



# Nutrition Risk and Malnutrition

An introductory module for  
clinicians



**Prof H Keller**, RD, PHD, FDC, FCAHS  
Schlegel-University of Waterloo  
Research Institute for Aging



# This module is part of the sfCare approach



 sfCare Learning Series

## Nutrition Risk and Malnutrition

An introductory module for clinicians

Prof H Keller RD, PHD, FDC, FCAHS  
Schlegel-University of Waterloo  
Research Institute for Aging



 sfCare  
Senior Friendly Care  
rgg.toronto.ca

PowerPoint  
Presentation

 Good food is good medicine!



Talk to your care team about the senior-friendly approach to nutrition.

**Ask Us:**

- ✓ Am I eating enough fruits and vegetables?
- ✓ What is the reason for the changes in my weight?
- ✓ Why has my appetite changed?
- ✓ How can food improve my quality of life?
- ✓ Are there certain foods I should avoid because of my health or medications?

or anything else...

 Your care is why we're all here!

 sfCare  
Senior Friendly Care  
rgg.toronto.ca

8.5 x 11  
Poster

 Good food is good medicine!

**Do**

- Meals don't need to be large. If your appetite is low, consider eating 1 or 2 healthy snacks instead of a meal, or having a meal replacement beverage.
- Have your favourite healthy snack foods readily available at home and on the go. Examples: nuts, lower fat yogurt with fresh fruit, lower fat cheese, boiled eggs, celery sticks with peanut butter, avocado on toast.
- Eat a variety of foods every day, including fruits, vegetables, whole grains, and protein rich foods (such as tofu, meat, eggs, nuts, beans, dairy).
- Choose healthy fats such as extra virgin olive oil, nuts, seeds, avocado, or fish more often than unhealthy fats such as fatty meats or high fat dairy products.
- Eat whole foods and drink water more often than processed foods or beverages which are often high in chemicals, sugars, salts, and unhealthy fats.

**Know**

- When you are hungry and when you are full.
- Drinking enough fluid every day can help prevent constipation, urinary incontinence, and delirium.
- Your appetite may change with age; however, getting all the nutrients you need is still important.

**Ask**

- Your care team to assess whether you are at risk for under or over nutrition.
- Your care team about what aspects of Canada's food guide might apply to you.

**Tell**

- Your care team if you have noticed recent changes in your weight.
- Your care team if you have noticed changes in your appetite.

Your care is why we're all here!

 sfCare  
Senior Friendly Care  
rgg.toronto.ca

Patient  
Handout

# Objectives



1. Identify the negative health outcomes associated with malnutrition
2. Recognize the factors that can lead to nutrition risk
3. Define and detect nutrition risk and malnutrition
4. Describe interventions to manage malnutrition
5. Apply a structured approach to mitigate nutrition risk across the continuum of care using a case study
6. Apply a senior friendly care approach to nutrition risk and malnutrition

## Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

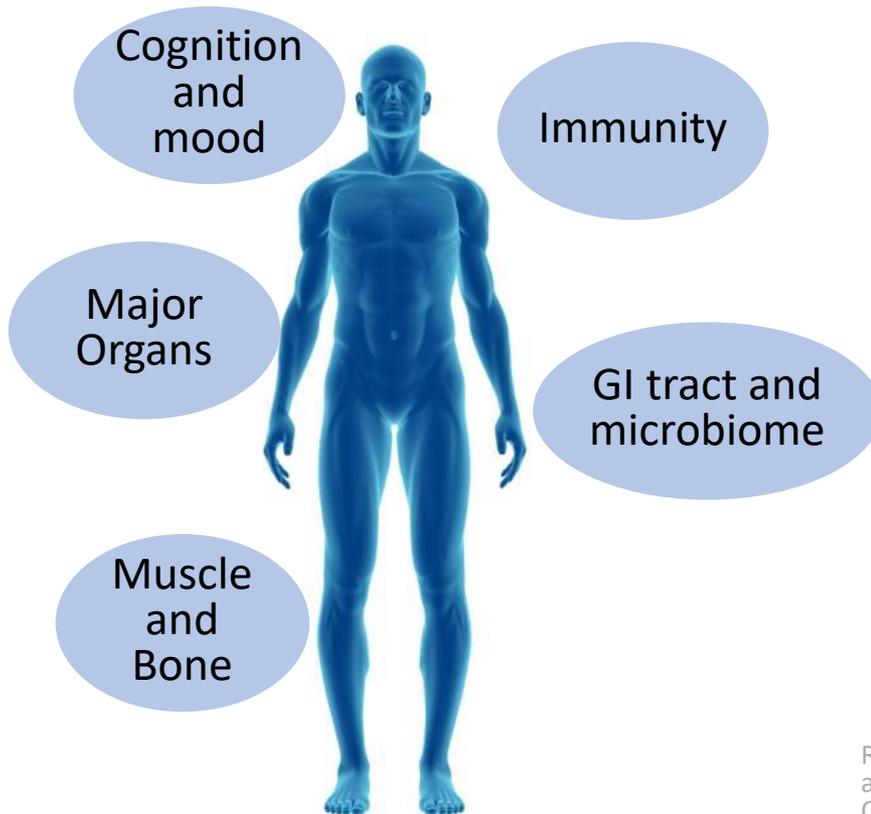
Questions

References

# Hazards of poor nutrition



## What we eat affects every system of the body



## Malnutrition increases the risk of:

- Delirium
- Depression
- Falls
- Impaired activity/function
- Mortality
- Poor surgical outcome
- Longer hospital stay
- Readmission

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References

Ref: Ahmed et al., 2014; Al-Rasheed et al., 2018; Chien et al., 2014; Neyens et al., 2013; Lim et al., 2011; Keller & Ostbye, 2003; Ho et al., 2015; Allard et al., 2015; Lim et al., 2012

# The continuum of risk to malnutrition



Objectives

The importance of nutrition

**What is nutrition risk and malnutrition?**

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References

Adapted from Keller 2007

# The continuum of risk to malnutrition



Continuum of risk to malnutrition

## Nutrition Risk

- Low or poor food /nutrient intake
- Common in older adults in Canada
- Occurs before overt signs of undernutrition



**34%** of older adults are at high nutrition risk

## Undernutrition

- Inadequate intake of energy, macro or micronutrients
- Leads to functional change in tissues of the body e.g. muscle loss, immune function
- Patient responds to re-feeding



