

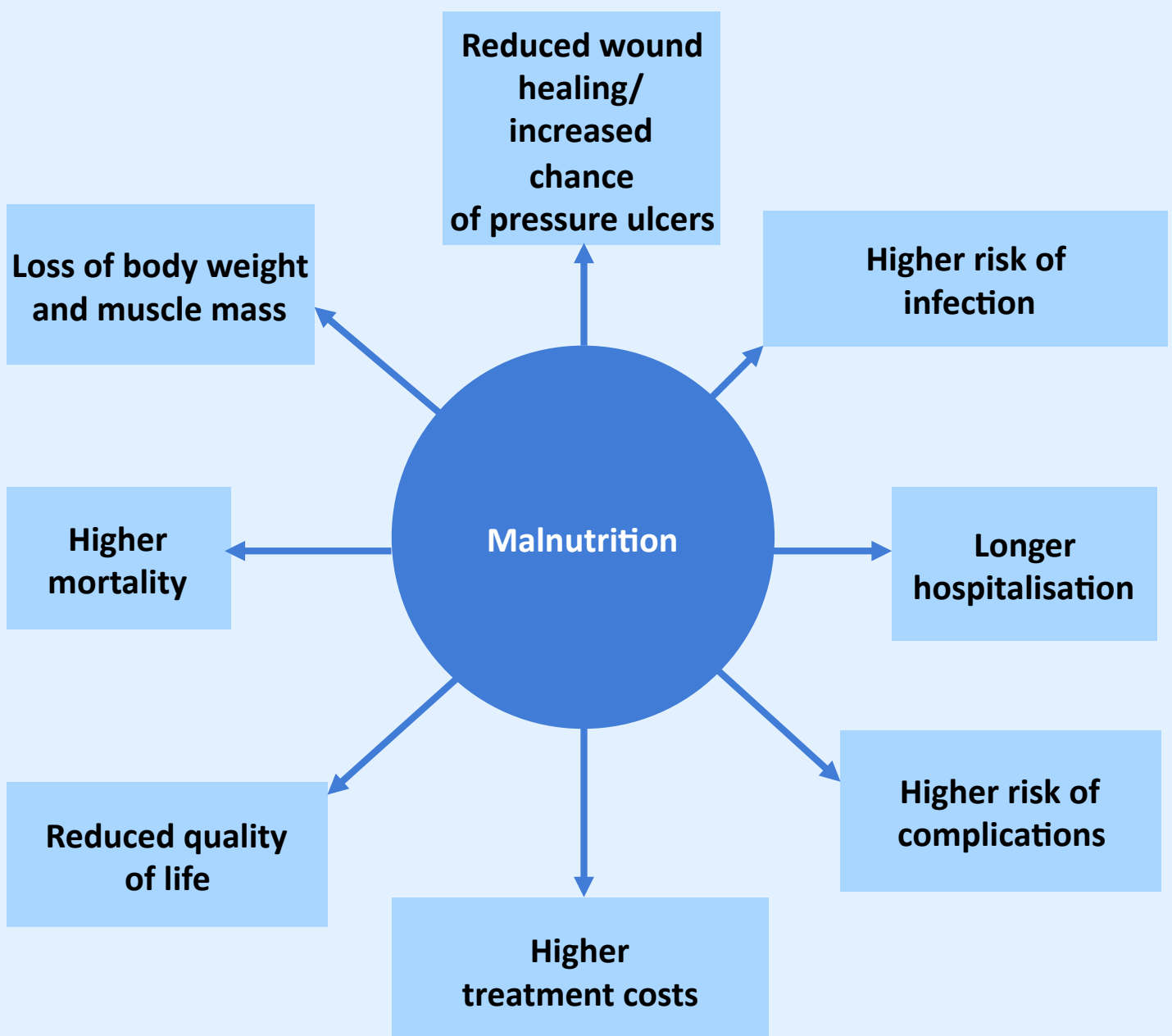
Early detection and treatment of malnutrition in hospital

Starting points:

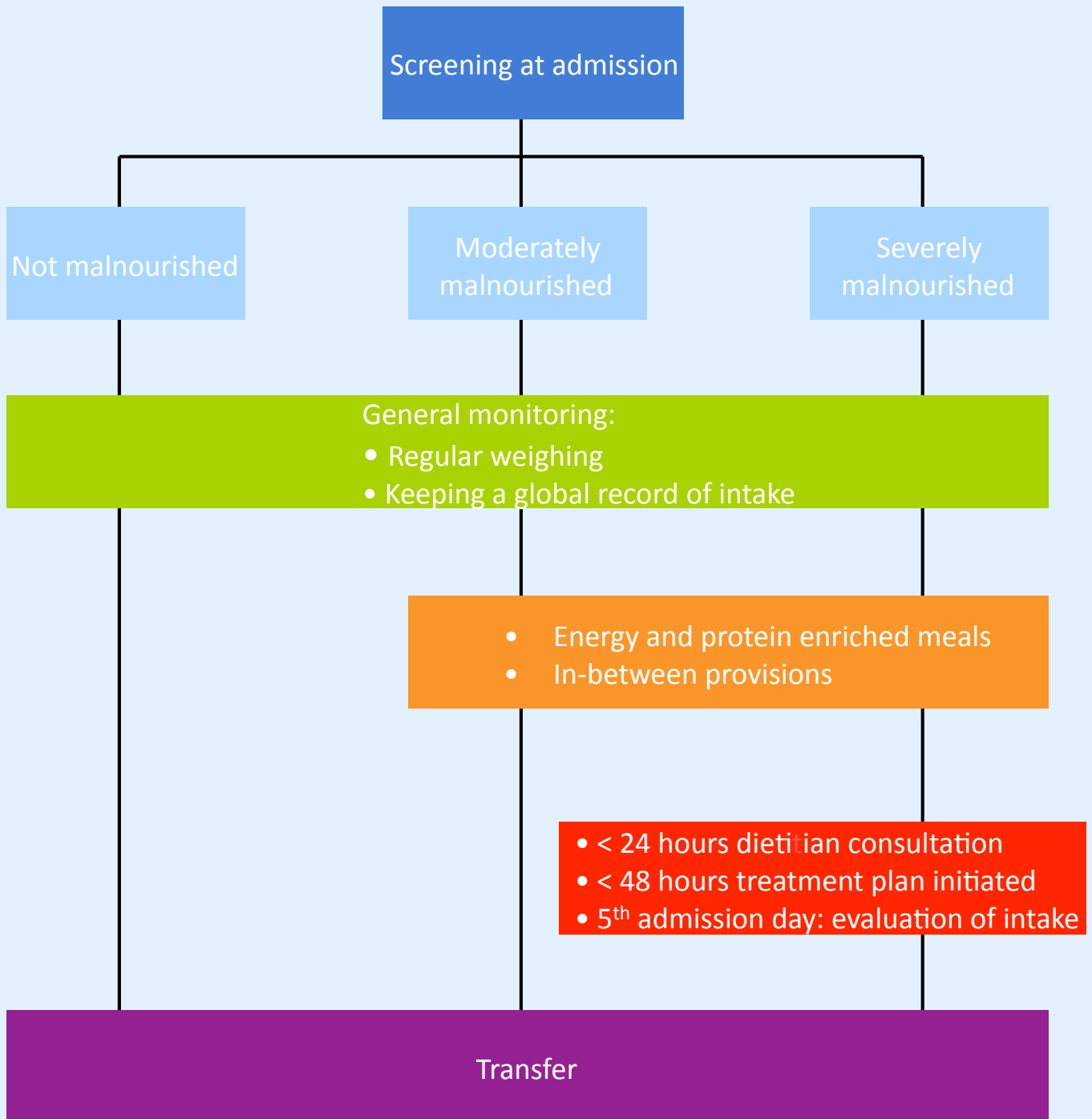
- Early detection:
 - within 24 hours after admission
 - high-risk patients during outpatient visits
- Fast and optimum treatment tailored to the circumstances and wishes of the patient



Disease-related malnutrition is a major problem in hospitals and can be recognised from unintended weight loss and/or a too low body weight during disease. 25-40% of hospital patients are malnourished on admission. The consequences of disease-related malnutrition are serious. Complications as a result of malnutrition lead, amongst other things, to a slower recovery and longer hospitalisation. Starting prompt treatment contributes to the health of the patient.



