Compounding individualized pediatric parenteral nutritions during the week-end : how to optimize the process?

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Objectives

To analyze if individualized parenteral nutrition (PN) prescribed and produced every **day during the week end has a clinically significant relevance because of changes in the formulation justifiying a daily compounding by the pharmacy during the week end**

Conclusion

- **75 % of PN compounded during the WE are unplanned and mainly for the intensive care unit and the smaller patients**
- **Only 16.6 % of the unplanned prescribed PN have significant changes justifiying the daily compounding by the pharmacy.**
- **Planned PN prescription for non intensive care units will be economically evaluated as next step.**

Background

- Individualized compounding of PN is offered for daily adaptation to clinicians in our pediatric hospital
- This proposition has a high impact on pharmacy workload and costs, due to safety, quality and laboratory controls, and mostly during the week-end days.

Methods

- *Setting:*
  - Retrospective collect of week end compounded PN (Friday to Sunday) during 2 periods of 8 months : March to October 2015 and 2016.

- *STUDY DESIGN :*
  - Implementation of nutritional teaching's program in 2016 with elearning module for prescribing physicians.
  - PN prescription sequences selected and defined as
    - Unplanned : PN prescribed every day during the week end, with or without any change
    - Planned : PN prescribed on Friday for the 3 week end days
  - Clinically day-to-day formulation changes defined as a significant change by a pediatric gastro-enterologist and a neonatalogist

	Significant change
Glucose	+/- 2mg/kg/min
Amino-acid	+/- 1g/kg/24h
Sodium	+/- 2 mmol/kg/24h
Potassium	+/- 1 mmol/kg/24h
Magnesium	+/- 0.3mmol/kg/24h
Calcium	+/- 0.5 mmol/kg/24h
Phosphate	+/- 0.5 mmol/kg/ 24h

- *OUTCOME:*
  - Number of PN with at least one significant change in the formulation during the week end in the unplanned PN
  - To analyze the possible associated factors for unplanned PN prescriptions without significant changes in the formulation

Results

- 32 physicians prescribed 306 PN during the week end :
  - 2015 : 163 prescriptions
  - 2016 : 143 prescriptions

  → ***252 prescriptions were unplanned during the WE***

1) Differences between planned and unplanned prescriptions :

❖ Period of unplanned PN prescriptions
- 2015 : 51,1%
- 2016 : 42,9%

p= 0.004

❖ Median weight of patients for unplanned PN prescriptions :
- 2,4kg vs 11.1kg

p= 0.001

❖ Unit for unplanned PN prescription:
- Ped. intensive care unit : 81,4%

2) Only 42/252 (16.6%) unplanned PN prescriptions had **one significant change** as defined in the formulation

No associated factor was found

❖Weight : trend to have smaller patient

❖Period of the study : no impact of the study period and nutrition's teaching

3) Most frequent changes in the formulation :
- ❖ Glucose : 55%
- ❖ Phosphate : 38%