Guidelines for managing adults at risk of refeeding syndrome.

<table>
<thead>
<tr>
<th>Version:</th>
<th>V3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratified by:</td>
<td>Out of Hospital Division Governance Meeting Clinical Nutrition Group</td>
</tr>
<tr>
<td>Date ratified:</td>
<td>12th January 2018</td>
</tr>
</tbody>
</table>
| Name of author and title: | Sarah Tisdall, Specialist Acute Dietician  
Maria Andrade, Lead Divisional Pharmacist Planned Care |
| Date Written: | November 2017 |
| Name of responsible committee/individual: | Nutrition Steering Group |
| Date issued: | January 2018 |
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| Review date: | November 2019 |
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• Guideline for parenteral nutrition in adults  
• Guideline for managing adults at risk of refeeding syndrome.  
• Guideline for the placement of nasogastric tubes and nasal retaining loops in adults.  
• Guidance for Staff on the Implementation of the Mental Capacity Act (MCA)  
• Guidance for Staff on the Implementation of the Deprivation of Liberty Safeguards  
• Guidelines for the Administration of Drugs to Patients Unable to Swallow Solid Oral Dosage Forms |

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Version Control Table

<table>
<thead>
<tr>
<th>Version number and issue number</th>
<th>Date</th>
<th>Author</th>
<th>Reason for Change</th>
<th>Description of Changes Made</th>
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<tr>
<td>V1.0</td>
<td>April 2010</td>
<td>Sarah Tisdall, Specialist Acute Dietitian. Lucinda Silva, Advanced Specialist Dietitian in Nutrition Support. Ben Clarke, Specialist Pharmacist, Clinical Education and Training</td>
<td>Bi annual update</td>
<td>Including refeeding risk in the community</td>
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<tr>
<td>V2.0 2014224</td>
<td>August 2014</td>
<td>Sarah Tisdall, Specialist Acute Dietitian Maria Andrade, Lead Divisional Pharmacist Planned Care</td>
<td>Bi annual update</td>
<td></td>
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<tr>
<td>V3.0 2018028</td>
<td>October 2017</td>
<td>Sarah Tisdall, Specialist Acute Dietitian Stephanie Collins, Lead Pharmacist Medicines Information</td>
<td>Bi annual update</td>
<td>Addition of feeding regimens Modification of administration of vitamins via enteral feeding tubes Addition of suggested doses and administration information in section 6.5.2</td>
</tr>
</tbody>
</table>

Consultation Table

This document has been developed in consultation with the groups and/or individuals in this table:

<table>
<thead>
<tr>
<th>Name of Individual or group</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key members of the Nutritional Steering Group and its subgroup the Clinical Nutrition Group</td>
<td>NSG</td>
<td>November 2017</td>
</tr>
<tr>
<td>Out of Hospital Division Governance Group</td>
<td></td>
<td>January 2018</td>
</tr>
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1. Introduction

These Guidelines have been developed by East Sussex Healthcare NHS Trust for all adult patients who are at risk of refeeding syndrome and are managed by this Trust.

The Guidelines have been developed by reviewing current literature and manufacturer guidelines to develop evidence based and best practice guidelines for managing patients at risk of refeeding syndrome; ensuring equality of care and standard advice throughout the Trust.

These Guidelines should be used in conjunction with the following guidelines from East Sussex Healthcare NHS Trust and NICE:

- ESHT Nutrition Policy for Adults
- Guideline for parenteral nutrition in adults
- Guideline for the placement of nasogastric tubes and nasal retaining loops in adults.
- Guidance for Staff on the Implementation of the Mental Capacity Act (MCA)
- Guidance for Staff on the Implementation of the Deprivation of Liberty Safeguards
- Guidelines for the Administration of Drugs to Patients Unable to Swallow Solid Oral Dosage Forms

2. Rationale

The aim of this policy is to
- Assist in the identification of adult patients at risk of refeeding syndrome
- Provide evidence-based guidance for the management of adult patients at risk of refeeding syndrome.
- Prevention of refeeding syndrome in adult patients at risk.

3. Scope

This document applies to any healthcare professional involved in the care of an adult patient who is at risk of refeeding syndrome. These Guidelines have been developed to be specific to East Sussex Healthcare NHS Trust; both acute and community settings.