Malnutrition flowchart for clinical patients



Screening tools for clinical patients

In the Netherlands, there is consensus on the use of two preferred screening tools: either SNAQ or MUST. Screening needs to take place within 24 hours of admission so that treatment can be started quickly. Our experience shows that hospitals prefer to use a quick and easy tool (such as SNAQ) over more extensive tools. Tip: include the screening tool in the (digital) medical history

SNAQ	
Short Nutritional Assessment Questionnaire	
• Did you lose weight unintentionally? More than 6 kg in the last 6 months More than 3 kg in the last month	● ● ● ● ●
• Did you experience a decreased appetite over the last month?	●
• Did you use supplemental drinks or tube feeding over the last month?	●
● no intervention ● ● moderately malnourished; nutritional intervention ● ● ● severely malnourished; nutritional intervention and treatment dietician	

- SNAQ is a quick and easy screening tool
- Answer the questions and add up the scores for each question

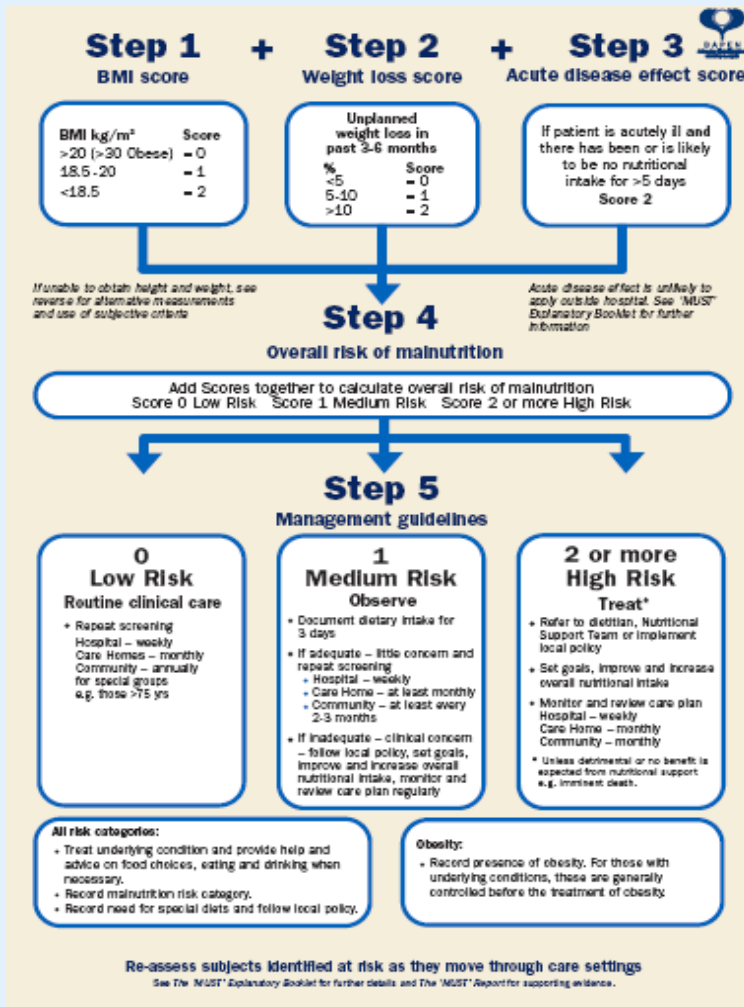
The scores

- With 0 or 1 point there is no malnutrition
- With 2 points there is moderate malnutrition*
- With 3 or more points there is severe malnutrition**

* Provide 3 in-between provisions

** Provide 3 in-between provisions and consult with a dietitian

MUST



• MUST is a screening tool to determine nutritional risk

• Answer the questions and add up the scores for each question

The scores

- With 0 points there is a low risk of malnutrition
- With 1 point there is a moderate risk of malnutrition
- With 2 or more points there is a high risk of malnutrition

