LITTERATUROVERSIKT FOR KOMPETANSETJENESTEN FOR SYKDOMSRELATERT UNDERERNÆRING

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Kompetansetjenesten for sykdomsrelatert underernæring (mars 2018)
Kompetansetjenesten for sykdomsrelatert underernæring (mars 2018)

Matarese LE, Charney P.
Capturing the Elusive Diagnosis of Malnutrition.


Stratton RG, C.J.; Elia, M. Disease-related malnutrition: An Evidence-Based Approach To Treatment CABI publishing: 2003.

DEFINISJONER OG KRITERIER

Soeters P, Bozzetti F, Cynober L, Forbes A, Shenkin A, Sobotka L.
Defining malnutrition: A plea to rethink.

Jensen GL, Cederholm T.

Cederholm T, Jensen GL.

Cederholm T, Barazzoni R, Austin P, et al

Matarese LE, Charney P.

Hand RK, Murphy WJ, Field LB, Lee JA, Parrott JS, Ferguson M, Skipper A, Steiber AL


PREVALENS (ERNÆRINGSRISIKO OG/ELLER UNDERERNÆRING)


Tangvik RJ, Guttormsen AB, Tell GS, Ranhoff AH. 


**Prevalence of undernutrition on admission to Swiss hospitals.** Clinical nutrition. 2010;29(1):38-41.


Bauer JD, Isenring E, Torma J, Horsley P, Martineau J. 
**Nutritional status of patients who have fallen in an acute care setting.** Journal of human nutrition and dietetics, 2007;20(6):558-64.

Singh H, Watt K, Veitch R, Cantor M, Duerksen DR. 
**Malnutrition is prevalent in hospitalized medical patients: are housestaff identifying the malnourished patient?** Nutrition. 2006;22(4):350-4.

Martins CP, Correia JR, do Amaral TF. 

**KONSEKVENSER AV ERNÆRINGSMESSIG RISIKO OG UNDERERNÆRING**

Barreto Pde S, Cadroy Y, Kalaiditi E, Vellas B, Rolland Y. 
**The prognostic value of body-mass index on mortality in older adults with dementia living in nursing homes.** Clin Nutr. 2017;36:423-428

Tevik K, Thürmer H, Husby MI, de Soysa AK, Helvik AS. 
**Nutritional risk is associated with long term mortality in hospitalized patients with chronic heart failure.** Clin Nutr ESPEN. 2016 Apr;12:e20-e29.


Tangvik RJ, Tell GS, Eisman JA, et al. 

Kompetansetjenesten for sykdomsrelatert underernæring (mars 2018)
Kompetansetjenesten for sykdomsrelatert underernæring (mars 2018)


**SCREENING**

Kompetansetjenesten for sykdomsrelatert underernæring (mars 2018) 6

Skipper A, Ferguson M, Thompson K, Castellanos VH, Porcari J. 

Kelly IE, Tessier S, Cahill A, Morris SE, Crumley A, McLaughlin D, McKee RF, Lean ME. 

### SCREENING OG KARTLEGGINGSVERKTØY (MED LENKER TIL HVOR DE FINNES)

#### MNA (SF)

Mini Nutritional Assessment er et kartleggingsverktøy som fører til vurderingene «Normal ernæringsstatus», «Risiko for underernæring» eller «Underernært».

Lenk til norsk oversettelse av MNA  

Veiledning for utfylling av MNA skjema for ernæringsvurdering  

Veiledningen har følgende vedlegg:

Vedlegg 1 • Tabell over Kroppsmasseindeks  
Vedlegg 2 • Regne ut BMI for personer med amputasjon  
Vedlegg 3 • Måle høyde ved hjelp av et Stadiometer  
Vedlegg 4 • Måle Pemispan  
Vedlegg 5 • Måle Knehøyde  
Vedlegg 6 • Måle Overarmens Omkrets (OO)  
Vedlegg 7 • Måle Leggens Omkrets  
17 referanser

Mastronuzzi T, Paci C, Portincasa P, Montanaro N, Grattagliano I.  

#### MUST

Malnutrition Universal Screenings Tool er et verktoy som vurderer risikoen for underernæring og skårer pasientene i «Lav risiko», «Middels risiko» eller «Høy risiko» for underernæring.