4. Definitions

Refeeding Syndrome (RFS)
Occurs as a result of severe fluid and electrolyte shifts and related metabolic implications in malnourished patients undergoing refeeding whether orally, enteraly or parenterally

Enteral feeding
Enteral feeding is the provision of nutrients straight into the gastrointestinal tract via a feeding tube. Enteral feeding can be used as a sole source of nutrition or to supplement a poor oral intake.

HE(T)F
Home Enteral (Tube) Feeding

Jejunostomy
A feeding tube inserted directly into the jejunum.

LFT’s
Liver Function Tests

Nasogastric (NG) tube
Tube that goes down the nose, oesophagus, then into the stomach
Nasojejunal (NJ) tube
A tube that goes down the nose, oesophagus, through the stomach, with its tip in the jejunum

NBM
Nil by mouth; deemed unsafe to have anything via oral route

Percutaneous Endoscopic Gastrostomy (PEG)
A feeding tube placed using an endoscope

RD
Registered Dietitian

Radiologically Inserted Gastrostomy (RIG)
A feeding tube inserted in radiology.

U & E's
Urea and Electrolytes (biochemistry)

5. Accountabilities

Doctor
- Identification of adult patients at risk of refeeding syndrome,
- Immediate referral to Dietetics
- Monitoring biochemistry and fluid balance as per process below
- Prescription of electrolytes and vitamins

Dietitian
- Education and training of all clinical staff and students as required
- Identification of adult patients at risk of refeeding syndrome.
- Assessment of adult patients at risk of Refeeding Syndrome
- Appropriate, safe nutrition care planning.

Pharmacist
- Advise Doctor on electrolyte and micronutrient prescription

Nursing staff
- Implement dietetic plan
- Keep strict fluid charts
- Monitor as per process below
- Highlight concerns to medical staff

6. Process

6.1 Pathogenesis of Refeeding Syndrome

In starvation
Insulin concentrations decrease and glucagon levels rise. As a consequence glycogen stores are rapidly converted to glucose and gluconeogenesis is activated resulting in glucose synthesis from protein and lipid breakdown products.
Guidelines for managing adults at risk of refeeding syndrome

The adipose tissue lipase is activated releasing large amounts of fatty acids and glycerol. Free fatty acids and ketone bodies replace glucose as the major energy source. In the starved state the catabolism of fat and muscle leads to loss of lean body mass, water and minerals

- ↑Gluconeogenesis → protein catabolism → negative nitrogen balance
- ↓ Lean body Mass
- Water and mineral depletion
- Adjustment to new metabolic state

During refeeding

There is a switch in metabolism from fat to carbohydrate with consequent insulin release, stimulated by the glucose load. With carbohydrate repletion and increased insulin production there is an increased uptake of glucose, phosphorus, potassium and water into cells, and a stimulation of anabolic protein synthesis.

Insulin release stimulates the sodium potassium adenosinetriphosphatase (ATPase) pump (which requires magnesium as a cofactor). This drives the potassium into the cells and sodium moves out. Carbohydrate load and insulin release stimulate phosphate shifts into the cells and phosphate depletion is associated with increased urinary magnesium excretion. These phenomena lead to low extracellular phosphate, magnesium and potassium and may precipitate the symptoms of refeeding syndrome (see table below).

Thiamine (vitamin B1) is an essential coenzyme carbohydrate metabolism. The symptoms of thiamine deficiency, Wernicke encephalopathy, can be precipitated by feeding with carbohydrate in a vitamin B depleted patient.

- Conversion to glucose as major energy source
- Insulin release
- ↑ Cellular glucose uptake ↑ protein synthesis
- Intracellular shifts and extracellular depletion of phosphate, potassium and magnesium
- Clinical symptoms of refeeding syndrome.

NB
Serum concentration of electrolytes may initially be normal due to adjustments in renal rate of excretion.

6.2 Consequences
The consequences of refeeding syndrome can be serious and include:

- Hypophosphataemia
- Hypokalaemia
- Hypomagnesaemia
- Altered glucose metabolism
- Fluid balance abnormalities
- Vitamin deficiency

These lead to cardiac, respiratory, neuromuscular, renal, metabolic, haematologic, hepatic and gastrointestinal (GI) problems. Please see Table 1 below.
Table 1. Consequences of the refeeding syndrome

