Identification and Management of Malnutrition in the Canterbury District Health Board Hospitalised Adult and Paediatric Patients

Contents

Purpose

The purpose of this document is to improve the malnutrition screening rates in the inpatient setting within the CDHB in, thereby ensuring appropriate identification, diagnosis and treatment of malnutrition.

Studies (2,3,4,5) including NZ data show that the prevalence of malnutrition is widespread in all health care settings and is largely unrecognised and under diagnosed resulting in a decline in nutritional status and adverse outcomes for the patient and results in increased costs (6).

Patients with malnutrition are known to have longer length of hospital stays, increased costs for their health care and poorer outcomes (4, 5). Malnutrition is associated with increased morbidity and mortality, falls and readmission to hospital. Malnutrition can complicate recovery from disease, trauma and surgery. The incidence of malnutrition in hospitals in Australasia has been found to be between 20-50% in adults depending on the patient group (2). The Australasian Nutrition Care Day Survey from 2010 showed the prevalence of malnutrition in hospitals was 32% and 41% of patients were at risk of malnutrition (3). The same study also showed that malnourished patients had a 5 day longer stay than well-nourished patients and a higher re-admission rate (3, 4,5). Early identification of patients at risk or with malnutrition is therefore essential to ensure that an effective care plan is put in place and monitored to improve outcomes (7, 8).

Patients who initially screen as well-nourished or not at risk of malnutrition can experience a decline in nutritional status during their hospital stay, so rescreening for patients hospitalised for more than 5 days is essential (2,7).

Malnutrition can be found in patients across BMI categories including those who are overweight or obese, as well as those who are underweight. Being overweight or obese may mask the presence of nutritional deficiencies. The same malnutrition risks occur in patients of any BMI (9).

Policy

The aim of this policy is to ensure that all patients are screened for malnutrition risk when admitted to hospital and rescreened within regular intervals throughout their admission to ensure that malnutrition is diagnosed and treated within an appropriate time-frame. A secondary aim is to ensure that the diagnosis criteria used within New Zealand is standardised.

For adults the validated tool in use at the CDHB and West Coast DHB is the Malnutrition Screening Tool (MST) (or MUST for Mental Health Services) (7).

CDHB Paediatric wards use a paediatric specific screening tool – the Paediatric Nutrition Screening Tool (PNST) (10). Infants, children and teenagers are weighed on admission and where appropriate a height is taken. For those under 2 years old, length and head circumference are measured also.

All screening should be completed within 24 hours of admission or at pre-admission. If the pre-admission screening has been undertaken prior to admission, it should be repeated on admission to capture change of nutritional status (8). Screening should also be completed on transfer to another hospital.

Rescreening of all inpatients should occur every 5 days as nutritional status has been shown to deteriorate during hospital stays.

Care needs to be taken to ensure that other concurrent medical and/or nutritional needs are identified and considered when planning the nutritional intervention e.g. renal disease.

Care should be taken with patients who are unsafe for transfer when weighing.

A multidisciplinary approach to the identification and treatment of malnutrition can improve patient outcome.

Exceptions for screening are neonates, women post-delivery, and those having day procedures. It may not be appropriate to screen some patient groups i.e. those at end of life. There are currently no validated tools for use in screening for infants or women who have short hospital stays on average post-delivery.

If the patient screens as being 'at risk of malnutrition', referrals to a dietitian must occur according to the DHB referral guidelines/malnutrition action chart.

All clinical staff should be oriented to the policy, and as relevant trained on procedures in the Policy document, on a regular basis. This may include education of other allied health staff involved in MST screening, health care assistants as well as nursing and medical staff.

Nutrition screens are best if simple and can be completed by either the patient/caregiver or staff.

Scope

This document provides information on the identification, diagnosis and management of malnutrition in adult and paediatric patients. This standard is to be used by all staff working in inpatient services including the surgical pre-admission setting.

Timely and appropriate identification, diagnosis and management of patients diagnosed with malnutrition or at risk of malnutrition (using the tools outlined in this document) will ensure that an effective care plan is put in place and monitored to improve patient outcomes. (1)

Definitions

Nutrition Screening: A simple procedure used by nursing, medical or other staff such as assistants, on admission to detect those who have a significant nutritional problem or significant risk of such problems, in order to initiate and implement nutrition therapy. A nutrition risk screen should be rapid and consist of 2-3 questions that have been validated

to predict risk which should be followed up with a formal nutrition assessment regarding the presence of malnutrition (10).

Malnutrition, at risk of: A patient who has eaten little or nothing for more than 5 days and/or is likely to eat little or nothing for the next 5 days or longer, or has poor absorption capacity, high nutrient losses or increased needs due to catabolism (11).

Malnutrition: A state of nutrition in which a deficiency or excess of energy, protein and/or other nutrients causes measurable adverse effects on tissue/body form, composition function or clinical outcome. In the acute care setting and in this document malnutrition will be considered as under-nutrition (8).

Malnutrition Action Flow Algorithm: An algorithm that provides a nutritional treatment plan based on the score of the malnutrition screening tool utilised when a patient is identified as having malnutrition or at risk of malnutrition. This details action that can be undertaken by nurses, including where relevant, a referral to a dietitian.

Associated documents

- ICD 10 Codes (Appendix 2).
- Referral criteria to Dietitians (see health pathways).
- Related Nutritional Standards of Care or Evidenced-based guidelines (DHB specific).
- Nutrition Care Process Terminology (NCPT) and definitions of malnutrition in adults (access through DNZ portal for the latest definitions).
- Other associated guidelines e.g. ERAS guidelines, Food and Hydration Policy Guideline.

Policy statement

Prevention

Wherever possible, prevention of malnutrition should be the goal for patients admitted to hospital or seen in outpatient or community settings, due to the potential adverse outcomes for patients.

An institutional culture where nutrition is seen as a priority should be fostered.

DHBs should have policies that facilitate universal screening for malnutrition, including re-screening for those patients who stay for longer than 1 week.

Patients should be weighed on admission and then weekly to capture changing nutritional status.

All clinicians should be educated on the importance of screening for malnutrition, and the risks around inadequate nutrition for the patient. This includes nursing and other MDT members who can create urgency around the need for screening.

The creation of nutrition champions is encouraged in wards or services.

Detection of the risk of Malnutrition

CDHB must ensure an effective process is used to identify and monitor malnutrition and its outcomes. CDHB should ensure that there is a framework in place to support malnutrition as a patient safety indicator i.e. there should be a governance process in place for malnutrition.

Screening:

A malnutrition screening tool, which includes a weight check, must be completed and documented for all patients admitted to the inpatient setting within 24 hours of admission (6, 12). A positive screen should result in a full dietetic assessment for malnutrition.

Nursing Responsibilities:

- Screen all adult patients on admission using the MST (or MUST in Mental Health) and record results in the patient care-plan. Rescreen every 5 days during the hospital admission (this must be documented in the patients care plan).
- Weigh patients within 24 hours of admission (or as soon as possible in Mental Health) and weekly thereafter, or as directed by dietitian/medical team.
- In some situations, the screening tool may be completed in the pre-assessment area prior to admission to identify those patients most at risk. Other situations where the screening tool may be completed more than 24 hours post admission are secondary to a patient's condition e.g. trauma, those with low GCS or acute intervention delaying screening e.g. major burns requiring fluid resuscitation and urgent theatre.
- Implement the appropriate nutrition treatment using the Malnutrition Action Flow Chart (see appendix 2). For low and moderate risk patients, implement the appropriate nutrition treatment using the Malnutrition Action Flow Chart. If the patient meets the referral criteria for medium and high risk, (taking into consideration other medical/nutrition needs), arrange the High Protein Energy (HPE) diet and refer to a dietitian in the first instance.
- Ensure that the appropriate diet code is entered on Floview (if Christchurch Hospital campus) or as per local hospital process, for the patient (referral to the dietitian required in Mental Health) (considering texture requirements and other clinical conditions).
- Ensure that the nutrition intervention is received by the patient and that a food chart is completed if required.
- Document accurate food and fluid intake in the medical records or food chart as appropriate.
- Document any nutrition concerns in the medical records. Communicate concerns to medical team and/or dietitian according the Malnutrition Action Flow Chart.

