Malnutrition risk and healthcare infection – a MUST do

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Instagram: RCSI Clin Microbiology

Hosted by Prof. Jean-Yves Maillard
Cardiff University, Wales

www.webbertraining.com February 13, 2020

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LEARNING OUTCOMES

1. Describe the Malnutrition Universal Screening Tool (MUST) for nutritional risk screening.
2. Discuss the association between malnutrition risk and healthcare-associated infection
3. Explain how MUST screening could be incorporated into a HAI prevention programme in hospitals

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Most of us probably have the same low expectations. Hospital food means the smell of boiled veg or elderly deep fat fryer oil that haunts hospital corridors, shrivelled grey meals served when you're feeling at your lowest.

Hospital food: The meals here are 'by and large inedible'

A new policy aimed at improving what we serve patients comes not a moment too soon

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Tags # FOOD # FOOD WASTE # HEALTH # HOSPITAL FOOD # HSE # LOUISE O'REILLY

'A hidden problem': Up to half of food provided to patients in Irish hospitals is not eaten

The HSE said it is working to implement guidelines in hospitals to address food waste.

Aug 5th 2019, 12:06 AM 28,462 Views 103 Comments Share 89 Tweet Email 3

THE HSE HAS said it is committed to reducing food waste in Irish hospitals as research shows up to 49% of food provided to patients is not eaten.

The issue was highlighted by Sinn Féin's health spokesperson Louise O'Reilly who recently asked the

https://www.irishtimes.com/life-and-style/food-and-drink/is-this-the-best-hospital-food-in-ireland-1.4095743

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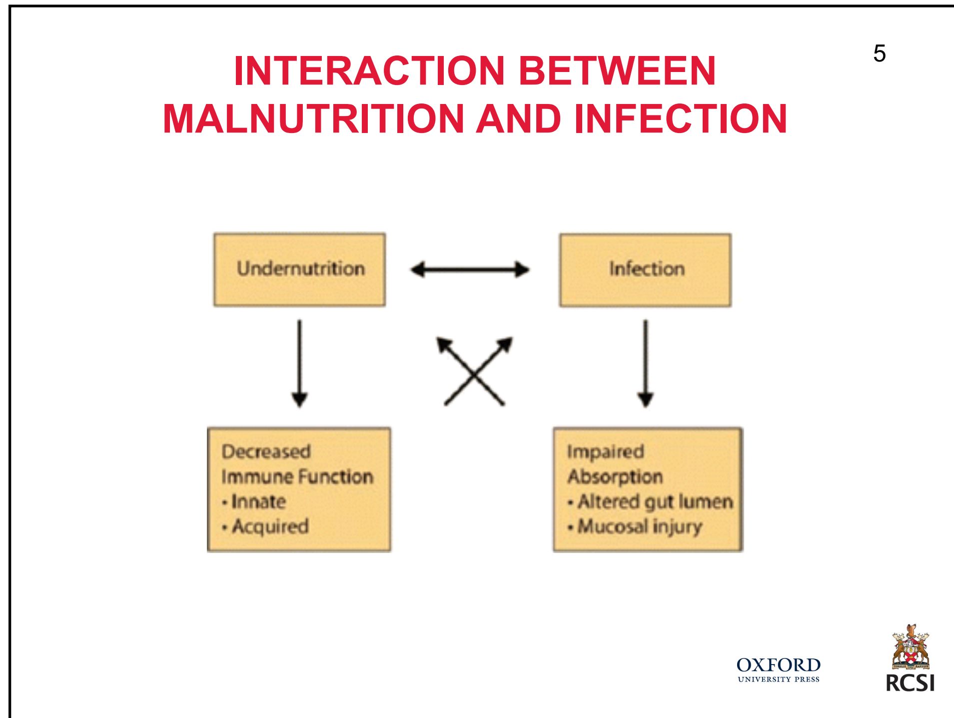
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INTERACTION BETWEEN MALNUTRITION AND INFECTION
Undernutrition
Infection
Decreased Immune Function
• Innate
• Acquired
Impaired Absorption
• Altered gut lumen
• Mucosal injury
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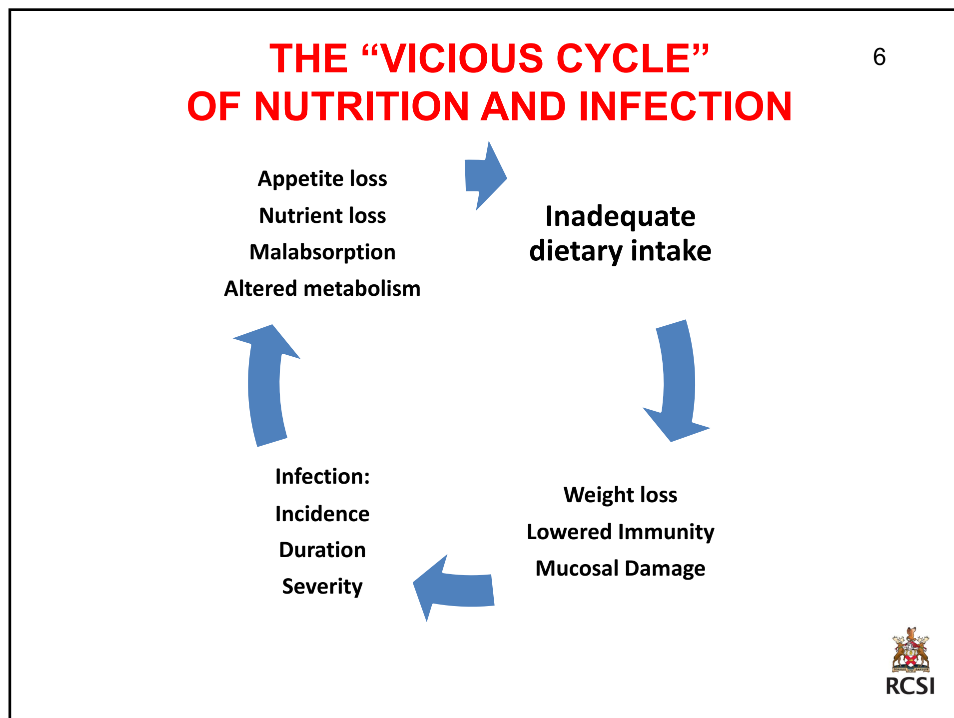
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THE "VICIOUS CYCLE" OF NUTRITION AND INFECTION
Appetite loss
Nutrient loss
Malabsorption
Altered metabolism
Inadequate dietary intake
Weight loss
Lowered Immunity
Mucosal Damage
Infection:
Incidence
Duration
Severity
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7

