



GI Disorders in Older Adults

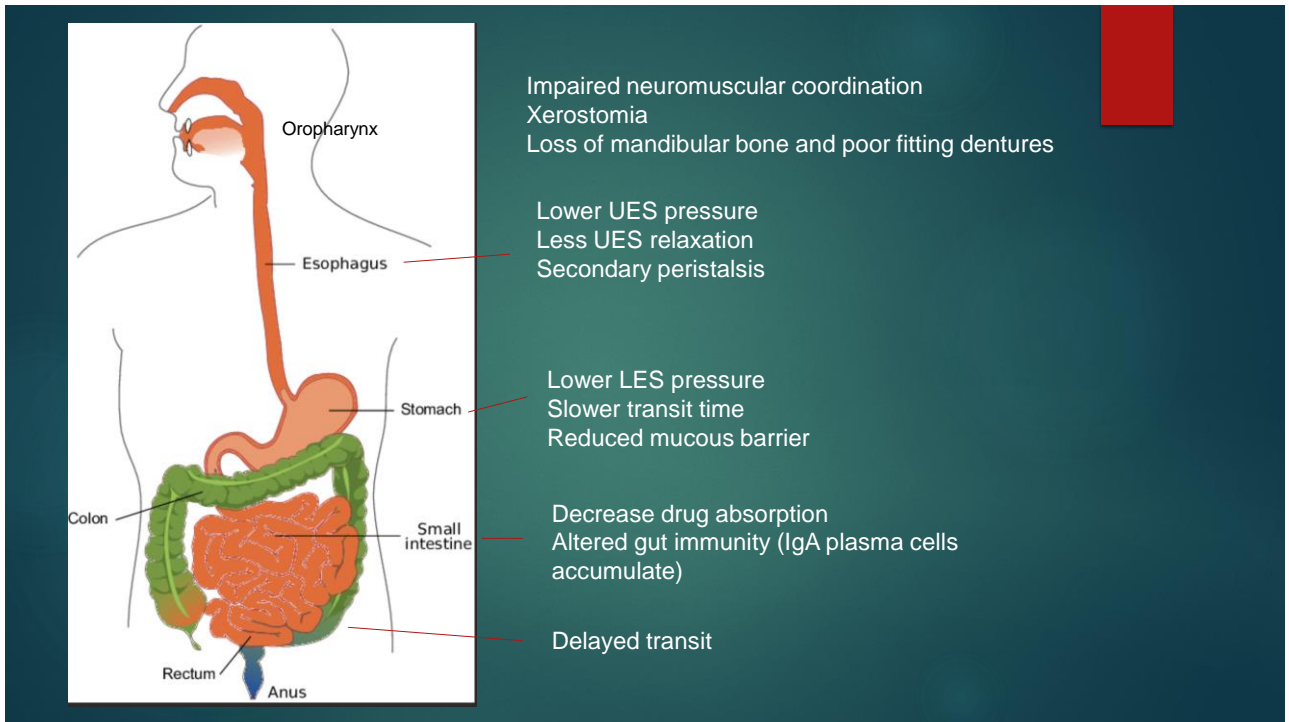
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UND PROFESSOR OF GERIATRICS

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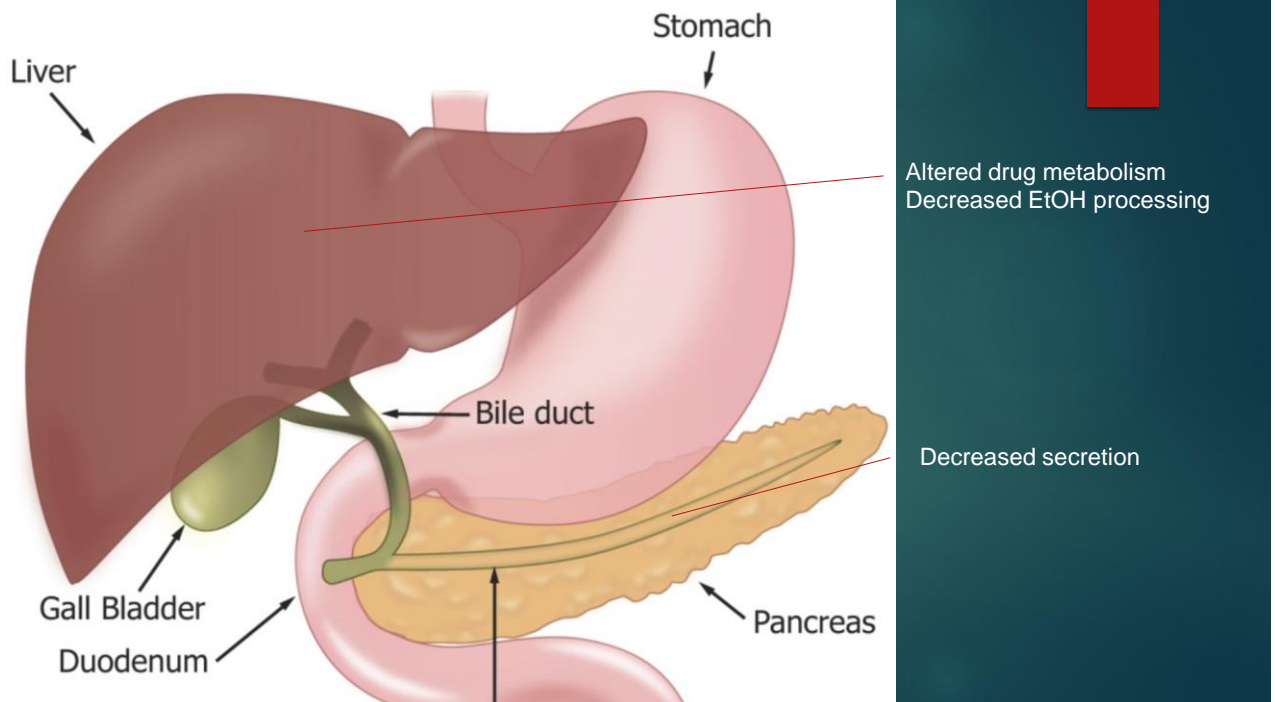
Goals