- Some of these tasks may be delegated to a health care assistant but remain the responsibility of the nurse to document and action.
- Ensure that patients are assisted in setting up for meals, opening packets and assisting with feeding where needed (as per restorative care).
- Attend training/education provided on nutrition screening and monitoring, and is familiar with the CDHB processes regarding meal delivery, special diet provision, how to obtain supplements and the dietitian referral criteria.

Medical staff responsibilities:

- Identify the presence of malnutrition or malnutrition risk in patients using current evidence-based guidelines. NB A low albumin is not an indicator of malnutrition.
- Identify patients at risk of refeeding syndrome and follow guidelines on Hospital Health Pathways.
- Ensure that patients identified as being at nutritional risk are started on the appropriate intervention as per the nutrition action flow chart or referred to the dietitian if they meet the ward referral criteria. In Mental Health all patients at risk of Refeeding Syndrome should be referred to a dietitian.
- Document the presence of malnutrition, according to agreed definitions, in the medical notes/electronic record so that this is clear for the clinical coders (14).
- Document the presence of malnutrition clearly within the discharge summary to ensure all professionals who are supporting the patient in the community including the GP are aware.
- Application for Special Authorities for Special Foods (e.g. Fortisip or Ensure) where patient meets PHARMAC criteria if a Dietitian is not involved with patient care or is a non-prescriber.

Dietitian responsibilities

- Assess referred patients (MST >3) or MUST ≥2 in Mental Health.
- Complete Subjective Global Assessment (SGA) or/and full assessment using ASPEN guidelines and record this in the initial assessment.
- Implement and document a nutrition care plan following discussion with patient and/or carer, family, medical team or nursing staff.
- Monitor nutrition goals and follow up as required.
- Provide education to patients and/or carers/family to reverse malnutrition wherever possible.
- Document the nutrition diagnosis and extent of malnutrition, according to agreed definitions, in the medical notes so this is clear for the clinical coders
- Provide regular education to all staff including nursing education programs, doctor's orientation on the identification and management of malnutrition.

- Regular education to key stakeholders, primarily the users of the tool to keep up with staffing turnover.
- Make application for special authority for Special Foods when the patient meets PHARMAC criteria. (This is limited to designated dietitian prescribers).
- Ensure an appropriate nutrition care plan is in place on discharge including ongoing referral to other services as appropriate.

Dietary Assistant (DA) Responsibilities:

- Urgent discharge requirements e.g. nutrition supplements, HEN equipment/consumables
- Urgent discharge non-complex standardised dietary instructions to patients (as directed by the Dietitian) e.g. education and storage of special foods, education on meal preparation.
- First line DA assessment including malnutrition coding, initiating nutrition intervention for malnutrition, monitoring and review
- Take supplements to discharging patients (non-urgent)
- HEN equipment/consumables for discharge (non-urgent)
- Ordering and Management of Special Foods for the Hospital Kitchen/supplement room – liaising with Diet Cook, PA for Dietitians, supply Department and Dietitians re stock/enteral feeds etc
- Provide non-complex standardised dietary instructions to patients (as directed by the Dietitian) e.g. education and storage of special foods, education on meal preparation.
- Provide non-complex standardised dietary education to patients such as food safety, basic HPE, poor appetite
- Interdisciplinary Team responsibilities:
- All members of the wider Interdisciplinary Team are aware of the risk of malnutrition and the need to take joint responsibility regarding the risk of malnutrition and ensure appropriate plans are in place.
- Regular audits are undertaken to audit compliance of completing the screening tool and an appropriate action plan is in place.
- Monitoring of complications as a result of malnutrition is undertaken.
- Appropriate and timely referrals to dietitians are actioned.

Assessment and Diagnosis of Malnutrition

- Once a patient is screened and has been identified as at risk of malnutrition (MST > 3/MUST ≥2 in Mental Health) the patient should be referred to the dietitian as per ward practice i.e. board meetings, written referral.
- Following receipt of the referral the dietitian completes a comprehensive nutrition assessment to determine the nutrition problem/s, aetiologies and presence of malnutrition.
- A cluster of subjective and objective signs and symptoms gathered in the nutrition assessment process provide evidence that the nutrition problem exists, quantifies the problem and describes its severity:
    - Biochemical tests as appropriate
    - Anthropometry: unintentional weight loss, % weight loss, and BMI (NB malnutrition can occur at any BMI)
    - Food and nutrition related history: energy and/or protein intake less than requirements
    - Nutrition focused physical findings: muscle/fat loss

Subjective Global Assessment (SGA)

Subjective Global Assessment (SGA) is the gold standard for diagnosing malnutrition (15). SGA is a simple bedside method of assessing the risk of malnutrition and identifying those who would benefit from nutrition care.

The assessment includes taking a history of recent intake, weight change, gastrointestinal symptoms and a physical evaluation to determine nutrition status and rates the patient as well nourished (SGA A), mildly malnourished (SGA B) or severely malnourished (SGA C). SGA has been validated in a variety of patient populations including cancer, dialysis, surgical and intensive care (15, 16).

There are a number of different types of SGA used around the world. New Zealand dietitians have agreed to use the Patient Generated SGA (PG-SGA) (16) and Traditional SGA (15). The Traditional SGA is often preferred in the inpatient setting as patients are less likely to complete the patient generated section of the PG-SGA.

It is necessary to also consider whether there is a presence of cachexia, sarcopenia or frailty which can affect the nutrition intervention.

Cachexia – If there is an underlying predisposing disorder (e.g. malignancy) and there is evidence of reduced muscle and fat mass, and no or limited improvement with optimal nutrient intake (19).

Sarcopenia – If there is an underlying disorder (e.g. aging) and there is evidence of reduced muscle mass and strength, and no or limited improvement with optimal nutrition intake (19).

Frailty - the definition of frailty is evolving. The general perception is that frailty is a state of vulnerability and non-resilience with limited reserve capacity in major organ systems. The condition contains nutrition related components i.e. weight loss, fatigue, weakness, and is linked to sarcopenia. Many factors can contribute to this weight loss many of which are modifiable (19).

Following completion of the SGA or PG-SGA, a rating is made to determine the degree of malnutrition:

SGA-A - Well-nourished no decrease in food/nutrient intake; < 5% weight loss; no/minimal symptoms affecting food intake; no deficit in function; no deficit in fat or muscle mass OR *an individual with criteria for SGA B or C but with recent adequate food intake; non-fluid weight gain; significant recent improvement in symptoms allowing adequate oral intake; significant recent improvement in function; and chronic deficit in fat and muscle mass but with recent clinical improvement in function.

SGA-B - Mildly/moderately malnourished definite decrease in food/nutrient intake; 5% - 10% weight loss without stabilization or gain; mild/some symptoms affecting food intake; moderate functional deficit or recent deterioration; mild/moderate loss of fat and/or muscle mass OR *an individual meeting criteria for SGA C but with improvement (but not adequate) of oral intake, recent stabilization of weight, decrease in symptoms affecting oral intake, and stabilization of functional status.

