Implementation of individual, hospital pharmacy-compounded neonatal TPN

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1. What was done?
Development and implementation of nutrition support protocols by using an electronic prescribing and compounding software (catoPAN™) to address the special needs of neonates and ensure a high level of individualized care.

2. Why?
Individual total parenteral nutrition (TPN) for neonates was originally compounded by nursing staff on the wards. This process was error-prone, documentation and traceability were inadequate and clean room conditions were absent.

3. How?
- Development of nutrition support protocols in cooperation with neonatologists
- A validated TPN compounding process was implemented, including the validation of catoPAN™ software and compounding pumps (Fig. 1)
- Various process and organizational changes concerning the wards, the production and the QC department of the hospital pharmacy (Fig. 2)

4. Achievements
(Infobox 1, Table 1)
- Compounding of individualized nutrition solutions within defined standards, predetermined specifications and quality attributes
- The production process is continuously monitored, including complete traceability
- A strong interprofessional collaboration between physicians ↔ nurses ↔ pharmacists
- A high level of confidence among all members

5. What is next?
- Expansion of TPN compounding to further pediatric wards / development of new nutrition protocols addressing other requirements
- Further support by pharmacy-based IV admixture service

**Table 1: Production data**

<table>
<thead>
<tr>
<th>Year</th>
<th>Produced bags</th>
<th>Increase compared to previous year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>6357</td>
<td>+ 5 %</td>
</tr>
<tr>
<td>2016</td>
<td>11126</td>
<td>+ 75 %*</td>
</tr>
<tr>
<td>2017</td>
<td>14398</td>
<td>+ 29 %</td>
</tr>
</tbody>
</table>

* Compounding of lipid infusions

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Figure 1: Validation process

Figure 2: Process of our TPN production