1. Understand normal aging of the gut
2. Recognize and treat common GI dysfunctions
3. Report nutritional needs with aging

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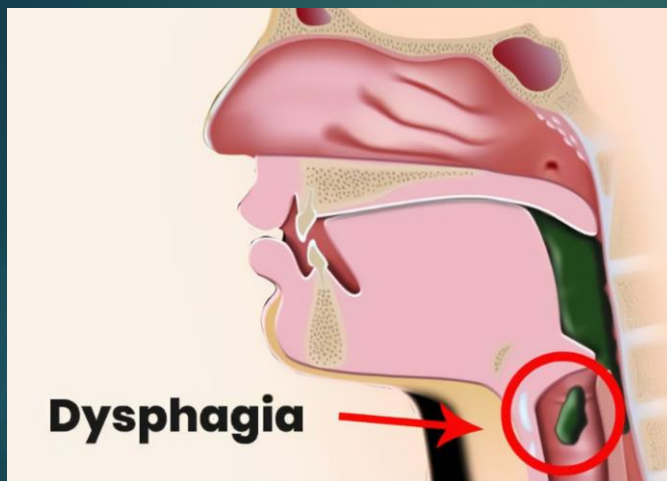
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Odynophagia

Medications	Infections	GERD	Other
Alendronate	Thrush		Radiation
Iron	Viruses		Chemotherapy
NSAIDs	Mycobacteria		Crohns disease
Vitamin C			Sarcoidosis
KCl			Trauma history



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Convergence of problems

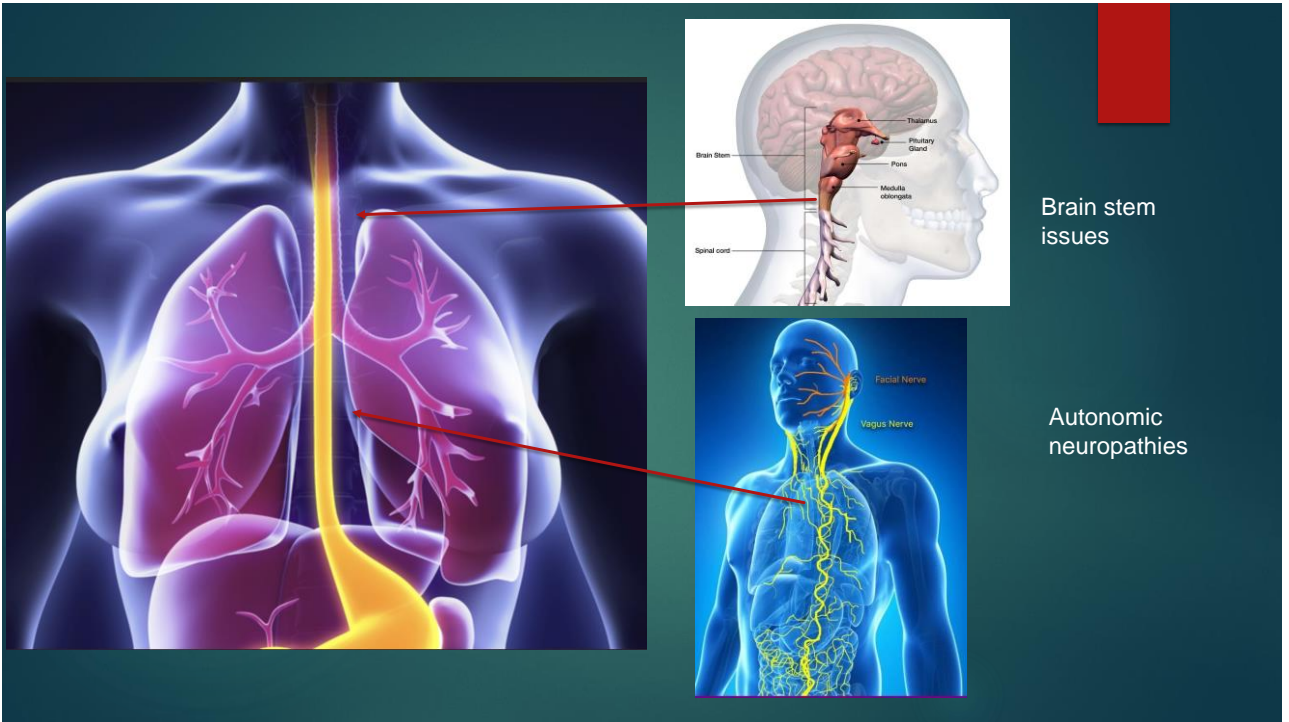
Muscle weakness

Nerve responses decrease

Structural changes: loss of teeth, gum disease, dry mouth (25%)