Lenk til norsk oversettelse av MUST  

Lenk til veiledning for utfylling av MUST
Marshall S, Young A, Isenring E
The malnutrition screening tool in geriatric rehabilitation: A comparison of validity when completed by health professionals with and without malnutrition screening training has implications for practice. J Acad Nutr Diet, 2018;118:118-123

Phillips W, Zechariah S


NRS-2002
Nutrition Risk screening 2002

Tevik K, Thürmer H, Husby MI, de Soysa AK, Helvik AS.

Sorensen J, Kondrup J, Prokopowicz J, et al

Kondrup J, Rasmussen HH, Hamberg O et al

J. Kondrup, S. P. Allison, M. Elia, B.Vellas, M. Plauth

Norsk oversettelse
6.utgave, desember 2015 er rett oversettelse fra original publikasjon.
http://www.fresenius-kabi.no/Documents/Open%20files/NO/EN/God_ern%C3%A6ringspraksis_lommebrosjyre.pdf

PG-SGA
The Scored Patient-Generated Subjective Global Assessment

Det er mange versjoner av SGA oversatt til ulike språk. PG-SGA inneholder elementene i screeningsverktøy og kan derfor fungere både som screening og kartleggingsverktøy. PG-SGA setter i dag standarden og er det foretrukne verktøyet innen onkologi og ved andre kronisk katabolske tilstander. PG-SGA er et kartleggingsverktøy som gir tilstandene velernært, moderat underernært eller alvorlig underernært.
Jager-Wittenaar H and Ottery FD


SNAQ

Short Nutritional Assessment Questionnaire (SNAQ) er ikke oversatt til norsk. Det finnes flere varianter av SNAQ for bruk på ulike nivåer av helsetjenestene og for ulike aldersgrupper.

Lenk til SNAQ verktøyene


EFFEKT AV SCREENING

Omidvari AH, Vali Y, Murray SM, Wonderling D, Rashidian A.

EFFEKT AV ERNÆRINGSSTÖTTE TIL DE SOM FANGES OPP VED SCREENING


Starke J, Schneider H, Alteheld B, Stehle P, Meier R.

**Effect of nutritional support on clinical outcome in patients at nutritional risk.**

---

**EFFEKT AV ERNÆRINGSINTERVENSJONER**

Ortiz-Reyes LA, Castillo-Martinez L, Lupian-Angulo AI et al

**Increased efficacy and safety of enteral nutrition support with a protocol (ASNET) in noncritical patients: a randomized controlled trial.** J Acad Nutr Diet, 2018; 118: 52-60


**Intake of a Protein-Enriched Milk and Effects on Muscle Mass and Strength. A 12-Week Randomized Placebo Controlled Trial among Community-Dwelling Older Adults.** J Nutr Health Aging. 2017;21(10):1160-1169. doi: 10.1007/s12603-016-0856-1. PMID: 29188875

Sine Roelsgaard Obling, Benedicte Vibjerg Wilson, Per Pfeiffer, Jens Kjeldsen


Munk T, Bruun N, Nielsen MA, Thomsen T.


Deutz NE, Matheson EM, Matarese LE, et al


Weekes CE, Baldwin C, Munk T, Beck AM.


Bonilla-Palomad JL, Gámez-Lópe AL, Castillo-Domínguez JC, et al

**Nutritional Intervention in Malnourished Hospitalized Patients with Heart Failure.** Arch Med Res. 2016 Oct;47(7):535-540

Munk T, Tolstrup U, Beck AM, Holst M, Rasmussen HH, Hovhannisyan K, Thomsen T.

De Waele E, Mattens S, Honoré PM, Spapen H, De Grève J, Pen JJ.  

Beck A, Andersen UT, Leedo E et al  
**Does adding a dietician to the liaison team after discharge of geriatric patients improve nutritional outcome: A randomized controlled trial.** Clin Rehabil, 2014;29:1117-28

Munk T, Beck AM, Holst M, Rosenbom E, Rasmussen HH, Nielsen MA, Thomsen T.  

Munk T, Seidelin W, Rosenbom E, Nielsen AL, Klausen TW, Nielsen MA, Thomsen T.  

Bonatto SR, Oliveira HP, Nunes E, et al.  


Holyday M, Daniells S, Bare M, Caplan GA, Petocz P, Bolin T.  

**Fish oil supplement alters markers of inflammatory and nutritional status in colorectal cancer patients.** Nutr Cancer. 2012;64(2):267-273.