20-50% inpatients

Barker LA, Gout BS, Crowe TC. Barker LA, Gout BS, Crowe TC. Hospital malnutrition: prevalence, identification and impact on patients and the healthcare system.
Int J Environ Res Public Health 2011. **8**(2): 514-27.

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WHY BOTHER?

Malnourished patients

- **access health services more often (acute hospital and GP)**
- **when admitted, have more complications, longer inpatient stays and higher mortality rates**
- **€1.4 billion per annum (10% Irish healthcare budget)**

NICE (2006) Nutrition Support for Adults Oral Nutrition Support, Enteral Tube Feeding and Parenteral Nutrition.
Rice, N., & Normand, C. (2012). The cost associated with disease-related malnutrition in Ireland. *Public Health Nutrition, 15*(10), 1966-1972. doi:10.1017/S1368980011003624

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WHY BOTHER?

Can do something about it!

= nutrition support

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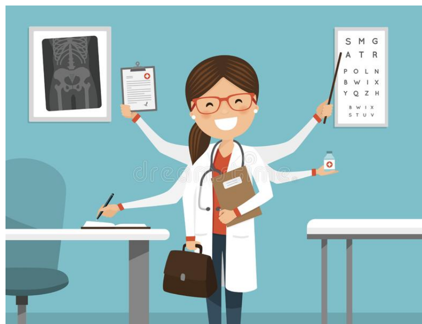
RECOGNISING MALNUTRITION IN HOSPITAL PATIENTS?



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NICE National Institute for Health and Care Excellence

Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition

Clinical guideline
Published: 22 February 2006
www.nice.org.uk/guidance/cg32

1.2 Screening for malnutrition and the risk of malnutrition in hospital and the community

1.2.1 Screening for malnutrition and the risk of malnutrition should be carried out by healthcare professionals with appropriate skills and training.

1.2.2 All hospital inpatients on admission and all outpatients at their first clinic appointment should be screened. Screening should be repeated weekly for inpatients and when there is clinical concern for outpatients.

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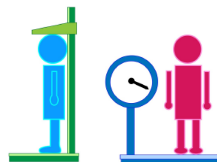
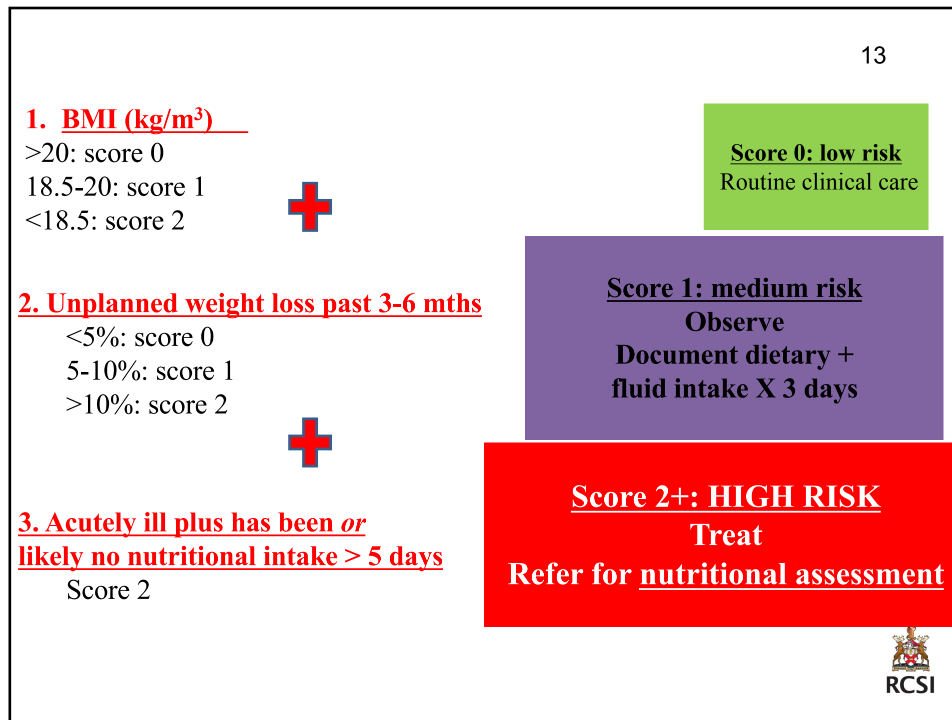
Malnutrition screening using "MUST": A brief guide for improving