SGA-C - Severely malnourished severe deficit in food/nutrient intake; > 10% weight loss which is on-going; significant symptoms affecting food/ nutrient intake: severe functional deficit OR *recent significant deterioration obvious signs of fat and/or muscle loss.

SGA should only be undertaken by clinicians who have been trained in performing the physical assessment.

AND/ASPEN Adult Malnutrition Clinical Characteristics

Another approach to diagnosing malnutrition is to use the Nutrition Care Process Terminology (NCPT) malnutrition clinical characteristics provided by the AND/ASPEN Adult Malnutrition Consensus Statement (20,22). Malnutrition is categorised based on aetiologies and time and degree of inflammatory response: starvation related malnutrition, chronic disease related malnutrition and acute disease or injury related malnutrition.

The malnutrition clinical characteristics which provide evidence that a problem exists are:

- Insufficient energy intake
- Weight loss
- Loss of muscle mass
- Loss of subcutaneous fat
- Localized or generalized fluid accumulation
- Diminished functional status (hand grip strength).

Malnutrition in children:

Paediatric malnutrition (undernutrition) is defined as an imbalance between nutrient requirement and intake, resulting in cumulative deficits of energy, protein, or micronutrients that may negatively affect growth, development, and other relevant outcomes (23). Individualised assessment of patients at risk of malnutrition is required to determine risk and therapy.

Documentation of a diagnosis of malnutrition:

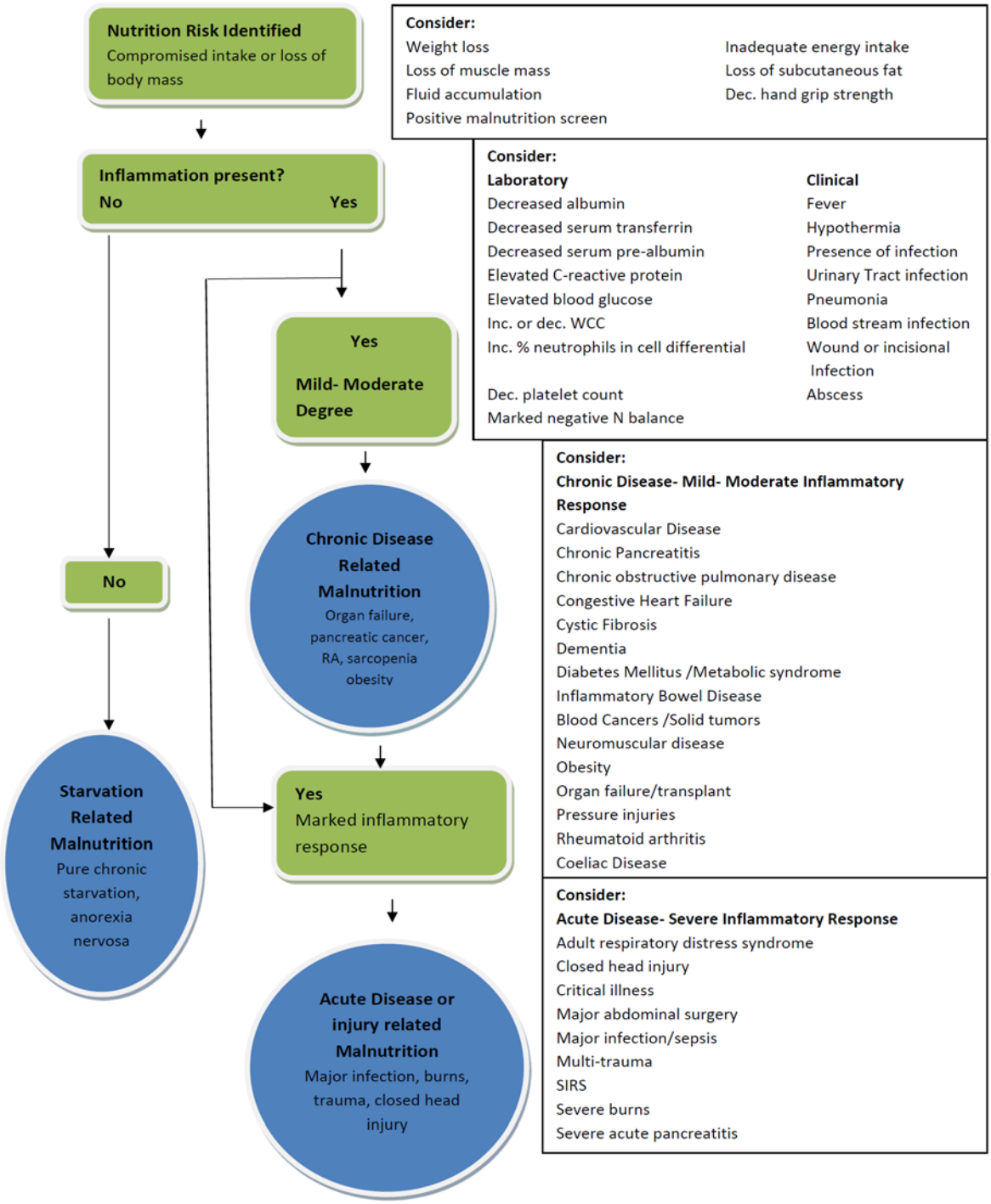
The malnutrition diagnosis should be clearly documented in the patient notes using the Nutrition Care process and Terminology (24). Tool used to assess malnutrition should be clearly stated.

Identifying the severity of the malnutrition stating whether the patient is well nourished mild/moderate or severely malnourished should be clearly documented.

