Neonatal and Paediatric TPN
Getting it Right

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Introduction
- Learning objectives
- PN practice and risks
- National reports
  - Key recommendations
  - Getting it right
    - Putting it into practice
    - National survey
  - Next steps

Learning Objectives
- By the end of this session...
  - Current practice and common risks
  - Key recommendations from reports
  - Findings from recent survey
  - Strategies for getting it right
  - What QA need to review and assure
  - Key references and resources

What is Parenteral Nutrition?
- Definitions
- Why we use it
- How we make it
- How we manage it
- The risks
  - Clinical
  - Technical
  - Organisational

Clinical risks include CV access, phlebitis, infection, metabolic imbalance, intestinal failure, medication errors, prescribing, poor monitoring
Technical risks include product selection, stability, automation, contamination, line integrity, and QA processes
Organisational risks include capacity (OOH), workforce, competency, error reporting and learning
Also cost pressures, QIPP, lack of standardisation, consensus

Technical errors in PN

UK NAERS 2004-2007
- 4691 reports (184 Paed PN)
- 0.49% of products made
- Paediatric PN 4%
- 99.5% near misses, 69% no potential/actual harm
- 1.7% actual errors (more minor, moderate harm)
- Staffing and capacity 68% (2.7% + 5.3%)
- Limitations

Q4 2010-11 Data
- 123 Paediatric PN reports
- Most common/serious:
  - wrong strength / volume of dextrose solution
  - wrong strength sodium chloride 0.9% v 30%
- Other errors
  - Calculation and labelling
  - Product selection errors


National Reports
NCEPOD 2010
- Themes
  - Clinical
  - Organisational
- Retrospective
  - Expert MD advisory group
  - Questionnaire / case notes
  - Adults and Neonates
- Report
  - Key findings
  - Recommendations

PCPG / NPPG 2011
- Clinical and technical
- Organisational
- External issues
- Prospective
  - Expert clinical / technical
  - Comprehensive survey
  - Neonates and Children
- Report (delayed)
  - Imperative actions
  - Recommendations
NCEPOD – overall assessment

Key recommendations

- **Internal organisational**
  - Executive and Chief Pharmacist
  - Capacity and Demand
- **Clinical guidance**
  - MDT Practice, prescribing, administration
  - Technical guidance
- **External organisations**
  - Industry, national advisory bodies, UKHD

Key recommendations

**National Advisory Board**
- End product testing prior to administration
- Stability data
- Education & training
- Section 10 supply
- Needleless connector

**NPSG / Industry**
- Raw materials suitable pack size/concentration
- Standardise range of licensed PN solutions
- To also include trace elements and vitamins

Key recommendations

- **Internal**
  - Capacity
  - MD Team led
  - Competency
  - Documentation
  - Practice
  - Technology
  - Rationalise
  - Standardise
  - Monitor

**Recommendations**

- Risk assess, review
- Minimum D,N,Ph, Di
- Training records
- Evidenced-based
- Controlled
- Prescribing / preparation
- Practice, solutions etc
- QA process / products
- Error trends / CAPA

Key recommendations

- **External**
  - BAPEN
  - NHS Ed & Dev / HEI
  - NAB
  - NQPAC
  - Compounds
  - NPSG and Pharma
  - Licensed products
  - NPPG / RCPCH
  - UKHDs

**Recommendations**

- Minimum competencies
- End product testing
  - Specialist technical
- Stability standards
  - Validation / maintenance
- Raw materials
  - Standard (+) bags
- Consensus, Research
- Legislation e.g. NMP

Putting it into practice

**National**
- Publicise reports
- Networks
- Engage Colleges
- RCPCH / RPS
- Research / Resources
- Implementation
- 2012 survey
- Quality & Safety
- EL(97)52 / errors
- Training & development

**Local**
- Risk assess practice
- Survey
- Errors / CAPA
- Review practice
- Clinical and technical
- Develop capacity
- Best practice
- Control systems
- Standardise / rationalise
- Share practice
Progress

- UK survey Aug 2012
- 106 UK Hospitals
  - 93.4% England
  - 4.7% Scotland
  - 1.9% Wales
- Variable responses
- Themes
- Limitations

- Incomplete data
- Non-mandatory
- Explicit questions
- Most focussed on ‘neonatal’ practice
- Many comments and practice examples.

Organisational (95 responses)

- Pharmacy review 61% Yes
- Board / Executives 88% Monitored
- Risk assessment 9 at capacity
- Action Plan 10 5-30% over
- Capacity plan 15 3-50% under
- "Don’t knowing"

- Monitored 8
- Variation 25% review / stop
- Response 63% standardised bags
- Outsource 67% choose

Aseptic / QA Services

- Availability
- Supply
  - Section 10
  - GMP
  - Out of Hours
  - Product
- QC approved
  - Audit / inspection
  - Issues identified

- MD Nutrition Team
- Availability
- Consultant led
- Prescribing
- Clinical support
- Pharmacy system
- Clinical Guidelines
  - Last review
  - Standardisation

Clinical Practice

- MD Nutrition Team
- Availability
- Consultant led
- Prescribing
- Clinical support
- Pharmacy system
- Clinical Guidelines
  - Last review
  - Standardisation

Training & Research

- Training package
- Re-assessment
- Error reporting
  - To NRLS
  - To NAERS
- IMP license
  - Clinical trials
  - Trial Lead /QP

Next Steps

- Are there any surprises from the results?
- What do inspections need to focus on?
- What roles can the QA/QC team play?
- What should be in a national PN toolkit?
- How do we share best practice and learning?
- What will you review in your own service?
References & resources

- NCEPOD ‘a mixed bag’ – an enquiry into the care of hospital patients receiving parenteral nutrition June 2010
  http://www.ncepod.org.uk/2010pn.htm
- PCPG Improving practice and reducing risk in the provision of parenteral nutrition for neonates and children. Nov 2011
- NPPG Neonatal and Paediatric Pharmacists Group
  http://www.nppg.scot.nhs.uk
- BAPEN British Association of Parenteral & Enteral Nutrition
  http://www.bapen.org.uk
- ESPEN European Society for Clinical Nutrition & Metabolism
  http://www.espen.org