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**UNDERERNÆRING**

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

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**DEFINISJONER OG KRITERIER**


**ASPEN/AND**


**ESPEN**


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**PREVALENS (ERNÆRINGSRISIKO OG/ELLER UNDERERNÆRING)**


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Kompetansetjenesten for sykdomsrelatert underernæring (3. november 2016) 2
EuroOOPS: an international, multicentre study to implement nutritional risk screening and evaluate clinical outcome. 

Prevalence of undernutrition on admission to Swiss hospitals. 

Frequency of malnutrition in older adults: a multinational perspective using the mini nutritional assessment. 

Tangvik RJ, Guttormsen AB, Tell GS, Ranhoff AH. 
Implementation of nutritional guidelines in a university hospital monitored by repeated point prevalence surveys. 

Tangvik RJ, Tell GS, Guttormsen AB, Eisman JA, Henriksen A, Nilsen RM, Ranhoff AH: 
Nutritional risk profile in a university hospital population. 

Eide HK, Benth JS, Sortland K, Halvorsen K, Almendingen K. 
Prevalence of nutritional risk in the non.demented hospital elderly: a cross-sectional study from Norway using stratified sampling. 

Jacobsen EL, Brovold T, Bergland A, Bye A. 
Prevalence of factors associated with malnutrition among acute geriatric patients in Norway: a cross-sectional study. 
BMJ Open 2016;6:e011512. doi:10.1136/bmjopen-2016-011512

ÅRSAKER OG RISIKOFAKTØRER TIL UNDERERNÆRING

Kommer

KONSEKVENSER AV UNDERERNÆRING

Sarcopenia is predictive of nosocomial infection in care of the elderly. 
The British journal of nutrition. 2006;96(5):895-901.

Mowe M, Diep L, Bohmer T.
Greater seven-year survival in very aged patients with body mass index between 24 and 26 kg/m². Journal of the American Geriatrics Society. 2008;56(2):359-60.


SCREENING


AUTHORS' CONCLUSIONS: Malnutrition in acute hospital admissions goes apparently unrecognized and unmanaged in 70% of cases. Since there are serious consequences, and effective simple treatment is readily available, increased awareness is required, with routine assessment of nutritional status in all patients.

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 undernæringer» eller «Underernæring».

Lenk til norsk oversettelse av MNA
http://www.mna-elderly.com/forms/MNA_norwegian.pdf

Veiledning for utfylling av MNA skjema for ernæringsvurdering
http://www.mna-elderly.com/forms/mna_guide_norwegian.pdf

Veiledningen har følgende vedlegg:
Vedlegg 1 • Tabell over Kroppsmasseindeks
Vedlegg 2 • Regne ut BMI for personer med amputasjon
Vedlegg 3 • Måle høye ved hjelp av et Stadiometer
Vedlegg 4 • Måle Pemispan
Vedlegg 5 • Måle Knehøye
Vedlegg 6 • Måle Overarmens Omkrets (OO)
Vedlegg 7 • Måle Leggens Omkrets
17 referanser

MUST

Malnutrition Universal Screenings Tool er et verktøy 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

13 referanser

NRS-2002
Nutrition Risk screening 2002

J. Kondrup, S. P. Allison, M. Elia, B.Vellas, M. Plauth
ESPEN Guidelines for Nutrition Screening 2002

EuroOOPS: an international, multicentre study to implement nutritional risk screening and evaluate clinical outcome.

Norsk oversettelse
5.utgave, januar 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 velnært, moderat underernært eller alvorlig underernært.

Norsk oversettelse
Vil komme på nettsiden til Pt-Global
http://pt-global.org/?page_id=13
**Short Nutritional Assessment Questionnaire (SNAQ)**

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


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**EFFEKТ AV SCREENING**

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

**Nutritional screening for improving professional practice for patient outcomes in hospital and primary care settings.**


**AUTHORS’ CONCLUSIONS:** Current evidence is insufficient to support the effectiveness of nutritional screening, although equally there is no evidence of no effect. Therefore, more high quality studies should be conducted to assess the effectiveness of nutritional screening in different settings.

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**DOES NUTRITION SUPPORT HELP THOSE SCREENED POSITIVE?**

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

**Short-term individual nutritional care as part of routine clinical setting improves outcome and quality of life in malnourished medical patients.**


**AUTHORS' CONCLUSIONS:** Malnourished patients profit from nutrition support regarding nutrition status and quality of life. They have fewer complications, need fewer antibiotics and are less often re-hospitalised.

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


**AUTHORS' CONCLUSIONS:** Protein and energy intake of nutritionally at-risk patients was increased which resulted in shortening of the part of the length of stay that was considered to be sensitive to nutritional support (LOSNDI) and shorter length of stay (LOS) among patients with complications.
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)

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

**AUTHORS' CONCLUSIONS:** Dietetic or nutrition assistants are being introduced in units across the UK. This, the largest ever study of nutritional support after hip fracture, shows that their employment significantly reduced patients' risk of dying in the acute trauma unit; an effect that persisted at 4 month follow-up.

Ha L, Hauge T, Spenning AB, Iversen PO.
Individual, nutritional support prevents undernutrition, increases muscle strength and improves QoL among elderly at nutritional risk hospitalized for acute stroke: a randomized, controlled trial.

**AUTHORS' CONCLUSIONS:** Individualized, nutritional treatment strategy can prevent clinically significant weight loss and improve QoL in elderly acute stroke patients at nutritional risk.

Somanchi M1, Tao X, Mullin GE.
The facilitated early enteral and dietary management effectiveness trial in hospitalized patients with malnutrition.

Holyday M, Daniells S, Bare M, Caplan GA, Petocz P, Bolin T.
Malnutrition screening and early nutrition intervention in hospitalised patients in acute aged care: a randomised controlled trial.