<table>
<thead>
<tr>
<th>Electrolytes</th>
<th>Cardiac</th>
<th>Respiratory</th>
<th>Hepatic</th>
<th>Renal</th>
<th>GI</th>
<th>Neuromuscular</th>
<th>Haematological</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low phosphorus</td>
<td>Altered myocardial function</td>
<td>Acute ventilatory failure</td>
<td>Liver dysfunction</td>
<td></td>
<td></td>
<td>Lethargy, Weakness, Seizures, Confusion</td>
<td>Haemolytic anaemia, WBC dysfunction, Thrombocytopenia</td>
</tr>
<tr>
<td></td>
<td>Arrhythmia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coma, Paralysis, rhabdomyolysis</td>
<td>Haemorrhage</td>
</tr>
<tr>
<td></td>
<td>Congestive heart failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Red cell 2,3 diphosphoglycerate deficiency</td>
</tr>
<tr>
<td>Low potassium</td>
<td>Arrhythmia</td>
<td>Respiratory depression</td>
<td>Exacerbation of hepatic encephalopathy</td>
<td>Decreased</td>
<td>Constipation</td>
<td>Paralysis</td>
<td>Weakness</td>
</tr>
<tr>
<td></td>
<td>Cardiac arrest</td>
<td></td>
<td></td>
<td>urinary</td>
<td>ileus</td>
<td>Rhabdomyolysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECG changes</td>
<td></td>
<td></td>
<td>concentrating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low magnesium</td>
<td>Arrhythmia</td>
<td>Respiratory depression</td>
<td>Increased potassium loss</td>
<td>Abdominal</td>
<td>Constipation</td>
<td>Ataxia</td>
<td></td>
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<tr>
<td></td>
<td>Tachycardia</td>
<td></td>
<td></td>
<td>pain</td>
<td></td>
<td>Confusion</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Anorexia</td>
<td></td>
<td>Muscle</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Diarrhoea</td>
<td></td>
<td>Tremors</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Constipation</td>
<td></td>
<td>Tetany</td>
<td></td>
</tr>
</tbody>
</table>
6.3 Criteria for determining patients at risk of developing refeeding syndrome:

6.3.1 Patients at risk:
- Any patient who has had very little or no food intake for more than 5 days

6.3.2 Patients at High Risk
Any patient in starved state is at a higher risk of RFS if they also have any of the following:
- BMI less than 16kg/m²
- Unintentional weight loss greater than 15% within the last 3-6 months
- Little or no food intake for more than 10 days
- Low levels of serum potassium, phosphate and magnesium prior to feeding

Or if a patient has 2 or more of the following:
- BMI less than 18.5kg/m²
- Unintentional weight loss greater than 10% within the last 3-6 months
- Little or no nutritional intake for more than 5 days
- A history of alcohol abuse or drugs including antacids, diuretics, chemotherapy and insulin

6.3.3 Very High Risk
- Patients in a starved state with BMI< 14 Kg/m²
- Very little or no nutrition for more than 15 days

For assistance with identification of those at risk further information is available from BAPEN: Decision Tree 'Refeeding Syndrome: Identification of those at Risk' - [http://www.bapen.org.uk/pdfs/decision-trees/refeeding-syndrome.pdf](http://www.bapen.org.uk/pdfs/decision-trees/refeeding-syndrome.pdf), Item 1

6.4. Feeding

Adult patients at risk of refeeding syndrome need to be monitored and assessed daily in their usual environment and the guidelines below followed. **All adult patients should be referred to a dietitian for specialist advice.**

Adult patients with a high or extremely high risk of refeeding should be admitted to hospital. If they remain in the community their management is the responsibility of the GP.

If an adult patient is at risk and/or has had a poor nutritional intake for more than 5 days serum Potassium (K⁺), Phosphate (PO₄⁻), Magnesium (Mg²⁺) should be checked prior to initiating nutrition. This includes any type of nutrition i.e. food, oral nutritional supplements, enteral tube feeding or parenteral nutrition (PN).

Whilst electrolyte levels are being corrected, there is no need to delay the introduction of nutrition further.

For patients with Anorexia Nervosa see MARSIPAN Guidelines refs 17 and 8.

6.4.1 Patients at Risk

In adult patients at risk of refeeding syndrome, nutrition should be introduced at a maximum of 50% of total energy requirement for the first 2 days, as calculated by the dietitian. Please refer to the Dietetic department for specialist advice.

