Adult Refeeding Syndrome Clinical Guideline

1. Guiding Principles

The purpose of this guideline is to establish minimum practice standards for the care and management of refeeding syndrome in adults throughout the WA Country Health Service (WACHS).

Refeeding syndrome (RFS) is a potentially fatal shift in fluids and electrolytes that may occur in severely malnourished or starved patients when first re-introduced to feeding[1] either via oral, enteral or parenteral routes. The condition typically appears in the first days of refeeding and is potentially fatal if not recognised promptly[1].

The primary feature of RFS is hypophosphatemia however other biochemical disturbances that may also occur include hypokalaemia and hypomagnesaemia; disorders of sodium and fluid balance; changes in glucose, protein, and fat metabolism and thiamine deficiency[2]

The clinical manifestations of RFS occur as a result of the functional deficits of electrolytes and vitamins and the rapid change in basal metabolic rate. There is a spectrum associated with these clinical features which are patient specific ranging from asymptomatic cases to life threatening symptoms. Low levels of these electrolytes and vitamins can manifest into clinical conditions listed in Appendix 1.

2. Guideline

A multi-disciplinary approach to the management of RFS is essential. The Dietitian, Medical Officer (MO), Nursing and Pharmacy staff should work together to manage patients with RFS. Critical points for management include:

i. Recognise patients at risk (refer to 2.1) and assess level of RFS risk (refer to 2.2)

- Once patients have been identified as a refeeding risk, they should be referred to a Dietitian for full nutritional assessment and Medical Officer for medical work up,
- Dietitian / Medical Officer to assess level of refeeding risk.

ii. Screen/monitor for electrolyte deficiency and replacement (prior to feeding where possible)

- Before the initiation of nutrition support, the treating Medical Officer is to order biochemistry for kidney function (UEC), calcium/magnesium/phosphate, Full Blood Count (FBC), Liver function tests (LFTs).
- Medical Officer to prescribe thiamine prior to commencing any nutrition support and then prescribe daily along with a multivitamin and trace element supplements (refer to 2.5)

- The treating Medical Officer is to supplement and /or correct biochemistry levels as indicated. It is not necessary to correct electrolyte levels before starting feeding. However, blood levels of potassium, magnesium, calcium and phosphate should be measured daily and aggressively corrected as feeding proceeds[5]
- Cardiac monitoring should be considered if the patient requires IV supplementation or at extreme risk of RFS[6].

iii. Gradual Feeding: increase based on resolution of symptoms and biochemistry (refer to 2.4)

- Dietitian to prescribe nutrition support according to nutrition assessment, risk level and choice of nutrition support route (oral, enteral or parenteral)
- Feeding to be slow and gradual under guidance of Dietitian and treating medical team
- Strict fluid balance monitoring. The treating Medical Officer is to correct any fluid imbalances. Careful rehydration is important in RFS as many patients are dehydrated. The ideal is to maintain a zero fluid balance to reduce the risk of pulmonary oedema.

Note: Please refer to:
- WA Eating Disorders Outreach and Consultation Service (WAEDOCS) guidelines for specific guidelines for management of RFS in eating disorder patients
- CAHS Refeeding Syndrome Prevention and Management in Malnourished Children Guideline for management of RFS in children.

2.1 Screening for RFS

On admission, patients should have their nutrition and hydration status assessed and documented by nursing or medical staff. This is documented on:

- MR111 WACHS Nursing Admission, Screening and Assessment Tool - Adults
- RC5 Resident Admission Assessment Form
- MR60.1.5 WACHS Malnutrition Screening Tool (MST)

Please refer to the Nutrition Screening, Assessment and Management Procedure for more information on nutrition screening and assessment. All patients at risk of malnutrition and refeeding are referred to the Dietitian for full nutrition assessment and nutrition care planning.

Identifying at risk patients for RFS

There are well documented patient groups who are at risk of RFS, where undernutrition may be a predominant factor[3]:

- Anorexia nervosa
- Chronic Alcoholism and/or other drug abuse
- Oncology patients
- Post-operative patients
- Frail elderly patients (with low BMI)
- Uncontrolled diabetes

- Long term antacid and diuretic users
- Patients with chronic malnutrition
- Prolonged fasting, or chronically low intake
- Morbid obesity with rapid weight loss
- High stress patient unfed for >7 days
- Malabsorptive syndromes (inflammatory bowel disease, chronic pancreatitis, cystic fibrosis, short bowel syndrome).