April 2016



Malnutrition
Universal
Screening
Tool

https://www.hse.ie/eng/about/who/qid/other-quality-improvement-programmes/nourish/must-improving-guide-nourish.pdf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1. BMI (kg/m³)
>20: score 0
18.5-20: score 1
<18.5: score 2
2. Unplanned weight loss past 3-6 mths
<5%: score 0
5-10%: score 1
>10%: score 2
3. Acutely ill plus has been or likely no nutritional intake > 5 days
Score 2
Score 0: low risk
Routine clinical care
Score 1: medium risk
Observe
Document dietary + fluid intake X 3 days
Score 2+: HIGH RISK
Treat
Refer for nutritional assessment
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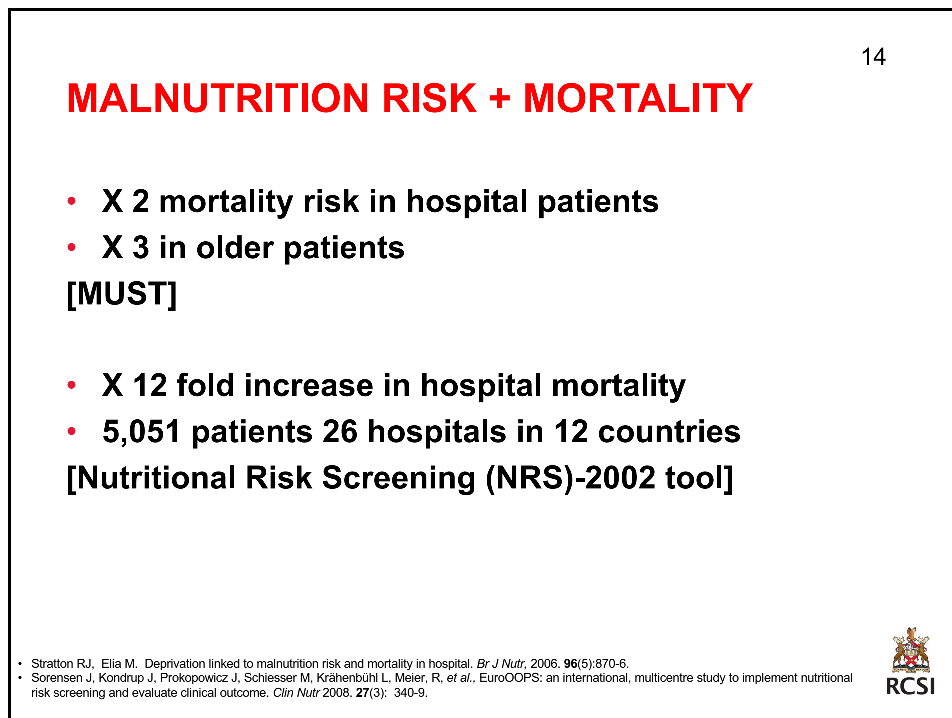
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MALNUTRITION RISK + MORTALITY
X 2 mortality risk in hospital patients
X 3 in older patients
[MUST]
X 12 fold increase in hospital mortality
5,051 patients 26 hospitals in 12 countries
[Nutritional Risk Screening (NRS)-2002 tool]
Stratton RJ, Elia M. Deprivation linked to malnutrition risk and mortality in hospital. Br J Nutr, 2006. 96(5):870-6.
Sorensen J, Kondrup J, Prokopowicz J, Schiesser M, Krähenbühl L, Meier, R, et al., EuroOOPS: an international, multicentre study to implement nutritional risk screening and evaluate clinical outcome. Clin Nutr 2008. 27(3): 340-9.
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Malnutrition associated with:

- Healthcare-associated infection (HAI)
- Factors that increase HAI risk;
  - pressure ulcers
  - lean body mass loss
  - prolonged length-of-inpatient stay

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MUST score

HAI

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Journal of Hospital Infection
journal homepage: www.elsevier.com/locate/jhin
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Food for thought. Malnutrition risk associated with increased risk of healthcare-associated infection

F. Fitzpatrick[a,b,*], M. Skally[a], C. O'Hanlon[c], M. Foley[a], J. Houlihan[a], L. Gaughan[d], O. Smith[c], B. Moore[c], S. Cunneen[c], E. Sweeney[c], B. Dinesh[a], K. O'Connell[a], E. Smyth[a], H. Humphreys[a,b], K. Burns[a,e]

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Point Prevalence Survey of
Hospital-Acquired Infections
&
Antimicrobial Use
in European Acute Care Hospitals

ALL-IRELAND PROTOCOL 2017
Version 1.0

(Adapted from the original © ECDC Protocol: v5.3)

hpsc

HSC Public Health Agency

PPS 2017 Protocol for Ireland Page 1

2017 MAY

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13

Malnutrition screening using "MUST": A brief guide for improving

April 2016

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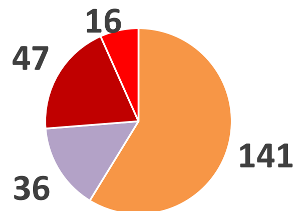
WHAT DID WE FIND?

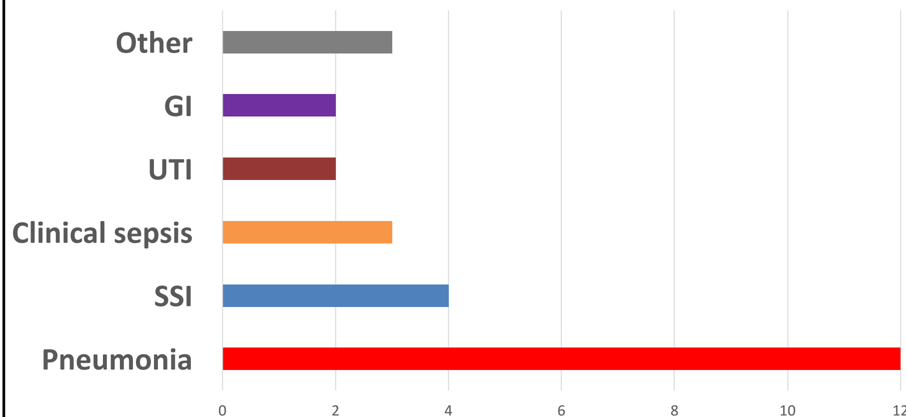
- 240 patients, mean age 68 years (range = 19 – 97)
- 63 patients (26%) at high risk of malnutrition.

