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What was done?

- **Development** of a standardized neonatal parenteral nutrition (PN) solution for the first days of life of newborn infants.
- **Manufacturing** of the ready-to-use double-chamber bag by an industrial partner.
- **Secured administration** and **reduced medication errors** (ME) by means of a high-quality product with a 24/7 availability.

Why was it done?

PN is indispensable for a good cerebral and neurologic development as well as a postnatal weight gain. PN can be composed of **about 50 different ingredients**, whereof the majority are amino acids (AA)

→ **PN is a complex and high-risk fabrication**

ME are often related to PN including prescription, transcription, preparation and administration errors

→ **ME can result in growth retardation, developmental disturbances and infections**

- ★ **Reduction of ME having an impact on vulnerable newborns.**
- ★ **Improvement of the security and quality of their nutritional treatment.**

How was it done?

Development of a neonatal PN conforming to the needs of two involved neonatal services by a **multidisciplinary working group**



Used references:
The **ESPGHAN guidelines** of 2005 and 2018.
A **standardized PN solution** used at the university hospital of Geneva HUG



“Formula hospitalis” (Swiss market only) development of an industrial production of **double-chamber infusion bags**.

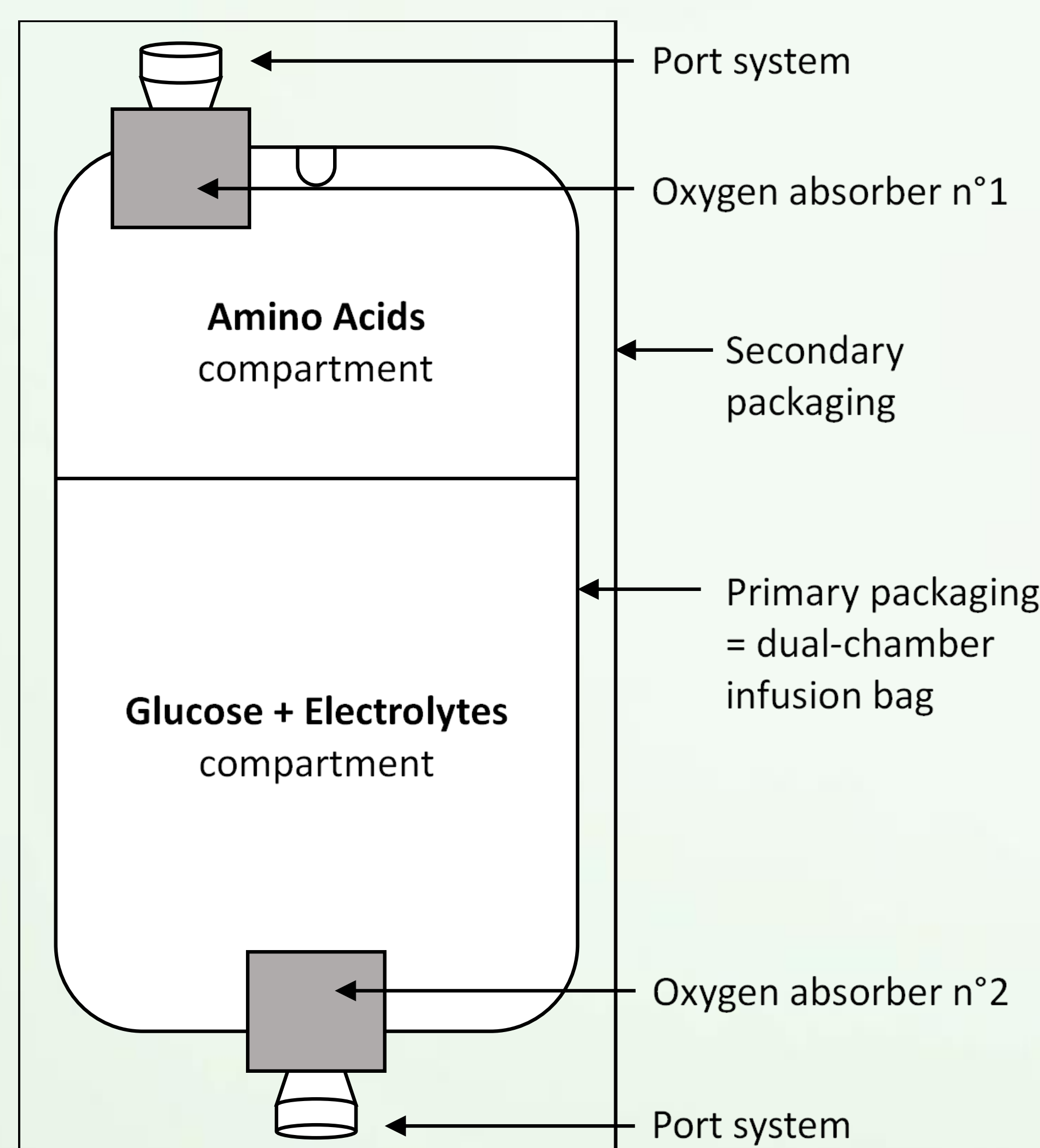
What has been achieved?

Characteristics:

- Volume: 250 mL
- Osmolarity: <900 mOsm/L
- Peripheral venous access
- Double-chamber bag
- Indication: first days of life

Stability:

- 18 months
- Storage at room temperature
- Oxygen absorbers to reduce degradation reactions by oxidation



★ Goals:

- **Implementation in March 2019** at the university hospital of Lausanne CHUV
- **Use of 90 bags/month**
- **Reduction of on-ward PN preparations by 80%**
- **Overall user satisfaction** on the neonatal ward

Composition	250 mL	
Amino acids	79 mL	31.4 g/L
Glucose		100.1 g/L
Sodium	171 mL	20 mmol/L
Calcium		11 mmol/L
Phosphate		8.6 mmol/L
Chloride		10 mmol/L
Non-prot. energy		400 kcal/L
Total energy		525 kcal/L
Osmolarity		883 mOsm/L



★ **The high-quality, ready-to-use neonatal PN with a 24/7 availability safes time for caregivers and increases the patient safety.**



What next? ~ Development of further standardized PN for newborn infants → **Safe nutritional treatment.**
 ~ Prohibition of on-ward PN preparations and takeover at the pharmacy → **Prevention of undetectable ME.**