Nutrition in liver Transplantation:

A central issue

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- Malnutrition is common in liver transplant candidates (20-80%) and increases the risk of mortality.

- Improving pre-transplant nutritional status improves the post transplant morbidity and mortality

Our agenda

In the next 15 min. we will go through:

- malnutrition in pre transplant
- Nutritional assessment in pre transplant
- Nutritional requirements and support in pre transplant

Why to find malnutrition in pre transplant?

It is a complicated puzzle!

liver transplantation is indicated in end stage liver disease which commonly complicate chronic liver disease and cirrhosis

Added to the bad psychological state of the patient which affect eating, Cirrhosis has its package of anorexia, mal digestion, mal absorption, associated infections or neoplasm

- Anorexia
- Ascites
- Altered taste perception
- Metabolic and inflammatory derangements
- Inadequate diet restrictions
- Decreased social status
- Polypharmacy
- Multiple paracentesis
- Variceal bleeding
- Long fasting periods for labs and diagnostic procedures

How to assess nutritional state in pre transplant patients

NUTRITIONAL ASSESSMENT

- Nutritional assessment is essential for all patients in healthcare system

- It means to predict the person more liable to develop malnutrition, not to diagnose a malnourished patient

- Malnutrition reduced patient and graft survival, longer ventilator support, and extended length of stay.

- higher risk of post-operative infections have been found in studies of malnourished liver transplant patients compared to well- nourished patients.

BMI

- Body mass index (BMI) <18.5 kg/m2 has been shown to be a predictor of death in two large studies of 73,500 and 38,194 liver transplant patients.

Orci LA, et al. (2013).; Dick AA, et al. (2009).

sarcopenia

- sarcopenia (muscle depletion), in liver transplant patients is associated with poor outcomes and reduced survival.

- up to 45% of patients with cirrhosis are sarcopenic, including overweight and obese patients

Hamaguchi Y, et al. (2014).; Englesbe MJ, et al. (2010); Kaido T, et al. (2013).

Obesity

- There is no absolute cut-off BMI for liver transplant but those with BMI >40 kg/m2 are likely to have increased post-transplant mortality.

- Surgical difficulties are correlated to waist circumference in morbidly obese patients.

Newsome PN, et al. (2012)

Obesity

- Guidelines for NASH recommend all transplant candidates are nutritionally assessed by a dietitian, including handgrip strength, anthropometry measurements and subjective global assessment.

Newsome PN, et al. (2012)

Body Weight

dry weight

	Ascites	Peripheral oedema
Minimal	2.2 kg	1.0 kg
Moderate	6.0 kg	5.0 kg
Severe	14.0 kg	10.0 kg

Waist circumference

Not accurate in ascites

Handgrip strength

- Poor handgrip strength has been found to be associated with longer length of stay post-liver transplant.

Vidas NA, et al. (2009)

Arm anthropometry

- Monitoring mid-upper arm circumference (MUAC) and mid-arm muscle circumference (MAMC) if skinfold calipers are available.
- It is a cost-effective and simple method of monitoring changes in body mass.

Subjective global assessment

Subjective Global Assessment

I. History

A. Weight

Height_____ Current weight_____

Pre-illness weight _____

Weight in past 6 months: High_____ Low_____

Overall change in past 6 months:_____

B. Appetite

Dietary intake change relative to normal

Appetite in past two weeks: ____good ____fair ____poor

Early satiety: _____none _____1-2 weeks _____ > 2 weeks

Taste changes: _____none _____1-2 weeks _____ > 2 weeks

C. Current intake per recall

Calories____ Protein_____

Calories needs _____ Protein needs_____

Subjective global assessment

Calories needs _____ Protein needs_____

D. Persistent gastrointestinal symptoms

Nausea: _____none _____1-2 weeks _____ > 2 weeks

Vomiting: _____none _____1-2 weeks _____ > 2 weeks

Diarrhea (loose stools, > 3/day)