Weed HG, Ferguson ML, Gaff RL, Hustead DS, Nelson JL, Voss AC.  
**Lean body mass gain in patients with head and neck squamous cell cancer treated perioperatively with a protein- and energy-dense nutritional supplement containing eicosapentaenoic acid.** Head Neck. 2011;33(7):1027-1033.

Glare P, Jongs W, Zafiropoulos B.  
**Establishing a cancer nutrition rehabilitation program (CNRP) for ambulatory patients attending an Australian cancer center.** Support Care Cancer. 2011;19(4):445-454.

Murphy RA, Mourtzakis M, Chu QS, Baracos VE, Reiman T, Mazurak VC.  
Somanchi M1, Tao X, Mullin GE.  

van der Meij BS, Langius JAE, Smit EF, et al.  
**Oral nutritional supplements containing (n-3) polyunsaturated fatty acids affect the nutritional status of patients with stage III non-small cell lung cancer during multimodality treatment.** J Nutr. 2010;140(10):1774-1780.

Taylor LA, Pletschen L, Arends J, Unger C, Massing U.  

van den Berg MGA, Rasmussen-Conrad EL, Wei KH, et al  


Ha L, Hauge T, Spenning AB, Iversen PO.  

Ryan AM, Reynolds JV, Healy L, et al.  

de Luis DA, Izaola O, Aller R, Cuellar L, Terroba MC, Martin T.  

Read J, Beale P, Volker D, Smith N, Childs A, Clarke S.  

Guarcello M, Riso S, Buosi R, d’Andrea F.  

Isenring EA, Bauer JD, Capra S.  
**Nutrition support using the American Dietetic Association medical nutrition therapy**

Fearon KC, Barber MD, Moses AG, et al. 

Duncan DG, Beck SJ, Hood K, Johansen A. 

de Luis DA, Izaola O, Aller R, Cuellar L, Terroba MC. 

Bauer J, Capra S, Battistutta D, Davidson W, Ash S. 

Ravasco P, Monteiro-Grillo I, Vidal PM, Camilo ME. 

Ravasco P, Monteiro-Grillo I, Marques Vidal P, Camilo ME. 

Persson C, Glimelius B, Rönnelid J, Nygren P. 

Odelli C, Burgess D, Bateman L, et al. 


Isenring E, Capra S, Bauer J. 
Patient satisfaction is rated higher by radiation oncology outpatients receiving nutrition intervention compared with usual care. J Hum Nutr Diet. 2004;17:145-152.

Isenring EA, Capra S, Bauer JD. 
Nutrition intervention is beneficial in oncology outpatients receiving radiotherapy to the gastrointestinal or head and neck area. Br J Cancer. 2004;91(3):447-452.
**Phase II study of high-dose fish oil capsules for patients with cancer-related cachexia.** Cancer. 2004;101(2):370-378.

Ravasco P, Monteiro-Grillo I, Camilo ME.

Isenring E, Capra S, Bauer J, Davies PSW.

Fearon KCH, von Meyenfeldt MF, Moses AGW, et al.
**Effect of a protein and energy dense n-3 fatty acid enriched oral supplement on loss of weight and lean tissue in cancer cachexia: A randomized double blind trial.** Gut. 2003;52(10):1479-1486.

Pratt VC, Watanabe S, Bruera E, et al.
**Plasma and neutrophil fatty acid composition in advanced cancer patients and response to fish oil supplementation.** Br J Cancer. 2002;87(12):1370-1378.

Stratton RG, C.J.; Elia, M. **Disease-related malnutrition: An Evidence-Based Approach To Treatment** CABI publishing; 2003.

**Evidence for nutrition support**

- Meta-analysis of 27 RCT with 1710 patients (complications)
- 30 RCT with 3250 patients (mortality)

- Complications: 28% vs 46% (P<0.001)
- Mortality: 17% vs 24% (P<0.001)

**IMPLEMENTERING AV ERNÆRINGSSTRATEGIER/-PROGRAM**

Fjeldstad SH, Thoresen L, Mowé M, Irtun Ø
**Changes in nutritional care after implementing national guidelines – a 10-year follow-up study.** Eur J Clin Nutr; 2018; online https://doi.org/10.1038/s41430-017-0050-5

Guenter P, Jensen G, Paten V et al
**Addressing Disease-Related Malnutrition in Hospitalized Patients: A call for a National Goal** The Joint Commission Journal on Quality and Patient Safety, 2015; 41:469-473

Brugler L, DiPrinzio MJ, Bernstein L.