Disease: Parkinson's, Alzheimer's, cancer

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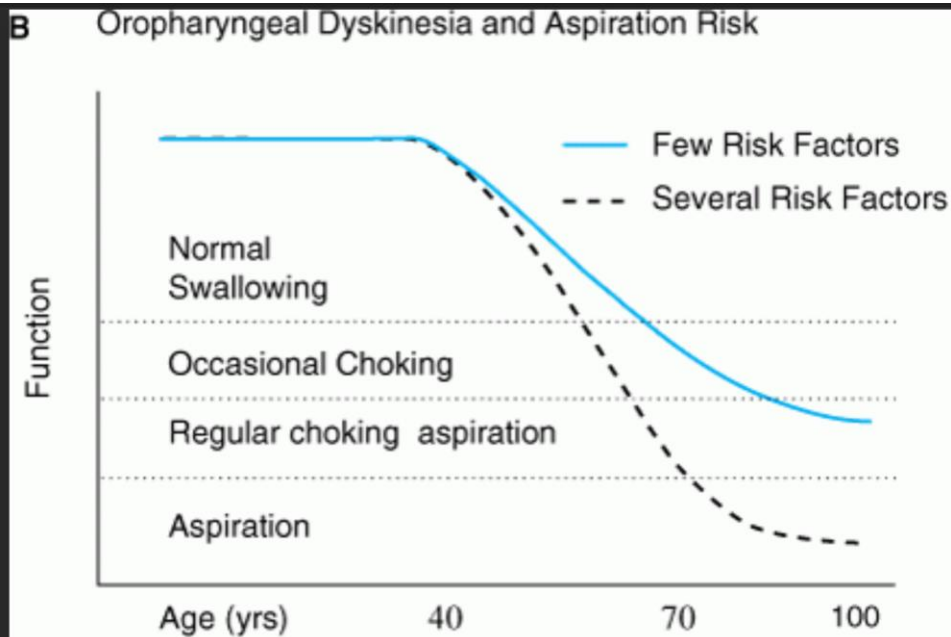
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Esophageal aging

- ▶ 10% healthy older adults with silent aspiration per barium studies
- ▶ 60% older adults show abnormal transfer of food bolus (presbyesophagus)
- ▶ C – spine osteoarthritis causes cricopharyngeal bars / folds
- ▶ Upper esophageal sphincter weakens and is slow to relax
- ▶ Most common: rapid peristaltic wave, simultaneous contractions



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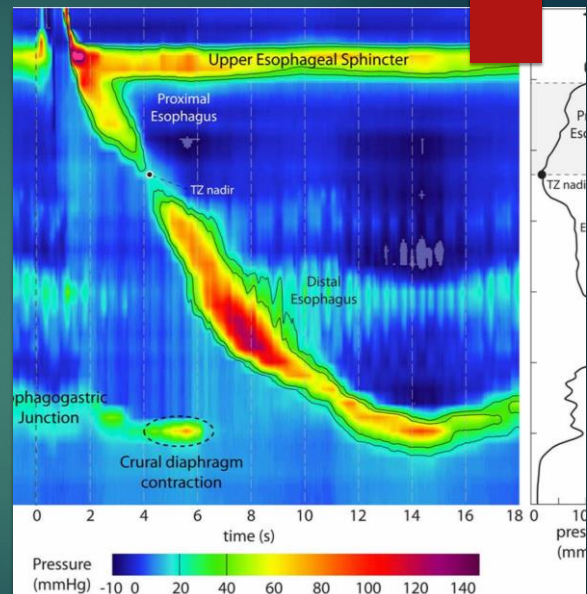


Source: Halter JB, Ouslander JG, Tinetti ME, Studenski S, High KP, Asthana S: *Hazzard's Geriatric Medicine and Gerontology*, 6th Edition: <http://www.accessmedicine.com>

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Clinical aspects of dysphagia