Number of stools per day_____/Consistency_____

_____none _____1 weeks _____ > 1 weeks

Constipation: _____none _____1-2 weeks _____ > 2 weeks

Difficulty chewing: _____none _____1-2 weeks _____ > 2 weeks

Difficulty swallowing: _____none _____1-2 weeks _____ > 2 weeks

E. Functional capacity

_____ No dysfunction ____Dysfunction

_____ weeks

_____ working suboptimally

_____ ambulatory

_____ bedridden

Subjective global assessment

II. Physical exam

A. Status of subcutaneous fat (triceps, chest)

_____ good stores _____ fair stores _____poor stores

B. Muscle wasting (quadriceps, deltoids, shoulders)

_____none _____mild to moderate _____ severe

C. Edema and ascites

_____none _____ mild to moderate _____ severe

III. Existing conditions

A.Encephalopathy

_____ none _____ stage I-II _____stage III _____ stage IV

B.Chronic or recurrent infection

_____ none _____ 1 week _____> 1 week

C.Kidney function

_____good/_____decreased (no dialysis)/_____decreased (with dialysis)

D.Varices

_____none/_____ varices (no bleeds)/_____ varices (with bleeds)

IV. Subjective Global Assessment Rating (based on sections I, II, III)

Subjective global assessment

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Subjective Global Assessment

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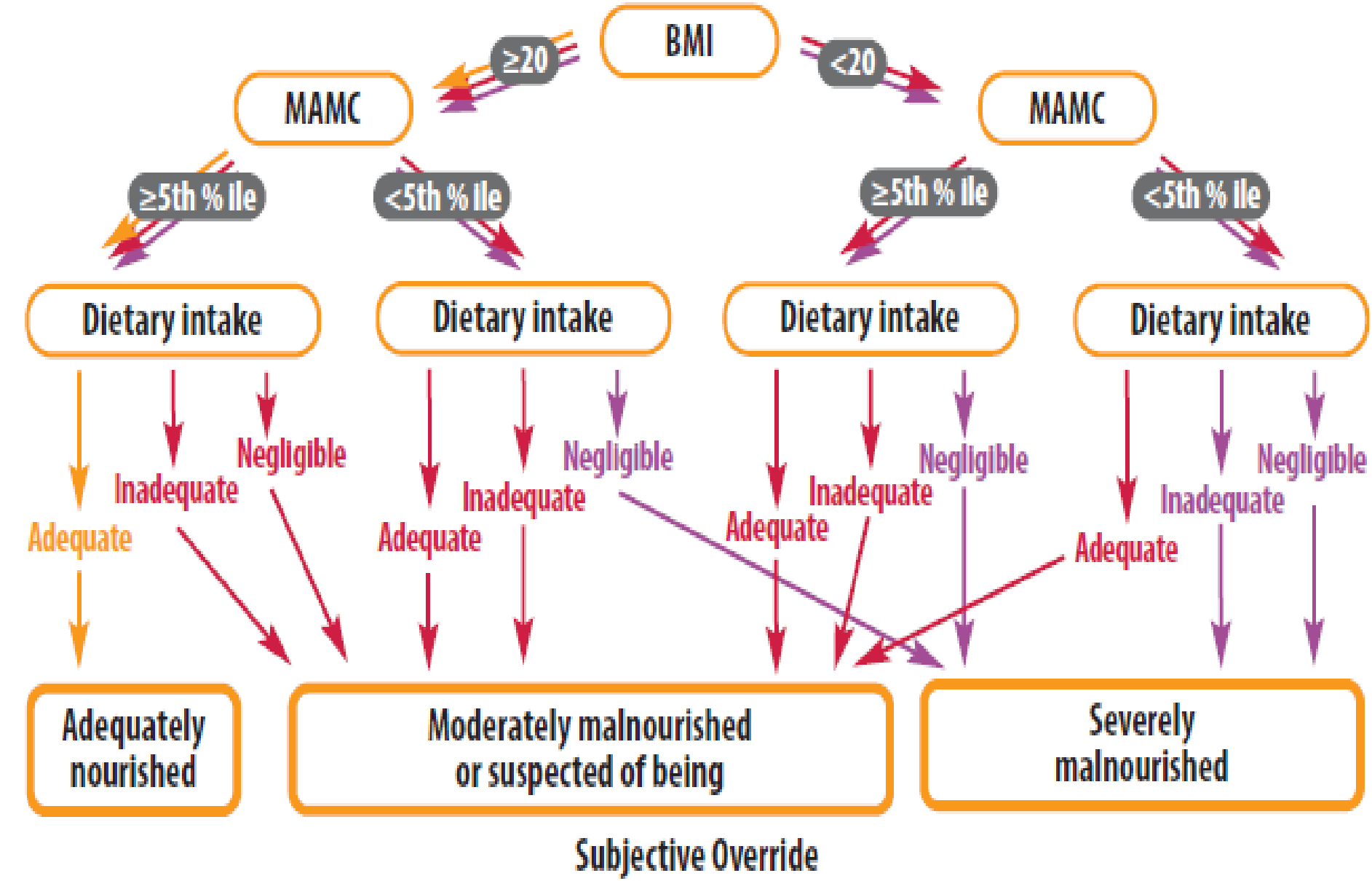
IV. Subjective Global Assessment Rating (based on sections I, II, III)