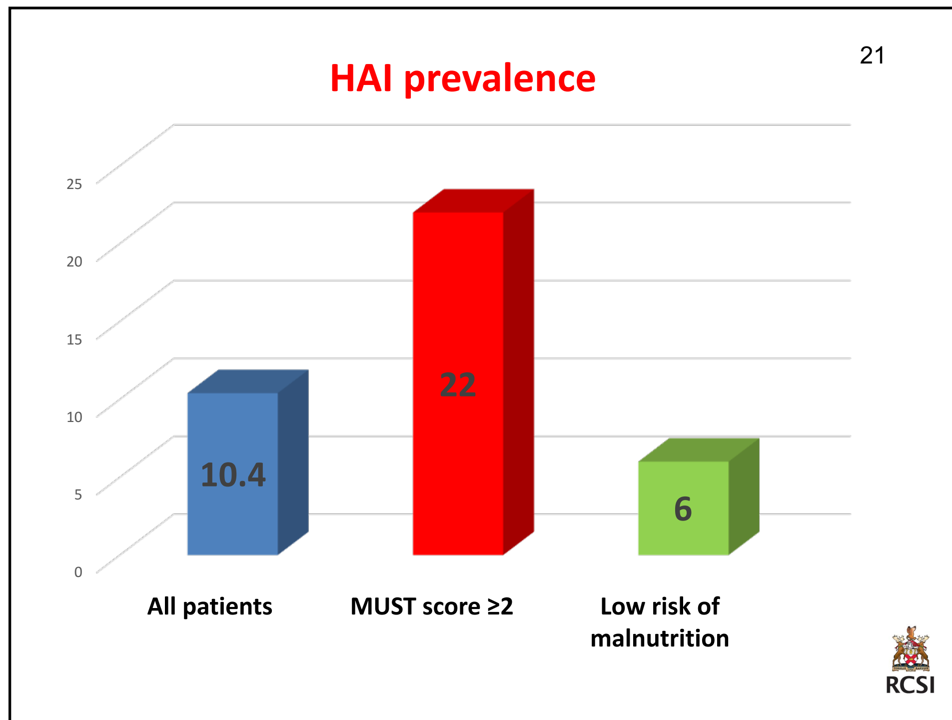


MUST 0 MUST 1 MUST 2 MUST ≥ 2

20

25 patients with 26 HAI (HAI prevalence = 10.4%)

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HAI prevalence
25
20
15
10
5
0
10.4
22
6
All patients
MUST score ≥2
Low risk of malnutrition
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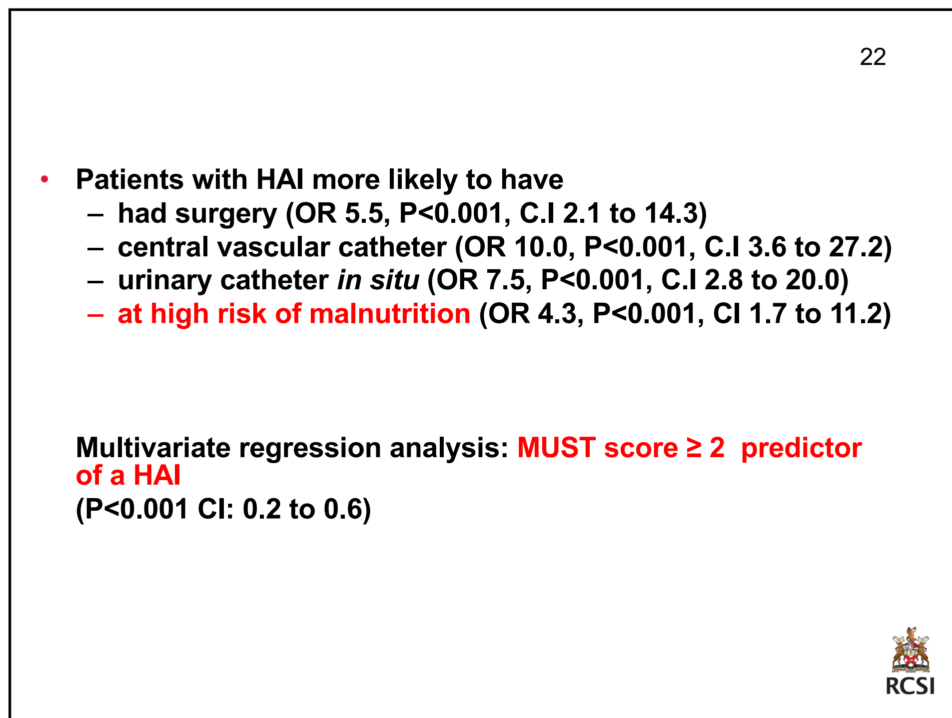
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• Patients with HAI more likely to have
– had surgery (OR 5.5, P<0.001, C.I 2.1 to 14.3)
– central vascular catheter (OR 10.0, P<0.001, C.I 3.6 to 27.2)
– urinary catheter in situ (OR 7.5, P<0.001, C.I 2.8 to 20.0)
– at high risk of malnutrition (OR 4.3, P<0.001, CI 1.7 to 11.2)
Multivariate regression analysis: MUST score ≥ 2 predictor of a HAI
(P<0.001 CI: 0.2 to 0.6)
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WHAT HAVE OTHERS FOUND?