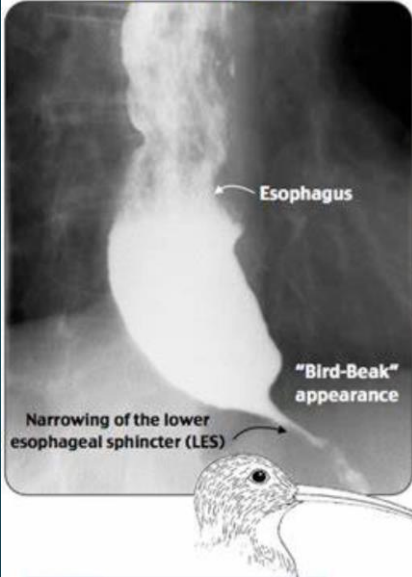

- ▶ 35% older adults complain of dysphagia, regurgitation, chest pain and heart burn
- ▶ Only 20 – 30 % have esophageal structural problems
- ▶ Diagnostic approach: barium swallow, manometry
- ▶ Concern for malignancy



Manometer: jack hammer esophagitis

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Achalasia

Pneumatic dilation

Botox

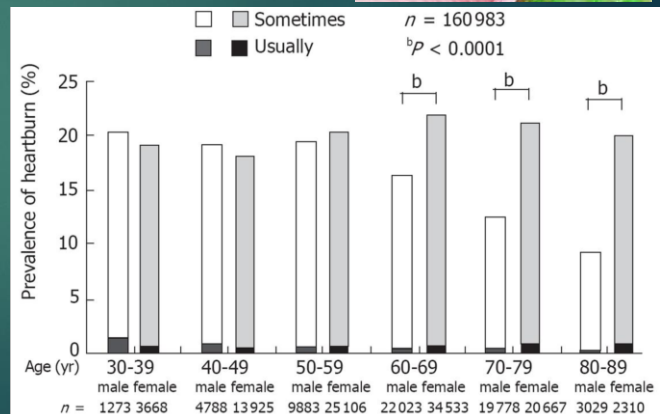
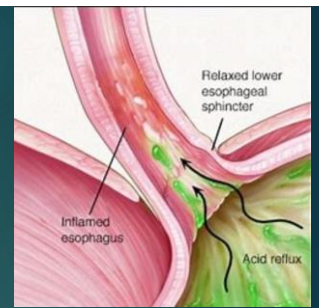
Calcium channel blockers

Surgery

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GERD

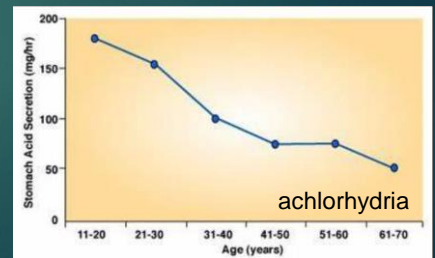
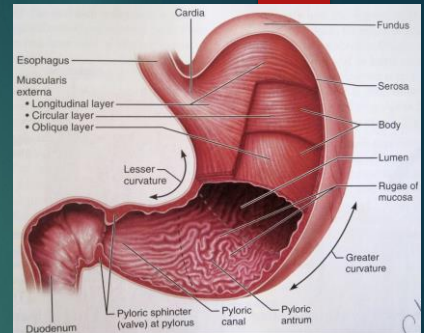
- ▶ Epigastric burning
- ▶ Treatment
 - ▶ Dietary: avoid alcohol, citrus, chocolate
 - ▶ Environmental: elevate head of bed
 - ▶ Behavioral: weight loss
 - ▶ Medical: PPI or H2 blocker
 - ▶ **Caution:** long term PPI use associated with increased Community Acquired Pneumonia, Alzheimer's Disease and Osteoporosis



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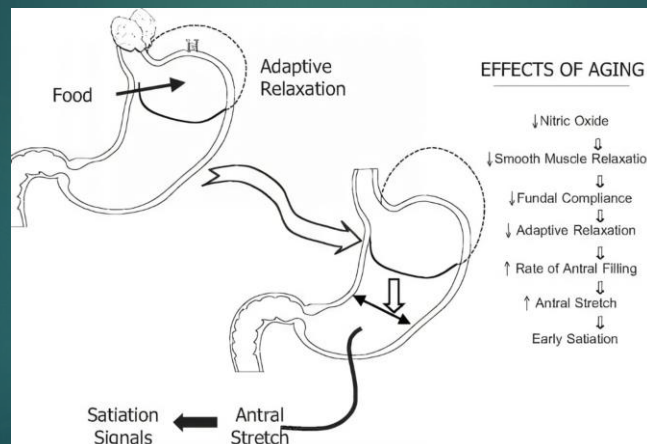
Stomach changes with age

- ▶ Slower liquid clearance
- ▶ Less acid secretion
- ▶ Reduced cytoprotection
- ▶ Lower perception of distension
- ▶ Atrophy / shrinkage



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Early satiety

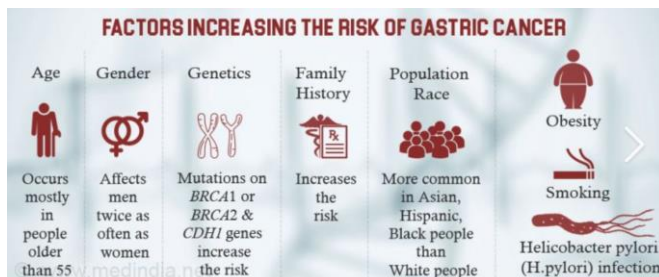
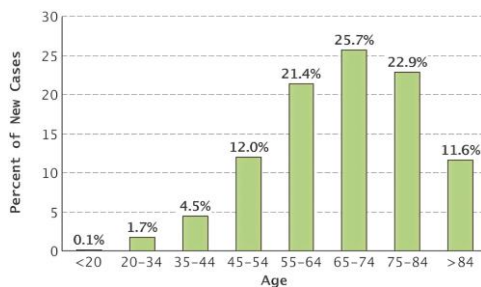