**BARRIERER OG SUKSESSFAKTORER**

Keller H, Allard J, Vesnauer E, et al
Eide HD, Halvorsen K, Almendingen K. 

Ekramzadeh M, Mazloom Z, Jafari P, Ayatollahi M, Sagheb MM. 

Leistra, E., van Bokhorst-de van der Schueren, M. A., et al 
**Systematic screening for undernutrition in hospitals: predictive factors for success** Clin Nutr, 2014;33:495-501

Stamp N, Davis AM 
**Identifying barriers to implementing nutrition recommendation** Topics in Clin Nutr, 2013; 28:249-261

Juul HJ, Frich JC. 
**Kartlegging av underernæring i sykehus. Hva hemmer og fremmer sykepleieres bruk av screeningverktøy for identifisering av ernæringsmessig risiko?** Nordisk Sygeplejeforskning 2013;3:77-89

Holst M, Rasmussen HH. 

Cahill NE, Suurdt J, Ouellette-Kuntz H, Heyland DK. 

**Food and nutritional care in hospitals: How to prevent undernutrition.** Strasbourg: Council of Europe Publishing; 2002

---

**KVALITETSSINDIKATORER**

van Nie-Visser, N. C., Meijers, J. M., Schols, et al 
**To what extent do structural quality indicators of (nutritional) care influence malnutrition prevalence in nursing homes?** Clin Nutr 2015;34:1172-1176

Thoresen L, Rothenberg E, Beck A M, Irtun Ø and on behalf of the Scandinavian Nutrition Group (SNG) **Doctors and nurses on wards with greater access to clinical dietitians have better focus on clinical nutrition.** Journal of Human Nutrition and Dietetics Volume 21, Issue 3, pages 239–247, June 2008
Costs of hospital malnutrition.

Elia M, Parsons EL, Cawood AL, Smith TR, Stratton RJ.
Cost-effectiveness of oral nutritional supplements in older malnourished care home residents.

Elia M, Normand C, Laviano A, Norman K.
A systematic review of the cost and cost effectiveness of using standard oral nutritional supplements in community and care home settings.

Elia M, Normand C, Norman K, Laviano A.
A systematic review of the cost and cost effectiveness of using standard oral nutritional supplements in the hospital setting.

Souzaa TT, Sturiona CJ, Faintuchb J.
Is the skeleton still in the hospital closet? A review of hospital malnutrition emphasizing health economic aspects
Clinical Nutrition, 2015;34:1088–1092

Freijer K, Lenoir-Wijinkoop I, Russell CA, et al
The view of European experts regarding health economics for medical nutrition in disease-related malnutrition.

The economic value of enteral medical nutrition in the management of disease-related malnutrition: a systematic review.

Economic evaluation for protein and energy supplementation in adults: opportunities to strengthen the evidence.

Freijer K, Tan SS, Koopmanschap MA, Meijers JM, Halfens RJ, Nuijten MJ.
The economic costs of disease related malnutrition.

Jie B1, Jiang ZM, Nolan MT, Zhu SN, Yu K, Kondrup J
Impact of preoperative nutritional support on clinical outcome in abdominal surgical patients at nutritional risk.

Estimating the costs associated with malnutrition in Dutch nursing homes.

Freijer K, Nuijten MJ, Schols JM.
The budget impact of oral nutritional supplements for disease related malnutrition in elderly in the community setting Front Pharmacol 2012; 3; 1-8


Juul, H J.


