

DEVELOPMENT AND EVALUATION OF A COMPUTERIZED PROGRAM FOR A ONE-STEP PRESCRIBING AND COMPOUNDING OF PAEDIATRIC PARENTERAL NUTRITION

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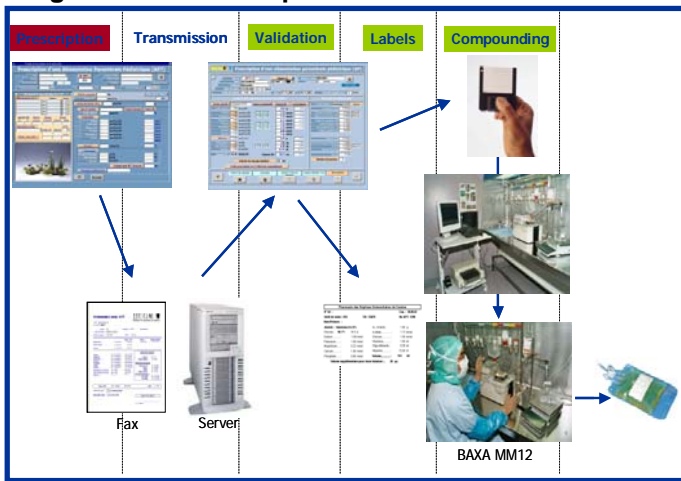
RATIONALE

Computerized ordering programs of parenteral nutrition reduce errors (e.g. calculation) and adverse events (e.g. calcium-phosphate precipitation), improve prescription's quality (e.g. by optimising the energy load), and decrease workload for the prescribers and the pharmacists.¹⁻⁴ Most of the time, computerized programs do not integrate the compounding and labels' edition steps. We developed a user-friendly program ("**Nutrilogic**"), for one-step prescribing and compounding of paediatric parenteral nutrition.

RESULTS

- ❖ **Nutrilogic** is accessible **online** since 2003 from all HUG's paediatric wards
- ❖ Ordering is performed in a logical way using patients' clinical data (enteral nutrition, amount of volume, energy, glucose, Na⁺ and K⁺ already administered with IV fluids and drugs) (Fig. 3)
- ❖ Limits for each nutrient, calcium-phosphate precipitation curves, and others useful functions (e.g. possibility to select a ready-to-use all-in-one TPN for children > 35 kg) are integrated in the program (Fig. 3,4)
- ❖ Alerts for physical or chemical incompatibilities are built in the program at the physician step to reduce unnecessary calls for clarification (Fig. 5)
- ❖ Prescriber's guide is integrated in the program (Fig. 1)
- ❖ **Nutrilogic** reduces significantly the risks compared to former manual compounding method, mainly by suppression of retranscription errors and readability problems⁵

Fig. 2 General Principle



CONCLUSIONS

By its high educational value and its one step approach from prescription to compounding, the user-friendly program **Nutrilogic** improves the quality and security of paediatric parenteral nutrition by reducing prescription errors and compounding risks.

References

- Schloerb PR. JPEN 2000;24:23-9 / 2. Peverini RL et al. Proc Amia Symp 2000;650-4 / 3. Hilmas E et al. Am J Health Syst Pharm 2004;61:273-7 / 4. Horn W et al. Artif Intell Med 2002;24:217-28 / 5. Bonnabry P et al. Qual Saf Health Care 2005;14:93-8

METHOD

Nutrilogic, developed on Access®, provides (Fig. 1,2):

- ❖ high educational environment for the prescription
 - ❖ direct prescription's recording on a server
 - ❖ creation of a file used to pilot a BAXA® MM 12 automatic compounder
 - ❖ automatic printing of the labels
 - ➔ complete traceability of each nutrition bag is assured
- Safety improvement of the process induced by the program was evaluated using a structured risk analysis method.

Fig. 1 Main functions of the program

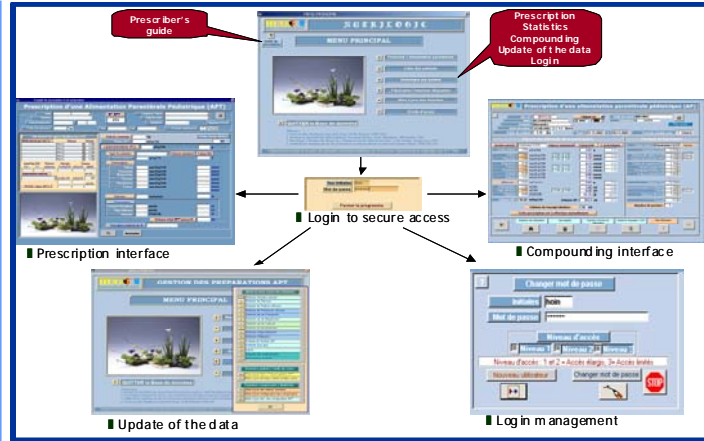


Fig. 3

The screenshot shows the 'Prescription d'une alimentation parentérale pédiatrique (AP)' interface. It displays 'Patient's general data', 'Patient's clinical data', and 'Limits for each nutrient'. A 'Prescriber's duration' is also indicated. The interface includes a 'Prescriber's saving' button.

Fig. 4

The screenshot shows the 'Validation and compounding' interface. It displays 'Data outside normal limits', 'Comparison with earlier prescriptions', and 'Compounding management'. It also shows 'Printing of labels and of compounding formulae' and 'Compounding formulae'.

Fig. 5

The screenshot shows an 'Alert' message: 'La prescription ne peut être automatisée dans les paramètres choisis car il existe des incompatibilités. La solution des valeurs des composants par défaut est proposée pour permettre une prescription. Voulez-vous valider votre prescription?'. Below the alert, there is a 'Description of the problem and solving possibilities' section and a 'Water volume filling' button.