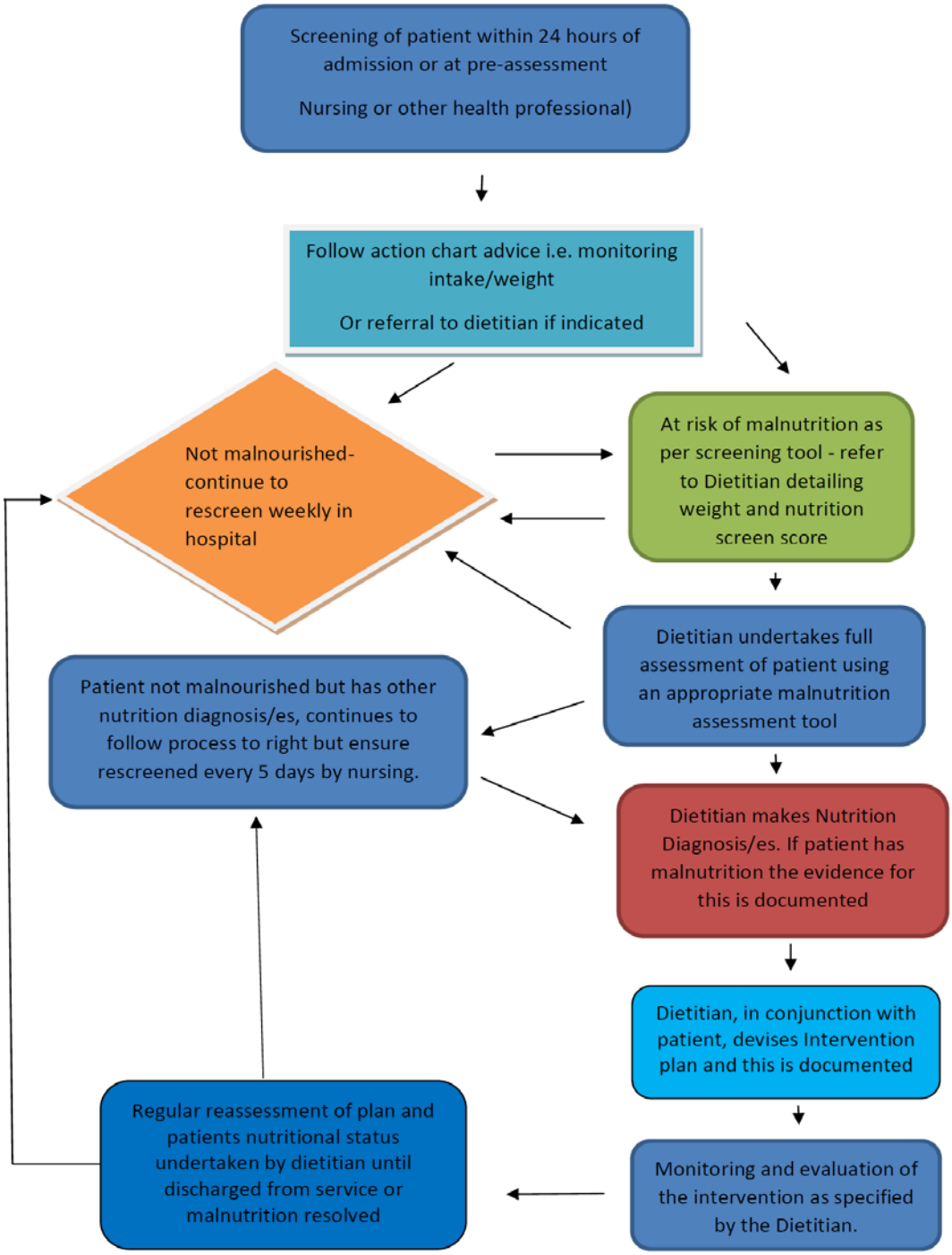
Dietitians must use a malnutrition sticker in the clinical notes select the malnutrition code on enotes (Cortex) which assists clinical staff and clinical coders to identify patients that have been identified as malnourished (14). Document the presence and extent of malnutrition, according to agreed definitions, in the medical notes so this is clear for the clinical coders using the green malnutrition stickers for adult patients and faltering growth for paediatric patient

Generally the clinical coders at CDHB use the generic code E46 - Unspecified protein-calorie malnutrition. Malnutrition not otherwise specified or protein-energy imbalance not otherwise specified.

AND/ASPEN Characteristics of Malnutrition Flow Chart (22)



Algorithm of process



Nutrition Intervention

Planning the nutrition intervention:

One or more specific nutrition interventions are selected by the dietitian following nutrition assessment to address the nutrition problem. The nutrition interventions are directed to the aetiology of the problem or may be addressing the signs and symptoms. First line treatment should be fortification of food, increased frequency of snacks, followed by addition of oral nutrition supplements (ONS). If this does not start to resolve the malnutrition or other Nutrition Diagnosis, then consideration should be given to enteral feeding. Parenteral Nutrition should only be considered where EN has failed or is clinically contraindicated i.e. severe malabsorption (6, 11).

The dietitian uses evidenced-based guidelines, institutional policies and procedures, care plans and other resources for recommended nutrition interventions to reach goals.

A nutrition prescription is determined which states the patient's recommended intake of energy, protein and other nutrients based on reference standards. Energy requirements should be determined by indirect calorimetry where available or calculated according to validated equations.

Goal setting establishes patient goals that are clear, measureable, achievable and defined.

It is desirable that goals are set collaboratively with the patient although this is not always possible.

Where the patient is at risk of Refeeding Syndrome (a syndrome of metabolic disturbances and fluid and electrolyte shifts that occur with the reinstitution of nutrition to patients who have had little or prolonged periods or who are severely malnourished), the plan should reflect this and be stated in the documentation so it is clear to all professionals involved in the patients care.

Implementing the nutrition intervention:

This involves communicating a plan of action to all relevant parties: patient, nursing staff, medical staff, and other healthcare workers. All health care professionals involved should work to implement the plan of action and undertake any required monitoring. This may involve assistance with meals, trying to avoid unnecessary nil by mouth orders or shorten the time for these by ensuring procedures requiring nil by mouth are timely.

The dietitian carries out the plan, communicates the plan and continues data collection that is initiated with the nutrition assessment and revises nutrition intervention based on response of patient.

The Domains of nutrition intervention are:

1. **Food and Nutrient delivery**: Fortification of food, increase frequency of snacks, oral nutrition supplements (ONS), feeding assistance, enteral and parenteral nutrition
2. **Education** of patient and staff on aspects of food fortification, ONS, enteral / parenteral feeding.
3. **Counselling** of patient to acknowledge and foster responsibility of self-management.
4. **Co-ordination of Care:**

    - Referral / collaboration with other healthcare workers and providers – prior to discharge.
    - Discharge planning and transfer of nutrition care, including provision of a prescription for supplements

    or enteral feed where required, and clear documentation about the presence of malnutrition.

    Reassessment should occur on a regular basis by monitoring the intervention and altering accordingly.

Outcomes and Monitoring:

The purpose of monitoring and evaluation is to determine and measure the amount of progress made for the nutrition intervention and whether the nutrition related goals / expected outcomes are being met.

Monitor progress, measure outcomes, evaluate outcomes against criteria to determine changes in specific indicators of nutrition care outcomes.

Patient related monitoring indicators include:

Food and Nutrient Intake:

- Percentage of meals eaten
- Oral nutrition supplements consumed
- Percentage of prescribed enteral / parenteral nutrition administered
- Protein and energy intake vs prescription

- Food access/ Food security**:** Can patient access food or fluids (hospital or community setting)

Anthropometric:

- Weight change

Biochemical:

- Electrolytes
  - Magnesium (considering re-feeding syndrome)
  - Phosphate (considering re-feeding syndrome)
- Liver function tests
- Albumin (NB albumin is not a standalone marker of nutrition status)
- Inflammatory markers i.e. CRP

Nutrition focused physical findings:

- Subcutaneous fat and muscle mass – SGA or PG-SGA rating
- Fluid accumulation / balance
- Gastrointestinal symptoms
- Other physical findings – hair, nails, tongue, skin, wound healing

Physical functioning:

- Hand grip strength
- Activity / exercise

Organisational quality measures as part of the malnutrition Strategy include:

- Malnutrition screening audit and clinical coding audit to measure the number of patients diagnosed with malnutrition.
- Audit of patients weight on admission and if weighed during stay and at discharge.
- To audit if appropriate menu was requested for the patient if identified as per flow chart.

Adherence to policies on nutritional screening/assessment by:

- Undertaking audits and linked assessments as a result of this

- Reporting of incidence of malnutrition and risk of this
- Documentation of the care plan to address malnutrition and clear communication on discharge to relevant parties involved in the patients' care in the community
- Evidence of repeated screening for inpatients.
- Adherence to policies on individual nutritional care pathways for those at risk by reports demonstration monitoring of food/nutrient intake, ongoing assessment of body weight and BMI, use and cost of nutritionals and enteral and parenteral nutrition.
- Communication of the nutritional information across care boundaries i.e. discharge summaries and referrals to others by including the nutrition screening score and BMI.
- Documented links with the Food Service and clarity of Food Services role in the management of malnutrition risk. Regular liaison between clinical dietitians and food service dietitians.
- Patient satisfaction forms regarding food quality that feed into patient quality reports.
- Feedback that relate to food/meal provision.
- Appropriate use of tools involved in malnutrition by ensuring that staffs receive regular education i.e. how to complete screening, role in management of malnutrition, use of nutrition assessment tools by dietitians, height/weight charts for paediatrics.
- Presence of nutrition information sheets that are appropriate to patient groups.
- Menu capacity – the food and beverages provided will be sufficient to meet the nutritional requirements of different age groups and special diets. Specifications are set to specify these requirements.

