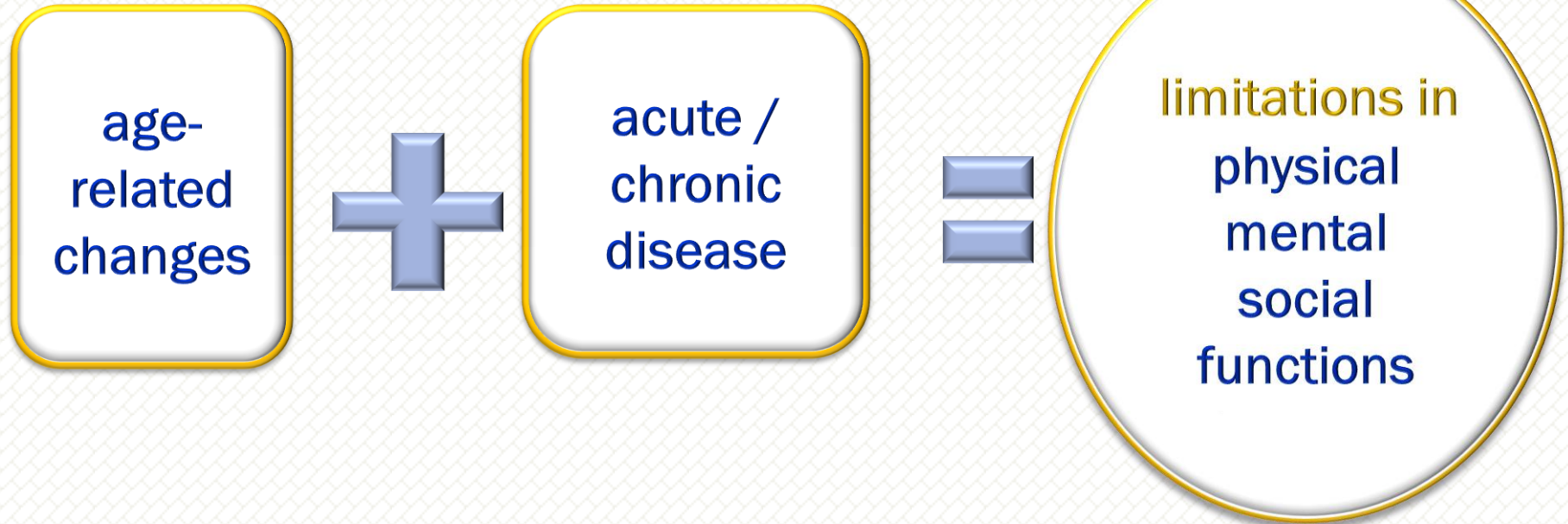


NUTRITION IN HOSPITALIZED ELDERLY

R. Hashemi. MD. PhD of Nutrition
Assistant Professor of TUMS

AGING CONSEQUENCES



TOPIC

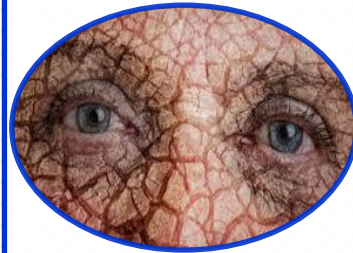
- ✓ Malnutrition
- ✓ Dehydration
- ✓ Obesity
- ✓ Dysphagia
- ✓ Bed Sore

