



## Intervention for prevention and treatment of pressure injury guideline: "Nutrition"



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### Question

- How many percent of patients are malnutrition in your hospital?
- How many percent of patients are at risk of pressure injury and have pressure injury in your hospital?
- How many percent of patients are related pressure injury with malnutrition in your hospital?
- how many percent of professional believe that nutrition plays role in pressure injury prevention and treatment?



### Risk factors of pressure injury



Pressure injuries are caused by a complex interplay of various intrinsic and extrinsic factors.

Intrinsic factors	Extrinsic factors
Cardiovascular disease	Pressure
Diabetes	Moisture
Malnutrition	Shear
Pulmonary disease	Friction
Neurological disease	Reduced tissue tolerance
Body type	Heat
Incontinence	Posture
Immobility	Impact injury







### Malnutrition continuum



- Too tired to shop or cook
- Too tired to eat
- Limited food budget

Poor

dietary

intake

Illness

- Injury or surgery
- Inflammatory respond
- Loss of reserves

• ↓ Food intake

- Weight loss
- ↓ Fat store
- ↓Physical strength

Nutrition disorder

Impaired nutrient transport

Increased

energy and

nutrient

needs

- ↓ Organ function
- Food-meds interactions

Adapted from: Litchford M. Nutr Clin Prac. Aug 2014, 29, 428



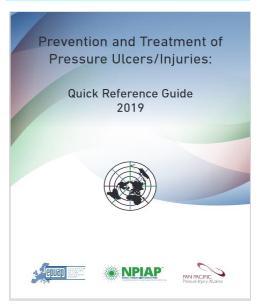








# Nutrition Assessment



Recommendations	Strength of Evidence	Strength of Rec.
Conduct nutritional screening for individuals at risk of a pressure injury.	B1	<b>↑</b> ↑
Conduct a comprehensive nutrition assessment for adults at risk of a pressure injury who are screened to be at risk of malnutrition and for all adults with a pressure injury	B2	<b>↑</b> ↑





# Valid nutritional screening tool

- Mini Nutritional Assessment (MNA ®)
  - https://www.mna-elderly.com/sites/default/files/2021-10/MNA-thai.pdf
- Malnutrition Universal Screening Tool (MUST)
  - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4532677/
- Short Nutritional Assessment Questionnaire (SNAQ)
  - https://www.fightmalnutrition.eu/toolkits/hospital-screening
- Nutritional Risk Screening (NRS 2002)
  - https://espen.info/documents/screening.pdf





### **Nutrition Screening**









### แนวทางปฏิบัติของการคัดกรองและการประเมิน กาวะโกซนาการที่เหมาะสมสำหรับประเทศไทย

**SPENT Nutrition Screening Tool** 

ผู้เข้ารับการรักษาในโรงพยาบาล



#### คัดกรองด้วย 4 คำถาม

- 1 น้ำหนักลดลงโดยไม่ตั้งใจภายใน 6 เดือน (3.<u>)ดัชนีมวลกาย <18.5</u> หรือ ≥25
- 2)ได้รับอาหารน้อยกว่าที่เคยได้ (เกิน 7 วัน)
- มีภาวะวิกฤติ หรือ กึ่งวิกฤติร่วมด้วย

### If ≥2/4 "Yes" → → Nutrition Assessment

สมาคมผู้ให้อาหารทางหลอดเลือดดำและทางเดินอาหารแห่งประเทศไทย (SPENT), 2560.





### Nutrition Screening and Assessment





## Recommended Nutrition Assessment Tools in Thailand









# Nutrition Triage (NT 2013)



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######################################	11) -(2%) -(	(2) 1-2% 2-1% 4-2% 7-2% 12% N 12% N 12% N Handbook (FX Handb (FX Handb (-4, 1) 2-4, 1) (-4, 1)	ASPEN MOREU  O  1  2  3  PORTER  O  1  2  3	(2)   (2)   (2)   (2)   (3)   (4)	Non-remission transa.  Head being: Annie quincipiery (100011-10, 1603-1, 1604-1, 1604-1, 1604-1), and the property of the prop	ACTUAL STREET,	Lun

สมาคมฝู่ใช่อาหารทางหลอดเลือดดำและทางเดิน อาหารแนงประเทศไทย (SPENT)