- **Surgical patients at nutritional risk = 1.81 X Surgical site infection (NRS-2002 tool)**
- **Malnutrition/weight loss + Surgical site infection, postoperative pneumonia and catheter-associated UTI**
- **Hospitalised elderly patients - Geriatric Nutritional Risk Index (GNRI)**
  - **well-nourished patients (GNRI >98) less likely to acquire a HAI**
  - **low GNRI associated with increased HAI risk.**

- Skeie E, Koch AM, Harthug S, Fosse U, Sygnestveit K, Nilsen RM, Tangvik RJ. A positive association between nutritional risk and the incidence of surgical site infections: A hospital-based register study. *PLoS One* 2018. **13**(5): e0197344.
- Fry DE, Pine M, Jones BL, Meimban RJ. Patient characteristics and the occurrence of never events. *Arch Surg* 2010. **145**(2): 148-51.
- Gamaletsou MN, Poulia KA, Karageorgou D, Yannakoulia M, Ziakas PD, Zampelas A, *et al.*, Nutritional risk as predictor for healthcare-associated infection among hospitalized elderly patients in the acute care setting. *J Hosp Infect* 2012. **80**(2): 168-172.

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PLOS | ONE

RESEARCH ARTICLE

Healthcare-Associated Infections Are Associated with Insufficient Dietary Intake: An Observational Cross-Sectional Study

Ronan Thibault[1], Anne-Marie Makhlouf[1], Michel P. Kossovsky[2], Jimison Iavindrasana[3], Marinette Chikhi[1], Rodolphe Meyer[4], Didier Pittet[5], Walter Zingg[5], Claude Pichard[1]*

1 Nutrition Unit, Geneva University Hospital, Geneva, Switzerland, 2 Rehabilitation and Geriatrics, Geneva University Hospital, Geneva, Switzerland, 3 Business Intelligence Division, Geneva University Hospital, Geneva, Switzerland, 4 Department of Informatics, Geneva University Hospital, Geneva, Switzerland, 5 Infection Control Programme, Geneva University Hospital, Geneva, Switzerland

These authors contributed equally to this work.
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- **Swiss point prevalence study**
- **Nutritional risk assessed with NRS-2002 (n=1091)**
- **Dietary intake assessed by dieticians (n=1024)**
- **CDC HAI definitions used**

- **6.8% HAI prevalence**
- **30% nutritional risk**
- **No association between HAI and nutritional risk**
- **Patients with HAI more likely to be identified with decreased energy intake**

Thibault R, Makhlouf A, Kossovsky MP, Iavindrasana J, Chikhi M, Meyer R, *et al.*, Healthcare-associated infections are associated with insufficient dietary intake: an observational cross-sectional study. *PloS One*, 2015. **10**(4): e0123695-e0123695.

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Clinical Research

Vascular Surgery Patients at Risk for Malnutrition Are at an Increased Risk of Developing Postoperative Complications

Louise B.D. Banning,[1] Lies ter Beek,[2,3,4] Mostafa El Moumni,[1] Linda Visser,[1] Clark J. Zeebregts,[1] Harriët Jager-Wittenaar,[2,3] and Robert A. Pol,[1] Groningen, The Netherlands

Annals of Vascular Surgery
Available online 18 October 2019
In Press, Corrected Proof

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

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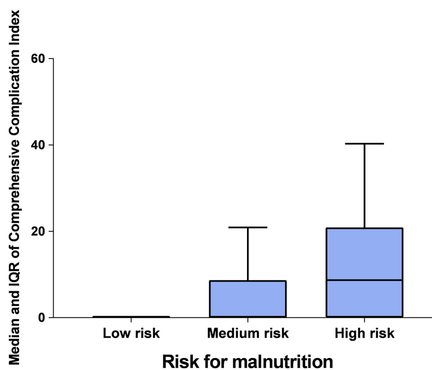
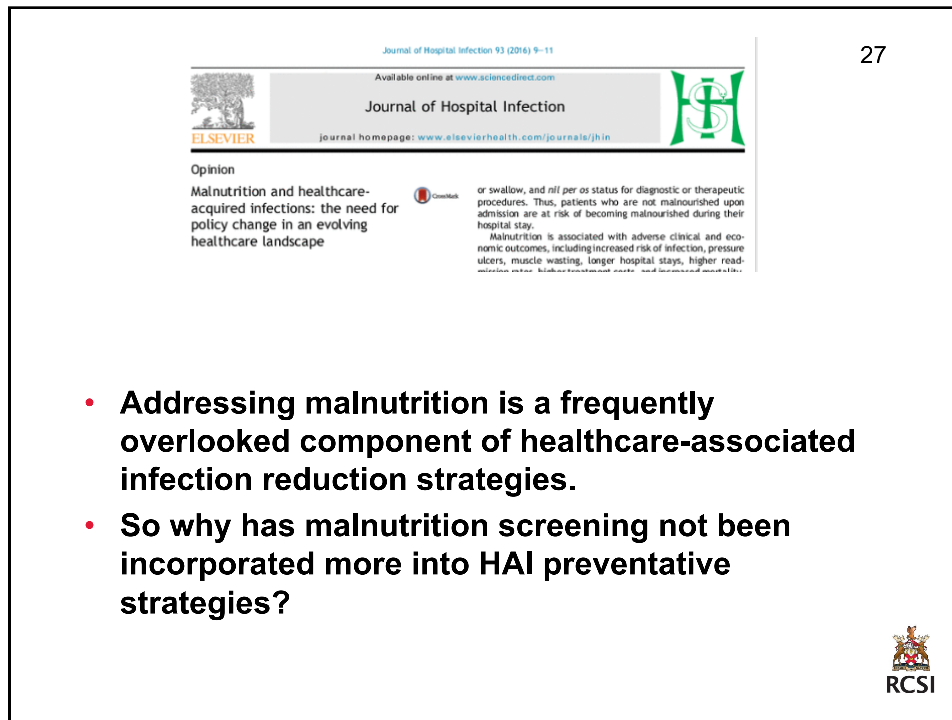
468 patients
- 113 (24.1%) at risk for malnutrition