Continue to monitor serum potassium, phosphate and magnesium daily.
6.4.2 Patients at High Risk and Very High Risk

In patients at high and very high risk of refeeding syndrome please follow the flow chart below:

![Flowchart](chart.png)

For assistance with starting to feed safely further information is available from BAPEN: Decision Tree ‘Refeeding Syndrome: Identification of those at Risk’ - [http://www.bapen.org.uk/pdfs/decision-trees/refeeding-syndrome.pdf](http://www.bapen.org.uk/pdfs/decision-trees/refeeding-syndrome.pdf), Item 2

6.5 Replacement therapy

6.5.1 Vitamins

<table>
<thead>
<tr>
<th>Suggested Vitamin and Mineral Supplementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intravenous</strong></td>
</tr>
<tr>
<td>• IV Vitamin B e.g. Pabrinex&lt;sup&gt;®&lt;/sup&gt; ampoules 1&amp;2 daily for 10 days</td>
</tr>
<tr>
<td>• First dose to be given at least 30 mins before feeding initiated</td>
</tr>
<tr>
<td>• If unsupplemented PN used, give Cernevit by slow IV injection (over 10 minutes) or by infusion in 5% glucose or NaCl 0.9% ) or see product information</td>
</tr>
<tr>
<td>•</td>
</tr>
<tr>
<td><strong>Enteral Tube Feeding</strong></td>
</tr>
<tr>
<td>• Thiamine 50mg QDS (crushed) for 10 days (tablets should be crushed and dispersed in water) (First dose to be given before feed is initiated)</td>
</tr>
<tr>
<td>• NOTE: Crushed tablets increase the risk of tube blockage- Vitamin B compound Strong must not be used.</td>
</tr>
<tr>
<td>• Phlexy-vits&lt;sup&gt;®&lt;/sup&gt; under dietetic guidance until full feeding is established.</td>
</tr>
</tbody>
</table>
Oral

- Thiamine 50mg QDS for 10 days plus
- Vitamins BPC OD or Forceval® 1 capsule OD for 10 days. (If oral diet remains poor consider continuing)

6.5.2 Electrolytes

If patient has severe renal impairment seek further advice from Medicines Information/On call Pharmacist

<table>
<thead>
<tr>
<th>Potassium (K⁺)</th>
<th>MILD (3-3.5 mmol/L)</th>
<th>MODERATE (2.5-3 mmol/L)</th>
<th>SEVERE (&lt;2.5 mmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Sando-K® 2 tablets BD (contains 24mmol K and 16mmol Cl per tablet)</td>
<td>- Initial IV replacement regimen of 40mmol/L bag for the first 24 hours. Usual maximum rate is 10mmol/hour (available as 500ml or 1L bags). Thereafter consider oral supplementation.</td>
<td>- Use IV potassium chloride, not recommended at a rate exceeding 10 mmol/hour</td>
</tr>
<tr>
<td></td>
<td>If liquid required: -Kay-cee-L® syrup (contains 1 mmol K+/ml)</td>
<td></td>
<td>- Concentrations &gt; 40mmol/L via central access only</td>
</tr>
<tr>
<td></td>
<td>- If nil enterally and clinically indicated consider IV therapy</td>
<td></td>
<td>- Check U&amp;E 12-24h</td>
</tr>
<tr>
<td>Magnesium (Mg²⁺)</td>
<td>Mild/moderate (&gt;0.3-0.6 mmol/L) and asymptomatic</td>
<td>Symptomatic</td>
<td>&lt; 0.3 mmol/L</td>
</tr>
<tr>
<td></td>
<td>- Treat orally as clinically appropriate with Magnaspartate® sachets 10mmol BD</td>
<td>- IV replacement is given using 20mmol magnesium sulphate. Available as 1g (4 mmol) per 2ml or 5g (20 mmol) per 10ml ampoules. Dilute 20mmol in at least 50ml of sodium chloride 0.9% and administer over 6hrs. -Can be administered centrally or peripherally</td>
<td>- Use IV 20mmol magnesium sulphate</td>
</tr>
<tr>
<td></td>
<td>- If nil enterally or diarrhoea occurs consider IV therapy</td>
<td></td>
<td>- Repeated daily infusions may be required, check magnesium daily. Dilute 20mmol in at least 50ml of sodium chloride 0.9% and administer over 6hrs. -Can be administered centrally/peripherally</td>
</tr>
<tr>
<td>Phosphate (PO₄³⁻)</td>
<td>(0.5-0.70mmol/L)</td>
<td>(0.32-0.5 mmol/L)</td>
<td>(&lt;0.32 mmol/L)</td>
</tr>
<tr>
<td></td>
<td>- Phosphate Sandoz®: 1 tablet contains 16.1mmol phosphate, 20.4mmol of sodium and 3.1mmol of potassium. Consider Phosphate Sandoz® 1 TDS</td>
<td>- Consider Phosphate Sandoz® 1 TDS adjusting according to response to a maximum of 2 BD-TDS. Oral phosphate supplements should not be taken with aluminium, calcium or magnesium salts as these bind to phosphate reducing its absorption</td>
<td>- IV Phosphate Polyfusor® 500ml contains 50mmol phosphate, 81mmol sodium and 9.5mmol potassium</td>
</tr>
<tr>
<td></td>
<td>- Oral phosphate supplements should not be taken with aluminium, calcium or magnesium salts as these bind to phosphate reducing its</td>
<td></td>
<td>- Consider 2-5ml/kg over 6-12 hours. Maximum dose is 500ml per infusion (per day). Maximum rate is 15mmol phosphate per hour. - Can be administered centrally/peripherally</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Consider parenteral replacement if after 12-24 hours there is no significant</td>
<td></td>
</tr>
</tbody>
</table>
Phosphate ($PO_4^{3-}$) Continued

