smart-pumps (Orchestra® workstation Fresenius Kabi, Base Intensive + Module DPS) in a NICU and PICU unit and to describe failures in the implementation process and to evaluate nurses' satisfaction.

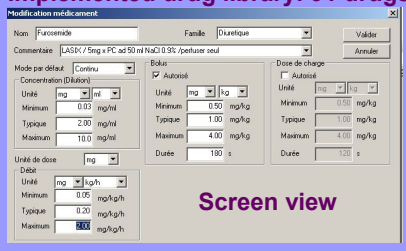
❶ Creation and validation of the drug library

Preliminary conditions ?

- adapted to ICU patients (range 350g to 80 kgBW)
- adapted to drugs preparation practices in the ICU

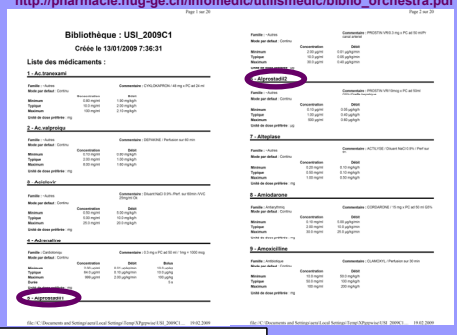
- validation with literature data
- tests with 5 fictive patients

Implemented drug library: 91 drugs



Library on internet site:

http://pharmacie.hug-ge.ch/infomedic/utilismedic/biblio_orchestra.pdf



Failures ?

Drug library creation:

- Drug library structure : some drugs like alprostadil or heparin entered twice to cover all indications and associated concentrations and rates, limited space for comments
- Technical problems (bugs, extraction of data)

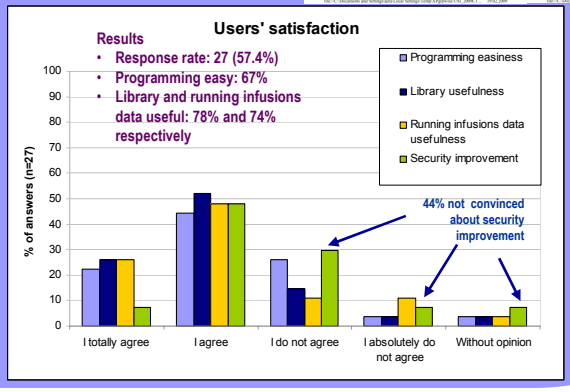
During implementation:

- Rapid drug administration during resuscitation (adrenaline bolus, dopamine rate)
- Programming time for new patients

❷ 2 months use of the system

❸ Evaluation survey

- programming easiness
- usefulness of the library
- usefulness of the running infusions data
- safety improvement



Conclusion

Usefulness of smart pumps has been demonstrated, but several limitations (i.e drug library structure, need for technical assistance) were highlighted. Teaching on the management of drug administration during resuscitation and practice to reduce programming time are necessary to ensure an optimal safety.

References: 1. Murdoch LJ, Cameron VL. Smart infusion technology: a minimum safety standard for the intensive care? Br J Nursing 2008;17:630-36

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