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Journal of Hospital Infection
journal homepage: www.elsevierhealth.com/journals/jhin
ELSEVIER
Opinion
Malnutrition and healthcare-acquired infections: the need for policy change in an evolving healthcare landscape
or swallow, and nil per os status for diagnostic or therapeutic procedures. Thus, patients who are not malnourished upon admission are at risk of becoming malnourished during their hospital stay.
Malnutrition is associated with adverse clinical and economic outcomes, including increased risk of infection, pressure ulcers, muscle wasting, longer hospital stays, higher read-
Addressing malnutrition is a frequently overlooked component of healthcare-associated infection reduction strategies.
So why has malnutrition screening not been incorporated more into HAI preventative strategies?
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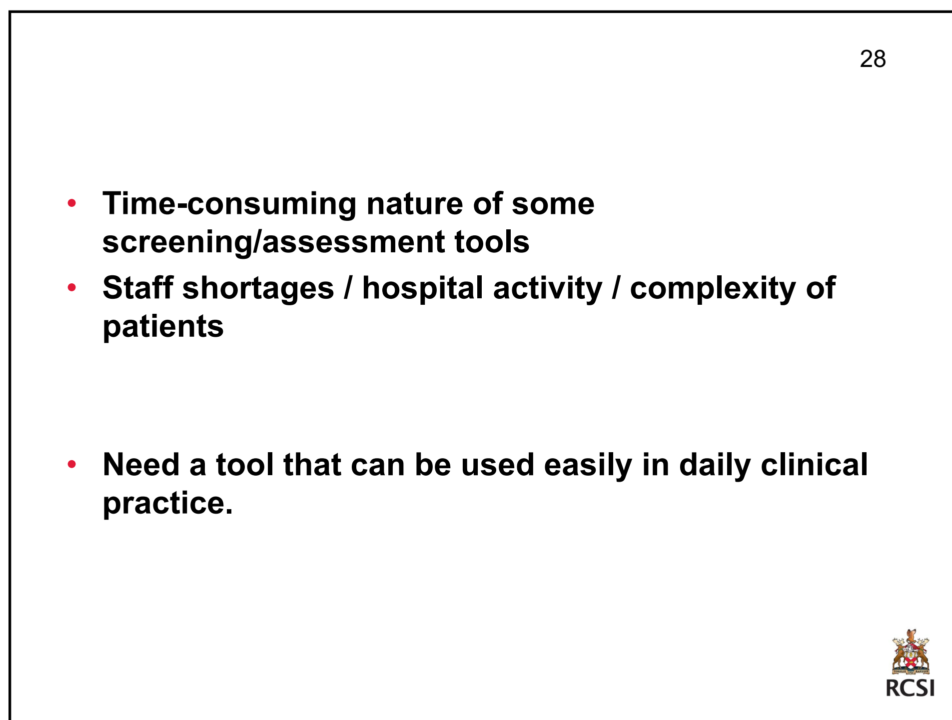
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Time-consuming nature of some screening/assessment tools
Staff shortages / hospital activity / complexity of patients
Need a tool that can be used easily in daily clinical practice.
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BEAUMONT HOSPITAL NUTRITIONAL SCREENING TOOL

Surname:
First name:
Address:
ADDRESSOGRAPH
Hospital No:
Date of Birth:
Consultant:

Malnutrition Universal Screening Tool
MUST
BAPEN Advancing Clinical Nutrition
MAG

Height (m): ☐ Reported ☐ Ulna ☐ Actual ☐ Estimated ☐
Usual / Recent Weight (kg): ☐

	Date	Weight kg	Weight scales*	BMI kg/m^2	MUAC** cm	Step 1	Step 2	Step 3	MUST score	Signature
Admission										
Week 2										
Week 3										
Week 4										

*Weight: data collected using Stand on scales=1 Sit on scales=2 Hoist=3 Estimated=4
** Use MUAC (Mid Upper Arm Circumference) to estimate BMI for patients with obvious oedema or ascites (see overleaf).
See overleaf for additional information on scoring of Steps 1-4.

Step 5 MANAGEMENT PLAN

A. Low Risk (MUST Score 0)	B. Medium Risk (MUST Score 1)	C. High Risk (MUST Score 2)

Malnutrition Universal Screening Tool

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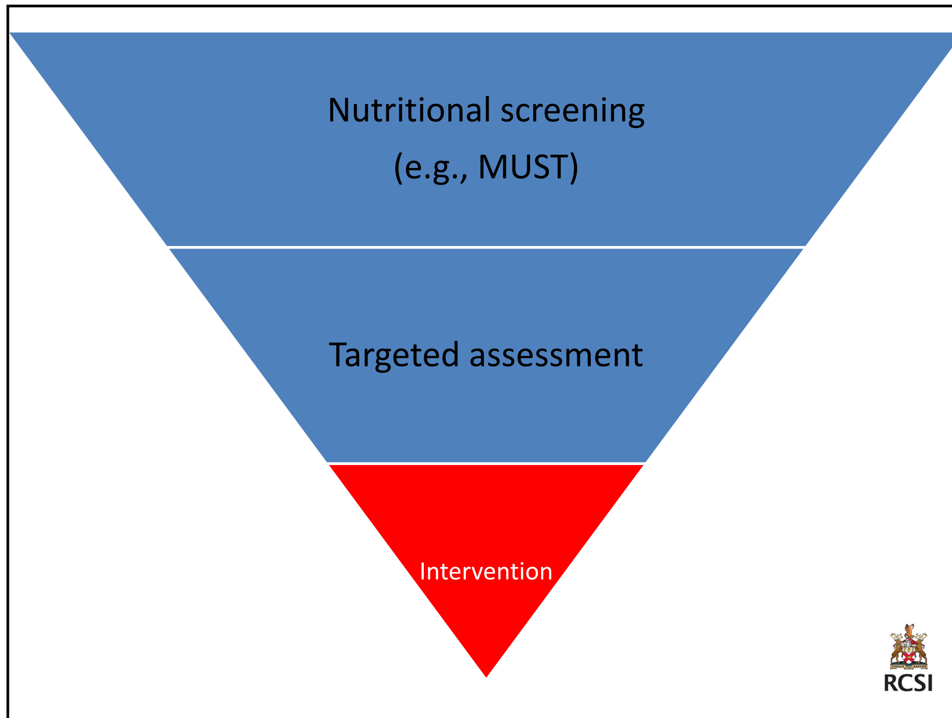
ADVANTAGES OF USING MUST