A minimum standard suggested for monitoring is:

- Was a nutrition screen undertaken for each patient?
- Was the patient weighed at and/or during admission?
- Was the process of the Malnutrition Action Flow Chart followed?
- Was an appropriate referral made to a dietitian?
- If the screen was not undertaken, is there evidence this affected the patients outcome?

Presence of Food and Nutrition Policies:

- Food and Hydration policy
- Malnutrition Policy to ensure screening, diagnosis and intervention

Governance:

- Nutrition or Malnutrition action group presence

Adherence to Malnutrition Screening and Assessment Process:

- Audits of adherence to the Malnutrition Policy
    - completion of initial screen within 24 hours of admission
    - repeat screens (every 5 days)
    - documented weight checks
    - Completed nutrition assessment (triage level 3) within 24 hours of positive nutrition screen

Reporting of incidence of malnutrition:

- Reports from Clinical Coders re coding of malnutrition (NB increased reporting expected capturing malnutrition rather than increased incidence) (Appendix 1).

Dietitian Documentation:

- Patient documentation reflects appropriate malnutrition diagnosis
- Nutrition interventions reflect goal for improvement of malnutrition status
- Transfer of care is reflected in documentation when patients are discharged from hospital or transferred to other health care facilities.

Education and Resources

Dietitians play a key role in educating and supporting staff in the screening, identification and management of malnutrition (6).

Generic packages for education should be developed and put into place for all clinicians involved in screening and identifying malnutrition risk. All nurses should receive generic malnutrition orientation. Charge nurse managers and nurse educators should ensure that all new graduates and new to area nurses receive information and education to enable and empower them to be confident in nutrition screening, dietitian referral criteria, and how they can initiate care according to a Malnutrition Action Plan (8).

All medical staff should receive education around identifying, supporting and monitoring people either at risk of or with malnutrition.

Education should be given to other allied health professionals, health care assistants, pre-admission staff and food service personnel involved with patient meal service at the ward level.

Education for relevant clinical staff should at a minimum include where to find scales, how to use, how to use stadiometers, how to access food and fluids through hospital food service systems, and how to complete a food and fluid record chart accurately. Education should also occur on using clinical judgement when referring to a dietitian and consideration should be given to confounding variables such as oedema masking true weight change.

Clinical coders may need education on the definitions of nutrition used by the CDHB to enable appropriate coding around malnutrition given potential revenue generation. ICD 10 codes should be used to define the severity of malnutrition so data comparison can potentially occur across DHBs (21).

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Appendicies

APPENDIX 1: Malnutrition Screening Tool and Action Plan

APPENDIX 2: Malnutrition Universal Screening Tool (Used in CDHB Mental Health Services)

APPENDIX 3: Malnutrition definitions used for Clinical Coding

APPENDIX 4: Information for estimating height (Demispan and Ulna Length)

APPENDIX 5: Information on the use of Hand Dynamometers

APPENDIX 6: Subjective Global Assessment Form

Appendix 1: Malnutrition Screening Tool (MST) and Action plan at CDHB

Malnutrition Screening Tool (MST)

Patient has lost weight in the last 3 months without trying:

If *no* - **score 0** If *unsure* - **score 2** If *yes* - how much weight have they lost (in kg)?

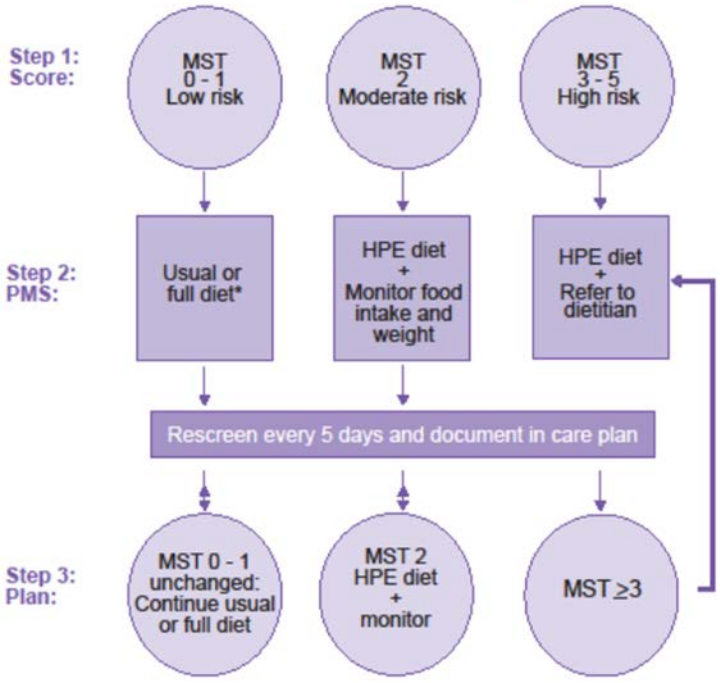
0.5 - 5 kg score 1 **5 - 10 kg score 2** **>10 kg - 15 kg score 3** **>15kg score 4**

Patient has been eating poorly because of poor appetite? If *no* - **score 0** If *yes* - **score 1**