NUTRITION IN ELDERLY

Nutritional Concerns In Elderly



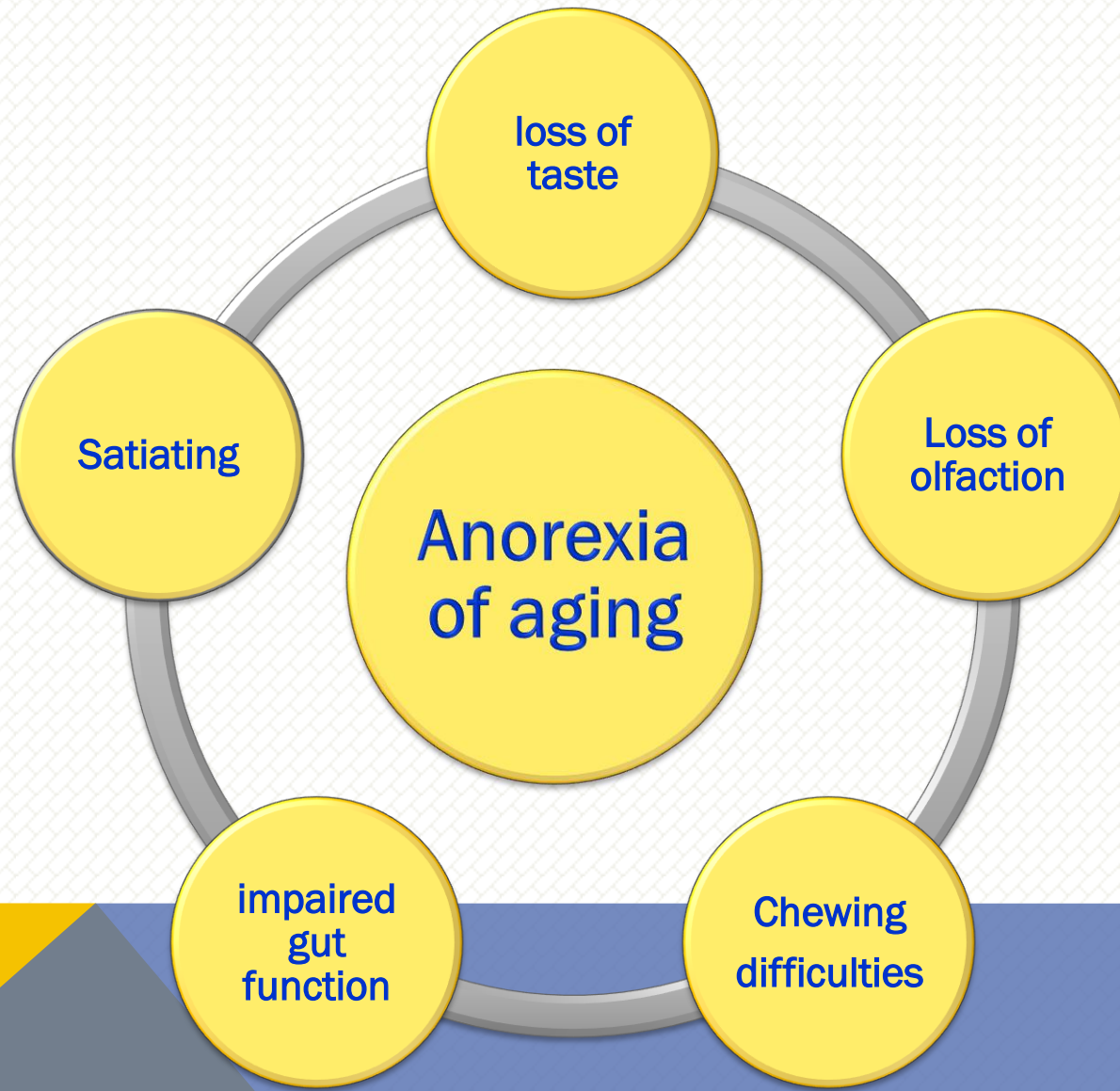
MALNUTRITION

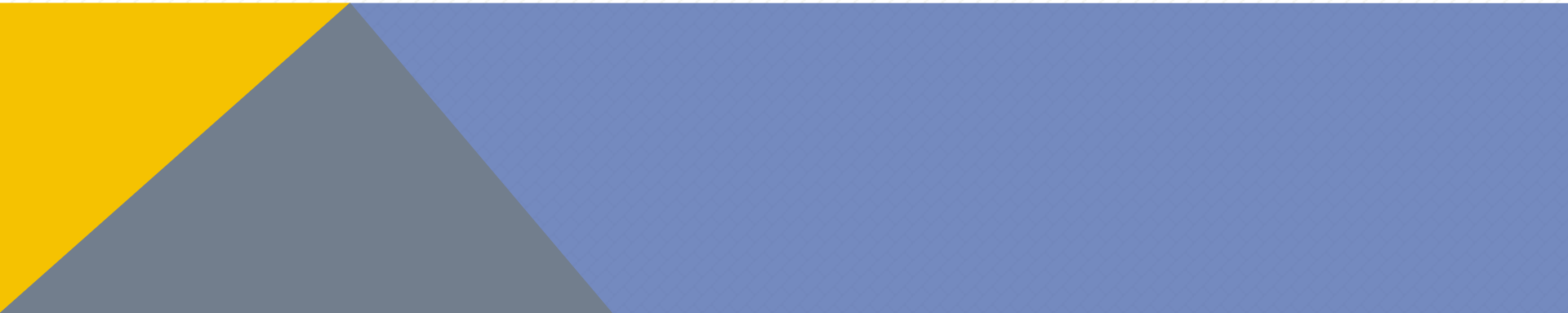
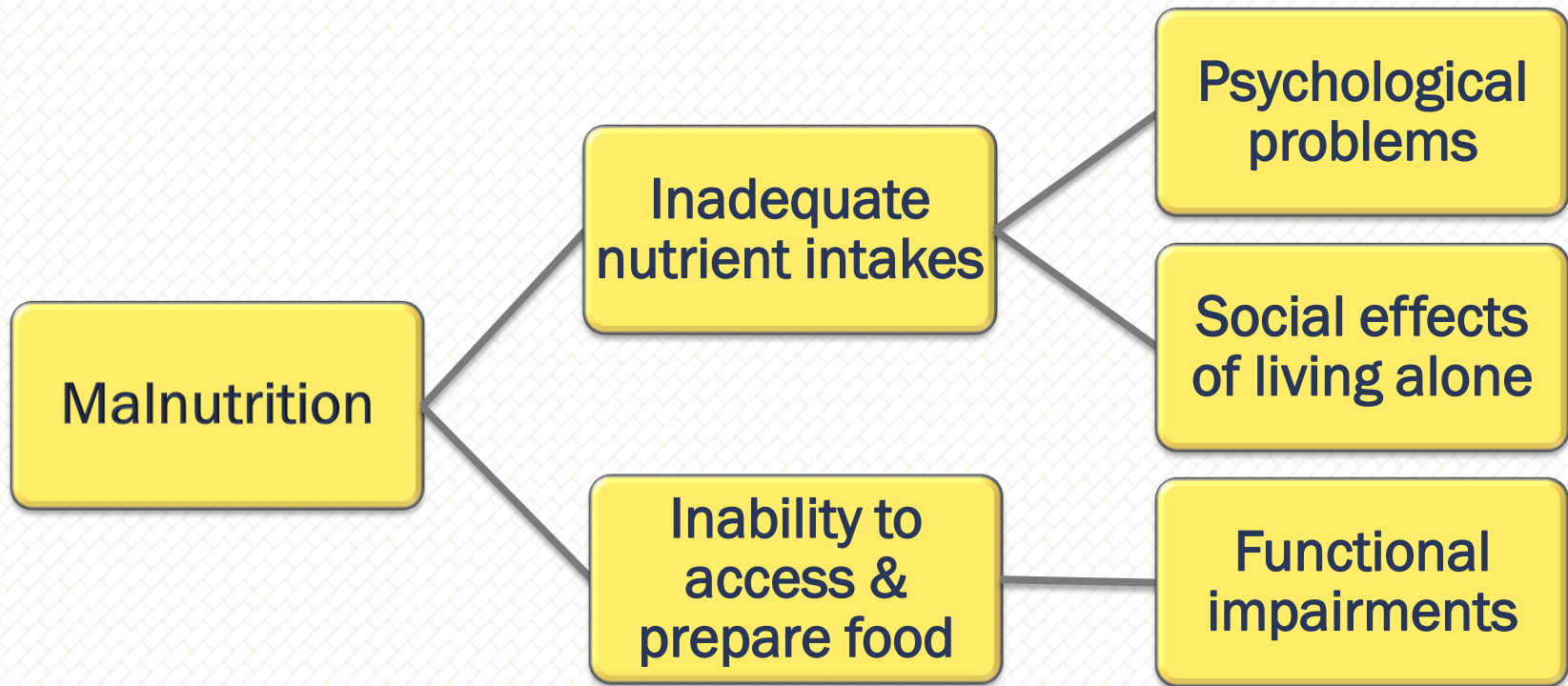


DEHYDRATION



OBESITY





OTHER FACTORS

In nursing home :

- ✓ physical environment
- ✓ Therapeutic diets :(low salt or low cholesterol)

ADA: American Dietetics Association

- ✓ Use of therapeutic diets in the nursing homes be restricted.