**AUTHORS' CONCLUSIONS:** Without screening, clinical staff identified only a small proportion of malnourished patients (35% of MN and 20% of AR). Malnutrition in the older hospital population is common. Malnutrition screening on hospital admission facilitated targeted nutrition intervention, however length of stay and re-presentations were only reduced in older malnourished patients with an MNA score less than 17.

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
IMPLEMENTERING AV ERNÆRINGSSTRATEGIER/PROGRAM

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.
The five-year evolution of a malnutrition treatment program in a community hospital.

BARRIERER OG SUKSESSFAKTORER

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

Cahill NE, Suurdt J, Ouellette-Kuntz H, Heyland DK.
Understanding adherence to guidelines in the intensive care unit: development of a comprehensive framework.

Holst M, Rasmussen HH.
Nutrition Therapy in the Transition between Hospital and Home: An Investigation of Barriers.

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

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

Leistra, E., van Bokhorst-de van der Schueren, M. A., Visser, M., van der Hout, A., Langius, J. A., Kruizenga, H. M.,
Systematic screening for undernutrition in hospitals: predictive factors for success
Clin Nutr, 2014;33:495-501

Ekramzadeh M, Mazloom Z, Jafari P, Ayatollahi M, Sagheb MM.
Major barriers responsible for malnutrition in hemodialysis patients: challenges to optimal nutrition.

Eide HD, Halvorsen K, Almendingen K.
Barriers to nutritional care for the undernourished hospitalised elderly: perspectives of nurses.

Barriers to food intake in acute care hospitals: a report of the Canadian Malnutrition Task Force.

KVALITETSINDIKATORER

To what extent do structural quality indicators of (nutritional) care influence malnutrition prevalence in nursing homes?
Clin Nutr 2015;34:1172-1176

KOSTNAD NYTTE

C.L. Funk, C.M. Ayton
Improving malnutrition documentation enhances reimbursement
J Am Diet Assoc, 1995;95,468–475

Effectiveness and cost-effectiveness of early screening and treatment of malnourished patients.

The economic impact of disease-related malnutrition at hospital admission
Clin Nutr, 2007;26:778–784

Karen Freijer 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:5a5e4ad5-9836-41b3-b86e-40067eb44e73/ASSET1

Freijer K, Nuijten MJ.
Analysis of the health economic impact of medical nutrition in the Netherlands.

Health economic impact of managing patients following a community-based diagnosis of malnutrition in the UK.
Clin Nutr. 2011;30:422-9

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; 78: 1-8


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\(^\text{32}^\text{13}\)

<table>
<thead>
<tr>
<th>Clinical characteristic</th>
<th>Non-severe (moderate) malnutrition</th>
<th>Severe malnutrition</th>
<th>Non-severe (moderate) malnutrition</th>
<th>Severe malnutrition</th>
<th>Non-severe (moderate) malnutrition</th>
<th>Severe malnutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malnutrition in the Context of Acute Illness or Injury</td>
<td></td>
<td></td>
<td>Malnutrition in the Context of Chronic Illness</td>
<td></td>
<td></td>
<td>Malnutrition in the Context of Social or Environmental Circumstances</td>
</tr>
<tr>
<td>Energy intake</td>
<td>&lt; 75% of estimated energy requirement for &gt; 7 days</td>
<td>&gt; 75% of estimated energy requirement for &gt; 5 days</td>
<td>&gt; 75% of estimated energy requirement for &gt; 1 month</td>
<td>&gt; 75% of estimated energy requirement for &gt; 1 month</td>
<td>&gt; 75% of estimated energy requirement for &gt; 1 month</td>
<td></td>
</tr>
<tr>
<td>Intake of weight loss</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Time % Time</td>
<td>1-2 1 wk &gt;2 1 wk</td>
<td>5 1 mo &gt;5 1 mo</td>
<td>5 1 mo &gt;5 1 mo</td>
<td>5 1 mo &gt;5 1 mo</td>
<td>5 1 mo &gt;5 1 mo</td>
<td></td>
</tr>
<tr>
<td>Physical findings</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of subcutaneous fat (e.g., waist, thighs, face)</td>
<td>Mild Moderate Mild Severe Mild Severe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### 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\(^\text{32}^\text{13}\) (continued)

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<th>Severe malnutrition</th>
<th>Non-severe (moderate) malnutrition</th>
<th>Severe malnutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle mass</td>
<td>Mild</td>
<td>Moderate</td>
<td>Mild</td>
<td>Severe</td>
<td>Mild</td>
<td>Severe</td>
</tr>
<tr>
<td>Fluid accumulation</td>
<td>Mild</td>
<td>Moderate to severe</td>
<td>Mild</td>
<td>Severe</td>
<td>Mild</td>
<td>Severe</td>
</tr>
<tr>
<td>Reduced grip strength (reference 42)</td>
<td>N/A</td>
<td>Measurably reduced</td>
<td>N/A</td>
<td>Measurably reduced</td>
<td>N/A</td>
<td>Measurably reduced</td>
</tr>
</tbody>
</table>

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Malnutrition is the result of inadequate food and nutrient intake or assimilation; thus, nutrient intake compared to estimated requirements is a primary criterion defining malnutrition. The clinician may obtain or review the food and nutrition history, estimate optimal energy needs, compare them with estimates of energy consumed and report imbalances. Intake as a percentage of estimated energy requirements over time.

The clinician may assess weight change over time reported as a percentage of weight lost from baseline.

Physical findings (reference 36, 37)

Malnutrition typically results in changes to the physical exam. The clinician may perform a physical exam and document any one of the physical exam findings below as an indicator of malnutrition.
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.