- Absorption
  - (MILD 0.5-0.7 mmol/L)
  - Consider parenteral replacement if after 12-24 hours there is no significant improvement in phosphate level or enteral route not available.
  - IV Phosphate Polyfusor® 500ml contains 50mmol phosphate, 81mmol sodium and 9.5mmol potassium
  - Consider 1-2ml/kg over 6-12 hours. Maximum dose is 500ml per infusion (per day). Maximum rate is 15mmol phosphate per hour.
  - Can be administered centrally/peripherally

- Improvement in phosphate level or enteral route not available.
  - (MODERATE 0.32-0.5mmol/L)

- IV Phosphate Polyfusor® 500ml contains 50mmol phosphate, 81mmol sodium and 9.5mmol potassium
  - Consider 2-5ml/kg over 6-12 hours. Maximum dose is 500ml per infusion (per day). Maximum rate is 15mmol phosphate per hour.
  - Can be administered centrally/peripherally

- (SEVERE <0.32mmol/L)
  - If fluid restricted with central access consider Addiphos®
  - Addiphos® 20ml vial contains 40mmol phosphate, 30mmol mmol of potassium and 30mmol sodium.
  - Dilute 1 vial
  - In 50ml glucose 5%.
  - Administer over 6-12 hours. More concentrated solutions have been used centrally in critical care units.

(See Medusa Injectable Medicines guide for administrations instructions)

Monitor electrolytes (phosphate, calcium and potassium) and renal function daily

*see Procedure for the Prescribing, Ordering, Storage, Supply and Administration of Strong Potassium Solutions

6.5.3 Monitoring patients in the early stages of refeeding syndrome

<table>
<thead>
<tr>
<th>Clinical monitoring</th>
<th>Frequency</th>
<th>Responsible Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure</td>
<td>NEWS-O-minimum 12hourly. Escalate if required according to new NEWS score.</td>
<td>Nursing</td>
</tr>
<tr>
<td>Pulse rate</td>
<td>NEWS-O-minimum 12hourly. Escalate if required according to new NEWS score.</td>
<td>Nursing</td>
</tr>
<tr>
<td>Fluid input and output</td>
<td>Hourly</td>
<td>Nursing</td>
</tr>
<tr>
<td>Food charts (where applicable)</td>
<td>Hourly</td>
<td>Nursing</td>
</tr>
<tr>
<td>Body Weight</td>
<td>Daily</td>
<td>Nursing</td>
</tr>
<tr>
<td>Neurological assessment</td>
<td>Daily</td>
<td>Doctor</td>
</tr>
<tr>
<td>Biochemical and electrolytes ($K^+$, $Mg^{2+}$, $PO_4^{3-}$)</td>
<td>Daily until on established nutrition support goal or as advised by the dietitian. To follow monitoring as TPN monitoring guidelines.</td>
<td>Doctor</td>
</tr>
<tr>
<td>Blood glucose levels</td>
<td>4 Hourly for 48hours &amp; then daily until stable</td>
<td>Nursing</td>
</tr>
</tbody>
</table>
7. **Special Considerations**

- Circulatory volume should be replaced but care should be taken not to fluid overload patients. Consideration should be given to the sodium content of the fluid used.