**45%** of older adults admitted to hospital are malnourished

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

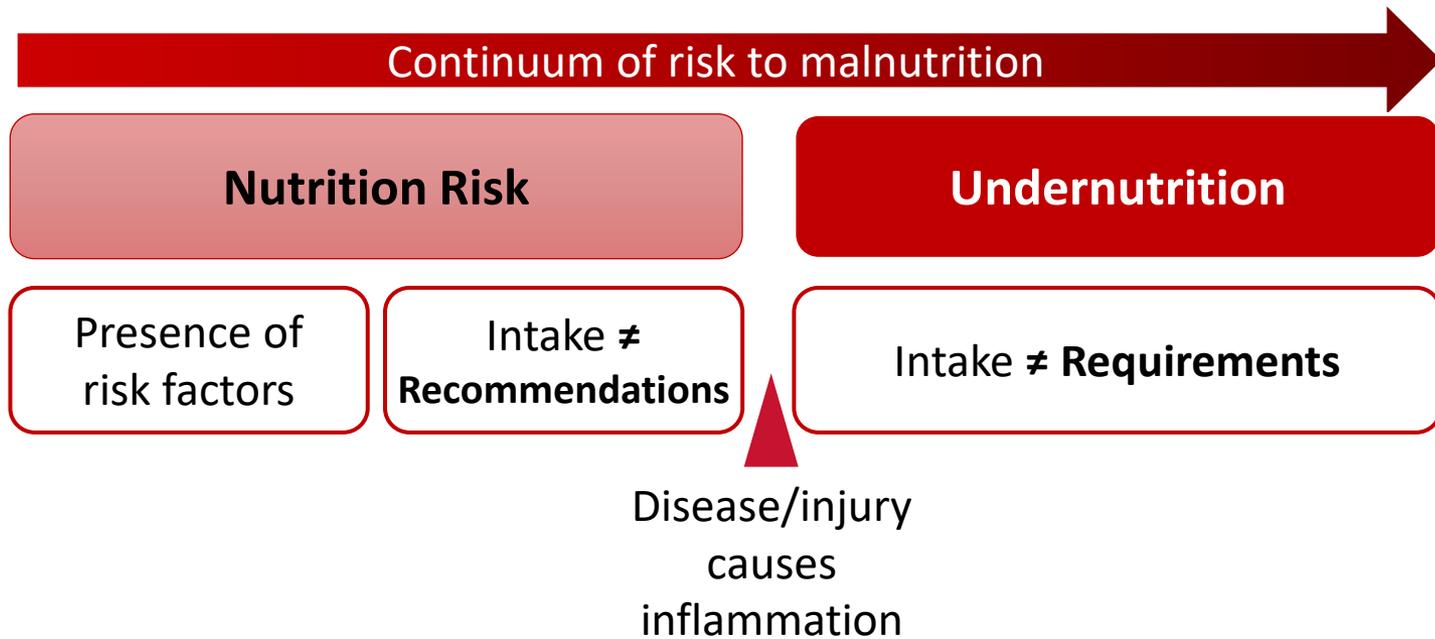
Questions

References

Adapted from Keller 2007; CMTF website adapted from: McKinlay, 2008



# The continuum of risk to malnutrition



Objectives

The importance of nutrition

**What is nutrition risk and malnutrition?**

How to detect and treat

Case study

Summary

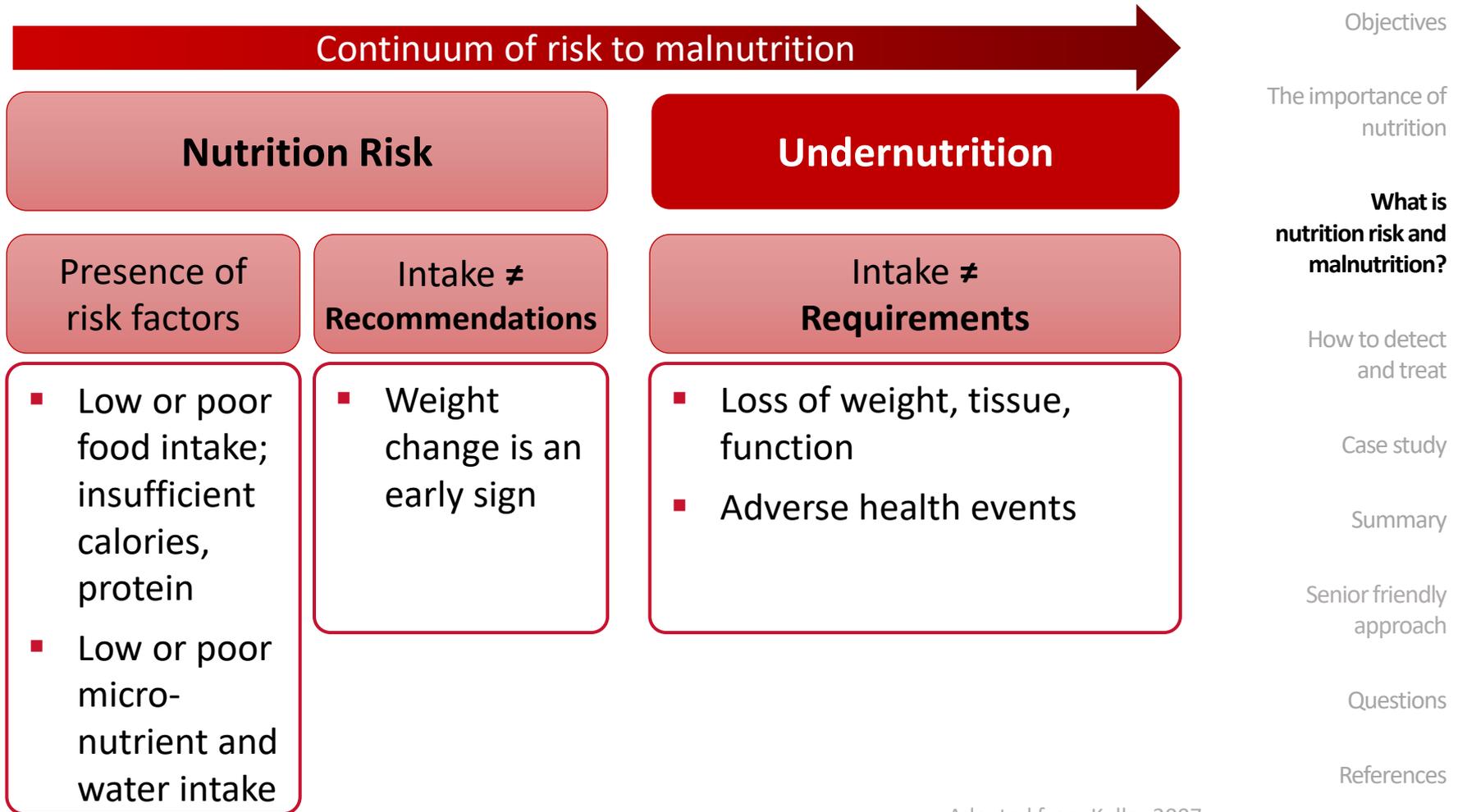
Senior friendly approach

Questions

References

Adapted from Keller 2007

# The continuum of risk to malnutrition



Adapted from Keller 2007