Karen Freijers avhandling Nutrition Economics Disease related malnutrition & the economic health care value of medical nutrition kan lastes ned fra denne lenken http://digitalarchive.maastrichtuniversity.nl/fedora/get/guid:5a5c4ad5-9836-41b3-b86e-40067eb44e73/ASSET1


C.L. Funk, C.M. Ayton Improving malnutrition documentation enhances reimbursement J Am Diet Assoc,1995;95,468–475
Alle kan lastes ned fra http://www.espen.org/education/espen-guidelines

**ESPEN guideline clinical nutrition in neurology.** Clinical Nutrition published online: 27 September, 2017

**ESPEN guidelines on nutritional support for polymorbid internal medicine patients** Clinical Nutrition Published online: July 24, 2017

**ESPEN expert group recommendations for action against cancer-related malnutrition** Clinical Nutrition 36 (2017) 1187-1196

**ESPEN guideline: Clinical nutrition in surgery** Clinical Nutrition 36 (2017) 623-650

**ESPEN guideline: Clinical nutrition in inflammatory bowel disease** Clinical Nutrition 36 (2017) 321-347

**ESPEN guidelines on definitions and terminology of clinical nutrition** Clinical Nutrition 36 (2017) 149-64

**ESPEN guidelines on nutrition in cancer patients** Clinical Nutrition 36 (2017) 11–48

Management of acute intestinal failure: A position paper from the European Society for Clinical Nutrition and Metabolism (ESPEN) Special Interest Group Clinical Nutrition 35 (2016), 6, 1209–1218

**ESPEN-ESPGHAN-ECFS guidelines on nutrition care for infants, children, and adults with cystic fibrosis** Clinical Nutrition 35 (2016) 557-577

**ESPEN guideline on ethical aspects of artificial nutrition and hydration** Clinical Nutrition 35 (2016) 545-556

**ESPEN guidelines on chronic intestinal failure in adults** Clinical Nutrition 35 (2016) 247-307

**ESPEN guidelines on nutrition in dementia** Clinical Nutrition 34 (2015) 1052-73

**ESPEN endorsed recommendations: Protein intake and exercise for optimal muscle function with aging: Recommendations from the ESPEN Expert Group** Clinical Nutrition 33 (2014) 929-936

**ESPEN endorsed recommendations: Nutritional therapy in major burns** Clinical Nutrition 32 (2013) 497-502


ESPEN Guidelines for adult parenteral nutrition Clinical Nutrition 2009; 28:359-479

ESPEN Guidelines on adult enteral nutrition Clinical Nutrition 2006;25:177-360

ESPEN Guidelines on enteral nutrition — Percutaneous endoscopic gastrostomy (PEG) Clinical Nutrition 2005;24:848-861


ESPEN Guidelines for nutrition in liver disease and transplantation Clinical Nutrition 1997;16:43-55

UTVALGTE MEDISINSKE DIAGNOSER OG TILSTANDER

GRAVIDITET


DEMENS


PULIKASJONER FRA NUTRITION DAY DATA


Streicher M, Themessl-Huber M, Schindler K, Sieber CC, Hiesmayr M, Volkert D, nutritionDay in Nursing Homes – The Association of Nutritional Intake and Nutritional
**Interventions With 6-Month Mortality in Malnourished Residents.** J Am Med Dir Assoc (2017); 18:162-168

Schindler K, Pichard C, Sulz I, et al

**To eat or not to eat? Indicators for reduced food intake in 91,245 patients hospitalized on nutritionDays 2006-2014 in 56 countries worldwide: a descriptive analysis** Am J Clin Nutr (2016); 104:1393-1402

Navarro DA, Boaz M, Krause I, et al
**Improved meal presentation increases food intake and decreases readmission rate in hospitalized patients** Clin Nutr (2016); 35:1153-1158

Streicher M, Themessl-Huber M, Schindler K, Sieber CC, Hiesmayr M, Volkert D.


Frantal S, Pernicka E, Hiesmayr M, Schindler K, Bauer P.
**Length bias correction in one-day cross-sectional assessments – The nutritionDay study.** Clin Nutr (2016); 35:522-527


**Self-rated health, nutritional intake and mortality in adult hospitalized patients.** Eur J Clin Invest (2014); 44:813-824

Tsaousi G, Panidis S, Stavrou G, Tsouskas J, Panagiotou D, Kotzampassi K.