- Beware of very malnourished, dehydrated patients with renal impairment and consequently normal or high potassium and phosphate levels. These can change very rapidly (hours) to very low levels due to the combined effects of rehydration and refeeding.

- It is easy to overlook significant renal impairment in patients with very low BMI and recent starvation who have very low creatinine and urea production. They may therefore have only modestly raised plasma creatinine and urea levels.

- In the very high risk group of patients or those with known cardiac arrhythmias, the monitoring of cardiac rhythm via ECG (where available) is recommended.

- Note: IV fluids should be normal saline (NS) rather than dextrose which is an energy source. Any medications given with dextrose or with significant known calorie values (e.g. Propofol) should be recorded and discussed with the dietitian.

- For patients with Anorexia Nervosa who are considered at risk of refeeding syndrome please refer to [Marsipan management of really sick patients with anorexia nervosa 2nd Edition (Royal college of psychiatrists CR189)](https://www.rcpsych.ac.uk) or [Marsipan management of really sick patients under 18 with anorexia nervosa (Royal college of psychiatrists CR 168)](https://www.rcpsych.ac.uk)
8. References


9. Competencies and Training Requirements

Clinical Leads and Line Managers are responsible for ensuring all their staff are competent with the care and management of patients of refeeding syndrome.
10. Monitoring

Compliance with this policy will be monitored by audit on an annual basis by a sub group on the ESHT Nutrition Steering Group. Improvements identified from these audits will be formulated into an action plan and the progress monitored by the ESHT Nutrition Steering Group.

Audit reports will be circulated to the Trust Clinical Quality and Patient Safety Committee (CQPSC) and Trust Nursing, Midwifery and AHP Group (TNMAG) via the Nutrition Steering Group.

The Care Quality Commission also has the power to audit ESHT compliance with PCA Outcome 5 Meeting Nutritional Needs. This policy forms part of ESHT evidence showing our compliance.

<table>
<thead>
<tr>
<th>Element to be Monitored</th>
<th>Lead</th>
<th>Tool for Monitoring</th>
<th>Frequency</th>
<th>Responsible individual/group/committee for review of results/report</th>
<th>Responsible individual/group/committee for acting on recommendations/action plan</th>
<th>Responsible individual/group/committee for ensuring action plan/lessons learnt are Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance with guideline</td>
<td>Clinical Nutrition Group – sub group of Nutrition Steering Group</td>
<td>Audit</td>
<td>Annual</td>
<td>Clinical Nutrition Group</td>
<td>Nutrition Steering Group</td>
<td>Nutrition Steering Group</td>
</tr>
</tbody>
</table>

11. Equality and Human Rights Statement

An assessment of this document has been carried out as part of the Nutrition Policy.
Refeeding syndrome: Identification of those at risk – Decision Tree

1. Who is at risk?

Establish BMI, degree of unintentional weight loss in the last 3-6 months, period of little or no nutritional intake, potassium, magnesium and phosphate levels and any history of excess alcohol or drugs such as insulin, chemotherapy, antacids and diuretics

Any one of the following¹:
- BMI<16kg/m²
- Weight loss of >15% over 3-6/12
- Poor intake for 10 days
- Low electrolytes

Any two of the following¹:
- BMI<18.5kg/m²
- Weight loss >10% over 3-6/12
- Poor intake for 5 days
- Drug history as above

Patient is at risk of refeeding syndrome: refer immediately to the diettitian and/or nutrition team

Ensure adequate thiamine and B vitamins before and during the first 10 days of feeding: consider IV vitamin B preparation (e.g. pabrinex), or high dose thiamine (200-300mg/day) and Vit B Co strong 1-2 tablets/day. Seek assistance from dietitians or pharmacists.
- Include a balanced multivitamin and trace element supplement daily

see 2 for feeding and electrolyte recommendations, and monitoring

¹The BAPEN Principles of Good Nutritional Practice (Decision Trees) have been prepared to assist health care professionals in the decision making processes surrounding nutritional care. Users of these materials are to use them at their own risk and discretion and in accordance with their own professional knowledge and skills. BAPEN does not assume any duty of care and shall not be liable to anyone using these Decision Trees.
2. Refeeding: starting to feed safely

Commence feeding: can the oral route be used?