# Determinants of food intake in older adults living with nutrition risk



## Presence of risk factors

- Low or poor food intake
- Low or poor nutrient intake

- Are low income
- Live alone
- Have low social support
- Do not socialize frequently
- Don't drive
- Report that they are depressed
- Are disabled
- Take 5+ medications
- Poor oral health



These risk factors are present in 40-60% of older adults with nutrition risk

(Ramage-Morin & Garriguet 2013)

Objectives

The importance of nutrition

**What is nutrition risk and malnutrition?**

How to detect and treat

Case study

Summary

Senior friendly approach

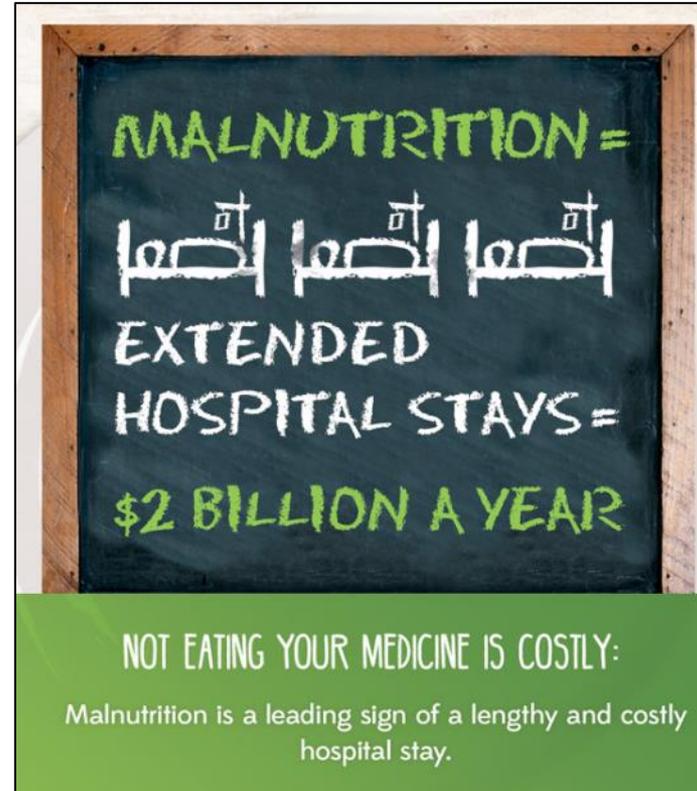
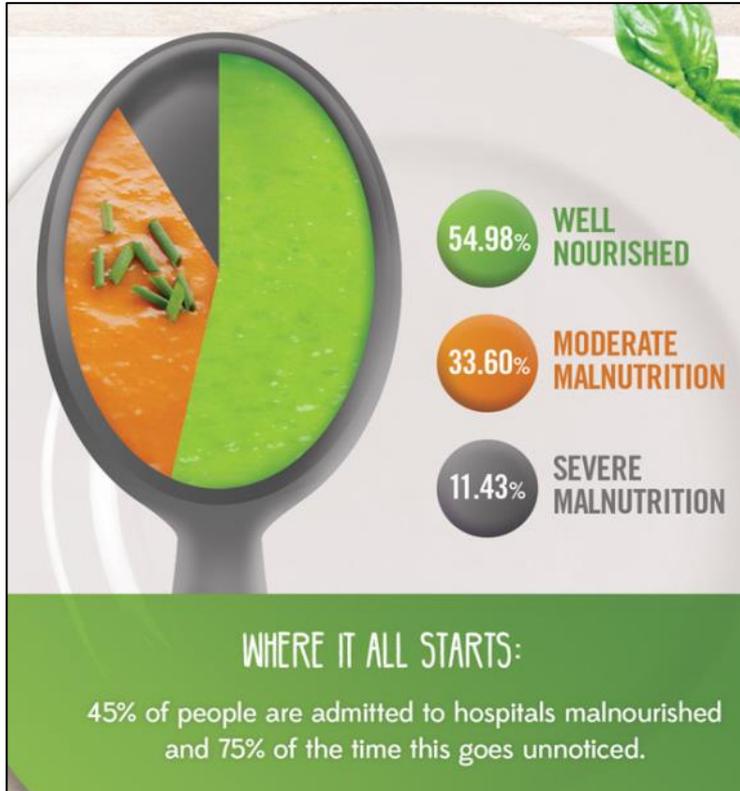
Questions