When considering patients at high risk of RFS, the following criteria should be used[4]:

One or more of the following:	Two or more of the following:
• Body Mass Index (BMI) less than 16kg/m²	• Body Mass Index (BMI) of less than 18.5kg/m²
• Unintentional weight loss greater than 15% in past 3-6 months	• Unintentional weight loss greater than 10% in past 3-6 months
• Little or no nutritional intake for more than 10 days	• Little or no nutritional intake for more than 5 days
• Low levels of potassium, phosphate or magnesium prior to feeding.	• History of alcohol or drug misuse, including insulin, chemotherapy, antacids or diuretics.

2.2 Assessment of RFS clinical risk

The level of clinical risk associated with RFS is compounded by pre-existing nutritional status. Refer to Table One (1) below to assess level of risk with RFS.

	Moderate RFS[2,4]	High Risk RFS[1,5]	Extreme Risk RFS[1,4]
BMI	BMI <20kg/m²	BMI <18.5kg/m²	BMI <14kg/m²
Weight loss	Unintentional weight loss >5% within 3-6 months	Unintentional weight loss >10% within 3-6 months	Unintentional weight loss >10% within 3-6 months
Intake	Very little or no food intake for >5 days	Very little or no food intake for >5 days	Negligible intake for >15 days
Biochemistry	Levels within normal limits	Low levels potassium, phosphate or magnesium prior to feeding	Low levels potassium, phosphate or magnesium prior to feeding

Table One (1): Identifying level of risk associated RFS

Referral to the Dietitian is required to undertake a full nutrition assessment of the patient's clinical risks associated with their level of RFS. Please refer to Appendix 2 for details of multiple factors to consider when completing nutritional assessments[2].

2.3 Oral Nutrition Support

The goal of nutrition support in patients **at risk** of RFS is to reach estimated nutritional requirements while minimising metabolic and clinical complications and maintaining normal biochemistry[2]. In patients identified as **refeeding** (excluding patients with Anorexia Nervosa) the rate of energy repletion should be based on the assessed severity of the patient's malnutrition prior to refeeding as per Dietitians recommendations[1,2, 4, 5,6].

It is recommended:

- Feeding is only commenced once nutrition and laboratory assessments have been carried out[6].
- Feeding is commenced under strict supervision of a Dietitian[6] where possible (for afterhours / weekends, please refer to *If Dietitian is not available within 24-48hrs)*
- Oral diet should be encouraged initially. This includes a small ward diet as tolerated based on meeting recommended energy requirements as outlined in Table Two below. The Dietitian may prescribe a special meal plan for the patient to meet their requirements through oral diet.
- No food is to be provided from outside the hospital.
- Commence oral nutrition sip supplements only if diet is not tolerated and at the discretion of the Dietitian and Medical Officer.
- Oral nutrition sip supplements are to be low in energy (ie 1cal/ml); examples of 1cal/ml oral nutrition sip supplements include Sustagen® RTD, Resource Protein, Glucerna
- Oral nutrition sip supplements should be increased after assessment of oral intake and meeting recommended energy requirements as outlined in Table Two below.

See Table Two (2) below for recommendations regarding starting nutrition support requirements and increasing levels slowly to meet patient's nutritional needs.

Grading of Nutrition	**Moderate risk** [4]	**High risk**	**Extremely risk**
Days 1 and 2	50% requirements Or 20kcal/kgIBW/day (84kJ/kgIBW/day)	10kcal/kg/day (42kJ/kgIBW/day)	5kcal/kg/day (21kJ/kgIBW/day)
Day 3+	Increase as per clinical condition and biochemistry until requirements met	Increase by 21kJ/kgIBW/day as per clinical condition and biochemistry until requirements met	Increase by 21kJ/kg/IBW/day as per clinical condition and biochemistry until requirements met NB: monitor cardiac rhythm continually[4]

Table Two (2) : Nutrition support recommendations[1, 4, 5,7]

Note: If underweight use current weight not IBW[8]

Estimating protein requirements for patients at risk of RFS[2]

Current literature indicates it is suitable to aim for protein intakes of **1.2 - 1.5g/kg/day** in patients at risk of RFS, although some patients may have increased (e.g. severe trauma, severe burns) or decreased protein requirements (e.g. renal failure with uraemia)[2].