#### Assess item

- 1.Energy intake
- 2.Weight loss
- 3.Edema
- 4.Fat loss
- 5.Muscle loss
- 6. Functional status (สมรรถภาพกลามเนื้อ)
- 7. Chronic disease
- 8. Acute/ sub acute disease

### ประเมินความรุนแรงของภาวะเจ็บป่วย เรื้อรัง (≥3 เดือน) ที่มี ผลกระทบ ต่อ กาวะโภชนาการ และ เมตาบอลิซึม (0 = มีโรคแต่คมได้ดี, 1 = เล็กน้อย, 2 = ปานกลาง, และ 3 = รนแรง)

(0 40	moniparini, t minaco, E Bianniti, mas 2	1	•••		
	โรค และ โรคร่วม ตัวอย่าง เช่น		คะเ	เนน	
โรคมะเร็ง	(Stage $I = 0$ , $II = 1$ , $III = 2$ , $IV = 3$ )	0	1	2	3
โรคปอด	(TB, COPD,)	0	1	2	3
โรคไต	(ไตวายเรื้อรัง แต่ยังมีปัสสาวะ = 2 , HD/PD = 3)	0	1	2	3
โรคตับ	(Hepatic Encephalopathy = 3)	0	l	2	3
HIV (มีอาการ	i+นน.ลด ≤ 10% = 1-2, นน.ลด >10% + wasting = 3)	0	1	2	3
โรค / สภาว	ะ อื่นๆ (eg.Short bowel,)	0	1	2	3
ท้องมาน	(น้ำประมาณระดับสะดือ = 2, เต็มท้อง = 3)	0	l	2	3
แผลกดทับ (รั	พิจารณาความกว้าง-ลึก ถึงไขมัน = 2, กล้ามเนื้อ = 3)	0	1	2	3
แผลเรื้อรังอื่น	]	0	1	2	3
หมายเหตุ ใ	ห้คะแนน แต่ละ ภาวะ แล้วรวมคะแนน แต่ผลรวมสุ	คท้าย ให	ม่เกิน 3		

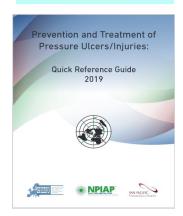
กรมการแพทย







# Nutrition care





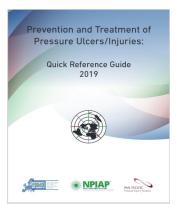
Recommendations	Strength of Evidence	Strength of Rec.
Develop and implement an individualized	B2	$\uparrow \uparrow$
nutrition care plan for individuals with, or		
at risk of, a pressure injury who are		
malnourished or who are at risk of		
malnutrition.		







# Nutrition care





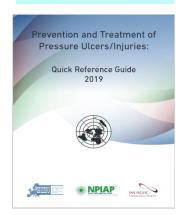
Recommendations	Strength of Evidence	Strength of Rec.
Provide 30 to 35 kcal./kg. body weight/day	B1	<b>↑</b>
for adults with a pressure injury who are		
malnourished or at risk of malnutrition.		
Provide 1.2 to 1.5 g. protein/kg. body weight/day	B1	$\uparrow \uparrow$
for adults with a pressure injury who are		
malnourished or at risk of malnutrition.		







# Nutrition care





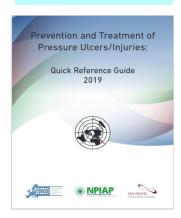
Recommendations	Strength of Evidence	Strength of Rec.
Offer high-calorie, high-protein fortified foods and/or nutritional	С	<b>↑</b>
supplements in addition to the usual diet for adults who are at		·
risk of developing a pressure injury and who are also		
malnourished or at risk of malnutrition, if nutritional		
requirements cannot be achieved by normal dietary intake		
Offer high calorie, high protein nutritional supplements in	B1	$\uparrow \uparrow$
addition to the usual diet for adults with a pressure injury who		
are malnourished or at risk of malnutrition, if nutritional		
requirements cannot be achieved by normal dietary intake.		1







# Nutrition care





Recommendations	Strength of	Strength of
	Evidence	Rec.
Provide high-calorie, high-protein, arginine,	B1	$\uparrow$
zinc and antioxidant oral nutritional		
supplements or enteral formula for adults		
with a Category/Stage II or greater pressure		
injury who are malnourished or at risk of		
malnutrition.		