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Dyspepsia

- ▶ Distinguish from esophageal, gall bladder or colonic source of pain
- ▶ Upper abdominal location, more lingering than spastic colonic pain

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Smoked foods with nitrates

Stomach cancer

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Small intestines

- ▶ Absorption generally intact
- ▶ + / - data on transit time
- ▶ Whey protein may be better absorbed than legume protein
 - ▶ Issue about 1 carbon chain metabolism and glycine deficiency
- ▶ Advise increase B12, vitamin D, and calcium consumption
- ▶ Caloric restriction in animal models prevents myenteric neuronal loss



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Colon

- ▶ Diverse changes with age
- ▶ Myenteric neurons: fewer and less functional
- ▶ Less nitric oxide
- ▶ More extracellular sugar
- ▶ Biome changes



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Colonic disorders

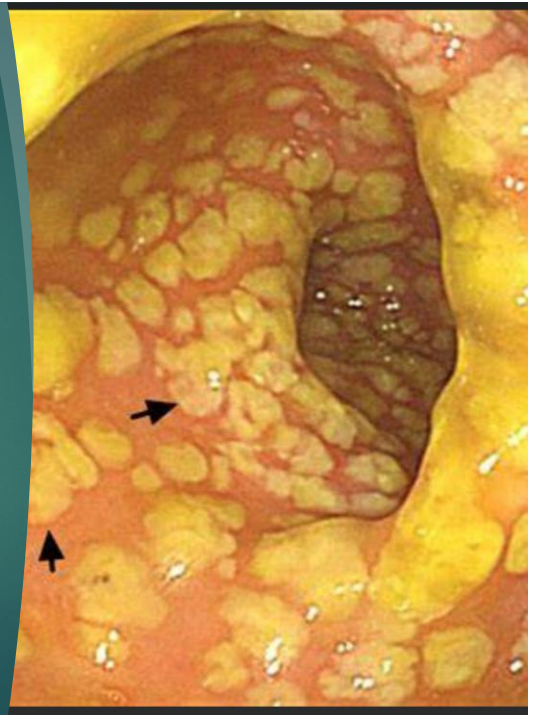
- ▶ Constipation
- ▶ Obstipation



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Diarrhea: not a normal part of aging

- ▶ Acute diarrhea (< 2 weeks)
 - ▶ Mostly viral and bacterial
 - ▶ Think medication or supplemental side effect
- ▶ Chronic diarrhea
 - ▶ High fecal impaction
 - ▶ Clostridium difficile colitis
 - ▶ 50% LTC residents colonized
 - ▶ Lymphocytic colitis
 - ▶ Hyper thyroid
 - ▶ Colon cancer with obstruction
 - ▶ Irritable bowel syndrome



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Colon cancer prevention

Stop smoking

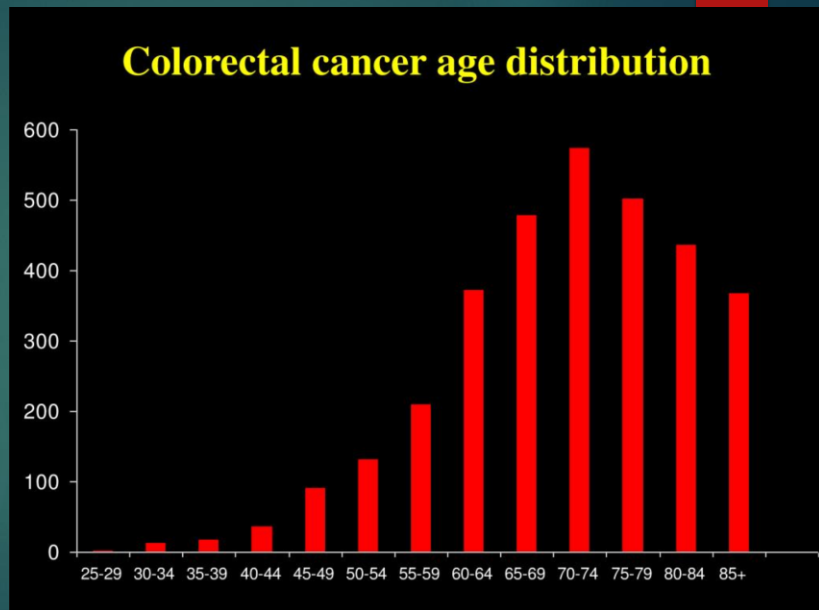
Low dose ASA ?

Calcium supplements ?