If a Dietitian is not available within 24-48 hours[6]:

- Order the patient small meal serves from the standard hospital diet with no snacks or desserts, and no food is to be provided from outside the hospital.
- Do not provide any oral nutrition sip supplements to the patient.
- If the patient requires enteral feeding, refer to Appendix 10: Adult After Hours Enteral Feeding Regimen in the WACHS Enteral Tubes and Feeding – Adult Clinical Practice Standard.

2.4 Enteral or Parenteral Feeding

If the patient requires enteral or parenteral feeding, please refer to WACHS Enteral Tubes and Feeding – Adult Clinical Practice Standard or WACHS Total Parenteral Nutrition Clinical Practice Standard for establishing feeding and **refer to the Dietitian**. Nutrition support should also be introduced cautiously in patients requiring enteral or parenteral feeding who present with refeeding risk[4].

Enteral feeding:

- Administer enteral feed continuously via pump over 24 hours
- It should be started at no more than 50% of the estimated target energy and protein needs, and gradually increase according to metabolic and gastrointestinal tolerance[4]
- Suggested starting rates: 30 ml / hr and grade up 10ml every 12 hours until reach target rate OR as per Dietitian feeding plan.

Parenteral feeding (PN):

- PN should only be started after careful consideration and planning by the medical team, with consultation with the Dietitian and Pharmacy.
- Suggested starting rates: 20 ml / hr for 24 hours or 42kJ/kg IBW/day OR as per Dietitian's feeding plan.

Do not discontinue feeding if biochemistry levels fall. Electrolytes cannot be successfully corrected without nutritional provision. However, where serum potassium, magnesium or phosphate levels are significantly low, feeding should not be advanced further until supplementation has occurred[5].

2.5 Vitamin and Electrolyte Supplementation

Multivitamin

Patients at *risk/ high risk* of RFS should commence a balanced daily multivitamin and trace element supplement[6] for the first 10 days of refeeding or until nutrition support provides the recommended intake of micronutrients [1, 2-4].

Patients with malabsorption (from conditions such as gastrointestinal surgeries, chronic pancreatitis or cystic fibrosis) may benefit from IV administration: for example:

- 5ml multivitamin vial/day and 10ml vial/day trace element (Refer to local guidelines or MIMS online for advice on how to administer)

Thiamine

Thiamine is an essential co-enzyme in carbohydrate metabolism, and deficiency can result in Wernicke-Korsakoff encephalopathy if patients are fed carbohydrate when deficient in thiamine. Chronic alcohol intake is a high-risk factor for thiamine deficiency, as it reduces absorption of oral thiamine as well as impairing the utilisation of thiamine due to decreased production of thiamine related enzymes.

Medical Officer to prescribe thiamine *before* starting nutrition support[5]

- At risk patients:
  - Thiamine 200-300mg oral / enteral for first 10 days[1],[4, 6]
- High/very high risk:
  - Thiamine 200mg IV TDS for 3 days then 100mg oral / enteral once daily[2]
- Please note IV route is more appropriate for patients with a history of alcohol abuse / Wernicke's. Dose may vary between 200mg-500mg IV TDS depending on the patient and clinical decision by the Medical Officer[1,9].

Electrolyte Replacement Therapy[1,4,10, 11]

For patients with electrolyte deficits, feeding can still be commenced immediately, but with caution and supervision. If there is evidence of severe deficiency, then it is recommended to withhold nutrition and replace electrolytes over 1-2 days[3].