PEM CONSEQUENCES

- ✓ increased rates of infections ,
- ✓ impaired wound healing,
- ✓ reduced functional status,
- ✓ increased length of hospital stay,
- ✓ increased mortality.

MALNUTRITION RISK ASSESSMENT

Phenotypic Criteria		Etiologic Criteria	
Weight loss (%) >5% within past 6 months or >10% beyond 6 months		Reduced food intake or Assimilation 50% of ER > 1 week, or any reduction for >2 weeks, or any chronic GI condition that adversely impacts food Assimilation or absorption	
Low body mass index (kg/m ²)	Asia: <18.5 if < 70 years, or <20 if >70 years	Inflammation	Acute disease/injured, or chronic diseaserelated
Reduced muscle mass	Reduced by validated body composition measuring techniquesa		

RISK FACTOR

- ✓ **Reduced oral intake.**

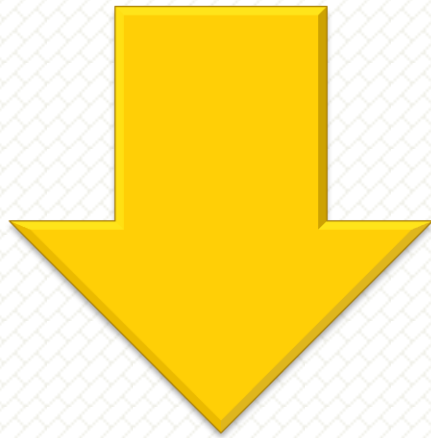
 - neuropsychological problems,

 - immobility,

 - chewing and swallowing problems

- ✓ **increase requirements.**

 - acute disease,



Nutrient
intake



Energy
expenditure



EPIDEMIOLOGY OF MALNUTRITION

- ✓ below 10% in independently living older persons
- ✓ 75% of older patients in acute care and rehabilitation hospitals.

The aim of clinical nutrition in older persons is:

- ✓ provide adequate amounts and meet nutritional requirements.
 - energy
 - protein
 - micronutrients
 - fluid
- ✓ maintenance or improvement of function and quality of life

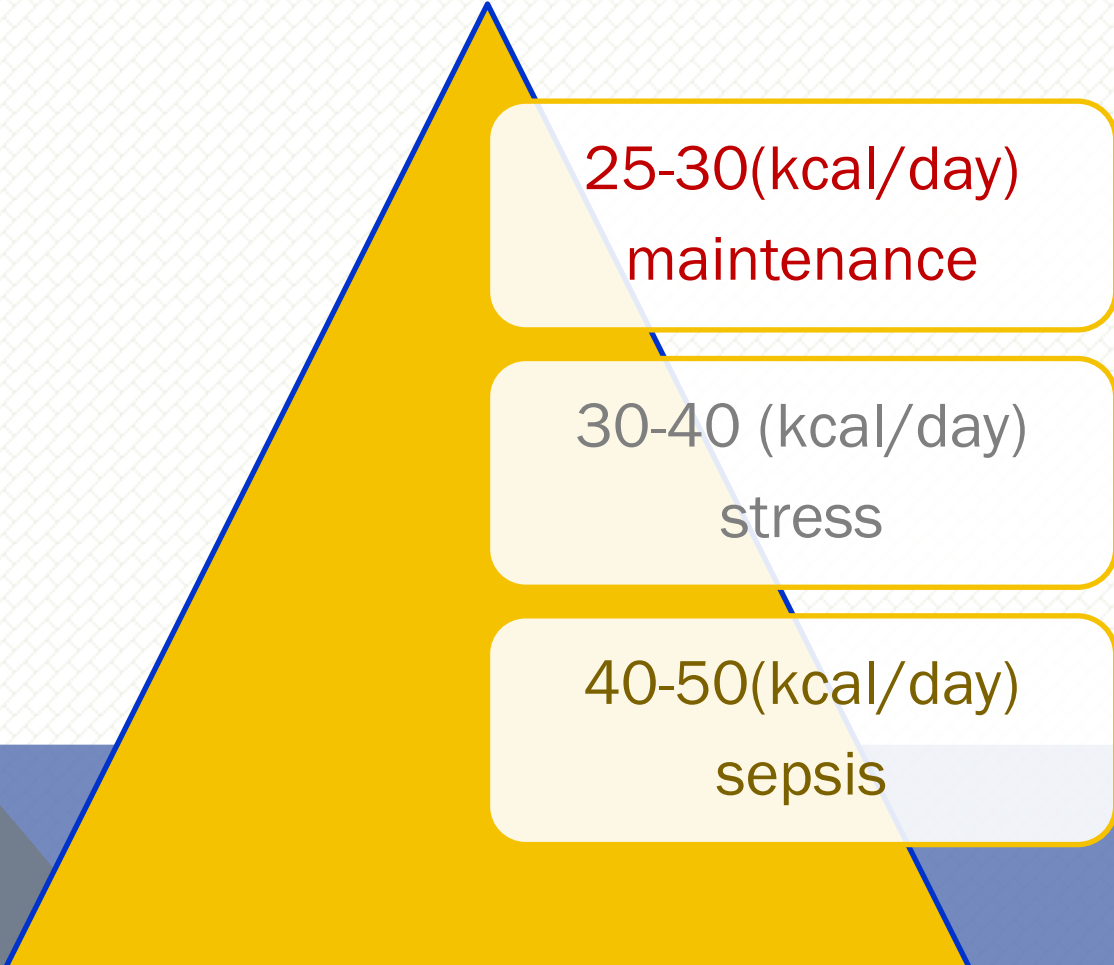
ENERGY REQUIREMENT

Energy requirement decrease in aging
especially in men and chronic disease.