A.____ Well nourished

B.____ Moderately malnourished (or suspected of being malnourished)

C.____ Severely malnourished



Spilman (2015)

What are the caloric requirements In Pre transplant Patients?

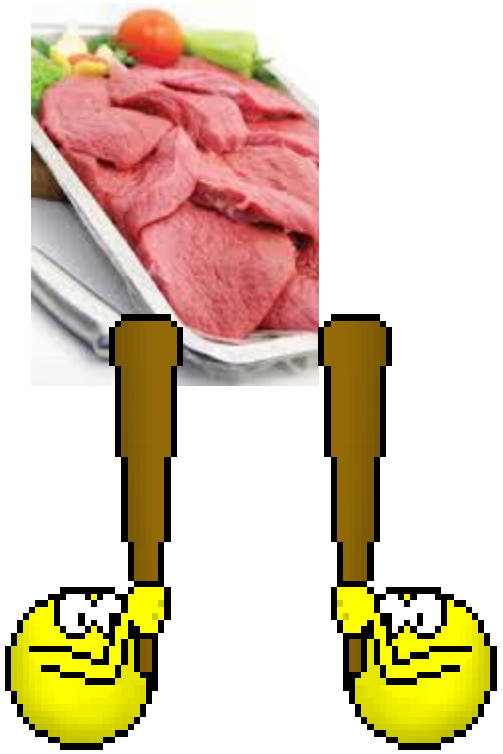
Energy and Protein Requirements for Liver Disease