Yes

Consider oral nutrition supplements or naso-gastric feeding if not adequate. Seek dietetic input

Concerns

Assess swallow referring to Speech and Language therapist, and consider placing a naso-gastric tube²

No

Consider parenteral nutrition via appropriate venous access³

Commence nutrition at a maximum of 10kcal/kg/day increasing to meet needs by 7 days

High risk patients are those with BMI<14 kg/m² or prolonged poor intake of >15 days and should commence at 5kcal/kg/day

Measure electrolytes: even if normal, replace potassium, phosphate and magnesium². Only withhold supplementation if levels are high

Monitor glucose (BMIs) several times per day, and observe potassium, calcium, magnesium, phosphate and sodium closely as well as fluid balance clinically

The more rapidly calories are delivered and the rate increased, the greater the demand on circulating electrolytes; thus there will be an increased risk of re-feeding syndrome

Keep fluid input low, but enough to maintain renal function
Restrict sodium replacement⁶
### Guidelines for managing adults at risk of refeeding syndrome

**Appendix 2 - Enteral Nutrition REFEEDING Starter Regimen NG/PEG/RIG**

**Red Flags’ for patients at risk of REFEEDING SYNDROME:**
- Weight < 50 kg
- Little or no food intake for > 7 days
- Unintentional weight loss of ≥10% over 3-6 months
- A history of substance abuse
- Low levels of serum potassium, magnesium and phosphate

**Please refer patient to Dietitian. If any ‘Red Flags’ identified, refer to REFEEDING REGIMEN and refeeding syndrome guidelines.**

Check position of tube by aspirating before commencing feed (NG tube), pH should be ≤4 to confirm correct position.

<table>
<thead>
<tr>
<th>Feed</th>
<th>Pump flow rate (ml/hr)</th>
<th>Hours of feeding</th>
<th>Total volume of feed in 24hrs (mls)</th>
<th>Energy (kcal)</th>
<th>Protein (g)</th>
<th>Na⁺ (mmol)</th>
<th>K⁺ (mmol)</th>
<th>Sterile water flushes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAY 1</strong> Nutrison 1000 Complete Multifibre</td>
<td>20</td>
<td>20</td>
<td>400</td>
<td>416</td>
<td>22</td>
<td>26</td>
<td>23.2</td>
<td>Flush NG tube with 100mls of water pre and post feed and with medications</td>
</tr>
</tbody>
</table>

*The patient’s head and shoulders should be elevated to at least 30° - 40 ° (i.e. raised) during feed and 1 hour after feeding to reduce risk of reflux.

Post PEG/RIG insertion patient NBM and nil by PEG/RIG for 6 hours, then flush gastrostomy with 50ml water and if no complications proceed to use regime above and follow the gastrostomy feeding in adults guidelines.

*Please continue with day 1 if tolerated until dietetic review*

- Extra fluid may be needed for hydration but check fluid balance daily to ensure patient receives adequate fluid but is not overfilled, discuss with medical team need for extra IV fluids
- Please document nasogastric tube position and pH on reverse
- If not tolerating feed follow NG/Gastrostomy FEEDING FLOW DIAGRAM in the Enteral Feeding Guidelines.
- If there are any contraindications for using a fibre feed please use ‘Nutrison’ for day 1 and 2
Starter Regimen Parenteral Nutrition

TPN SOLUTION IS NOT SUITABLE FOR ANY PATIENTS WITH AN EGG OR SOYA ALLERGY- PLEASE CHECK FOOD ALLERGIES

Please refer patient to Dietitian and refer to refeeding guidelines if required.

<table>
<thead>
<tr>
<th>TPN regimen code no.</th>
<th>Route of administration (central/ peripheral)</th>
<th>Hourly TPN rate (ml/ hr)</th>
<th>Total Volume over 24 hours</th>
<th>Prescriber Signature</th>
<th>kcal</th>
<th>Blood Results</th>
<th>Other fluid volume (next 24hours)</th>
<th>Total fluid volume (next 24hours)</th>
<th>TPN given by:</th>
<th>Date &amp; time given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days 1 &amp; 2- Nutriflex Lipid Peri 1266mls</td>
<td>Peripheral/ central</td>
<td>25mls/ hr for 24 hours</td>
<td>600 mls</td>
<td>453 kcal over 24 hrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If refeeding risk or weight is less than 50kg

Please continue as above until dietetic review and administer pabrinex unless contraindications as per Refeeding syndrome guidelines

Discuss with medical team need to extra IV fluids

Prior to commencing TPN please check the following: a Indications, b. Is the Enteral route accessible and viable? – If it is, TPN is not indicated. c. What is the aim of treatment (goal)? d. Access. e. Length of time required. f. Bloods and weight. (Refer to monitoring sheet). g If TPN is being considered during normal working hours bleep Dietetics to discuss further: - Conquest 2566, EDGH 4694.
Appendix 4 – Staff Feedback Form

Please complete this form if you would like to make a comment on the procedural document you have just read. Your feedback will be held by the Assurance Manager and your views will be taken into account at the next review date of the document.