For more information see www.bapen.org.uk

In addition to these two tools there are more screening tools such as the SGA, MNA and the MNA-SF. For more information on these tools please see www.fightmalnutrition.eu

Policy during admission for *all* patients

General monitoring of nutritional status consists of 3 aspects:

1. The nurse and the nutritional assistant monitor food intake on a daily basis with the aid of the 'Rate-a-Plate' chart
2. The nurse weighs the patient in accordance with the weighing policy of the ward (1 to 2 times per week on calibrated scales)
3. The nurse includes the nutritional status as a fixed part in visits, multidisciplinary consultations and the transfer to home or nursing home

Tips:

- Ensure optimum use is made of anti-nausea and pain medication
- Take preventative measures during treatments where major feeding problems are to be expected

'Rate-a-Plate' chart

Rate-a-Plate

is your patient eating enough?


The diet aide or nurse may note the points scored on the table below, or write down what the patient has eaten or drunk. The total score provides a daily overview.

Name of patient: _____


Date: _____ Week number: _____

Score screening: _____


Fluid intake (ml): _____




A full plate, hot meal




A half plate, hot meal




A quarter plate, hot meal




A full plate, cold meal



A half plate, cold meal






A quarter plate, cold meal



Milk products and between-meal meals

	Breakfast		In-between meal (morning)		Cold meal		In-between meal (afternoon)		Hot meal		In-between meal (evening)		Total	Total fluids
	offered	eaten	offered	eaten	offered	eaten	offered	eaten	offered	eaten	offered	eaten		
Mon	1 sandwich, cheese	...												
Fluids	1 glass of juice	...ml												
Tue														
Fluids														
Wed														
Fluids														
Thu														
Fluids														
Fri														
Fluids														
Sat														
Fluids														
Sun														
Fluids														

notes: _____

Multidisciplinary allocation of tasks

Responsibilities of the nurse

- Screen for malnutrition on admission
- Measure and monitor intake and feeding problems in all patients
- Engage the nutritional assistant in cases of moderate / severe malnutrition
- (Via doctor) engage dietitian in cases of severe malnutrition
- Include nutritional status as fixed part of visits, multidisciplinary meetings and discharge letters
- Assist with eating if the patient is unable to manage alone

Responsibilities of the nutritional assistant

- Stimulate patient to eat sufficiently
- Allow enough time for meals
- Pay attention to the mealtime environment
- Offer a solution if the patient is absent during meals (e.g. for tests)
- Assist with eating if the patient is unable to manage alone
- Keep a global record whether the patient eats and drinks what has been provided
- Consult with dietitian / nurse
- Stock management of the range of provisions

Policy during admission for *moderately and severely malnourished* patients

In addition to general monitoring of nutritional status, the following is also important:

1. The nurse informs the nutritional assistant about the meals and in-between provisions
2. Provide energy and protein rich meals
 - Full fat products, extra dessert, enrichment of soup and dessert
3. Provide three in-between provisions per day
 - aim for 200 kcal and 5-10 gram protein per in-between provision
 - make sure there is sufficient variation: savoury and sweet, warm and cold, think also of consistency

Responsibilities of the doctor

Include nutritional status in medical history and treatment plan

- Apply global diagnostics (BMI, weight loss, feeding problems, illness) and record in file
- Engage dietitian
- Follow changes in nutritional status by making enquiries during visits and multidisciplinary meetings
- Include nutritional status in discharge letter

Responsibilities of the dietitian

Diagnostics, treatment, evaluation and possibly transfer to home or nursing home

- Make/order and record measurements (BMI, weight loss, biochemistry, feeding problems, illness)
- Start treatment plan < 48 hours after admission, evaluate on day 5 and adjust treatment if necessary
- Follow up with the aid of more extensive measurements (e.g. body composition, hand grip strength and quality of life)

Policy during admission for *severely malnourished* patients

In addition to general monitoring of nutritional status, in-between provisions and enriched main meals, the following is also important:

1. The nurse or doctor engages the dietitian within 24 hours of admission
2. The dietitian starts a treatment plan within 48 hours of admission
3. On day 5, the dietitian evaluates the intake of the patient on day 4 of the admission