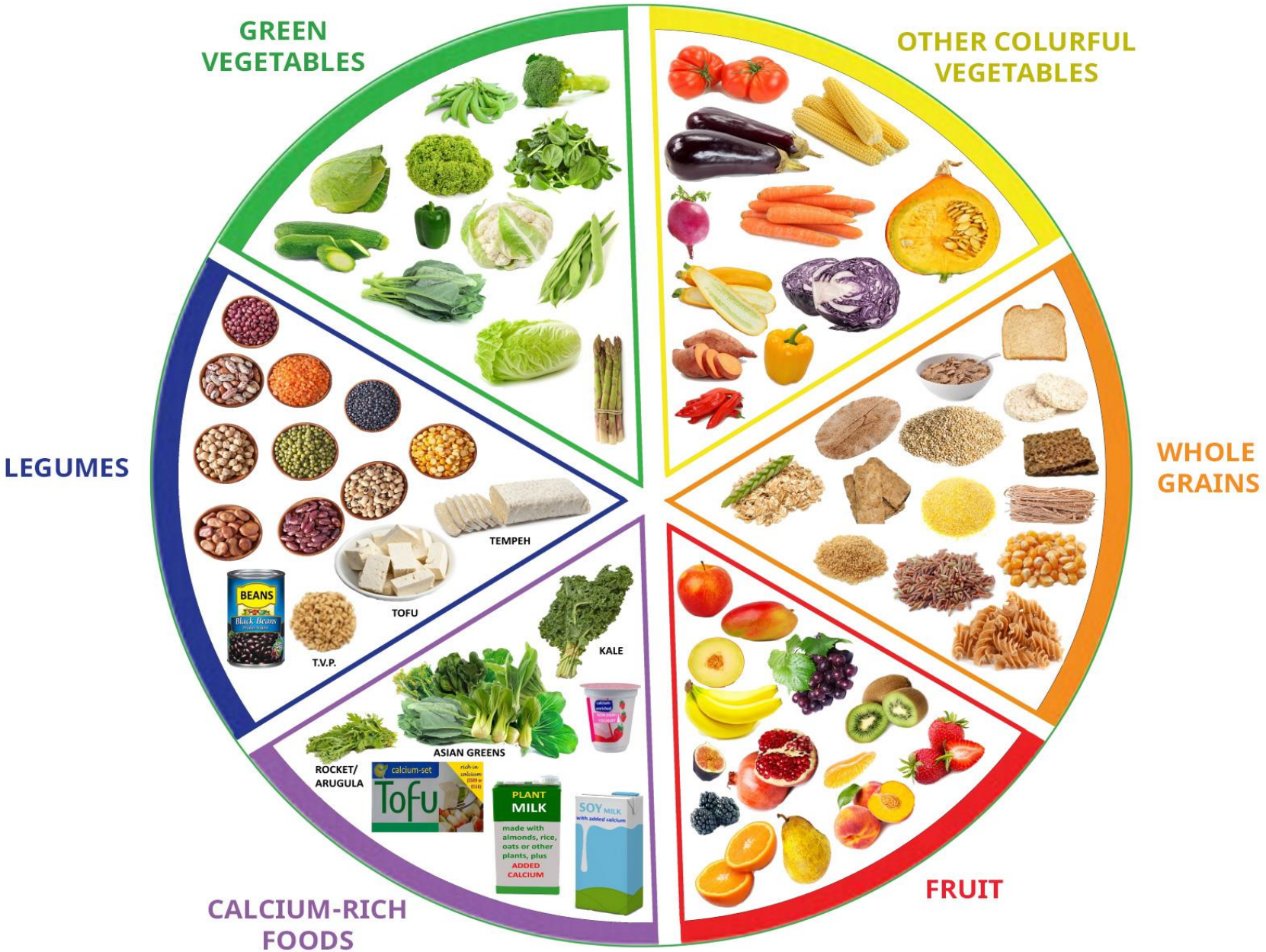
	Kcal/kg/day	Henry BMR with activity and stress factors (SF)	Protein(g)/kg/day
Decompensated	35-40	SF 30-40%	1.2-1.5
Repletion	Calculate requirements as above + 400-1000 kcal	Calculate requirements as above + 400-1000 kcal	1.5-2

Anastácio,2016

Decompansated cirrhosis and protein

TIPS, Encephalopathy and protein




GREEN VEGETABLES
OTHER COLURFUL VEGETABLES
LEGUMES
WHOLE GRAINS
FRUIT
CALCIUM-RICH FOODS
BEANS
Black Beans
T.V.P.
TOFU
TEMPEH
KALE
ASIAN GREENS
ROCKET/ ARUGULA
calcium-set
Tofu
PLANT MILK
made with almonds, rice, oats or other plants, plus ADDED CALCIUM
SOY MILK
with added calcium

What Is The Optimal Diet In Pre transplant Patients?


cirrhosis diet

The eatwell plate

FOOD STANDARDS AGENCY

food.gov.uk

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.

Decompensated cirrhosis and fasting

Consider NG feeding

Enteral is better than parenteral

Micro nutrient

Consider supplementation

If specific deficiency diagnosed

Ascetic patient and sodium

The sodium content of enteral feed is usually within the no added salt recommendation.

Carry Home Message

Carry home message

- The cause of malnutrition in patients with cirrhosis is multifactorial, please do not add iatrogenic.

- avoid unnecessary food restriction and modify according to individual tolerance

- Subjective global assessment , muscle mass, and Hand grip is extremely beneficial.

Carry home message

- Bed time snack is a must in decompansated cirrhosis
- Avoid prolonged fasting
- Patient listed for transplantation should Not Fast In Ramadan


eat
right.


Thanks