Total Malnutrition Risk Score: _____

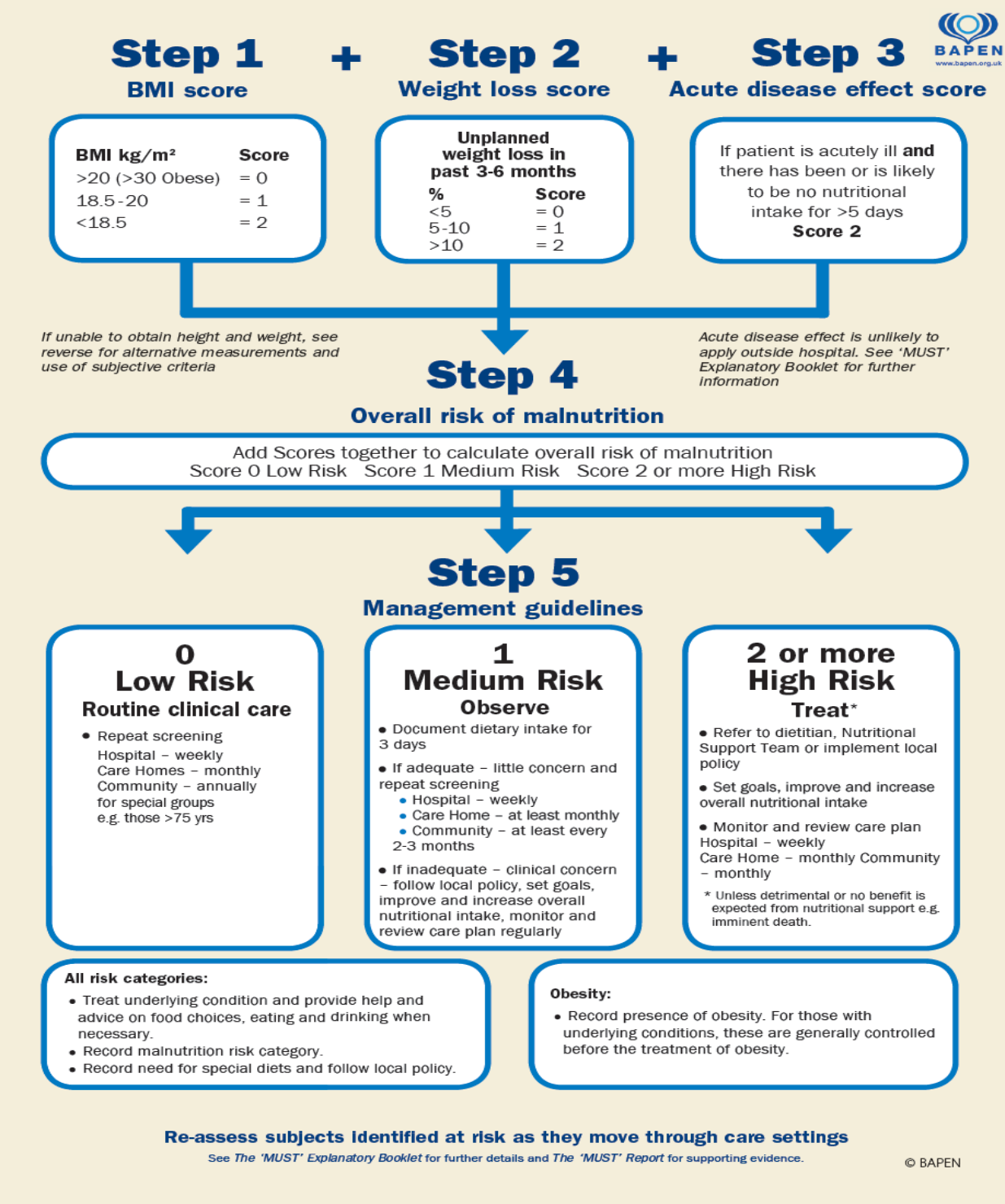
ACTION PLAN

to be documented in care plan



Appendix 2: Malnutrition Universal Screening Tool (Used in CDHB Mental Health Services)

See MUST online Screening Tool at this link: https://www.bapen.org.uk/screening-and-must/must-calculator



Appendix 3: Malnutrition Definitions used for Clinical Coding

ICD-10 definitions of malnutrition relating to adults are (21):

- Unspecified severe protein-energy malnutrition (E43) – in adults a BMI <18.5 kg/m² or unintentional weight of >10% with suboptimal intake resulting in severe loss of subcutaneous fat and /or severe muscle wasting. Starvation oedema.

- Moderate protein-energy malnutrition (E44.0) - in adults a BMI <18.5kg/m² or unintentional loss of weight of 5-9% with evidence of suboptimal intake, resulting in moderate loss of subcutaneous fat and/or moderate muscle wasting.

- Mild protein-energy malnutrition (E44.1) - in adults a BMI of < 18.5kg/m² or unintentional loss of weight of 5-9% with evidence of suboptimal intake, resulting in mild loss of subcutaneous fat and/or mild muscle wasting.

- E46 - Unspecified protein-calorie malnutrition. Malnutrition not otherwise specified or protein-energy imbalance not otherwise specified. (This is the most common malnutrition code used by coders)

- NB: BMI should consider the ethnicity of the patient and appropriate cut-offs used for patients of Asian or Maori/Pacific origin i.e. a normal BMI for those of Asian ethnicity is 18.5-23kg/m² and Maori/Pacific is 20.5-27.5kg/m² (9).

Appendix 4: Information for estimating height e.g. ulna length, demispan

This information can be used when unable to undertake a height for a patient i.e. those who cannot stand. Two methods for determining are either using the ulna length or the demispan length to make an approximation of height. Height may be needed for calculation of Body Mass Index.

Demispan length:

Used when height is not able to be undertaken to estimate patient height.

Men: Height (cm) = 57.8 + (1.40 x demi-span in cm)

Women: Height (cm) = 60.1 + (1.35 x demi-span in cm)

Ulna length:

Alternative measurements: instructions and tables

BAPEN
www.bapen.org.uk

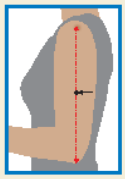
If height cannot be obtained, use length of forearm (ulna) to calculate height using tables below.
(See The 'MUST' Explanatory Booklet for details of other alternative measurements (knee height and demispan) that can also be used to estimate height).

Estimating height from ulna length

Measure between the point of the elbow (olecranon process) and the midpoint of the prominent bone of the wrist (styloid process) (left side if possible).

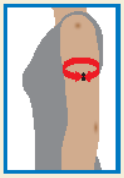
Height (m)	men (<65 years)	1.94	1.93	1.91	1.89	1.87	1.85	1.84	1.82	1.80	1.78	1.76	1.75	1.73	1.71
	men (≥65 years)	1.87	1.86	1.84	1.82	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.67
	Ulna length (cm)	32.0	31.5	31.0	30.5	30.0	29.5	29.0	28.5	28.0	27.5	27.0	26.5	26.0	25.5
Height (m)	Women (<65 years)	1.84	1.83	1.81	1.80	1.79	1.77	1.76	1.75	1.73	1.72	1.70	1.69	1.68	1.66
	Women (≥65 years)	1.84	1.83	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.66	1.65	1.63
Height (m)	men (<65 years)	1.69	1.67	1.66	1.64	1.62	1.60	1.58	1.57	1.55	1.53	1.51	1.49	1.48	1.46
	men (≥65 years)	1.65	1.63	1.62	1.60	1.59	1.57	1.56	1.54	1.52	1.51	1.49	1.48	1.46	1.45
	Ulna length (cm)	25.0	24.5	24.0	23.5	23.0	22.5	22.0	21.5	21.0	20.5	20.0	19.5	19.0	18.5
Height (m)	Women (<65 years)	1.65	1.63	1.62	1.61	1.59	1.58	1.56	1.55	1.54	1.52	1.51	1.50	1.48	1.47
	Women (≥65 years)	1.61	1.60	1.58	1.56	1.55	1.53	1.52	1.50	1.48	1.47	1.45	1.44	1.42	1.40

Estimating BMI category from mid upper arm circumference (MUAC)



The subject's left arm should be bent at the elbow at a 90 degree angle, with the upper arm held parallel to the side of the body. Measure the distance between the bony protrusion on the shoulder (acromion) and the point of the elbow (olecranon process). Mark the mid-point.

Ask the subject to let arm hang loose and measure around the upper arm at the mid-point, making sure that the tape measure is snug but not tight.



If MUAC is <23.5 cm, BMI is likely to be <20 kg/m².
If MUAC is >32.0 cm, BMI is likely to be >30 kg/m².

The use of MUAC provides a general indication of BMI and is not designed to generate an actual score for use with 'MUST'. For further information on use of MUAC please refer to *The 'MUST' Explanatory Booklet.*

Appendix 5: Use of Hand Dynamometer to measure Hand Grip Strength:

The purpose of this test is to measure the maximum hand grip strength. Handgrip strength can show whether a person has lost functional status or improved over time (17). This test is one of the 6 clinical characteristics used in the ASPEN malnutrition clinical characteristics. Results can vary depending on the protocol used so it is important to compare results to the norms derived using the same technique. The hand dynamometer is adjusted to fit the hand of the patient. The same setting should be used when re-setting. As results can vary depending on which hand used, the tests should be conducted on the same side, usually the dominant side. Several attempts should be undertaken to get a maximum score. Refer to manufacturer's instructions re use. Results are expected to vary between males and females as well as with age. The patient should squeeze the dynamometer with maximum effort for about 5 seconds, with the arm at right angles. Allow 15 seconds between attempts.

Ensure that between using with another patient the machine is cleaned with alcohol swabs.
Record the data in kg, and whether weak, normal or strong. Normative data should be provided with each machine.

Otherwise suggested cut-off points for are <20kg for women and < 30kg in men.

