PHARMACEUTICAL FORMULATION NEEDS ASSESSMENT TO LIMIT THE USE OF INAPPROPRIATE DRUGS IN PAEDIATRIC INTENSIVE CARE AND CONTINUING CARE UNITS

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INTRODUCTION

Medicines used in peadiatric units may be inappropriate for this population because of their unsuitable dosage forms (dry forms for chirldren < 6 years old, numerous dilutions of injectable solutions, presence of excipients with known effects (EKE)).

Objectives : Identify the inappropriate medicines used in paediatric intensive care and continuing care units to prioritize our research projects on new formulations adapted to the needs of these units in order to reduce iatrogenic risk.

MATERIALS & METHODS

Create a database of the medicines used in paediatric units over a 6-month period

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Quick-audit in the paediatric intensive care and continuing care units from 3 days at 1 week apart to evaluate the frequency of inappropriate drug administrations. We collected: demographic data, dosage form, drug administration methods, and presence of EKE

DISCUSSION/CONCLUSION

We found many behaviors at iatrogenic risk amplified by the lack of suitable formulations for the paediatric population in terms of dosage form and compounding. New pediatric formulations and support for medical teams on the use of medicines when there are no therapeutic alternatives must be established.

This study allowed us to prioritize these actions by highlighting the needs. The development of an oral solution of folic acid becomes a priority due to its daily use and the absence of a suitable dosage form (only the tablets are available).

RESULTS

Database analysis

Of the 748 drugs identified, 56.9% (426/748) contained at least 1 EKE, and 158 were known to be harmful for premature and newborn infants. The most common were Propylene glycol, Parabens, and Ethanol. Ethanol was found in 22 oral solution administrations.

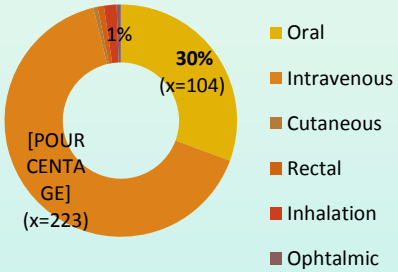
Audit

49 prescriptions
338 medicines

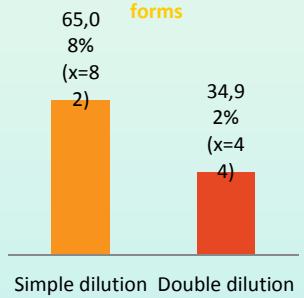
32 patients
(18 premature infants, 8 infants < 1 y.o, 1 child between 1 and 6 y.o, 5 children > 6 y.o)

9 drugs were found in more than 50% (170/338) of the prescriptions : Folic acid 0,4mg tablets, Vitamin K1 2mg inj, Caffeine citrate 50mg inj, Epoetin beta 500IU inj, Sufentanil 10µg inj, Vancomycin 125mg inj, Uvesterol (Vitamin A.D.E.C) oral solution, Midazolam 5mg inj.

Administration routes



Types of dilutions outside the SPC of injectable forms



Concerning the oral route, 63% (65/104) of the administrations were oral solutions. Folic acid represented 51% (20/39) of the monolithic forms.

Alternative and more accurate medical devices were used for 6.8% (29/338) of the administrations (e.g. administration of the folic acid oral solution (obtained with the tablets) with a 1mL enteral syringe for more handiness and dosage precision).

About 50% (165/338) of the prescriptions had at least 1 EKE. EKE known to be toxic for premature or newborn infants were found in 8 drugs administered to these populations at risk (e.g. Epoetin beta containing Polysorbate 20, Vitamin A.D.E.C containing Polysorbate 80 and Propylene glycol). 18 (18/75) drugs contained EEN that could cause irritation or allergies (e.g. Vitamin K1 containing Soybean oil). Drugs containing alcohol accounted for 0.59% (2/338) of the prescription (e.g. Furosemide oral solution, Clonazepam inj)