Avoid nitrates

Limit alcohol

Screening



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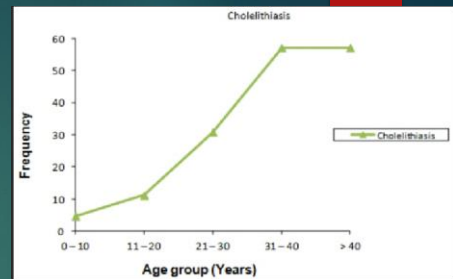
Age dependent changes in liver

- ▶ Size and blood flow decrease
- ▶ Liver enzymes linked to biological age
- ▶ Decreased caffeine and alcohol clearance
- ▶ 50% bile flow reduction
- ▶ Increased sensitivity to injury and less capable of regeneration

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Liver disorders

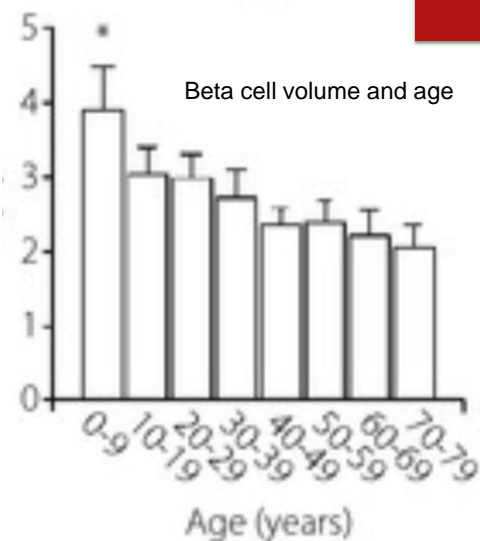
- ▶ Chronic Hepatitis B and C → hepatic cancer
- ▶ Cholelithiasis / Cholecystitis
- ▶ Hepatic steatosis (fatty liver)



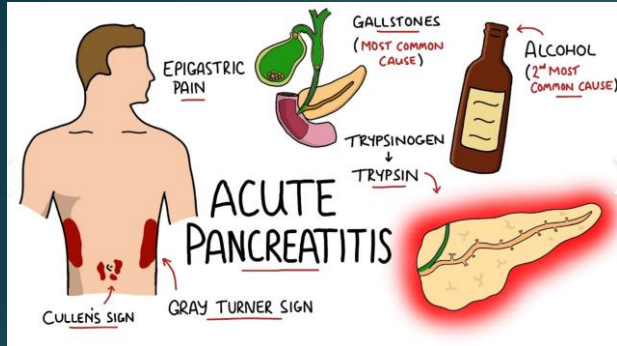
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Pancreas

- ▶ Function intact with age
- ▶ Decreased size, increased ductal epithelial hyperplasia
- ▶ Interlobular fibrosis



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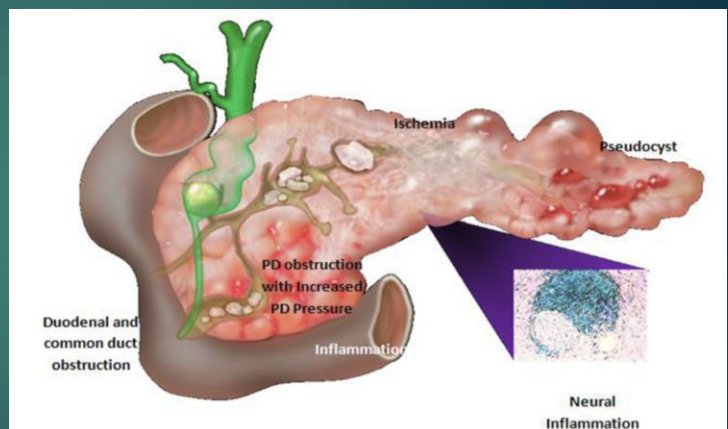
- ▶ 30% in 60 + year olds
- ▶ 25% mortality

I	IDIOPATHIC	
G	GALLSTONES	2 nd most common cause in the US
E	ETHANOL	Most common cause in the US
T	TRAUMA	
S	STEROIDS	
M	MUMPS / MALIGNANCY	
A	AUTOIMMUNE	May have IgG4 antibody present
S	SCORPION STING	
H	HYPERTRIGLYCERIDES OR HYPERCALCEMIA	Usually TG >1000
E	ERCP	
D	DRUGS (e.g. HCTZ, Didanosine, Pentamidine, Bactrim, Azathioprine)	

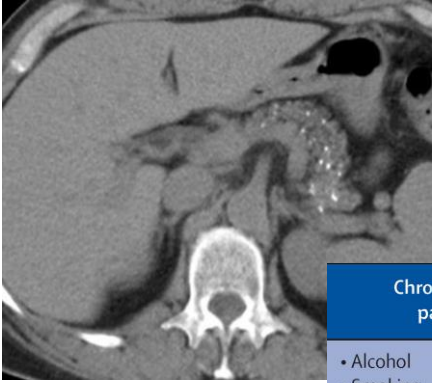
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Chronic pancreatitis

- ▶ Duct obstruction (80%)
- ▶ Alcohol / smoking
- ▶ Drug induced
 - ▶ Estrogens
 - ▶ Furosemide
 - ▶ ACE