Electrolyte	Range[11]	Estimated requirement[4]	Examples of Preparations[6]	Administration Guide
Potassium	3.5-5.1 mmol/L	2-4 mmol / kg / day	Chlorvescent tabs® : 14 mmol / tab Slow release potassium tab: 8mmol/tab IV: Potassium Chloride 10 mmol / 100 mL premixed bags	WACHS High Risk Medications Procedure WACHS Specialised Medication - Potassium Supply Policy
Magnesium	0.77–1.33 mmol/L	0.2 mmoL / kg / day intravenously OR 0.4 mmoL / kg / day PO / Enteral	Magnesium 400 mg capsule : 16.5 mmol / capsule / capsule IV: Magnesium Sulfate 10 mmol / 5 mL injection	WACHS High Risk Medications Procedure

Phosphate	0.8–1.45 mmol / L	0.3 to 0.6 mmoL / kg / day Oral: 1000 mg / day (mild deficit range 0.61-.079 mmol / L)[1]	Phosphate effervescent tab: 16.1 mmol / tab IV: Potassium Dihydrogen Phosphate: 10 mmol of Potassium and Phosphate / 10mL	WACHS Specialised Medication - Intravenous Phosphate Supplementation in Adults Guideline WACHS High Risk Medications Procedure

These can be given orally, enterally or IV based on clinical presentation of the patient.

Please refer to the following standard clinical resources for more information on administration of the above electrolytes:

- Australian Injectable Drugs Handbook: https://aidh-hcn-com-au.wachslibresources.health.wa.gov.au/browse/about_aidh
- Therapeutic Guidelines: https://tgldcdp.tg.org.au/etgAccess

2.6 Monitoring of nutritional clinical indicators with RFS

Below is the recommended monitoring frequency for clinical indicators in patients at risk and /or who have been identified as refeeding. More frequent monitoring may be indicated in the initial days of nutrition repletion, especially in patients who manifest symptoms of hypophosphataemia[2].

Clinical Indicator	Frequency of Monitoring
UEC	Baseline, daily until patient is clinically stable, then 1-2 times / week
LFTs and albumin	Baseline, twice weekly until stable and then weekly Albumin weekly after baseline
FBC	Baseline, then 1-2 times / week
Calcium, magnesium, phosphate	Baseline, daily until patient is clinically stable and then weekly
Blood sugar levels	4 hourly until patient is clinically stable; then as clinically indicated ie 1-2 times per day
Vitals (heart rate, blood pressure, respiratory rates)	4 hourly or QID
Weight	Daily body weights until fluid balance is stable
Height	On admission

Nutrition intake	Strict daily dietary intake chart, reducing to twice weekly when stable MR144c WACHS Food Intake Chart
Fluid balance	Strict daily fluid balance chart MR144 WACHS Fluid Balance Work Sheet
Bowels	Daily
Urine output	Daily
Oedema / ascites	Daily or as clinically indicated
Nutrition Impact Symptoms (nausea, vomiting, appetite)	Daily or as clinically indicated
ECG	Consider in the first week of re-feeding

3. Definitions

Carer	A person who provides personal care, support and assistance to another individual who needs it because they have a disability, a medical condition (including a terminal or chronic illness) or a mental illness, or are frail and/or aged
Malnutrition	Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. The term malnutrition covers 2 broad groups of conditions. One is 'undernutrition'—which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals). The other is overweight, obesity and diet-related non-communicable diseases (such as heart disease, stroke, diabetes and cancer).
Patient	A person who is receiving care in a health service organisation
Wernicke's Encephalopathy	A condition caused by thiamine deficiency, in which a person has one or more of: acute confusion, coma, reduced consciousness, memory disturbances, ataxia, nystagmus, ophthalmoplegia, hypothermia or unexplained hypotension.

4. Roles and Responsibilities

All Staff are required to work within policies and guidelines to make sure that WACHS is a safe, equitable and positive place to be.