**NutritionDay 2010 audit in Jingling hospital of China.** Asia Pac J Clin Nutr (2013); 22:206-213

Hiesmayr M, Schindler K, Pernicka E, et al
*Decreased food intake is a risk factor for mortality in hospitalised patients: The nutritionDay survey 2006.* Clin Nutr 28 (2009) 484-491

Valentini L, Schindler K, Schlaffer R, et al

**DIVERSE**

Kristin Halvorsen, Helene Kjøllesdal Eide, Kjersti Sortland and Kari Almendingen
*Documentation and communication of nutritional care for elderly hospitalized patients: perspectives of nurses and undergraduate nurses in hospitals and nursing homes* BMC Nursing (2016) 15:70

Iversen Per O, Ha Lisa, Blomhoff Rune, Hauge Truls, Veierød Marit B. *Baseline oxidative defense and survival after 5-7 years among elderly stroke patients at nutritional risk: Follow-up of a randomized, nutritional intervention trial.* Clin Nutr 2014 Jul 25. Epub ahead of print. PMID:25108573
Definisjonene og kriterier på underernæring

White et al 2012

Since there is no single parameter that is definitive for adult malnutrition, identification of two or more of the following six characteristics is recommended for diagnosis (see the Table):
• insufficient energy intake (30-32);
• weight loss (33-36);
• loss of muscle mass (36,37);
• loss of subcutaneous fat (36,37);
• localized or generalized fluid accumulation (36,37) that may sometimes mask weight loss; and
• diminished functional status as measured by hand grip strength (3,36,38-42).
### Table. Academy of Nutrition and Dietetics (Academy)/American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) clinical characteristics that the clinician can obtain and document to support a diagnosis of malnutrition\(^{22}\) (continued)

<table>
<thead>
<tr>
<th>Clinical characteristic</th>
<th>Malnutrition in the Context of Acute Illness or Injury</th>
<th>Malnutrition in the Context of Chronic Illness</th>
<th>Malnutrition in the Context of Social or Environmental Circumstances</th>
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<tr>
<td>(4) Muscle mass</td>
<td>Non-severe (moderate) malnutrition, Severe malnutrition</td>
<td>Non-severe (moderate) malnutrition, Severe malnutrition</td>
<td>Non-severe (moderate) malnutrition, Severe malnutrition</td>
</tr>
<tr>
<td></td>
<td>Mild, Moderate</td>
<td>Mild, Severe</td>
<td>Mild, Severe</td>
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<tr>
<td></td>
<td>Muscle loss (e.g., wasting of the temples, temporalis muscle, clavicle, pectoralis and deltois, shoulders (deltois), intercostal muscles, scapula (lattissimus), trapezius, deltois, thigh (quaadriceps) and calf (gastrocnemius))</td>
<td></td>
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<tr>
<td>(5) Fluid accumulation</td>
<td>Mild, Moderate to severe</td>
<td>Mild, Severe</td>
<td>Mild, Severe</td>
</tr>
<tr>
<td></td>
<td>The clinician may evaluate generalized or localized fluid accumulation evident on exam (extremities, vulvar/ovarian edema or ascites). Weight loss is often masked by generalized fluid retention (edema and weight gain may be observed)</td>
<td></td>
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<tr>
<td>(6) Reduced grip strength</td>
<td>N/A</td>
<td>Measureably reduced</td>
<td>Measureably reduced</td>
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<td></td>
<td>Consult normative standards supplied by the manufacturer of the measurement device</td>
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Malnutrition is the result of inadequate food and nutrient intake or assimilation; thus, recent intake compared to estimated requirements is a primary criterion defining malnutrition. The clinician may obtain or review the food and nutrition history, estimate optimum energy needs, compare them with estimates of energy consumed and report inadequate intake as a percentage of estimated energy requirements over time.

Interpretation of weight loss:

- The clinician may evaluate weight in light of other clinical findings, including the presence of under- or overhydration. This clinician may assess weight change over time reported as a percentage of weight lost from baseline.
- Physical findings:
  - Loss of subcutaneous fat (e.g., brachial, triceps, fat overlying the ribs).

Bowel habit:
- Mild
- Moderate
- Mild
- Severe
- Mild
- Severe
Fact box:
Two alternative ways to diagnose malnutrition.
Before diagnosis of malnutrition is considered it is mandatory to fulfil criteria for being “at risk” of malnutrition by any validated risk screening tool.

**Alternative 1:**
BMI <18.5 kg/m2

**Alternative 2:**
Weight loss (unintentional) > 10% indefinite of time, or >5% over the last 3 months combined with either
BMI <20 kg/m2 if <70 years of age, or <22 kg/m2 if 70 years of age or FFMI <15 and 17 kg/m2 in women and men, respectively.

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Cederholm et al 2017

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Cederholm et al 2015

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Kompetansetjenesten for sykdomsrelatert underernæring (mars 2018)