Appendix 6

Canadian traditional SGA form - from Canadian Malnutrition Taskforce

Subjective Global Assessment Form

MEDICAL HISTORY

Patient name: _____ Date: ____/____/____

NUTRIENT INTAKE

1. ☐ No change; adequate
2. Inadequate; duration of inadequate intake _____
   ☐ Suboptimal solid diet ☐ Full fluids or only oral nutrition supplements ☐ Minimal intake, clear fluids or starvation
3. **Nutrient intake in past 2 weeks***
   ☐ Adequate _____ ☐ Improved but not adequate _____ ☐ No improvement or inadequate _____

WEIGHT

Usual weight _____ **Current weight** _____

1. **Non fluid weight change past 6 months** Weight loss (kg) _____
   ☐ <5% loss or weight stability ☐ 5-10% loss without stabilization or increase ☐ >10% loss and ongoing
   If above not known, has there been a subjective loss of weight during the past six months?
   ☐ None or mild ☐ Moderate ☐ Severe
2. **Weight change past 2 weeks*** Amount (if known) _____
   ☐ Increased ☐ No change ☐ Decreased

SYMPTOMS (Experiencing symptoms affecting oral intake)

1. ☐ Pain on eating ☐ Anorexia ☐ Vomiting ☐ Nausea ☐ Dysphagia ☐ Diarrhea
   ☐ Dental problems ☐ Feels full quickly ☐ Constipation
2. ☐ None ☐ Intermittent/mild/few ☐ Constant/severe/multiple
3. **Symptoms in the past 2 weeks***
   ☐ Resolution of symptoms ☐ Improving ☐ No change or worsened

FUNCTIONAL CAPACITY (Fatigue and progressive loss of function)

1. No dysfunction
2. Reduced capacity; duration of change _____
   ☐ Difficulty with ambulation/normal activities ☐ Bed/chair-ridden
3. **Functional Capacity in the past 2 weeks***
   ☐ Improved ☐ No change ☐ Decrease

METABOLIC REQUIREMENT

High metabolic requirement ☐ No ☐ Yes

PHYSICAL EXAMINATION

Loss of body fat	☐ No	☐ Mild/Moderate	☐ Severe
Loss of muscle mass	☐ No	☐ Mild/Moderate	☐ Severe
Presence of edema/ascites	☐ No	☐ Mild/Moderate	☐ Severe

SGA RATING

☐ **A** Well-nourished Normal

☐ **B** Mildly/moderately malnourished Some progressive nutritional loss

☐ **C** Severely malnourished Evidence of wasting and progressive symptoms

CONTRIBUTING FACTOR

☐ **CACHEXIA** - (fat and muscle wasting due to disease and inflammation) ☐ **SARCOPENIA** - (reduced muscle mass and strength)

*See page 2 SGA Rating for more description.

April 2017

Subjective Global Assessment Guidance For Body Composition

SUBCUTANEOUS FAT

Physical examination	Normal	Mild/Moderate	Severe
Under the eyes	Slightly bulging area	Somewhat hollow look, Slightly dark circles,	Hollowed look, depression, dark circles
Triceps	Large space between fingers	Some depth to fat tissue, but not ample. Loose fitting skin.	Very little space between fingers, or fingers touch
Ribs, lower back, sides of trunk	Chest is full; ribs do not show. Slight to no protrusion of the iliac crest	Ribs obvious, but indentations are not marked. Iliac Crest somewhat prominent	Indentation between ribs very obvious. Iliac crest very prominent

MUSCLE WASTING

Physical examination	Normal	Mild/Moderate	Severe
Temple	Well-defined muscle	Slight depression	Hollowing, depression
Clavicle	Not visible in males; may be visible but not prominent in females	Some protrusion; may not be all the way along	Protruding/prominent bone
Shoulder	Rounded	No square look; acromion process may protrude slightly	Square look; bones prominent
Scapula/ribs	Bones not prominent; no significant depressions	Mild depressions or bone may show slightly; not all areas	Bones prominent; significant depressions
Quadriceps	Well defined	Depression/atrophy medially	Prominent knee, Severe depression medially
Interosseous muscle between thumb and forefinger (back of hand)**	Muscle protrudes; could be flat in females	Slightly depressed	Flat or depressed area

FLUID RETENTION

Physical examination	Normal	Mild/Moderate	Severe
Edema	None	Pitting edema of extremities / pitting to knees, possible sacral edema if bedridden	Pitting beyond knees, sacral edema if bedridden, may also have generalized edema
Ascites	Absent	Present (may only be present on imaging)	

A - Well-nourished no decrease in food/nutrient intake; < 5% weight loss; no/minimal symptoms affecting food intake; no deficit in function; no deficit in fat or muscle mass **OR** *an individual with criteria for SGA B or C but with recent adequate food intake; non-fluid weight gain; significant recent improvement in symptoms allowing adequate oral intake; significant recent improvement in function; and chronic deficit in fat and muscle mass but with recent clinical improvement in function.

B - Mildly/moderately malnourished definite decrease in food/nutrient intake; 5% - 10% weight loss without stabilization or gain; mild/some symptoms affecting food intake; moderate functional deficit or recent deterioration; mild/moderate loss of fat and/or muscle mass **OR** *an individual meeting criteria for SGA C but with improvement (but not adequate) of oral intake, recent stabilization of weight, decrease in symptoms affecting oral intake, and stabilization of functional status.

C - Severely malnourished severe deficit in food/nutrient intake; > 10% weight loss which is ongoing; significant symptoms affecting food/nutrient intake;severe functional deficit **OR** *recent significant deterioration obvious signs of fat and/or muscle loss.

Cachexia – If there is an underlying predisposing disorder (e.g. malignancy) and there is evidence of reduced muscle and fat and no or limited improvement with optimal nutrient intake, this is consistent with cachexia.

Sarcopenia – If there is an underlying disorder (e.g. aging) and there is evidence of reduced muscle and strength and no or limited improvement with optimal nutrient intake.

**In the elderly prominent tendons and hollowing is the result of aging and may not reflect malnutrition.

April 2017

Canadian Malnutrition Task Force* | le Groupe de travail canadien sur la malnutrition*

Scored Patient-Generated Subjective Global Assessment (PG-SGA)

History: Boxes 1 - 4 are designed to be completed by the patient.
[Boxes 1-4 are referred to as the PG-SGA Short Form (SF)]

Patient Identification Information

1. Weight *(See Worksheet 1)*

In summary of my current and recent weight:

I currently weigh about _____kg
I am about _____ cm tall

One month ago I weighed about _____ kg
Six months ago I weighed about _____ kg

During the past two weeks my weight has:
☐ decreased (1) ☐ not changed (0) ☐ increased (0)

Box 1 ☐

2. Food intake: As compared to my normal intake, I would rate my food intake during the past month as
- ☐ unchanged (0)
- ☐ more than usual (0)
- ☐ less than usual (1)

I am now taking
- ☐ *normal food* but less than normal amount (1)
- ☐ little solid food (2)
- ☐ only liquids (3)
- ☐ only nutritional supplements (3)
- ☐ very little of anything (4)
- ☐ only tube feedings or only nutrition by vein (0)

Box 2 ☐

3. Symptoms: I have had the following problems that have kept me from eating enough during the past two weeks (check all that apply)
- ☐ no problems eating (0)
- ☐ no appetite, just did not feel like eating (3)
- ☐ nausea (1)
- ☐ constipation (1)
- ☐ mouth sores (2)
- ☐ things taste funny or have no taste (1)
- ☐ problems swallowing (2)
- ☐ pain; where? (3) _____
- ☐ other (1)** _____

☐ vomiting (3)
☐ diarrhea (3)
☐ dry mouth (1)
☐ smells bother me (1)
☐ feel full quickly (1)
☐ fatigue (1)

**Examples: depression, money, or dental problems

Box 3 ☐

4. Activities and Function:
Over the past month, I would generally rate my activity as:
- ☐ normal with no limitations (0)
- ☐ not my normal self, but able to be up and about with fairly normal activities (1)
- ☐ not feeling up to most things, but in bed or chair less than half the day (2)
- ☐ able to do little activity and spend most of the day in bed or chair (3)
- ☐ pretty much bed ridden, rarely out of bed (3)

Box 4 ☐

The remainder of this form is to be completed by your doctor, nurse, dietitian, or therapist. Thank you.