Tips

- For the calculation of intake, use information from the global monitoring and supplement this with information from the patient.
- If necessary, provide postoperative tube feeding
- Consider preventative placement of a PEG if major feeding problems are to be expected

Nutritional plan

General ward

- Provide energy in accordance with energy use: measure or calculate metabolic rate (by calorimetry or calculated using the Harris and Benedict (1984) equation*) and increase this by 30% for activity
- 1.5-1.7 g protein / kg / day (if BMI > 27 calculate on basis of a weight with a BMI of 27)

Intensive Care

- Provide energy in accordance with energy use: measure or calculate metabolic rate (by calorimetry or calculated using the Harris and Benedict (1984) equation*) and increase this by 10% activity and 20% illness factor
- 1.2 g protein / kg / day (if BMI > 27 calculate on basis of a weight with a BMI of 27)

*For men: $88,362 + (13,397 \times \text{weight}) + (4,799 \times \text{height}) - (5,677 \times \text{age})$

*For women: $447,593 + (9,247 \times \text{weight}) + (3,098 \times \text{height}) - (4,33 \times \text{age})$

Advice and evaluation of treatment plan

The schedule below can be used to create a treatment plan after the malnutrition diagnosis has been made and to evaluate the treatment on day 5 and subsequently in accordance with the schedule

Intake versus requirement	Advice	Evaluation and action
100% of requirement	Energy and protein rich food (enriched main meals, in-between provisions and possibly oral nutritional supplements)	Global monitoring of intake by nutritional assistant / nurse
75-100% of requirement	Energy and protein rich food (enriched main meals, in-between provisions and possibly oral nutritional supplements)	< 48 hours: is the requirement met by the intake? Continue or supplement with oral nutritional supplements
50-75% of requirement	Oral nutritional supplements or tube feeding	< 48 hours: is the requirement met by the intake? Continue or transfer to tube feeding
<50% of requirement	Complete or supplementary tube feeding, if possible oral nutritional supplements	< 48 hours: is the requirement met by the intake? Continue or oral food (oral nutritional supplements) if possible

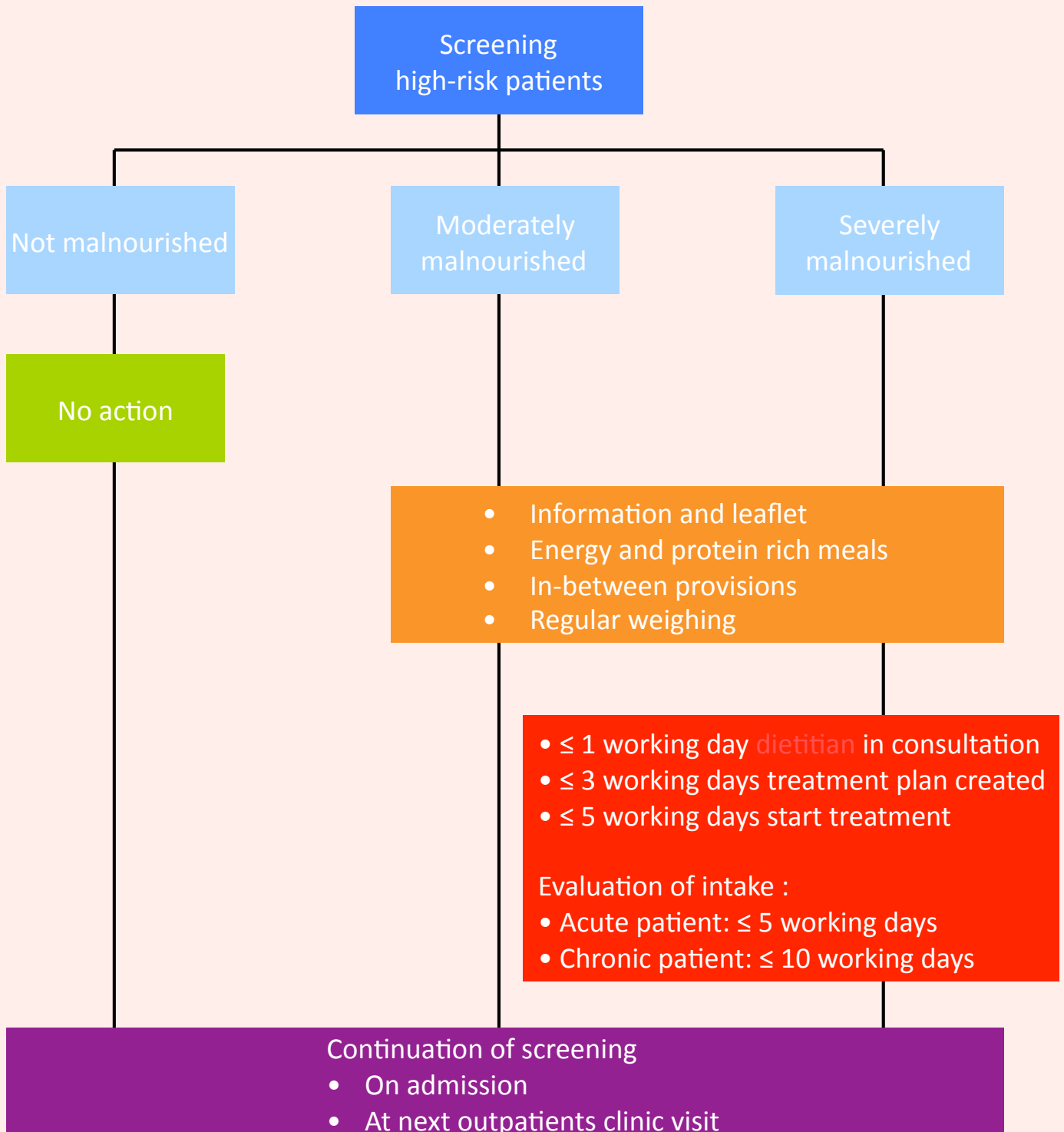
Example progressive schedule tube feeding