# Oral Nutritional Supplements (ONS)

Multi-nutrient liquid, semi-solid or powder products that provide macronutrients and micronutrients with the aim of increasing oral nutritional intake.

Clin Nutr 2006; 25:180-186.







# special diets to improve their prognosis.



#### Immunonutrients and Their Mode of Action

Immunonutrients	Mode of Action
Omega-3 fatty acid	<ul> <li>Anti-inflammation by:         <ul> <li>Suppress pro-inflammatory cytokine production</li> <li>Reverse immunosuppression</li> </ul> </li> </ul>
Glutamine	<ul> <li>Nutrients for immune cells</li> <li>Improve gut barrier</li> <li>Non-sulphydryl precursor for glutathione</li> </ul>
Arginine	<ul> <li>Precursor for nitric oxide</li> <li>Enhances T-lymphocyte numbers and function</li> <li>Precursor of proline (→ → collagen)</li> <li>Stimulate GH production</li> </ul>
Nucleotides	<ul> <li>RNA and DNA precursors</li> <li>Improve T-lymphocyte function</li> </ul>

Grimble RF, et al. Curr Opin Gastroenterol. 2005;21:216-222.







### Oral Nutrition Supplement for skin immune



- Hydroxymethylbutyrate (HMB);
  - 1 g of HMB should be consumed 3 times per day
  - or 1.5 g of HMB should be consumed 2 times per day,
  - for a total of 3 g of HMB daily (or 38 mg/kg of bodyweight).
- Probiotics and prebiotics formula

Molecular Therapy
Methods & Clinical Development
Original Article



Improved diabetic wound healing by LFcinB is associated with relevant changes in the skin immune response and microbiota

Michelle V. Mouritzen, 1,6 Marija Petkovic, 1,2,3,6 Katrine Qvist, 1 Steen S. Poulsen, 4 Susana Alarico, 2,3 Ermelindo C. Leal, 2,3 Louise T. Dalgaard, 1 Nuno Empadinhas, 2,3 Eugenia Carvalho, 2,3,5 and Håvard Jenssen 1

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<sup>&</sup>lt;sup>3</sup>Institute for Interdisciplinary Research, University of Coimbra, Coimbra, Portugal; <sup>4</sup>Department of Biomedical Science, University of Copenhagen, Copenhagen, Denmark;

<sup>&</sup>lt;sup>5</sup>Department of Geriatrics, University of Arkansas for Medical Sciences, and Arkansas Children's Research Institute, Little Rock, AR, USA



## Monitoring and Evaluation

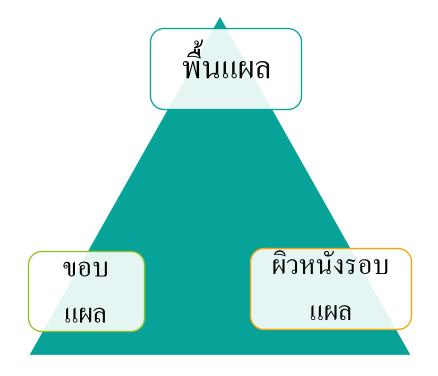


- Meet calorie and protein needs
- •รูปริมาณอาหารที่ผู้ปวยกินโดจริง

#### Recommended Nutrition Assessment Tools in Thailand



### การประเมินบาดแผล









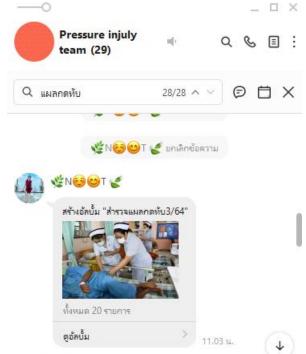
### Take home message





Don't look at the hole in the person. Look at the whole person.





















ทุกลมหายใจที่โดคืนมา มีคามากเกินกวาคำชื่นชม



ทำดีที่สุด เพื่อทุกชีวิต (Do our best for all)

กรมการแพทย



80 กรมการแพทย ทำดีที่สุดเพื่อทุกชีวิต