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Chronic calcifying pancreatitis

- Alcohol
- Smoking
- Genetic
- Idiopathic
 - Juvenile-onset
 - Tropical
 - Senile-onset

Chronic obstructive pancreatitis

- Stricture**
- Blunt trauma
 - Endoscopic stenting
 - Acute pancreatitis
 - Anastomotic stricture
- Tumour**
- Adenocarcinoma
 - IPMN
 - Serous cystadenoma
 - Islet cell tumour

Steroid-responsive pancreatitis

- Autoimmune pancreatitis**
- Type 1
 - Type 2 (IDCP)

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Exocrine pancreatic insufficiency



Consistent
diarrhea



Frequent gas
and bloating



Unexplained
stomach pain



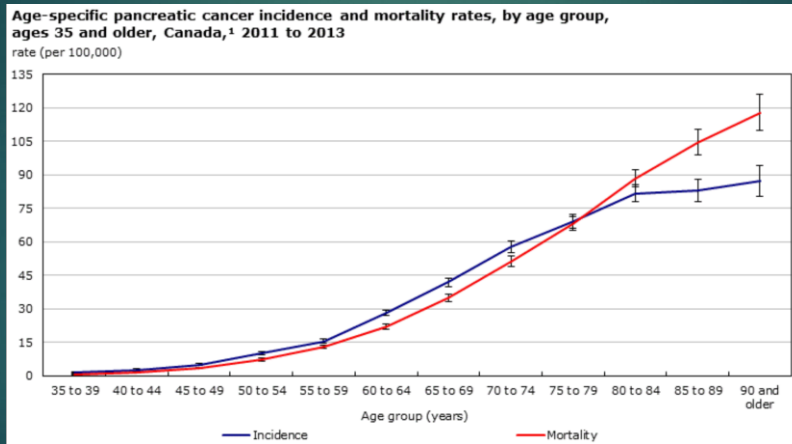
Unexplained
weight loss



Oily stools that float or
stick inside the toilet

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Pancreatic cancer



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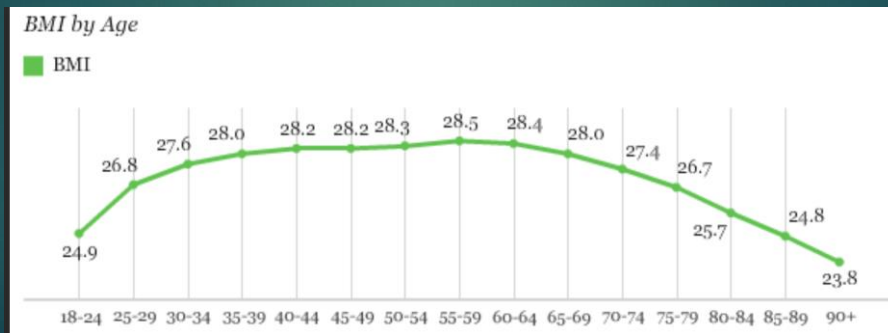
Somatization

- ▶ Fixation on bowels and bowel movements
- ▶ Chronic, diffuse pain and mood disorders

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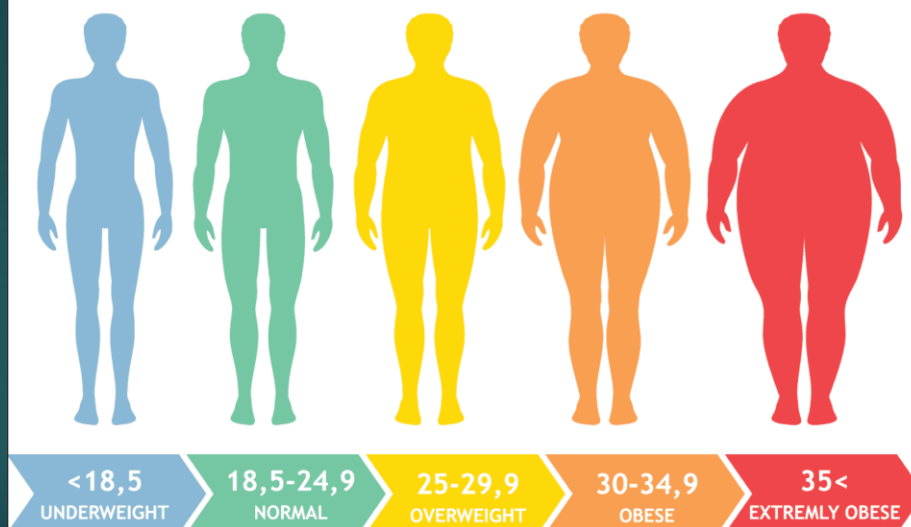
Nutrition and aging

- ▶ 1% loss of lean body mass annual after 60
- ▶ Ratio of fat to total body mass increases
- ▶ 30 % obesity
- ▶ Predisposition to protein undernutrition