Determine the type and quantity of tube feeding on the basis of the energy and protein needs of the patient. Determine the building-up speed with the aid of the schedule below.

When?	How quickly? (pump setting)
<ul style="list-style-type: none"> • Risk of refeeding syndrome*: <ul style="list-style-type: none"> • Long-term reduced intake (≥ 1 week 0-50% of requirement) • Unintended weight loss ($\geq 5\%$ in 1 month) • BMI $< 17 \text{ kg/m}^2$ • Increased loss and/or reduced absorption (severe vomiting, severe diarrhoea, digestion or malabsorption disorder) • Surgical gastrostomy or jejunostomy placed in the last 24 hours 	<p><u>Cautious</u> building-up schedule: ≤ 72 hours on nutritional target</p> <ul style="list-style-type: none"> • Day 1: 500 mL/day • Day 2: 1000 mL/day • Day 3: first 6 hours feeding pump setting at a rate of 1500 mL/day, after that, pump setting as desired
<ul style="list-style-type: none"> • Short-term reduced intake: Last 3 days 0-50% of the requirement • Unintended weight loss ($< 5\%$ in 1 month) 	<p><u>Standard</u> building-up schedule: ≤ 48 hours at nutrition target</p> <ul style="list-style-type: none"> • Day 1: setting 40 ml/hr (1000 mL/day) • Day 2: first 6 hours setting 60 ml/hr (1500 mL/day), after that, pump setting as desired
<ul style="list-style-type: none"> • Other patients 	<p><u>Fast</u> building-up schedule: ≤ 24 hours on nutrition target</p> <ul style="list-style-type: none"> • Day 1: first 6 hours setting 40 ml/hr (1000 mL/day), after that, pump setting as desired

* Monitor the electrolytes status, fluid level and clinical condition and supplement thiamine

Flow chart malnutrition outpatients



The prevalence of malnutrition in the outpatients clinic is relatively low (5-6%). Research shows that the prevalence amongst the following patient groups lies above the average:

- patients with a chronic illness such as COPD, stomach, bowel and liver complaints
- patients with an oncology-related complaint
- patients needing surgery
- the elderly

For these groups, screening at outpatients clinics should be considered.