Cause :

- ✓ Loss of muscle mass
- ✓ Decrease physical activity

ESTIMATION OF DAILY ENERGY



25-30(kcal/day)
maintenance

30-40 (kcal/day)
stress

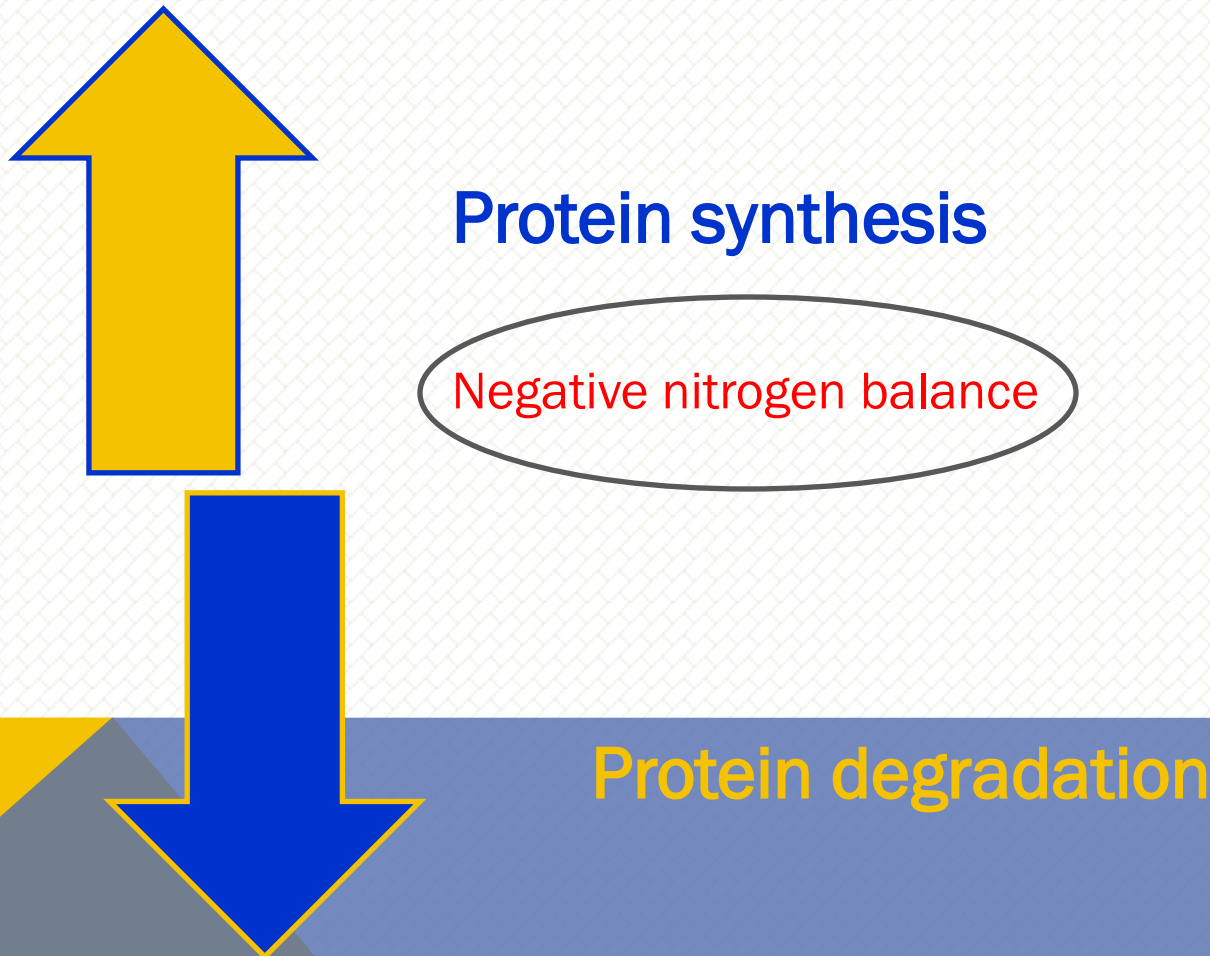
40-50(kcal/day)
sepsis

PROTEIN REQUIREMENT

✓ protein requirements of an individual being influenced by:

1. age
2. non protein content of the diet,
3. activity level,
4. medications,
5. health status.

many disease and medications induce a catabolic state and negative nitrogen balance \longrightarrow loss of muscle mass



ESTIMATION OF DAILY PROTEIN

Healthy Elderly

- 1-1.2 g/kg

Acute/chronic illness

- 1.2-1.5 g/kg

Sever illness

- >2g/kg

GOOD PROTEIN SOURCE

Biological Value of Proteins

(c) Fooducate, 2014

Egg	94
Milk	90
Rice	83
Quinoa	83
Fish	76
Beef	74
Soybeans	73
Whole wheat	64
Beans	58



