Switching from individualised nutrition to standardised or commercialised nutrition in newborns: are there any possibilities?

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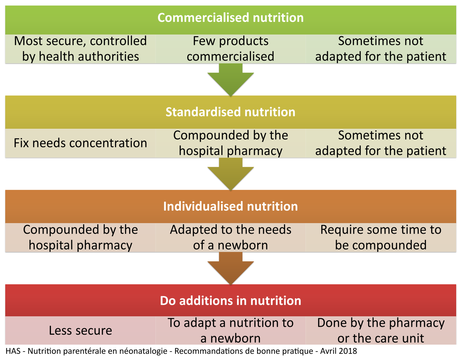
Introduction

Parenteral nutrition is often required for sick or preterm newborns. There are three possibilities :

- Individualised nutrition
- Standardised nutrition
- Commercialised nutrition

In 2015, the *Inspection Générale des Affaires Sociales* (IGAS) investigated a big part of French neonatology department and pharmacy to establish the state of practice concerning parenteral nutrition. This report demonstrated some risk concerning all steps of parenteral nutrition.

In April 2018, the *Haute Autorité de Santé* (HAS) published new national guidelines for parenteral nutrition in newborn.



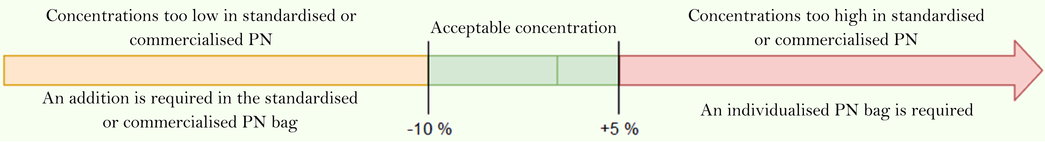
HAS - Nutrition parentérale en néonatalogie - Recommandations de bonne pratique - Avril 2018

Purpose

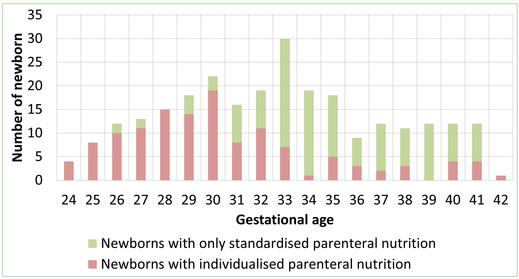
The aim of this study was to evaluate the substitutability potential of individualised nutrition by standardised or commercialised nutrition in a regional maternity hospital.

Material and method

- Retrospective chart review of all parenteral nutrition for newborns from August 2017 to January 2018.
- The concentrations of glucose and electrolytes (potassium, sodium, phosphorus and calcium) in individualised nutrition were compared to the concentrations in standardised and commercialised nutrition.



Results



2285 parenteral nutrition concerning 263 newborns were included.

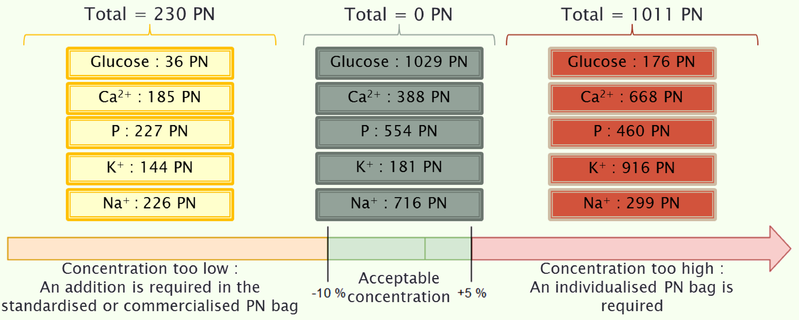
54 % (1241) were Individualised parenteral nutrition and have concerned 130 newborns (89 % preterms).

Demographic criteria of the part of newborn receiving individualised parenteral nutrition :

Demographic criteria	Value
Medium gestational age (weeks)	30+3 [24 ; 42]
Sex-ratio (M/F)	0,91
Medium weight (grams)	1461,97±758,98 [580 ; 3770] g

The medium parenteral nutrition duration was 13 days [1-54].

81 % of individualised parenteral nutrition (PN) were not substitutable :



No individualised parenteral nutrition were immediately substitutable but 230 (19 %) were potentially substitutable by adding one or more elements (average 3.4 adds).

187 individualised parenteral nutrition were potentially substitutable by a standadardised parenteral nutrition and 43 by a commercialised parenteral nutrition.

Number of add(s) required in commercialised or standardised nutrition to be equivalent to the individualised parenteral nutrition :

	Number of PN	1 add	2 adds	3 adds	4 adds
Standardised PN	187	3	21	73	90
Commercialised PN	43	0	3	8	32
Total	230	3	24	81	122

Following HAS guidelines : max 3 adds !
→ only 108 PN were substitutable (9 %)

Discussion

The individualised parenteral nutrition rate in our maternity hospital is in line with national rate.

Following HAS guidelines : 91 % of individualised parenteral nutrition were not substitutable. What about the 9% remaining ?

- The guidelines preconize to compound individualised parenteral nutrition rather than doing some adds
- In our maternity hospital, we are using an automata →compounding individualised parenteral nutrition is easier than manually doing the adds

The vitamins and oligo elements were not compared because there are no clear guidelines on these quantities and because there are low clinical consequences if there are a little less or more of them on a short period.

The proteins were not compared. First because they are not present in our standardised parenteral nutrition formula. Second because adding them in a parenteral nutrition bag can cause important osmolality variation. → We take the part to consider proteins as not addable.

Conclusion

None of the individualised parenteral nutrition analyzed were immediately substitutable because the concentrations were specifically adapted to the newborn clinical situation. Finaly, following strictly the guidelines, the answer to the question “do we have to switch some individualised parenteral nutrition to standardised or commercialised parenteral nutrition ?” is : **No, we don’t have to do that**.

Further studies have to complete this one : is it possible to switch some standardised nutrition to commercialised nutrition ? If commercialised nutrition are adapted to some newborns, what about the cost compared to our individualised and to our standardised parenteral nutrition ?