Role	Responsibilities
Dietitian	• Performs nutrition assessment • Identify status of RFS risk and coordinates care with treating medical team and pharmacist • Plans and sets goals for nutrition support in liaison with MDT and patient • Prescribes therapeutic diets and oral nutrition supplements • Prescribes and monitors of enteral / parenteral nutrition • Educates patients and significant other(s)/carers • Liaises with catering department and members of the MDT • Organises nutrition support for discharge • Provides health service staff education regarding refeeding, nutrition and screening.
Medical Officer	• Considers the patient's mental and physical ability to feed • Requests daily pathology • Prescribes micronutrient and electrolyte supplementation.
Nursing Staff	• Performs nutrition screening in collaboration with the MDT • Coordinate protected mealtimes and facilitate food /oral nutrition sip supplements intake • Monitor diet intake as per Dietitian request, including completing strict food intake charts • Completes fluid balance charts, stool charts and monitors weight as requested • Monitors the patient closely for signs and symptoms of RFS • Deliver and monitor enteral / parenteral nutrition.
Pharmacist	• Advises on the prescription of micronutrient and electrolyte supplementation • Advises on parenteral nutrition composition and compatibilities • Ensures supply of parenteral nutrition solutions • Advises on drug nutrient interactions and drug delivery.

5. Compliance

Failure to comply with this policy document may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the Employment Policy Framework issued pursuant to section 26 of the *Health Services Act 2016* (WA) and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

WACHS staff are reminded that compliance with all policies is mandatory.

6. Records Management

Records Management Policy
Health Record Management Policy

7. Evaluation

Review of this document is to be carried out by WACHS Dietetic Area Coordinator, every five (5) years using the following means or tools:

- Review with key stakeholders

8. Standards

National Safety and Quality Health Service Standards:1.7, 1.8, 1.27, 5.27, 5.28

9. Legislation

(Accessible via: Government of Western Australia (State Law Publisher or ComLaw)
Carers Recognition Act 2004
Equal Opportunity Act 1984
Equal Opportunity Regulations 1986
Health Practitioner Regulation National Law Act 2010 (WA)
Occupational Safety and Health Act 1984 (WA)
Occupational Safety and Health Regulations 1996
Privacy Act 1988
State Records Act 2000 (WA)

10. References

Irish Society for Clinical Nutrition and Metabolism. Prevention and Treatment of Refeeding Syndrome in the Acute Care Setting, Nov 2013

Royal Perth Bentley Group Refeeding Syndrome Clinical Guideline April 2018 [Accessed via HealthPoint: 17th April 2019]

Mehanna, H.M., J. Moledina, J. Travis. (2008). Refeeding syndrome: what it is, and how to prevent and treat it. British Medical Journal. 336 (7659): 1495-98.

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CNSG East Cheshire NHS Trust. Guidelines for Prevention and Management of Refeeding Syndrome in Adults, 2015

Fiona Stanley Hospital. Adult Refeeding Syndrome. August 2014 [Accessed via HealthPoint: 17 April 2019]

Boatemg AA, Sriram K, Meguid MM and Crook M. (2010) Refeeding Syndrome: treatment considerations based on collective analysis of literature case reports. Nutrition 26: 156-167

Stewart, R. (2011). Griffith Handbook of Clinical Nutrition & Dietetics (4th ed.). Australian Publishing.

WACHS Great Southern Administration of Thiamine in Chronic Alcohol Abuse Guideline. January 2018 [Accessed via HealthPoint: 17 April 2019]

Australian Medicines Handbook Pty Ltd, 2018, Oral Electrolytes, accessed July 2018 https://amhonline.amh.net.au/chapters/blood-electrolytes/tables/oral-electrolytes-table?menu=hints

Khan, L., Ahmed, J., Khan, S., & MacFie, J. (2011). Refeeding Syndrome: A Literature Review. Gastroenterology Research and Practice.

11. Related Forms

MR111 WACHS Nursing Admission, Screening and Assessment Tool - Adults
MR111P WACHS Paediatric Nursing Admission / Discharge Assessment
MR120 WACHS Adult Nursing Care Plan "My Care Plan"
MR120P WACHS Paediatric Nursing Care Plan
MR144c WACHS Food Intake Chart
MR144 WACHS Fluid Balance Work Sheet
MR60.1.12 WACHS Oral Nutrition Support Chart
MR60.1.10 WACHS Adult Enteral Feeding Form
RC5 Resident Admission Assessment Form
RC7 Resident Care Plan