- Quick
  - Simple (3 questions)
  - Does not require specialist input, laboratory investigations or mathematical calculations
- Inter-user reproducibility
- Validated
- Suitable on-going use by non-dietitians to prompt specialist dietitian evaluation and intervention
  - Ensures dietitians focus their time on those patients most at-risk.

- Henderson S, Moore N, Lee E, Witham MD. Do the malnutrition universal screening tool (MUST) and Birmingham nutrition risk (BNR) score predict mortality in older hospitalised patients? *BMC Geriatrics* 2008;8:26.
- Stratton RJ, Hackston A, Longmore D, et al. Malnutrition in hospital outpatients and inpatients: prevalence, concurrent validity and ease of use of the 'malnutrition universal screening tool' ('MUST') for adults. *The British Journal of Nutrition* 2004;92:799-808.



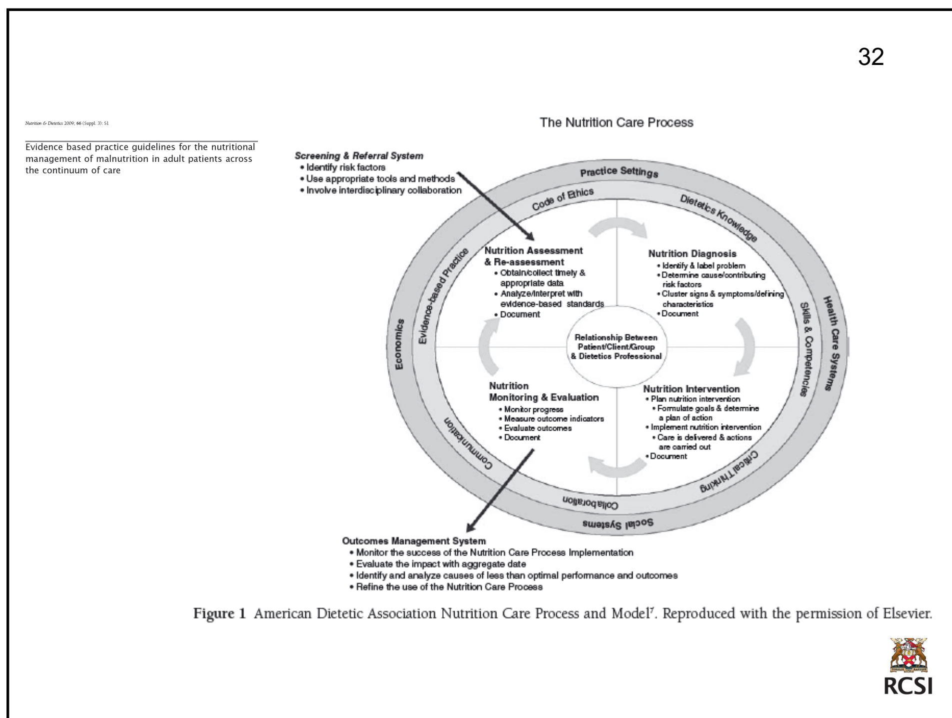


Figure 1 American Dietetic Association Nutrition Care Process and Model[7]. Reproduced with the permission of Elsevier.

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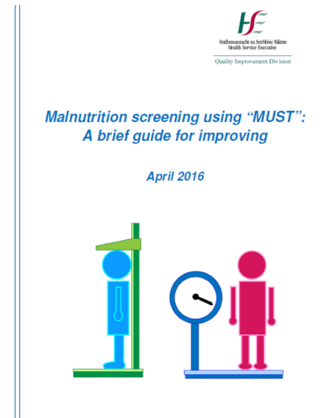
IMPLEMENTATION?



https://www.hse.ie/eng/about/who/qid/other-quality-improvement-programmes/nourish/must-improving-guide-nourish.pdf

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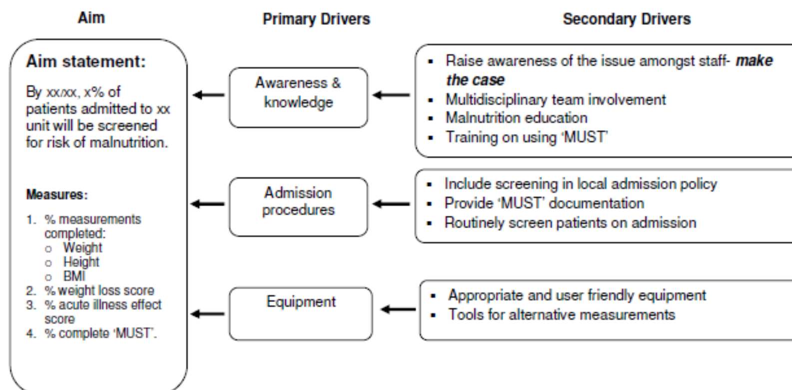
10 Appendices