Word egg day

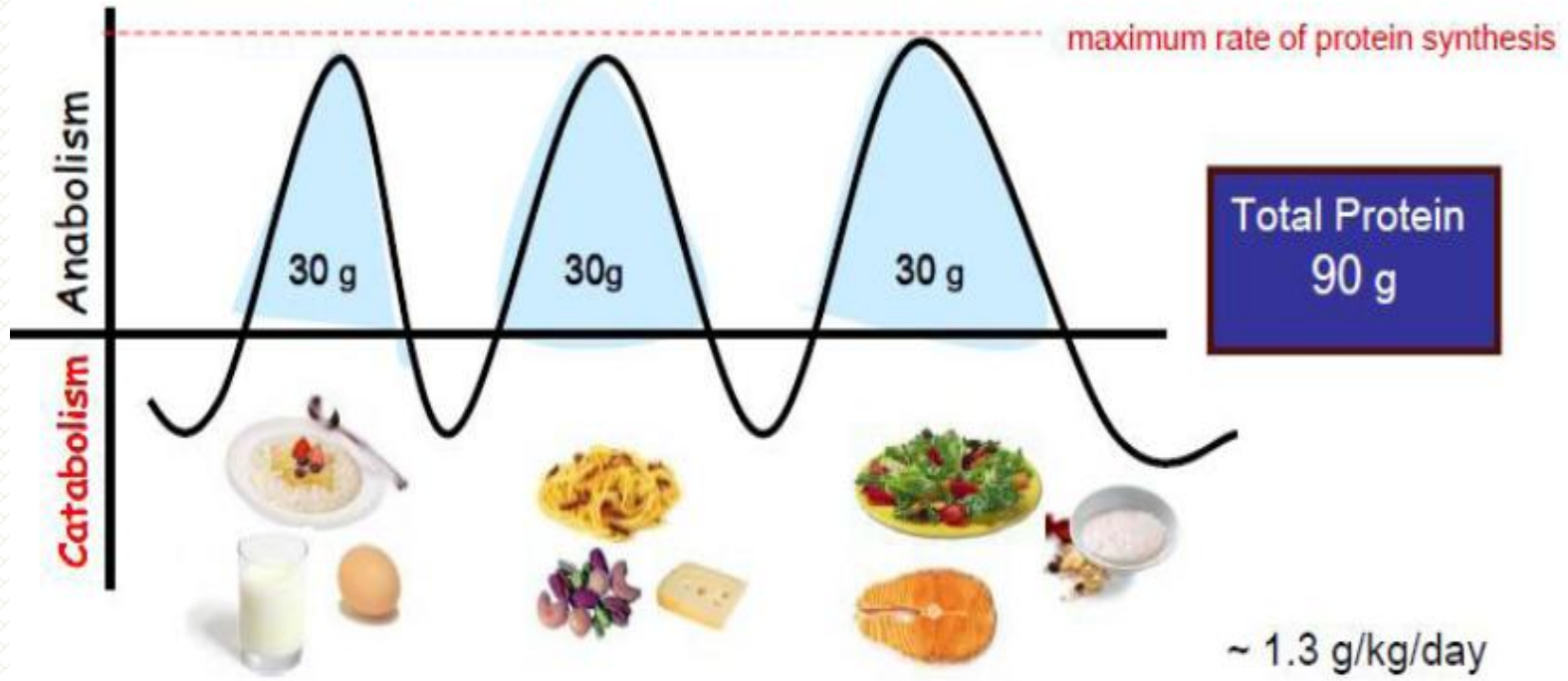
PROTEIN DISTRIBUTION



Pulse feeding
protein



Distributed
feeding
protein



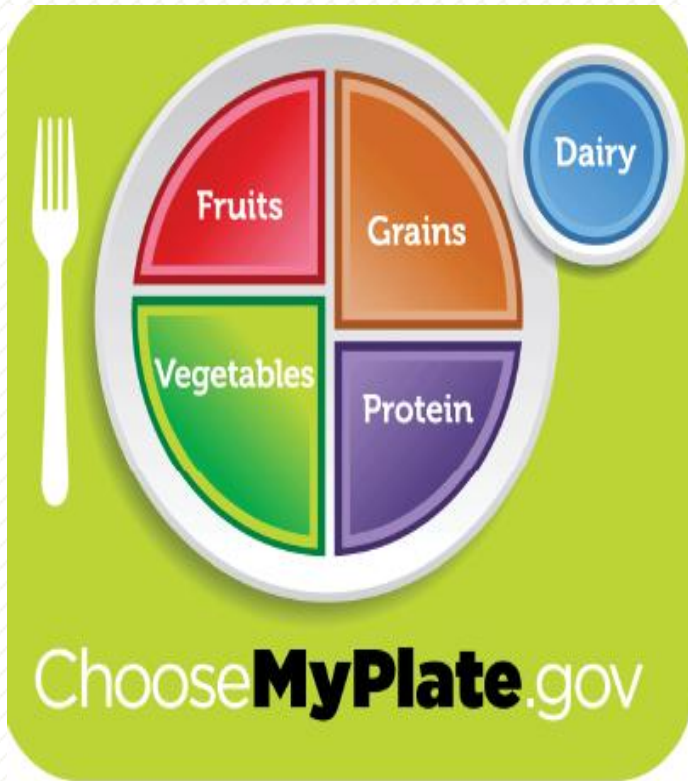
Repeated maximal stimulation of protein synthesis
→ increase / maintenance of muscle mass

FIBER

Structural components of plant cell wall.

Constipation and diarrhea are common in elderly.

- ✓ Recommendation : 25 g of fiber/day



EACH DAY

- two cups of fruit,
- 2.5 cups of vegetables
- 180 g of grains

MICRONUTRIENT

- ✓ Dietary recommendations for micronutrients for older persons do not differ from those for younger adults.
- ✓ older persons are at increased risk of micronutrient deficiencies, which should be corrected by supplementation.
- ✓ vitamin B12, calcium and iron

NUTRITIONAL ASSESSMENT

- ✓ All older persons also overweight and obese persons shall routinely be screened for malnutrition with a validated tool in order to identify those with risk of malnutrition.
- ✓ in long-term care residents = every 3 months
- ✓ in stable condition= once a year

WEIGHT



HEIGHT

- ✓ **Height measurement:**
standing position
without shoes.

- ✓ **Height estimation:**
Bed ridden patient
If significant kyphosis or scoliosis

HEIGHT ESTIMATION

Estimating height from ulna length



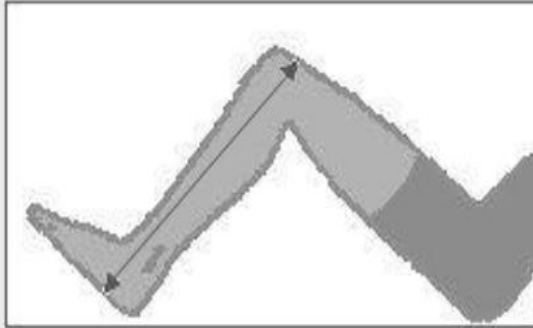
1. Ulna height

Measure between the point of the elbow (olecranon process) and the midpoint of the prominent bone of the wrist (styloid process) (left side if possible).

HEIGHT (m)	Men (<65 years)	1.94	1.93	1.91	1.89	1.87	1.85	1.84	1.82	1.80	1.78	1.76	1.75	1.73	1.71
	Men (>65 years)	1.87	1.86	1.84	1.82	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.67
	Ulna length (cm)	32.0	31.5	31.0	30.5	30.0	29.5	29.0	28.5	28.0	27.5	27.0	26.5	26.0	25.5
HEIGHT (m)	Women (<65 years)	1.84	1.83	1.81	1.80	1.79	1.77	1.76	1.75	1.73	1.72	1.70	1.69	1.68	1.66
	Women (>65 years)	1.84	1.83	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.66	1.65	1.63
HEIGHT (m)	Men (<65 years)	1.69	1.67	1.66	1.64	1.62	1.60	1.58	1.57	1.55	1.53	1.51	1.49	1.48	1.46
	Men (>65 years)	1.65	1.63	1.62	1.60	1.59	1.57	1.56	1.54	1.52	1.51	1.49	1.48	1.46	1.45
	Ulna length (cm)	25.0	24.5	24.0	23.5	23.0	22.5	22.0	21.5	21.0	20.5	20.0	19.5	19.0	18.5
HEIGHT (m)	Women (<65 years)	1.65	1.63	1.62	1.61	1.59	1.58	1.56	1.55	1.54	1.52	1.51	1.50	1.48	1.47
	Women (>65 years)	1.61	1.60	1.58	1.56	1.55	1.53	1.52	1.50	1.48	1.47	1.45	1.44	1.42	1.40