References

# Malnutrition is common in hospitalized older adults



## Canadian Malnutrition Task Force



Objectives

The importance of nutrition

**What is nutrition risk and malnutrition?**

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

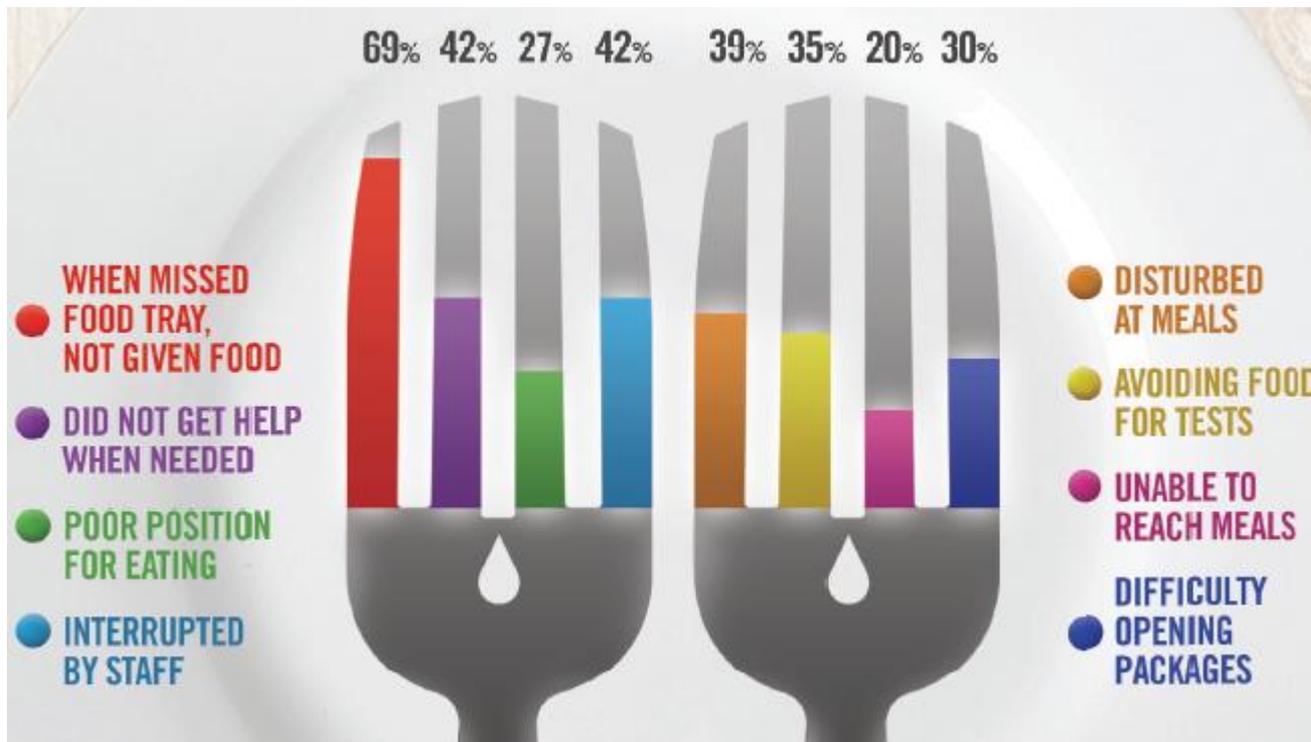
References

(Keller et al., 2015)

# Barriers to eating in hospital



There are many organizational barriers to food intake in hospital



(Keller et al., 2015)

- Objectives
- The importance of nutrition
- What is nutrition risk and malnutrition?**
- How to detect and treat
- Case study
- Summary
- Senior friendly approach
- Questions
- References

# How to detect – nutrition screening



Nutrition screening is a rapid and simple process conducted by self-administration or admitting staff, typically a nurse, not a nutrition professional.

Nutrition screening identifies:

- At risk of malnutrition (risk factors are present that impair intake and/or increase the body's needs for nutrients and/or energy)
- Already malnourished
- Likely to benefit from further nutrition assessment and treatment

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

**How to detect and treat**

Case study

Summary

Senior friendly approach

Questions

References

Cederholm et al., 2017

# How to detect – nutrition screening



## 1. In the Community / Home Care / Primary Care



Nutri-eScreen

## 2. In the Hospital



Canadian Nutrition Screening Tool

## 3. In Residential Care



Mini Nutritional Assessment

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References



# How to detect and treat



## In the Community / Home Care / Primary Care



Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

**How to detect and treat**

Case study

Summary

Senior friendly approach

Questions

References

# Nutrition screening



## In the Community / Home Care / Primary Care

SCREEN (Seniors in the Community Risk Evaluation for Eating & Nutrition)

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References



[NutritionScreen.ca](http://NutritionScreen.ca)

- Upstream tool – includes risk factors for poor food intake, weight change, food intake
- Requires no specialized skills to complete
- Can be self-administered or interviewer administered
- Can be completed online, and is available on Ocean Tablets
- Valid and reliable
- Used by Statistics Canada and Primary Care providers
- Items help identify actions post screening

Keller et al., 2005

# Nutrition screening



## In the Community / Home Care / Primary Care

### 14 and 8 item versions of SCREEN II



- **Weight change\***
  - Loss/gain
  - Intentionality
  - Perception
- Skipping meals\*
- Diet restrictions/ difficulty
- **Appetite\***
  - Eating alone\*
  - Use of meal replacements

- Intake
  - Fruits & vegetables\*
  - Milk products
  - Meat & alternatives
  - Fluid\*
- **Swallowing\***
  - Chewing
  - Grocery difficulty
  - Cooking difficulty\*

\* On 8-item version

Objectives

The importance of  
nutrition

What is  
nutrition risk and  
malnutrition?

How to detect  
and treat

Case study

Summary

Senior friendly  
approach

Questions

References

# Key interventions and resources



## In the Community / Home Care / Primary Care



### Community services that promote access to food

- Transportation
- Grocery delivery
- Meal programs



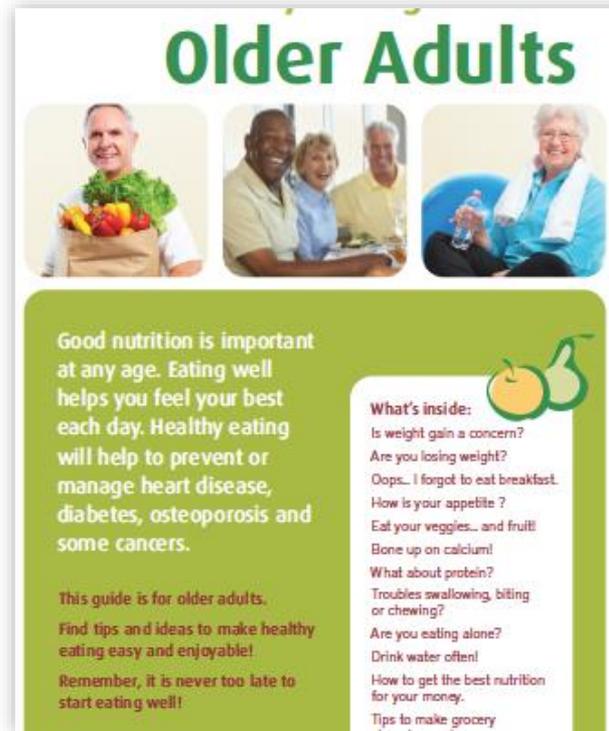
### Programs that increase awareness and interest in food