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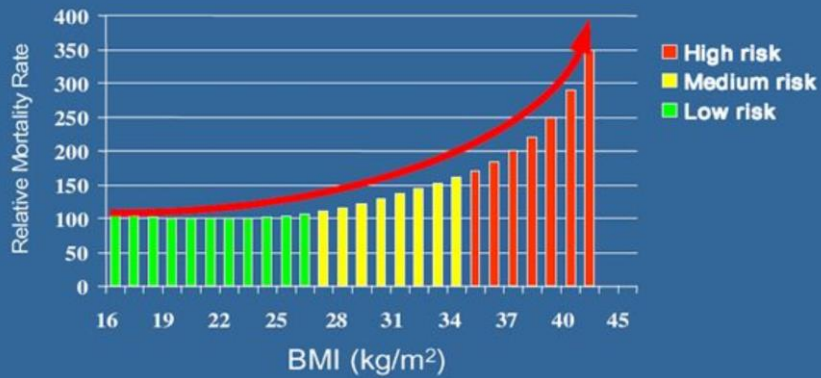
Body Mass Index



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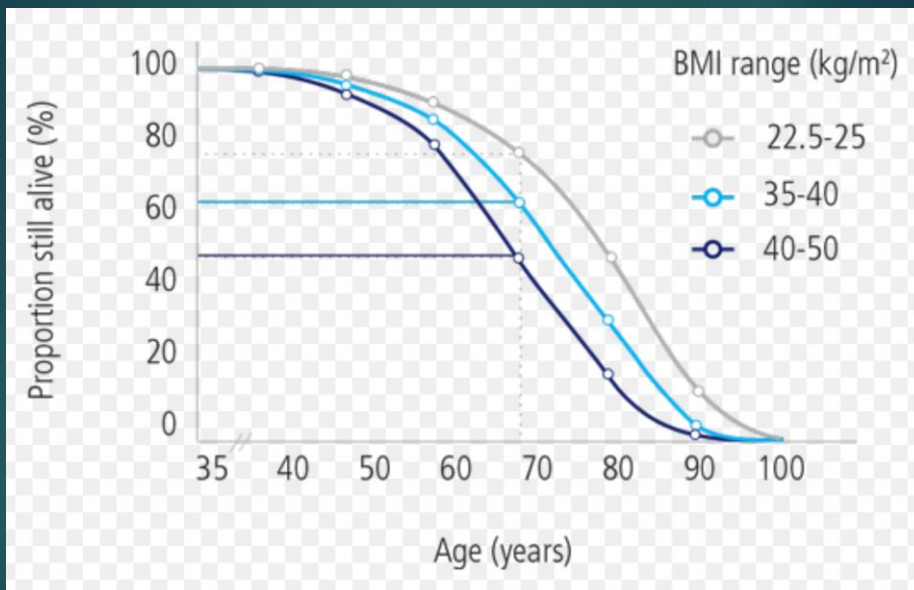
Body Mass Index vs. Mortality

Exponential Increase in Risk



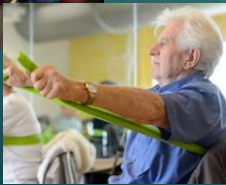
Adams KF et al. N Engl J Med 2006;355:763-778

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Nutrition – physical activity relationship



- ▶ Bed rest even with adequate nutrition leads to loss of muscle mass strength and function
 - ▶ 10 days rest = 16% strength loss and 6% muscle mass loss
- ▶ Resistance training
 - ▶ 1.6 gm protein / kg daily to sustain lean body mass
 - ▶ 90 – 112 gm protein daily



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Nutrition – Disease relationship

- ▶ Inflammatory changes with aging
- ▶ Anorexia
- ▶ Low serum albumin = poor prognosis
- ▶ Appetite suppression
- ▶ Malabsorption
- ▶ Loss of self feeding



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Social determinants of health



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Age related changes that may impact nutrition

- ▶ Anosmia, loss of smell
 - ▶ 63% long COVID have hyposmia or anosmia
- ▶ Ageusia, loss of taste
- ▶ Painful mouth / gums
- ▶ Poor fitting dentures or no dentures
- ▶ Dysphagia, swallowing issues

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Age related changes in metabolism

- ▶ Decrease in muscle protein synthesis
- ▶ 1 carbon chain disruption (glycine)
- ▶ Decline in testosterone, estrogen and IGF1
- ▶ Bioenergetic gap, less ATP production

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Nutritional assessment

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 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 (max. 14 points)	<input type="checkbox"/>
12-14 points: <input type="checkbox"/> Normal nutritional status	<input type="button" value="Save"/>
8-11 points: <input type="checkbox"/> At risk of malnutrition	<input type="button" value="Print"/>
0-7 points: <input type="checkbox"/> Malnourished	<input type="button" value="Reset"/>

Mini nutritional assessment

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Summary

- ▶ Age and chronic diseases co – conspire to impact the GI system in various ways (hyper and hypo active functions)
- ▶ Age reduces gut resiliency
- ▶ If GI complaints, think medication side effects firstly
- ▶ Most older adults consume too little daily protein and do not understand the importance of resistance training
- ▶ Gut biome may contribute to inflammaging and chronic conditions, including Alzheimer's Disease