<table>
<thead>
<tr>
<th>Title of the procedural document:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of next review:</td>
<td></td>
</tr>
<tr>
<td>Your name (optional):</td>
<td></td>
</tr>
<tr>
<td>Date today:</td>
<td></td>
</tr>
<tr>
<td>Your comments:</td>
<td></td>
</tr>
</tbody>
</table>

Thank you for your feedback

Please forward this form to: **Assurance Manager (NHSLA)**
## Appendix 5

**Due Regard, Equality & Human Rights Analysis**

<table>
<thead>
<tr>
<th>Title of document: Guidelines for managing adults at risk of refeeding syndrome</th>
</tr>
</thead>
</table>

**Who will be affected by this work?** E.g. staff, patients, service users, partner organisations etc. All ESHT staff working within the Trust who are involved in the care of adult patients who are at risk of refeeding syndrome and managed within the Trust

**Please include a brief summary of intended outcome:**
To assist in the identification of adult patients at risk of refeeding syndrome, to prevent refeeding syndrome in adult patients at risk and to provide evidence-based guidance for the management of such patients.

<table>
<thead>
<tr>
<th>Does the work affect one group less or more favourably than another on the basis of: (Ensure you comment on any affected characteristic and link to main policy with page/paragraph number)</th>
<th>Yes/No</th>
<th>Comments, Evidence &amp; Link to main content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> Age</td>
<td>Yes</td>
<td>The guideline is aimed at adults at risk of refeeding syndrome. We do not provide a service to paediatrics as we do not have the expertise and as such these paediatric patients would need to be treated by a centre with expertise such as BSUH NHS Trust or a London Teaching Hospital</td>
</tr>
<tr>
<td>Disability (including carers)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Religion &amp; Belief</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sexual Orientation (LGBT)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Pregnancy &amp; Maternity</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Marriage &amp; Civil Partnership</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Gender Reassignment</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Other Identified Groups</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

| 2. Is there any evidence that some groups are affected differently and what is/are the evidence source(s)? | No | |

<p>| 3. What are the impacts and alternatives of implementing / not implementing the work / policy? | 6.2: The consequences of refeeding syndrome can lead to cardiac, respiratory, neuromuscular, renal, metabolic, haematological, hepatic and gastrointestinal problems outlines in Table 1 |</p>
<table>
<thead>
<tr>
<th></th>
<th>Please evidence how this work / policy seeks to “eliminate unlawful discrimination, harassment and victimisation” as per the Equality Act 2010?</th>
<th>The policy applies to all adults at risk of refeeding syndrome as per sections 1-3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Please evidence how this work / policy seeks to “advance equality of opportunity between people sharing a protected characteristic and those who do not” as per the Equality Act 2010?</td>
<td>The policy applies to all adults at risk of refeeding syndrome as per sections 1-3</td>
</tr>
<tr>
<td></td>
<td>Please evidence how this work / policy will “Foster good relations between people sharing a protected characteristic and those who do not” as per the Equality Act 2010?</td>
<td>Section 5: All staff outlined in this section have a responsibility to ensure that they access relevant training / policy and are aware of the means by which they can safely administer feeding and monitor patients</td>
</tr>
<tr>
<td></td>
<td>Has the policy/guidance been assessed in terms of Human Rights to ensure service users, carers and staff are treated in line with the FREA principles (fairness, respect, equality, dignity and autonomy)</td>
<td>All aspects of FREA are considered and applied to the policy</td>
</tr>
<tr>
<td></td>
<td>Please evidence how have you engaged stakeholders with an interest in protected characteristics in gathering evidence or testing the evidence available?</td>
<td>Refer to consultation Table P2</td>
</tr>
<tr>
<td></td>
<td>Have you have identified any negative impacts or inequalities on any protected characteristic and others? (Please attach evidence and plan of action ensure this negative impact / inequality is being monitored and addressed).</td>
<td>No</td>
</tr>
</tbody>
</table>