- Educational sessions
- Cooking groups
- Social programs



### Individualized guidance

- Dietitian
- Nutri-eSCREEN®



<http://www.unlockfood.ca/en/articles/seniors-nutrition/a-guide-to-healthy-eating-for-older-adults.aspx>

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References

# How to detect and treat



## In Hospital



Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

**How to detect and treat**

Case study

Summary

Senior friendly approach

Questions

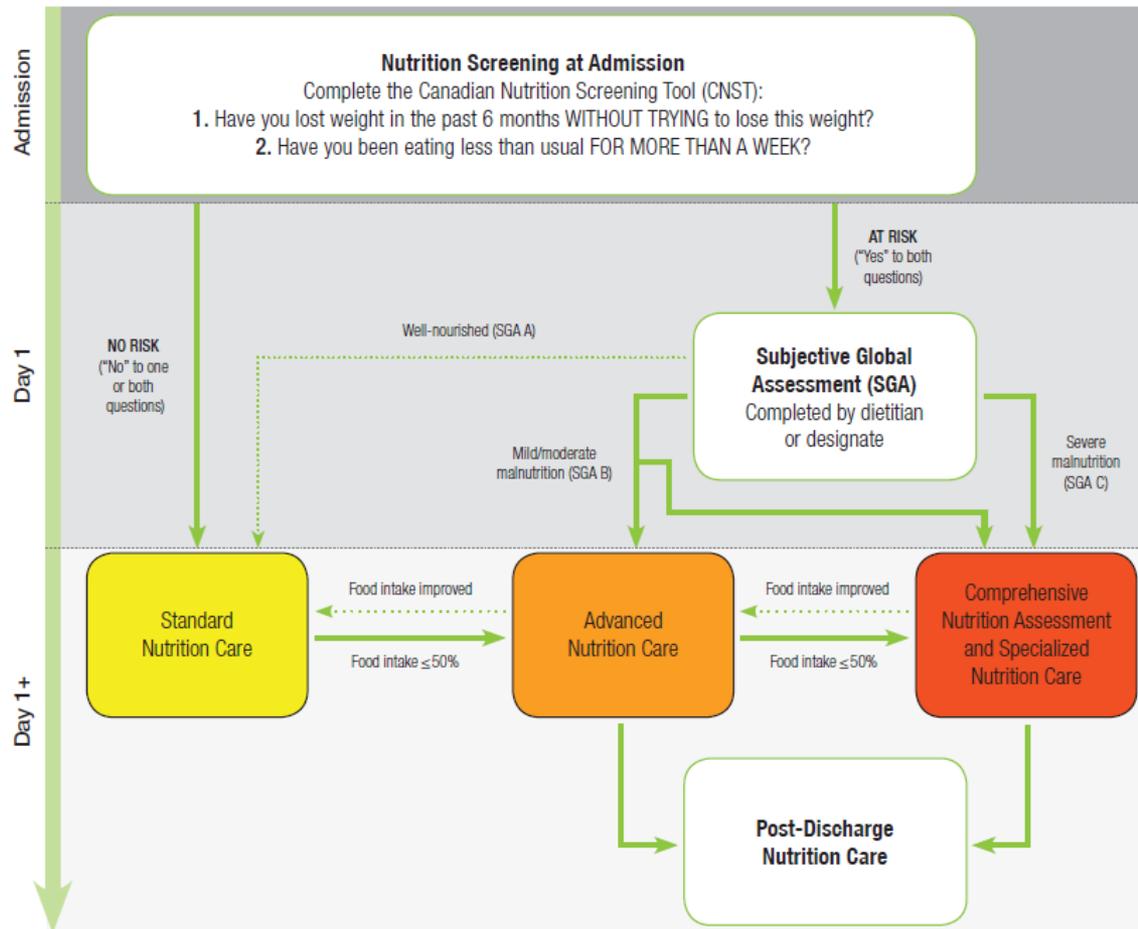
References

# How to detect and treat



## In Hospital

### The Integrated Nutrition Pathway for Acute Care



Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References

Keller et al, 2018

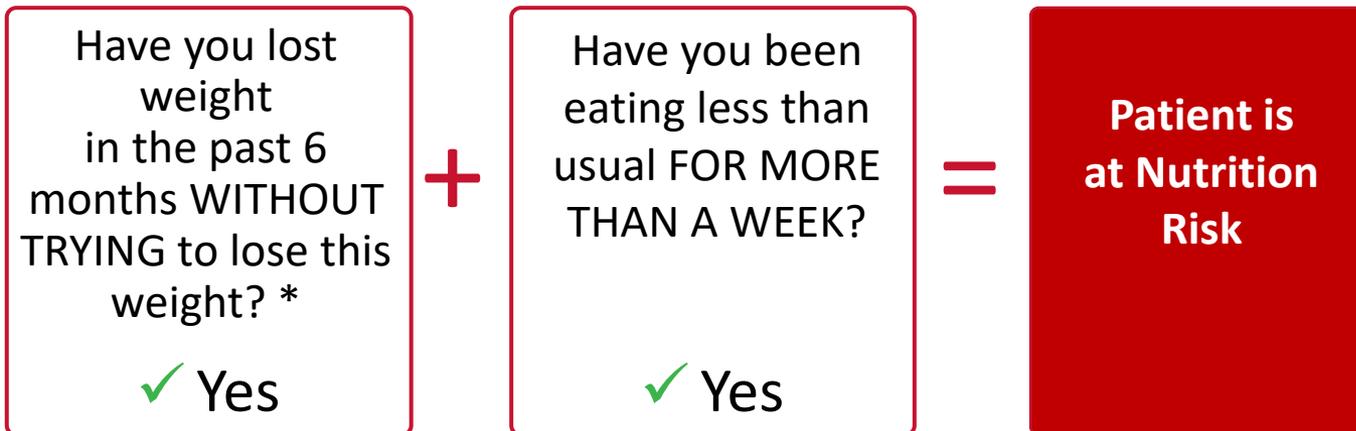
# Nutrition screening



## In Hospital

### The Canadian Nutrition Screening Tool

Within a few hours of admission, a member of the interprofessional care team asks the patient...