10.1 Driver diagram and change ideas



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Secondary driver	Change ideas
▪ Raise awareness of the issue - ***make the case***; ▪ Multidisciplinary team involvement. ▪ Malnutrition education; ▪ Training on using 'MUST';	▪ Engage the multidisciplinary team and develop a shared vision for and sense of urgency for the quality improvement project: ○ Tissue Viability Nurse to share information on pressure ulcer/wound break down where malnutrition is a factor; ○ Physiotherapist to share information on falls where malnutrition is a factor; ▪ Develop visual displays; use key facts relating to malnutrition and the 'MUST' e.g. locally developed flyers or adapting existing flyers and posters; ▪ Put malnutrition on the agenda at MDT journal club and team meetings; ▪ Ensure e-learning programme is accessible to staff and explore making it part of mandatory training programme; ▪ Follow up on e-learning with short targeted practical sessions at ward level; ▪ Make the project 'visible'- for example on 'Know How We Are Doing' notice boards.

https://www.hse.ie/eng/about/who/qid/other-quality-improvement-programmes/nourish/must-improving-guide-nourish.pdf

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Secondary driver	Change ideas
▪ Include screening guidance in hospital Nutrition Policy; ▪ Provide 'MUST' documentation; ▪ Routinely screen patients on admission.	▪ Set a timeframe within which screening will be completed e.g. 24 hours of admission; ▪ Consult with local documentation group to explore ways to embed 'MUST' in nursing admission documentation; ▪ Design 'MUST' form to be user friendly and intuitive, look for examples from other hospitals/units and adapt to local setting; ▪ Provide 'MUST' packs with conversion tables, BMI charts; ▪ Develop an admission checklist and include 'MUST' as an admission risk assessment tool along with falls risk, pressure ulcers etc.
▪ Suitable equipment; ▪ Tools for alternative measurements.	▪ Provide weighing scales suitable for the patient group – ○ Sit down scales; ○ Hoist scales; ▪ Ensure equipment is operational; ▪ Optimise position of equipment on ward-make it easy to access; ▪ Focus on the use of alternative anthropometric measurements when needed – i.e. match methods of measurement to patient group; ▪ Provide ulna length rulers and MUAC tapes.

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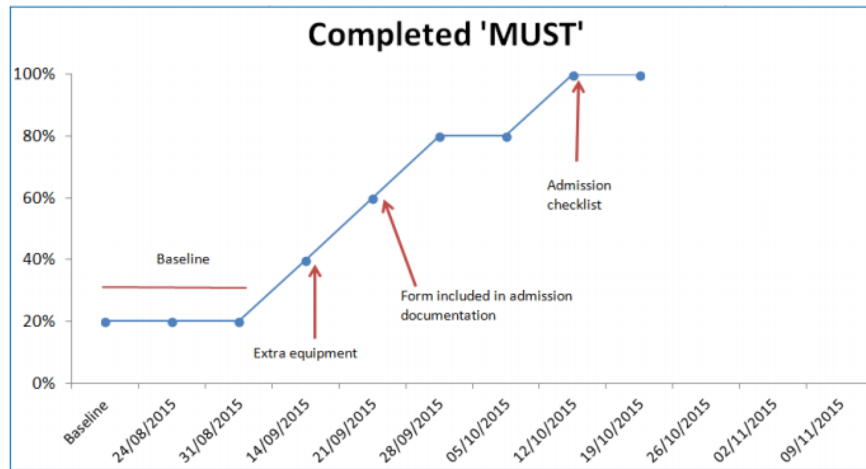

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SUMMARY

- Malnutrition = cause and effect of illness
- If untreated, can lead to poorer health outcomes, increase morbidity and significantly reduce quality of life.
- Its worth screening for as you can intervene
- Lots of tools! Malnutrition risk and malnutrition

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THINGS TO CONSIDER WHEN CHOOSING A NUTRITION SCREENING TOOL

- your context (and resources!)
- evidence based
- validated
- reliable
- practical.
- link to specified protocols for action e.g. referral of those identified as ‘at risk’, to a Dietitian for more detailed assessment or rescreen for those at low risk at regular intervals.

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MORE INFORMATION

Journal of Hospital Infection 101 (2019) 300–304

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journal homepage: www.elsevier.com/locate/jhin

Food for thought. Malnutrition risk associated with increased risk of healthcare-associated infection

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bapen.org.uk/screening-and-must/must/introducing-must

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Introducing 'MUST'

Last Updated: 17 August 2016

The ‘Malnutrition Universal Screening Tool’ (‘MUST’) was developed by the Malnutrition Advisory Group, a standing committee of BAPEN and it has been reviewed regularly since its launch in 2003. It is supported by many governmental and non-governmental organisations including the British Dietetic Association (BDA), the Royal College of Nursing (RCN) and the Registered Nursing Home Association RNHA) and is the most commonly used screening tool in the UK. It is also used in many other countries in Europe and the rest of the world.

Copies of the ‘MUST’ materials and the ‘MUST’ Explanatory Booklet – a guide to the use of ‘MUST’ are available to view and download in PDF format free of charge. Click here

Screening & 'MUST'
- Introducing 'MUST'
- 'MUST' Report
- 'MUST' Toolkit
- 'MUST' Calculator
- 'MUST' on your mobile device
- Nutritional Care Tool

'Malnutrition Universal Screening Tool' materials are also available in the following languages:

French / Français | German / Deutsch | Italian / Italiano | Portuguese / Português | Spanish / Español

www.webbertraining.com/schedulep1.php

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