Screening at the outpatients clinic is possible with:

<h1 style="margin: 0;">SNAO</h1> <p style="margin: 0;">Short Nutritional Assessment Questionnaire</p>	<h2 style="color: #f4a460;">+ BMI</h2> <p>Cut off points + points</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">≤ 65 years:</td> <td style="width: 30%;">BMI < 18.5</td> <td style="width: 10%; text-align: center;">:</td> <td style="width: 30%;">3 points</td> </tr> <tr> <td></td> <td>BMI 18.5-20</td> <td style="text-align: center;">:</td> <td>2 points</td> </tr> <tr> <td>> 65 years:</td> <td>BMI < 20</td> <td style="text-align: center;">:</td> <td>3 points</td> </tr> <tr> <td></td> <td>BMI 20-22</td> <td style="text-align: center;">:</td> <td>2 points</td> </tr> </table>	≤ 65 years:	BMI < 18.5	:	3 points		BMI 18.5-20	:	2 points	> 65 years:	BMI < 20	:	3 points		BMI 20-22	:	2 points
≤ 65 years:	BMI < 18.5	:	3 points														
	BMI 18.5-20	:	2 points														
> 65 years:	BMI < 20	:	3 points														
	BMI 20-22	:	2 points														
<ul style="list-style-type: none"> • Did you lose weight unintentionally? More than 6 kg in the last 6 months More than 3 kg in the last month ●●● • Did you experience a decreased appetite over the last month? ●● • Did you use supplemental drinks or tube feeding over the last month? ● <p style="font-size: small; margin-top: 5px;"> ● no intervention ●● moderately malnourished; nutritional intervention ●●● severely malnourished; nutritional intervention and treatment dietician </p>																	

or

The objective definition of malnutrition (preferably included in the digital medical history)

Severe malnutrition ≤ 65 years:

BMI < 18.5 and/or unintentional weight loss $\geq 5\%$ /past month or $\geq 10\%$ past six months

Severe malnutrition > 65 years:

BMI < 20 and/or unintentional weight loss $\geq 5\%$ /past month or $\geq 10\%$ past six months

Moderate malnutrition ≤ 65 years:

BMI 18.5 – 20 and/or unintentional weight loss 5-10%/past six months

Moderate malnutrition > 65 years:

BMI 20 – 22 and/or unintentional weight loss 5-10%/past six months

Advice and evaluation outpatient treatment plan

The schedule below can be used to create a treatment plan after the malnutrition diagnosis has been made and to subsequently evaluate the treatment according to the schedule with patients attending the outpatients clinic

Treatment

Protein: 1.2 – 1.7 g protein/kg body weight (with BMI > 27 calculate with weight at BMI 27)

Energy: minimum H&B equation (1984)* + supplement 30% for activity

**For men: $88,362 + (13,397 \times \text{weight}) + (4,799 \times \text{height}) - (5,677 \times \text{age})$*

**For women: $447,593 + (9,247 \times \text{weight}) + (3,098 \times \text{height}) - (4,33 \times \text{age})$*

Intake versus requirement	Advice	Evaluation and action
100% of the requirement	Energy and protein rich food (enriched main meals, in-between provisions and possibly oral nutritional supplements)	Patient records intake him/herself and contacts dietician if there are problems Screening on admission to the clinic or at next outpatient visit
75-100% of the requirement	Energy and protein rich food (enriched main meals, in-between provisions and possibly oral nutritional supplements)	≤ 10 working days: requirement met by intake? Continue or supplement with oral nutritional supplements
50-75% of the requirement	Oral nutritional supplements and/or tube feeding	≤ 5 working days: requirement met by intake? Continue or transfer to tube feeding
<50% of the requirement	Complete or supplementary tube feeding, if possible oral nutritional supplements	≤ 2 working days: requirement met by intake? Continue or oral food (oral nutritional supplements) if possible

Explanation

**Fight
Malnutrition**
www.fightmalnutrition.eu



This manual was devised in collaboration with hospitals which participated in the project financed by ZonMw:

‘Early detection and optimal treatment of malnutrition in Dutch hospitals’

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