\* If the patient reports a weight loss but gained it back, consider it as a NO weight loss.

CNST is focused on the ACUTE state of not eating the normal amount of food leading to unintentional weight loss

Laptorte et al., 2014

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References

# Key interventions and resources



## In Hospital

- Multidisciplinary team
- Dietitian to confirm malnutrition and care plan
- Oral nutritional supplements
- Artificial food/nutrition
- Reduce barriers to food intake e.g. volunteers open tray items
- Monitor food intake and intervene quickly
- Ask family to bring in healthy comfort foods
- Support socializing at meals on or off the unit
- Plan for needed food-related supports prior to discharge

Canadian Malnutrition Task Force [www.nutritioncareinCanada.ca](http://www.nutritioncareinCanada.ca)

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

**How to detect and treat**

Case study

Summary

Senior friendly approach

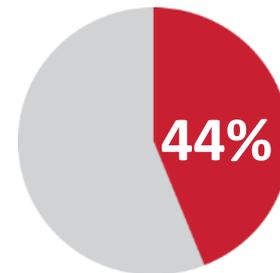
Questions

References

# How to detect and treat



## In Residential Care



Malnutrition  
is common in  
Residential Care

Keller et al., 2017

Objectives

The importance of  
nutrition

What is  
nutrition risk and  
malnutrition?

**How to detect  
and treat**

Case study

Summary

Senior friendly  
approach

Questions

References

# Nutrition screening and interventions



## In Residential Care

- Mini Nutritional Assessment (MNA) to screen
  - Requires BMI and circumference measures
- Dietitian assessment to individualize care plan
  - Mealtime experience
  - Nutrient dense food
  - Address eating challenges including need for modified textures
  - Goals of care
  - Trade offs of treatment with quality of life

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References

**Mini Nutritional Assessment MNA®** Nestlé Nutrition Institute

Last name: \_\_\_\_\_ First name: \_\_\_\_\_  
Sex: \_\_\_\_\_ Age: \_\_\_\_\_ Weight, kg: \_\_\_\_\_ Height, cm: \_\_\_\_\_ Date: \_\_\_\_\_

Complete the screen by filling in the boxes with the appropriate numbers. Add the numbers for the screen. If score is 11 or less, continue with the assessment to gain a Malnutrition Indicator Score.

**Screening**

**A How food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?**

0 = no decrease in food intake  
1 = moderate decrease in food intake  
2 = no decrease in food intake

**B Weight loss during the last 3 months**

0 = weight loss greater than 3kg (6.6lbs)  
1 = does not know  
2 = weight loss between 1 and 3kg (2.2 and 6.6 lbs)  
3 = no weight loss

**C Mobility**

0 = bed or chair bound  
1 = able to get out of bed / chair but does not go out  
2 = goes out

**D Has suffered psychological stress or acute disease in the last 3 months?**

0 = yes  
1 = no

**E Neuropsychological problems**

0 = anxious, demented or depression  
1 = mild dementia  
2 = no psychological problems

**F Body Mass Index (BMI) = weight in kg / (height in m)<sup>2</sup>**

0 = BMI less than 18  
1 = BMI 18 to less than 21  
2 = BMI 21 to less than 23  
3 = BMI 23 or greater

Screening score (nutritional max. 14 points)  
13-14 points:  Normal nutritional status  
9-11 points:  At risk of malnutrition  
0-7 points:  Malnourished

For a more in-depth assessment, continue with questions G-I.

**Assessment**

**G Lives independently (not in nursing home or hospital)**

1 = yes  
0 = no

**H Takes more than 3 prescription drugs per day**

0 = yes  
1 = no

**I Pressure sores or skin ulcers**

0 = yes  
1 = no

**J How many full meals does the patient eat daily?**

0 = 1 meal  
1 = 2 meals  
2 = 3 meals

**K Selected consumption markers for protein intake**

All least one serving of dairy products (milk, cheese, yogurt) per day: yes  no   
Two or more servings of legumes or eggs per week: yes  no   
Meat, fish or poultry every day: yes  no   
0.0 = 0 to 1 ym  
0.5 = 2 ym  
1.0 = 3 ym

**L Consumes two or more servings of fruit or vegetables per day?**

0 = no  
1 = yes

**M How much fluid (water, juice, coffee, tea, milk...) is consumed per day?**

0.0 = less than 3 cups  
0.5 = 3 to 5 cups  
1.0 = more than 5 cups

**N Mode of feeding**

0 = unable to eat without assistance  
1 = self fed with some difficulty  
2 = self fed without any problems

**O Self view of nutritional status**

0 = views self as being malnourished  
1 = is uncertain of nutritional state  
2 = views self as having no nutritional problem

**P In comparison with other people of the same age, how does the patient consider his / her health status?**

0.0 = not as good  
0.5 = does not know  
1.0 = as good  
2.0 = better

**Q Mid-arm circumference (MAC) in cm**

0.0 = MAC less than 21  
1.0 = MAC 21 to 22  
2.0 = MAC greater than 22

**R Calf circumference (CC) in cm**

0 = CC less than 31  
1 = CC 31 or greater

Assessment (max. 16 points)   
Screening score   
Total Assessment (max. 30 points)

**Malnutrition Indicator Score**

24 to 30 points:  Normal nutritional status  
17 to 23.5 points:  At risk of malnutrition  
Less than 17 points:  Malnourished

Save Print Reset



# Key resources



## In Residential Care

- Dietitians mandated in LTC in ON
  - Not in other residential care settings
- Best Practices
  - Dietitians of Canada
- Research Institute for Aging
  - Toolkits
  - Factsheets
  - Training opportunities

**Food & Beverages**  
Research and Recommendations  
for Long-Term Care

RIA RESEARCH INSTITUTE for AGING  
Schlegel • Waterloo • Cambridge  
Enhancing Life

**You Are What You Eat!**  
The nutrients in the food and beverages that we consume play a big role in our health and well-being. For residents in long-term care, getting the right amount of protein, fluid, vitamins and minerals starts with eating and drinking enough at mealtimes.