12. Related Policy Documents

WACHS Nutrition Screening, Assessment and Management Procedure
WACHS Enteral Tubes and Feeding – Adults Clinical Practice Standard
WACHS Adult Parenteral Nutrition Clinical Practice Standard
WACHS Allied Health Clinical Handover Policy
WACHS Medication Prescribing and Administration Policy
WACHS High Risk Medications Procedure
WACHS Specialised Medication - Intravenous Phosphate Supplementation in Adults Guideline
WACHS Potassium Supplementation Policy
CAHS Refeeding Syndrome Prevention and Management in Malnourished Children

13. Related WA Health System Policies

MP 0053/17 WA Clinical Alert Med Alert Policy
MP 0095/18 Clinical Handover Policy
MP 0122/19 Clinical Incident Management Policy 2019
MP 0131/20 High Risk Medication Policy
MP 0171/22 Recognising and Responding to Acute Deterioration Policy
MP 0175/22 Consent to Treatment Policy

14. Policy Framework

Clinical Governance, Safety and Quality

15. Appendices

Appendix 1: Clinical Manifestations of RFS[11]
Appendix 2: Pathophysiology of RFS[1,2]
Appendix 3: Detailed Nutrition Assessment for RFS[1,2]

This document can be made available in alternative formats on request for a person with a disability

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Appendix 1: Clinical Manifestations of RFS[11]

Deficiency	Clinical implications
Hypophosphataemia (normal range 0.8–1.45 mmol / l)	• Cardiovascular: heart failure, arrhythmia, hypotension, cardiomyopathy shock, death • Renal: acute tubular necrosis, metabolic acidosis • Skeleton: rhabdomyolysis, weakness, myalgia, diaphragm weakness • Neurology: delirium, coma, seizures, tetany • Endocrine: hyperglycaemia, insulin resistance, osteomalacia • Haematology: haemolysis, thrombocytopenia, leukocyte dysfunction.
Hypokalaemia (normal range 3.5–5.1 mmol / l)	• Cardiovascular: hypotension, ventricular arrhythmias, cardiac arrest, bradycardia or tachycardia • Respiratory: hypoventilation, respiratory distress, respiratory failure • Skeleton: weakness, fatigue, muscle twitching • Gastrointestinal: diarrhoea, nausea, vomiting, anorexia, paralytic ileus, constipation • Metabolic: metabolic alkalosis.
Hypomagnesaemia (normal range 0.77–1.33 mmol / l)	• Cardiovascular: paroxysmal atrial or ventricular arrhythmias, repolarisation alternans • Respiratory: hypoventilation, respiratory distress, respiratory failure • Neuromuscular: weakness, fatigue, muscle cramps (Trousseau and Chvostek) weakness, • ataxia, vertigo, paraesthesia, hallucinations, depression, convulsions • Gastrointestinal: abdominal pain, diarrhoea, vomiting, loss of appetite, and constipation • Other: anaemia, hypocalcaemia • NB: many cases of hypomagnesaemia do not manifest clinically till very late.
Hyponatremia (normal range 136–145 mmol / l) due to hyperglycaemia	• Cardiovascular: heart failure and arrhythmia • Respiratory: respiratory failure, pulmonary oedema • Renal: renal failure • Skeleton: muscle cramps, fatigue, fluid retention and swelling (oedema).
Thiamine	• Neurology: Wernicke-Korsakoff syndrome, Korsakoff's psychosis • Cardiovascular: congestive heart failure and lactic acidosis, beriberi disease.

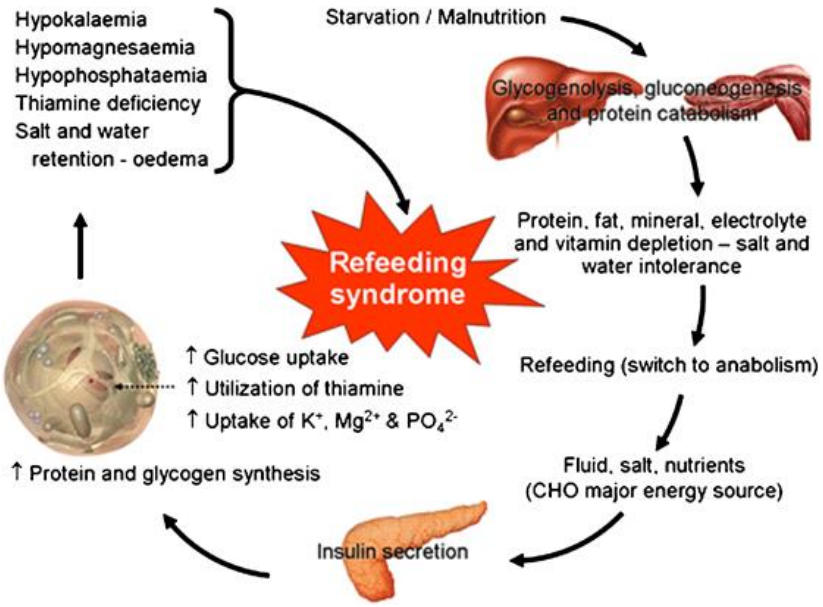
Appendix 2: Pathophysiology of RFS[1,2]

