Gníomhaireacht Bainistíochta an Chisteáin Náisiúnta
National Treasury Management Agency

An Ghníomhaireacht um Éilimh ar an Stát
State Claims Agency

Irish Society for Clinical Nutrition & Metabolism

Patient Safety Notification

Risks associated with Parenteral Nutrition

The number of reported incidents relating to parenteral nutrition over a one-year period.

Examples of some factors identified that contributed to parenteral nutrition incidents:

- **Prescribing issues:**
  - Not prescribed in the medication record
  - Incorrect regime prescribed
- **Ordering and delivery issues:**
  - Not ordered / not ordered in time
  - Not delivered to pharmacy / ward
  - Lack of availability of parenteral nutrition
- **Administration issues:**
  - Incorrect infusion rates/times/bags, administered to wrong patients
- **Other issues:**
  - Disconnected infusion lines, extravasation of central and peripheral lines

Date of Issue: 09 July 2024

Reference Number: SCA-PSN-11-01

T +353 (0)1 238 4900 **E** stateclaims@ntma.ie **W** www.stateclaims.ie

Reducing patient safety incidents associated with the use of parenteral nutrition

Parenteral nutrition (PN) is the intravenous administration of nutrition, bypassing the gastrointestinal (GI) tract. PN may be total (TPN), where the digestive system is not functioning at all, or supplementary (SPN), where some intake via the digestive system is possible but inadequate to meet requirements. PN is associated with several avoidable risks, which include infectious complications, catheter insertion complications, e.g. pneumothorax, and metabolic complications (glycaemic control, lipid clearance and biochemical imbalances). One of the most serious and avoidable complications is catheter-related infection (CRI). The Clinical Risk Unit has prepared the following advice, in conjunction with the Irish Society for Clinical Nutrition and Metabolism (IrSPEN). This advice is based on available best practice guidelines and should be considered along with further recommended reading.

Risk Considerations

A number of factors have been identified, which may contribute to PN incidents:

- Non-compliance with infection prevention and control policies, procedures and guidelines (PPGs) resulting in increased CRI risk:
    - Inappropriate disconnection of PN infusions during episodes of care, such as washing, dressing and toileting or to administer other IV medications; or during transitions of care such as mobilising or transfer to other departments
    - Nonadherence to aseptic technique
    - PN regimens not changed / discarded every 24 hours
- Inadequate safety checks:
    - Prior to administration (incorrect bag / service user)
    - Infusion rates not checked / corrected when incorrect
- Dislodged, damaged and leaking central venous catheters (CVCs) and peripherally inserted central catheters (PICCs); poor peripheral access with infiltration of peripherally inserted catheters (PICs)
- PN not ordered, prescribed, or delivered to ward
- Incorrect dose elements in excess of the service user's nutritional requirements
- Lack of dietitian involvement in care planning or prescribing (lack of resources, lack of referral)
- Failure to monitor electrolytes to evaluate response to treatment

Advice for Safe Practice

- Healthcare services should have in place, and adhere to, **PPGs** for the use of PN including:
    a) Ordering and prescribing
    b) Preparation, delivery, and storage
    c) Administration
    d) Monitoring
- There should be strict adherence to **Infection prevention and control** measures, which should include:
    a) Care bundles for CVCs, PICCs and PICs
    b) Monitoring for suspected catheter related infections
- Ensure that all health and social care professionals have the correct level of **education and training on the use and administration of PN** relevant to their setting prior to undertaking practice in this area. An e-Learning programme to support this guideline is available on www.hseland.ie
- **Educate patients / service users and their carers** on the risks associated with infusion lines, to include the risk of dislodging and disconnecting lines, such as when mobilising and dressing
- **Monitor biochemistry** and adjust PN accordingly to optimize treatment and prevent electrolyte imbalances.
- Ensure multi-disciplinary team involvement to oversee the provision of PN (the multi-disciplinary team should include medical, nursing, dietetic, pharmacy and infection control staff as a minimum)
- Undertake regular **audit** of implementation and impact of PN guidelines through outcome and process measures to support continuous quality improvement

References and further reading:

1. National Clinical Guideline, Guideline on the use of Parental Nutrition in Neonatal and Paediatric Units (07/2020)
2. https://my.clevelandclinic.org/health/treatments/22802-parenteral-nutrition
3. https://ecampusontario.pressbooks.pub/clinicalskills/chapter/8-8/

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