**Research Study: Making the Most of Mealtimes (M3)**  
M3 is a national study that looked at what residents in long-term care eat and drink, and what factors promote better nutrition. This page shares some of the findings from over 600 residents who participated in the study.

**WHAT DID WE LEARN?**

- 90% of residents in long-term care were not drinking enough **FLUID**.
- 96% of residents in long-term care were not getting enough **PROTEIN**.
- 50% of residents in long-term care were not getting enough of several **VITAMINS & MINERALS**.

On average, residents were getting well below the daily recommended minimum of 1,500 mL of fluid, and less protein than the daily recommendation of 1.2 g/kg body weight.

[www.the-ria.ca](http://www.the-ria.ca)

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References

# Case Study: Marg in the community



- Marg is 82 years old. She recently lost her husband. She is active, and other than having hypertension is quite well. She is mobile, but does not drive.
- She sees the opportunity of not having to make a big dinner for her husband as an opportunity to 'cut back' and lose a few pounds.

**What's going through your mind?**

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References

# Case Study: Marg in the community



## What determinants put Marg at risk for undernutrition?



Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References

# Case Study: Marg in the community



## What determinants put Marg at risk for undernutrition?



- Living alone
- Recently bereaved
- Change in eating pattern
- Doesn't drive
- Interest in losing weight

Any weight change in those > 60 year old is a risk for comorbidity and mortality

(Cheng et al., 2015)

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References

# Opportunity for intervention for Marg



- Nutrition risk screening in Primary Care
- Link to community services



Engage older adults by educating them on the importance of nutrition for health and staying independent

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References

# Case Study: Marg goes to the hospital...



- Marg did lose weight, BMI ~22
- She also lost muscle
- Not exercising
- Low intake of several key nutrients
- Fell when walking and broke her hip
- Hospital stay, delirium

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References

# Opportunity for intervention for Marg



- Nutrition risk screening in Primary Care
- Link to community services
- Screening on admission
- Assessment and treatment by a dietitian
- Remove barriers to eating
- Discharge planning



Engage older adults by educating them on the importance of nutrition for health and staying independent

Engage older adult in their nutrition care by educating them on the importance of eating sufficient amounts of energy and protein to promote recovery

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References

# Unfortunately, Marg's experience in hospital was not good



- Had barriers to food intake
- Poorly mobilized
- Lost more weight and 10% muscle → frail
- Stayed 18 days
- Discharged to home but readmitted 1 week later
- Eventually, discharged to retirement home

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References

# Opportunity for intervention for Marg



- Nutrition risk screening in Primary Care
- **Link to community services**

- Link to community dietitian for continued treatment
- Link to supportive services
- **Screen/follow up by Primary Care**



- **Screening on admission**
- Assessment and treatment by dietitian
- Remove barriers to eating
- Discharge planning

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References

# Case Study: Marg enters long-term care...



- Shortly after being discharged to the retirement home, Marg's kidneys are failing
- Marg is in need of daily dialysis

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References

# Opportunity for intervention for Marg



- Nutrition risk screening in Primary Care
- **Link to community services**

- Link to community dietitian for continued treatment
- Link to supportive services
- **Screen/follow up by Primary Care**

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

**Case study**

Summary

Senior friendly approach

Questions

References



- **Screening on admission**
- Assessment and treatment by a dietitian
- Remove barriers to eating
- Discharge planning

- **Screening with MNA**
- Dietitian for individualized nutrition care plan

# Summary



- Nutrition affects health, quality of life, and independence
- Nutrition risk and malnutrition are common in older adults
- Nutrition screening can be used to identify nutrition risk
- Follow screening with diagnosis for malnutrition
- Variety of effective treatments are available
  - Interventions will vary depending on level of risk vs. malnutrition and location of older adult
- Coordination among interdisciplinary health professionals is needed to address risk/malnutrition
  - Consult a dietitian when malnutrition is present