During **prolonged starvation**, insulin secretion is decreased in response to the lack of carbohydrates, and as a result, fat and protein are metabolised as the primary energy source. The shift to protein catabolism causes the gradual loss of cellular and/or muscle mass, with major organs such as the heart, lungs, liver and intestines the most severely affected.

There is usually severe depletion of phosphate, magnesium and potassium but as they are primarily intracellular electrolytes this may not be reflected in serum concentrations. Thiamine, a water-soluble vitamin, is also depleted in malnourished patients.

After starvation, **reintroduction of nutrition** stimulates insulin release, carbohydrate metabolism and synthesis of glycogen, fat and protein. This is associated with intracellular movement of phosphate, magnesium and potassium, which are already depleted, resulting in a dramatic fall in serum levels. Hypophosphatasemia, the hallmark sign of RFS, typically occurs on or between the second to fourth days of refeeding. While mild to moderate hypophosphatemia is often asymptomatic and may go unrecognised, severe derangements may lead to widespread dysfunction of cellular processes and are associated with increased adverse effects. Thiamine, which is also depleted, is rapidly metabolised as a coenzyme in glucose oxidation. Although gluconeogenesis is initially suppressed, continuation of feeding results in hyperglycaemia [4, 5, 2].

Source: Z Stanga, et al. 2008, Nutrition in clinical practice—the refeeding syndrome: illustrative cases and guidelines for prevention and treatment: The refeeding syndrome. European Journal of Clinical Nutrition 62, 687-694



Appendix 3: Detailed Nutrition Assessment for RFS[1-2]

There are multiple factors which Dietitians must consider when assessing patients' risk of RFS including[2]:

Anthropometric measurements to evaluate body composition such as:

- height
- current weight and weight history
- percentage weight changes
- BMI.

Diet history to establish the extent to which a patient's nutritional requirements are being met such as:

- recent food and fluid (including alcohol and intravenous hydration) intake
- extent of variation to usual intake and duration of inadequacy
- comparison of energy and protein intake to individual estimated nutritional requirements
- social considerations including psychosocial, socioeconomic, environmental and educational factors. Note: Indigenous Australians may fast for cultural reasons such as sorry business.

Physical assessment such as:

- physical appearance including assessment of fat and/or muscle loss, oedema, skin colour and turgor
- Subjective Global Assessment (SGA) and Patient Generated – SGA (PG-SGA)
- mobility and ambulatory capacity
- fluid status, heart rate, blood pressure
- clinical or functional signs of nutritional deficiencies.

Biochemical and haematological indices such as:

- pre-feeding serum levels of electrolytes, specifically phosphate, potassium, magnesium and sodium
- thiamine status and levels of other vitamins
- blood glucose levels
- albumin, however possible confounding factors such as fluid status and inflammatory state should be considered.

Clinical considerations: Injury, acute or chronic illness and surgery can significantly impact nutritional status due to the direct effects of disease and indirect effects on food intake.

Factors to consider include:

- Altered nutritional requirements
- Impaired nutrient ingestion/ dysphagia
- Gastrointestinal function and impaired digestion and/or absorption i.e. vomiting, diarrhoea.
- Increased nutrient losses.
- Medications may affect nutrient intake, absorption, metabolism and/or excretion. Consider supplements (e.g. vitamins or minerals), diuretics, oral hypoglycaemic agents and insulin.
- Mood, psychological factors.