Estimating height from knee height

2.Knee height



While lying supine, both the knee and ankle of the patient are held at a 90-degree angles. One blade of a sliding Mediform caliper is placed under the heel of the foot, and the other blade is placed on the anterior surface of the thigh. The shaft of the caliper is held parallel to the long axis of the lower leg, and pressure is applied to compress the tissue. Height (in cm) is then calculated from the formula below:

Females

$$\text{Height in cm} = 84.88 - (0.24 \times \text{age}) + (1.83 \times \text{knee height})$$

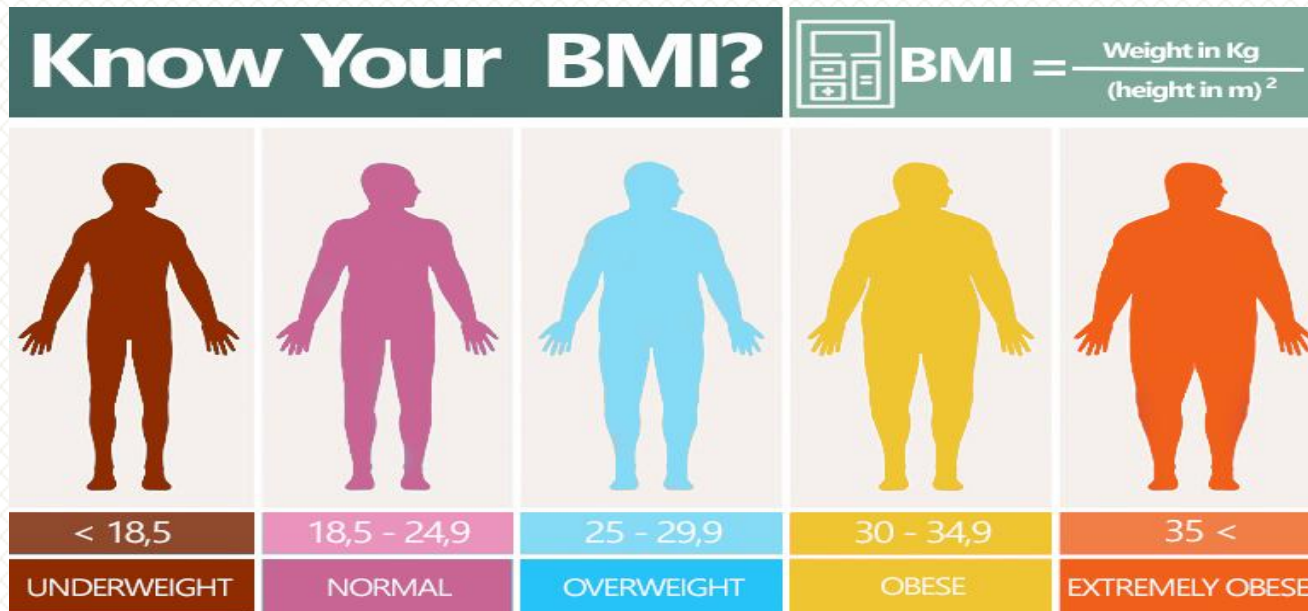
Males

$$\text{Height in cm} = 64.19 - (0.04 \times \text{age}) + (2.02 \times \text{knee height})$$

BODY MASS INDEX

2

$$\text{BMI} = \text{Weight (kg)} / \text{Height (m)}^2$$



SCREENING TOOLS

Mini Nutritional Assessment

- ✓ BMI
- ✓ Weight loss
- ✓ Reduced intake
- ✓ Immobility,
- ✓ neuropsychological problem
- ✓ Calf circumference

Last name:	<input type="text"/>	First name:	<input type="text"/>						
Sex:	<input type="text"/>	Age:	<input type="text"/>	Weight, kg:	<input type="text"/>	Height, cm:	<input type="text"/>	Date:	<input type="text"/>
Complete the screen by filling in the boxes with the appropriate numbers. Total the numbers for the final screening score.									
Screening									
A Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties? 0 = severe decrease in food intake 1 = moderate decrease in food intake 2 = no decrease in food intake <input type="checkbox"/>									
B Weight loss during the last 3 months 0 = weight loss greater than 3 kg (6.6 lbs) 1 = does not know 2 = weight loss between 1 and 3 kg (2.2 and 6.6 lbs) 3 = no weight loss <input type="checkbox"/>									
C Mobility 0 = bed or chair bound 1 = able to get out of bed / chair but does not go out 2 = goes out <input type="checkbox"/>									
D Has suffered psychological stress or acute disease in the past 3 months? 0 = yes 2 = no <input type="checkbox"/>									
E Neuropsychological problems 0 = severe dementia or depression 1 = mild dementia 2 = no psychological problems <input type="checkbox"/>									
F1 Body Mass Index (BMI) (weight in kg) / (height in m)² <input type="checkbox"/> 0 = BMI less than 19 1 = BMI 19 to less than 21 2 = BMI 21 to less than 23 3 = BMI 23 or greater <input type="checkbox"/>									
IF BMI IS NOT AVAILABLE, REPLACE QUESTION F1 WITH QUESTION F2. DO NOT ANSWER QUESTION F2 IF QUESTION F1 IS ALREADY COMPLETED.									
F2 Calf circumference (CC) in cm 0 = CC less than 31 3 = CC 31 or greater <input type="checkbox"/>									
Screening score <input type="checkbox"/> <input type="checkbox"/> (max. 14 points)									
12-14 points: <input type="checkbox"/> Normal nutritional status									
8-11 points: <input type="checkbox"/> At risk of malnutrition									
0-7 points: <input type="checkbox"/> Malnourished									
								Save	
								Print	
								Reset	

A positive malnutrition screening shall be followed by:

- ✓ assessment,
- ✓ intervention,
- ✓ **Monitoring**



NUTRITIONAL ASSESSMENT

- ✓ Nutritional status
- ✓ Nutritional deficit
 - Intake monitoring
 - Requirement
- ✓ Identify underlying causes
- ✓ Individual preferences

NUTRITIONAL INTERVENTION

- ✓ Defining goals: intake, body weight, BMI
- ✓ Intervention: nutrition care plan
 - Adequate intake
 - Treatment underlying causes



NUTRITIONAL MONITORING

- ✓ Monitoring and reassessments should be performed in regular intervals,
- ✓ If goals not achieved :
updating goals and intervention
- ✓ In the hospital setting, it is important to
Initiate adequate nutritional care after discharge at home and to
Continue the nutritional strategy started in hospital

- ✓ Dietary restrictions that may limit dietary intake are potentially harmful and should be avoided.