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

**Summary**

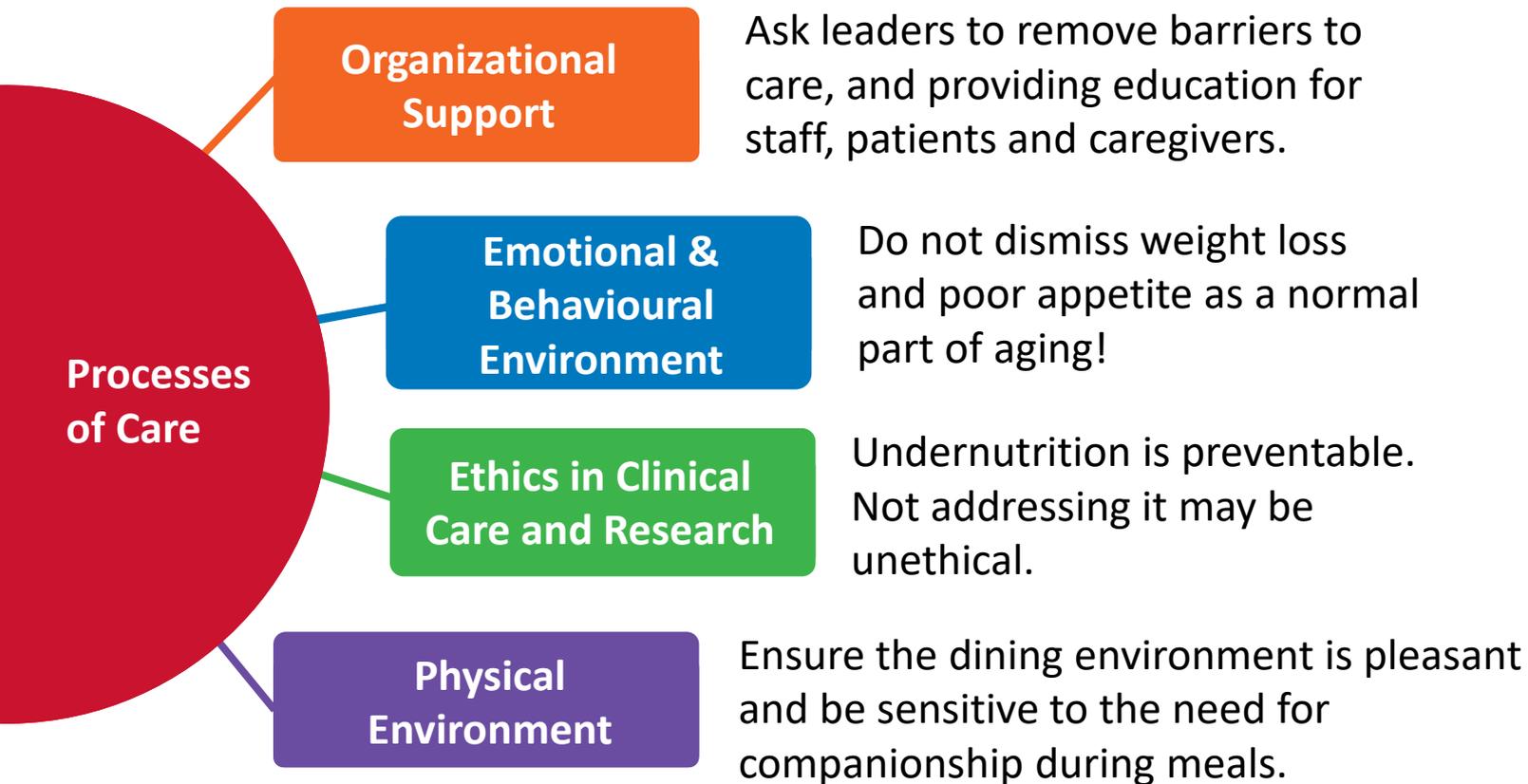
Senior friendly approach

Questions

References

# The senior friendly approach

How all healthcare providers can address nutrition risk and malnutrition using a **senior friendly care** approach



Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

**Senior friendly approach**

Questions

References

# Discussion questions



- Can you identify barriers to decreasing nutrition risk in your setting?
- How can each member of your interprofessional team contribute to nutrition risk?
- What is one thing you can do differently after today's module?

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

**Questions**

References

# References



Ahmed et al Risk factors for incident delirium among older people in acute hospital medical units: a systematic review and meta-analysis. *Age Ageing* 2014;43(3):326-33.

Allard JP, et al. Decline in nutritional status is associated with prolonged length of stay in hospitalized patients admitted for 7 days or more: A prospective cohort study. *Clin Nutr.* 2016; 35(1): 144-152. doi 10.1016/j.clnu.2015.01.009

Allard JP, et al. Malnutrition at hospital admission: contributors and impact on length of stay. A prospective cohort study from the Canadian Malnutrition Task Force. *J Parenter Enteral Nutr.* 2016; 40(4): 487-497. doi 10.1177/0148607114567902

Al-Rasheed et al. Malnutrition in elderly and its relation to depression. *Int J Comm Med Public Health* 2018;5(6):2156-2160.

Cederholm et al. ESPEN guidelines on definitions and terminology of clinical nutrition. *Clin Nutr* 2017 36(1): 49-64.

Cheng et al. Weight change and all-cause mortality in older adults: A meta-analysis *J Nutr Geontol Geriatr* 2015;34(4):343-68

Chien et al. Nutritional status and falls in community-dwelling older people: a longitudinal study of a population-based random sample. *Plos One* 2014;9(3): e91044.

Curtis L, e al. Costs of hospital malnutrition. *Clin Nutr.* 2017; 36(5): 1391-1396. doi 10.1016/j.clnu.2016.09.009

Ho et al. Malnutrition risk predicts surgical outcomes in patients undergoing gastrointestinal operations: results of a prospective study. *Clin Nutr* 2015 34(4):670-84

Keller HH, Østbye T. Nutritional risk and time to death; predictive validity of SCREEN (Seniors in the Community Risk Evaluation for Eating and Nutrition). *J Nutr Health Aging* 2003; 7(4):274-9.

Keller HH. Promoting food intake in older adults living in the community: a review. *App Phys Nutr Metab.* 2007; 32(6): 991-1000. doi 10.1139/H07-067

Keller et al. Validity and reliability of SCREEN II (Seniors in the Community: Risk evaluation for eating and nutrition, Version II). *EJCN.* 2005;59, 1149-1157.

Keller H et al. Update on the Integrated Nutrition Pathway for Acute Care (INPAC): Post implementation tailoring and toolkit to support practice improvements. *BMC Nutr.* 2018; 17: 2. doi 10.1186/s12937-017-0310-1.

Keller H, et al. Prevalence and determinants of poor food intake or residents living in long term care. *J Am Med Dir Assoc.* 2017; 18(11): 941-947. doi 10.1016/j.jamda.2017.05.003

Keller HH. Nutri-eSCREEN®: Descriptive analysis of a self-management site for older adults (50+ years). *BMC Nutr.* 2016; 2: 1. doi 10.1186/s40795-015-0041-7

Keller H, et al. Barriers to food intake in acute care hospitals: a report of the Canadian Malnutrition Task Force. *J Hum Nutr Diet.* 2015; 28(6): 546-557. doi 10.1111/jhn.12314

Keller HH, McKenzie JD\*. Nutritional risk in vulnerable community-living seniors. *Can J Diet Prac Res.* 2003; 64(4): 195-201.

Laporte M, et al. Validity and reliability of the new Canadian Nutrition Screening tool in the 'real-world' hospital setting. *Eur J Clin.* 2015; 69(5): 558-564. doi 10.1038/ejcn.2014.270

Lim et al. Malnutrition and its impact on cost of hospitalization, length of stay, readmission and 3 year mortality. *Clin Nutr* 2012 31(3):345-350. DOI: 10.1016/j.clnu.2011.11.001

McKinlay Malnutrition: the spectre at the feast. *J R Coll Physicians Edinb* 2008:38317-21.

Neyens et al. Malnutrition is associated with an increased risk of falls and impaired activity in elderly patients in Dutch residential long-term care (LTC): a cross-sectional study. *Arch Gerontol Geriatrics* 2013 56(1):265-269.

Ramage-Morin, Garriguet. Nutritional risk among older Canadians. *Health Repots* 2013 24(3):3-13.

Objectives

The importance of nutrition

What is nutrition risk and malnutrition?

How to detect and treat

Case study

Summary

Senior friendly approach

Questions

References



The sfCare Learning Series received support from the Regional Geriatric Programs of Ontario, through funding provided by the Ministry of Health and Long-Term Care.

