Early parenteral nutrition in critically ill patients
Assoc. Prof. Gordon Doig, Sydney (Australia)

Study Goal: To investigate whether surgical or medical ICU patients with relative contraindication to early enteral nutrition (e.g. GI perforation or GI obstruction) benefit from early onset of PN at day one.

Study results in brief:

1. Early PN group showed a trend towards shorter ICU stay (Early PN 8.6 days vs SOC 9.3 days, p = 0.06)
2. Early PN saves one day of mechanical ventilation vs. standard of care (SOC)² (Early PN: -1.1 days vs SOC, p = 0.009)
3. Early PN is cost-effective with potential savings of >1800 €/case vs SOC ³
4. Early PN does not worsen mortality vs. SOC ² (60-d mortality: Early PN 21.5% vs SOC 22.8%, p = 0.6)
5. Early PN does not increase rate of infections vs SOC ² (Any major infection: Early PN 10.9%, SOC: 11.4%, p = 0.8)


Abbreviations:
AA: Amino Acids
EN: Enteral Nutrition
ESPEN: European Society for Parenteral and Enteral Nutrition
GI: Gastro-Intestinal
ICU: Intensive Care Unit
PN: Parenteral Nutrition
SOC: Standard Of Care
SPN: Supplemental Parenteral Nutrition

The complete slidesets of the three symposium lectures are available by courtesy of the speakers.
They may be downloaded from the Fresenius Kabi webpage under this URL:
www.fresenius-kabi.com/ESPEN_2013_information.htm

Fresenius Kabi Satellite Symposium
The power of optimised clinical nutrition
35th ESPEN Congress
Leipzig, Germany
1st September 2013
**SWISS SPN STUDY:**

**Goal-directed nutrition reduces nosocomial infections**

Prof. Claude Pichard, Geneva (Switzerland)

Early energy deficits in ICU patients are strongly related to increased complication rates. Study Goal of the Swiss SPN study: To investigate if in ICU patients the delivery of optimal nutrition support (100% of measured energy targets), achieved with the combined administration of EN and SPN, optimises their clinical outcome.

The optimal energy provision (i.e. supplemental PN to reach 100% of individual energy target as measured by indirect calorimetry) from day 4 resulted in a number of benefits:

- **Study results in brief:**
  - SPN does not increase mortality
  - Individually targeted SPN may reduce rate of nosocomial infections
  - Individually targeted SPN may reduce use of antibiotics
  - Individually targeted SPN may reduce duration of mechanical ventilation

- **ESPEN Enteral Nutrition guideline / Intensive care (2006):** Glutamine should be added to standard enteral formula in:
  - Burned patients – Grade A recommendation
  - Trauma patients – Grade A recommendation

- **ESPEN Parenteral Nutrition guideline / Intensive care (2009):** When PN is indicated in ICU patients, the AA solution should contain 0.2 – 0.4 g/kg/day of L-glutamine (e.g. 0.3 – 0.6 g/kg/day of alanyl-glutamine dipeptide) – Grade A recommendation

**Glutamine in clinical nutrition – what is the evidence?**

Prof. Pierre Dechelotte, Rouen (France)

- Enteral and i.v. glutamine supplementation – Well-established in the ICU with highest grade recommendation in current ESPEN guidelines
- Beneficial effects for i.v. glutamine supplementation in critically ill and mixed patient populations were confirmed in recent meta-analyses

**Meta-analysis (2013):** i.v. glutamine in mixed patient groups

- Significantly reduced relative risk for infections by 17%
- Shorter length of hospital stay (LOS) by 2.35 days

**Calculation of a pharmaco-economic model including the most recent evidence for ICU patients**

- Database analysis based on patient data from 200 Italian ICUs

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| Shorter length of hospital stay (LOS) by 2.35 days | Value: €4,448 (95% CI: -8,140 to -63, 36)
| Test for overall effect: Z = 2.30 (p = 0.03) |
| Hospital mortality | -33% |
| 10 % reduced mortality vs standard PN | Value: €3,523 (95% CI: -7,850 to -17,196; p = 0.0001) |
| 1.1 days reduction in hospital LOS vs standard PN | Value: €26.0 ± 1.1 days reduction in hospital LOS vs standard PN |
| Treatment costs for i.v. glutamine were over-compensated by savings on ICU and antibiotic costs. |

**Calculation of a pharmaco-economic model including the most recent evidence for ICU patients**

- Significantly increased mortality
- Longer duration of mechanical ventilation
- Increase in antibiotic days

**Calculation of a pharmaco-economic model including the most recent evidence for ICU patients**

- Significantly reduced nosocomial infections
- Reduced duration of antibiotic usage
- Cost savings per patient

- Significant relative risk reduction in hospital mortality by 33% (relative risk reduction 0.65 (0.49–0.86); p = 0.0001)
- Length of hospital stay (LOS) by 2.42 days

- Hazard ratio (multivariate analysis): 0.65, p = 0.0338

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