SUPPORTIVE INTERVENTION

- ✓ offered mealtime assistance in order to support adequate dietary intake.
- ✓ Support may be needed ranging from :
adequate positioning at a table
and verbal prompting to :
direct physical assistance to bring foods and fluids into the mouth.

SUPPORTIVE INTERVENTION

- ✓ Food fortification(oil,cream,egg)
- ✓ Offered additional snacks or finger food
- ✓ Food modification



ORAL NUTRITIONAL SUPPLEMENT

- ✓ Older persons with malnutrition or at risk of malnutrition with chronic conditions shall be offered ONS when dietary counseling and food fortification are not sufficient.



- ✓ Older persons with malnutrition or at risk of malnutrition should be encouraged to share their mealtimes with others.
- ✓ In institutional settings, food intake of older persons with malnutrition or at risk of malnutrition shall be supported by a home-like environment.



NUTRITIONAL EDUCATION

- ✓ Malnourished elderly
- ✓ Care giver



DEHYDRATION



DEHYDRATION

- ✓ Serious health consequences.
- ✓ low prevalence in community-dwelling older persons.
- ✓ more than 30% frail and vulnerable older adults and in those in need of care.

HOW MUCH SHOULD OLDER DRINK/DAY

- ✓ Women 1.6 L
- ✓ Men 2L
- ✓ unless there is a clinical condition that requires different approach.



WHO AT RISK?

- ✓ All older persons should be considered to be at risk of low intake dehydration and encouraged to consume adequate amounts of drinks.
- ✓ Aging appears to blunt thirst and primary urine concentration .
- ✓ Medication (diuretic,laxative)

Simple signs and tests commonly used to assess dehydration such as :

- ✓ skin turgor,
- ✓ mouth dryness,
- ✓ Weight change,
- ✓ urine color or specific gravity,

shall NOT be used to assess hydration status in older adults.



OBESITY



OBESITY

- ✓ An increasing problem also in older people.
- ✓ Currently affecting between 18 and 30% of the worldwide population aged 65 years and older .

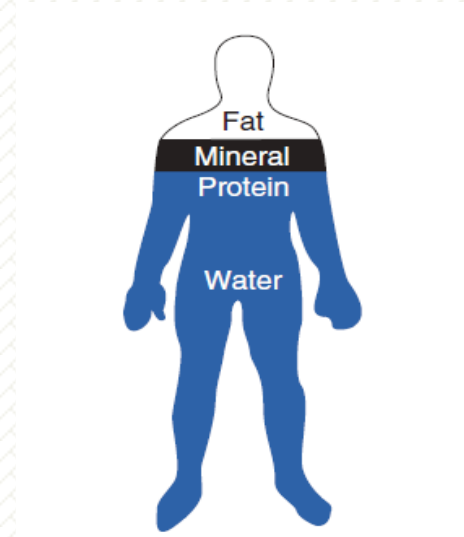
BODY WEIGHT COMPONENTS

- ✓ **FAT MASS:**

the fat from all body sources including the brain, skeleton, and adipose tissue,

- ✓ **FAT-FREE MASS (FFM):**

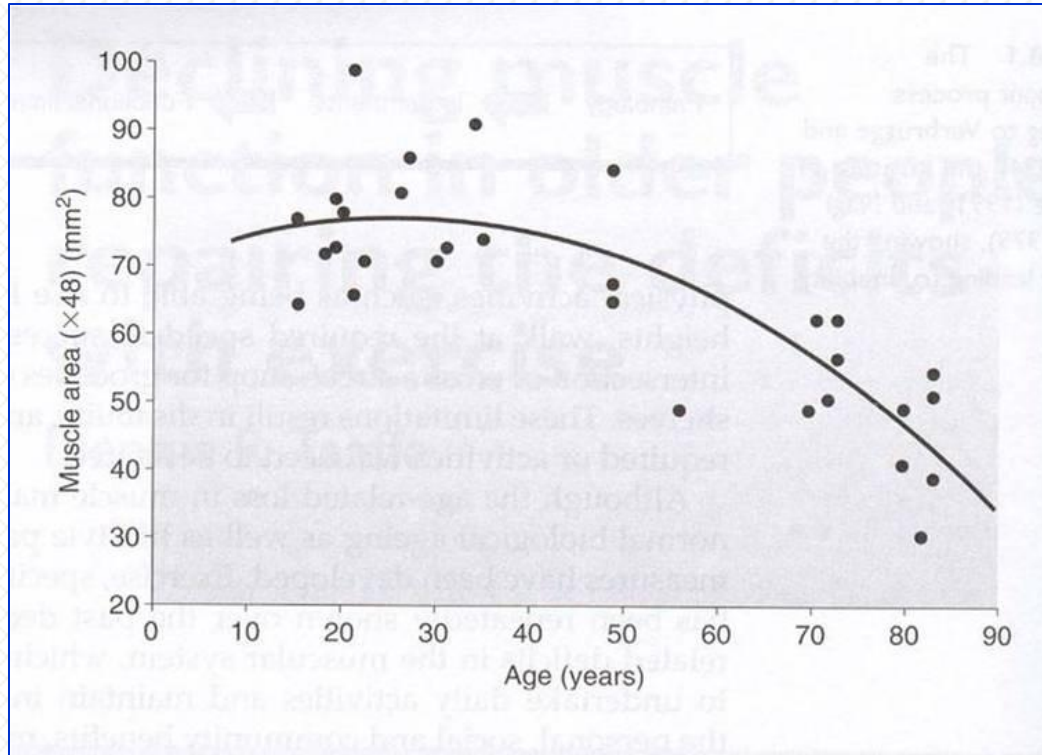
Includes water, protein, and mineral components.



AGE-RELATED CHANGES ON BODY COMPOSITION

- ✓ **Body composition changes:**
 - Increase total body fat
 - Decrease muscle mass
 - Decrease bone mass.
- ✓ **These changes begin in the third decade accelerated rate after age 65.**

1-2% DECLINE EACH YEAR AFTER 50.