Additive Score of Boxes 1-4 ☐ **A**

email: faithottervmdphd@aol.com or info@pt-global.org

Scored Patient-Generated Subjective Global Assessment (PG-SGA)

Additive Score of Boxes 1-4 (See Side 1) ☐ **A**

Worksheet 1 – Scoring Weight Loss

To determine score, use 1-month weight data if available. Use 6-month data only if there is no 1-month weight data. Use points below to score weight change and add one extra point if patient has lost weight during the past 2 weeks. Enter total point score in Box 1 of PG-SGA.

Weight loss in 1 month	Points	Weight loss in 6 months
10% or greater	4	20% or greater
5-9.9%	3	10- 19.9%
3-4.9%	2	6- 9.9%
2-2.9%	1	2- 5.9%
0-1.9%	0	0- 1.9%

Numerical score from Worksheet 1 ☐

5. Worksheet 2 – Disease and its relation to nutritional requirements:

Score is derived by adding 1 point for each of the following conditions:
- ☐ Cancer
- ☐ AIDS
- ☐ Pulmonary or cardiac cachexia
- ☐ Chronic renal insufficiency
- ☐ Presence of decubitus, open wound or fistula
- ☐ Presence of trauma
- ☐ Age greater than 65

Other relevant diagnoses (specify) _____
Primary disease staging (circle if known or appropriate) I II III IV Other _____

Numerical score from Worksheet 2 ☐ **B**

6. Worksheet 3 – Metabolic Demand

Score for metabolic stress is determined by a number of variables known to increase protein & caloric needs. **Note:** Score fever intensity or duration, whichever is greater. The score is additive so that a patient who has a fever of 38.8 °C (3 points) for < 72 hrs (1 point) and who is on 10 mg of prednisone chronically (2 points) would have an additive score for this section of 5 points.

Stress	none (0)	low (1)	moderate (2)	high (3)
Fever	no fever	> 37.2 and < 38.3	≥ 38.3 and < 38.8	≥ 38.8 °C
Fever duration	no fever	< 72 hours	72 hours	> 72 hours
Corticosteroids	no corticosteroids	low dose (< 10 mg prednisone equivalents/day)	moderate dose (≥ 10 and < 30 mg prednisone equivalents/day)	high dose (≥ 30 mg prednisone equivalents/day)

Numerical score from Worksheet 3 ☐ **C**

7. Worksheet 4 – Physical Exam

Exam includes a subjective evaluation of 3 aspects of body composition: fat, muscle, & fluid. Since this is subjective, each aspect of the exam is rated for degree. Muscle deficit/loss impacts point score more than fat deficit/loss. Definition of categories: 0 = no abnormality, 1+ = mild, 2+ = moderate, 3+ = severe. Rating in these categories is *not* additive but are used to clinically assess the degree of deficit (or presence of excess fluid).

Muscle Status					Fat Stores				
temples (temporalis muscle)	0	1+	2+	3+	orbital fat pads	0	1+	2+	3+
clavicles (pectoralis & deltoids)	0	1+	2+	3+	triceps skin fold	0	1+	2+	3+
shoulders (deltoids)	0	1+	2+	3+	fat overlying lower ribs	0	1+	2+	3+
interosseous muscles	0	1+	2+	3+	**Global fat deficit rating**	0	1+	2+	3+
scapula (latissimus dorsi, trapezius, deltoids)	0	1+	2+	3+	**Fluid status**				
thigh (quadriceps)	0	1+	2+	3+	ankle edema	0	1+	2+	3+
calf (gastrocnemius)	0	1+	2+	3+	sacral edema	0	1+	2+	3+
Global muscle status rating	0	1+	2+	3+	ascites	0	1+	2+	3+
					Global fluid status rating	0	1+	2+	3+

Point score for the physical exam is determined by the overall subjective rating of the total body deficit.
No deficit score = 0 points
Mild deficit score = 1 point
Moderate deficit score = 2 points
Severe deficit score = 3 points
Again, muscle deficit/loss takes precedence over fat loss or fluid excess.

Numerical Score for Worksheet 4 ☐ **D**

Total PG-SGA Score (Total numerical score of A+B+C+D) ☐

Clinician Signature _____ RD RN PA MD DO Other _____ Date _____

Global PG-SGA Category Rating (Stage A, Stage B or Stage C) ☐

Worksheet 5 – PG-SGA Global Assessment Categories

	Stage A	Stage B	Stage C
Category	Well-nourished	Moderate/suspected malnutrition	Severely malnourished
Weight	No weight loss OR recent non-fluid wt gain	≥ 5% loss in 1 month (≥10% in 6 months) OR Progressive weight loss	> 5% loss in 1 month (>10% in 6 months) OR Progressive weight loss
Nutrient intake	No deficit OR Significant recent improvement	Definite decrease in intake	Severe deficit in intake
Nutrition Impact Symptoms (NIS)	None OR significant recent improvement allowing adequate intake	Presence of NIS (Box 3 of PG-SGA)	Presence of NIS (Box 3 of PG-SGA)
Functioning	No deficit OR Significant recent improvement	Moderate functional deficit OR Recent deterioration	Severe functional deficit OR Recent significant deterioration
Physical Exam	No deficit OR chronic deficit but with recent clinical improvement	Evidence of mild to moderate loss of muscle mass &/or muscle tone on palpation &/or loss of SQ fat	Obvious signs of malnutrition (e.g., severe loss muscle, fat, possible edema)

Nutritional Triage Recommendations: Additive score is used to define specific nutritional interventions including patient & family education, symptom management including pharmacologic intervention, and appropriate nutrient intervention (food, nutritional supplements, enteral, or parenteral triage).
First line nutrition intervention includes optimal symptom management.

Triage based on PG-SGA point score
- 0-1 No intervention required at this time. Re-assessment on routine and regular basis during treatment.
- 2-3 Patient & family education by dietitian, nurse, or other clinician with pharmacologic intervention as indicated by symptom survey (Box 3) and lab values as appropriate.
- 4-8 Requires intervention by dietitian, in conjunction with nurse or physician as indicated by symptoms (Box 3).
- ≥ 9 Indicates a critical need for improved symptom management and/or nutrient intervention options.

email: faithottervmdphd@aol.com or info@pt-global.org

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Triage based on PG-SGA point score:

0-1 No intervention required at this time. Re-assessment on routine and on a regular basis during treatment.

2-3 Patient & family education by dietitian, nurse, or other clinician with pharmacologic intervention as indicated by symptom survey (Box 3) and lab values as appropriate.

4-8 Requires intervention by dietitian, in conjunction with nurse or physician, as indicated by symptoms (Box 3).

9≥ Indicates a critical need for improved symptom management and/or nutrient intervention options.

Policy Owner	Clinical Manager, Nutrition and Dietetics
Policy Authoriser	Director of Allied Health
Date of Authorisation	5 July 2019