WEIGHT REDUCTION IN ELDERLY

- ✓ In overweight older persons weight-reducing diets shall be avoided in order to prevent loss of muscle mass and accompanying functional decline.



✓ In obese older persons with weight-related health problems, weight-reducing diets shall only be considered after careful and individual weighing of benefits and risks.

✓ obesity + comorbidity  weight reduction

WT LOSS PROGRAM ELDERLY

- ✓ moderate caloric restriction (~500 kcal/d less than estimated).
- ✓ needs and maintaining a minimum intake of 1000e1200 kcal/d).
- ✓ targeting a weight loss of 0.25 -1 kg/week (5 -10% of initial body weight after six months or more) .
- ✓ assuring a protein intake of at least 1 g/kg BW/d appropriate intake of micronutrients.
- ✓ Add physical exercise

DYSPHAGIA

DYSPHAGIA ASSESSMENT

1. Noninstrumental “bedside” procedure

2. instrumental assessment

FIBEROPTIC ENDOSCOPIC



11/18/2020

A VIDEOFLUOROSCOPY (VFS) IS A MOVING X-RAY EXAMINATION OF SWALLOWING.



11/18/2020

1. Age-Related Disease

Stroke, brain injury, Alzheimer's disease ,other dementia syndromes,diabetes

2. Iatrogenic

3. Medication

anticholinergic ,antihistamine

DYSPHAGIA

INTERVENTION

- a. compensatory,
- b. rehabilitative,
- c. or a combination of the two approaches

COMPENSATORY INTERVENTIONS

Postural adjustment

Rate regulation

Food texture modification

POSTURAL ADJUSTMENTS

a) simple to teach to a patient

upright posture and neck at a 90-degree angle to the horizon and the head in line with the horizon

(a) Seated at a table



(b) Propped up in bed



(c) Support for knees and pelvis



FÖRSVAGNING
PARÉS



Weak
side,
paresis



LUTA
AT
STARKA
SIDAN

Lean
towards
strong
side

VRIDA
MOT
SVAGA
SIDAN



Turn
towards
weak
side

Head postural adjustments

- Chintuck (chin down)
- Head turn/rotation toward weak side
- Head tilt toward strong side
- Head extension (raise chin)

How does these head postures affect swallowing?

FOOD AND LIQUID RATE AND AMOUNTS

Eat **slowly** and allow enough time for a meal.

Do not eat or drink when **rushed or tired**.

Take **small** amounts of food or liquid into the mouth,
use a teaspoon rather than a tablespoon

Concentrate on swallowing—**eliminate** distractions
like television.

Avoid mixing food and liquid in the same mouthful.

Place the food on the **stronger** side of the mouth if there is unilateral weakness.

Alternate between **liquids** and solids.

Use sauces, condiments, and gravies to facilitate cohesive bolus formation and prevent pocketing or **small food** particles from entering the airway

Wash out after each meal



11/18/2020

TEXTURE MODIFICATION

Level 1: Dysphagia Puree:

Smooth, pureed, homogenous, very cohesive,

Level 2: Dysphagia Mechanically-Altered

semisolid foods that require some chewing ability.

Level 3: Dysphagia Advanced (Previously: Mechanical Soft):

**Soft-solid foods. Includes easy-to-cut whole meats,
vegetables soft fruits and**

Level 4: regular Diet

LIQUIDS

Swallowing liquids of thin consistency such as juice or water is the most difficult swallowing task because of the coordination and control required.

- a) Dry milk powder
- b) Commercial thickeners(xanthan gum)



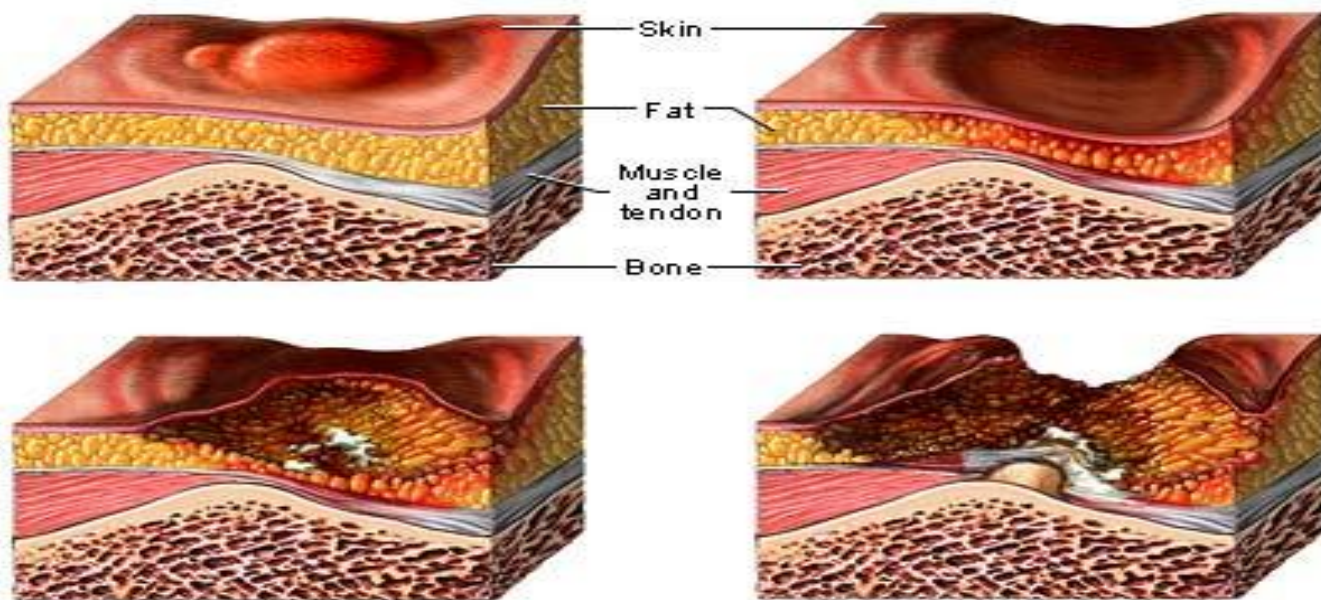
ADAPTIVE

EQUIPMENT



BED SORE

Progression of decubitus ulcer



1.HYDRATION

2.VIT A,C,E

3,ZINC

4.PROTEIN \$ ENERGY

THANKS FOR YOUR ATTENTION

