Neoplastic Disease

KNH 406

Cancer

- Carcinogenesis - Etiology
  - Genes may be affected by antioxidants, soy, protein, fat, kcal, alcohol
  - *Nutritional genomics* – study of genetic variations that cause different phenotypic responses to diet

TABLE 24.1

Cancer Prevention Guidelines

Eat a healthful diet.

Eat a variety of healthful foods, with an emphasis on plant sources.

Eat five or more servings of a variety of vegetables and fruits each day.

- Include vegetables and fruits at every meal and for snacks.
- Eat a variety of vegetables and fruits.
- Limit French fries, snack chips, and other fried vegetable products.
- Choose 100% juice if you drink fruit or vegetable juices.

Choose whole grains in preference to processed (refined) grains and sugars.

- Choose whole grain rice, bread, pasta, and cereals.
- Limit consumption of refined carbohydrates, including pastries, sweetened cereals, soft drinks, and sugars.

Limit consumption of red meats, especially those high in fat and processed.

- Choose fish, poultry, or beans as an alternative to beef, pork, and lamb.
- When you eat meat, select lean cuts and smaller portions.
- Prepare meat by baking, broiling, or poaching, rather than by frying or charbroiling.

Choose foods that help maintain a healthful weight.

- When you eat away from home, choose food low in fat, calories, and sugar, and avoid large portions.
- Eat smaller portions of high-calorie foods. Be aware that "low fat" or "fat free" does not mean "low calorie" and that low-fat cakes, cookies, and similar foods are often high in calories.
- Substitute vegetables, fruits, and other low-calorie foods for calorie-dense foods such as French fries, cheeseburgers, pizza, ice cream, doughnuts, and other sweets.

Adopt a physically active lifestyle.

Adults: Engage in at least moderate activity for 30 minutes or more on 5 or more days of the week; 45 minutes or more of moderate to vigorous activity on 5 or more days per week may further reduce the risk of breast and colon cancer.

Children and adolescents: Engage in at least 60 minutes per day of moderate-to-vigorous physical activity for at least 5 days per week.

Helpful Ways to Be More Active

- Use stairs rather than an elevator.
- If you can, walk or bike to your destination.
- Exercise at lunch with your workmates, family, or friends.
- Take a 10-minute exercise break at work to stretch or take a quick walk.
- Walk to visit co-workers instead of sending an e-mail.
- Go dancing with your spouse or friends.
- Plan active vacations rather than only driving trips.
- Wear a pedometer every day and watch your daily steps increase.
- Join a sports team.
- Use a stationary bicycle while watching TV.
- Plan your exercise routine to gradually increase the days per week and minutes per session.

Maintain a healthful weight throughout life.

Balance caloric intake with physical activity.

Lose weight if currently overweight or obese.

Being overweight or obese is associated with an increased risk of developing several types of cancer:

- Breast (among postmenopausal women)
- Colon
- Endometrium
- Esophagus
- Gallbladder
- Pancreas
- Kidney

If you drink alcoholic beverages, limit consumption.

People who drink alcohol should limit their intake to no more than 2 drinks per day for men and 1 drink a day for women. The recommended limit is lower for women because of their smaller body size and slower metabolism of alcohol. A drink is defined as 12 ounces of beer, 5 ounces of wine, or 1.5 ounces of 80 proof distilled spirits.

Alcohol is an established cause of cancers of the:

- Mouth
- Pharynx (throat)
- Larynx (voice box)
- Esophagus
- Liver
- Breast

Alcohol may also increase the risk of colon cancer.

Surgery

- Diagnoses requiring surgery
  - Head and neck
  - Esophageal
  - Gastric
  - Intestinal
  - pancreatic
  - Significant and long-term nutritional side effects

Surgery

- Head and Neck
  - Difficulty chewing and swallowing
  - Dysgeusia
  - Xerostomia
  - Alterations in smell
  - Difficulty speaking
  - Malnutrition
  - RND – causes severe nutritional deficits
  - Placement of feeding tube at time of surgery is prudent

Surgery

- Esophageal
  - Risk factors
    - Smoking, alcohol abuse
    - Barrett's esophagus
    - Diet low in fruits and vegetables
  - Many develop cachexia
  - Placement of feeding tube d/t slow recovery of oral intake

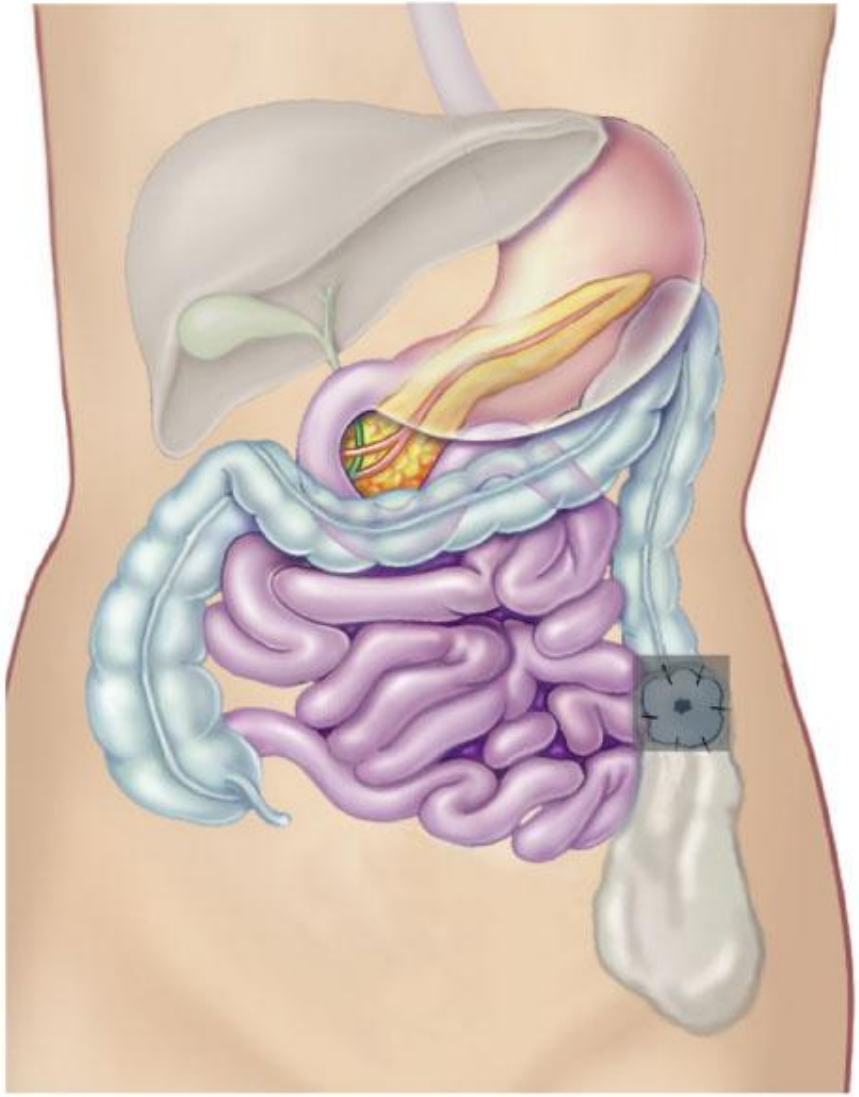
Surgery

- Gastric
  - Repeated infection with *H. pylori*
  - Increases risk for
    - Vitamin B_{12} deficiency
    - Decreased calcium and iron absorption
  - Dumping syndrome
  - Delayed gastric emptying, early satiety, nausea, vomiting

Surgery

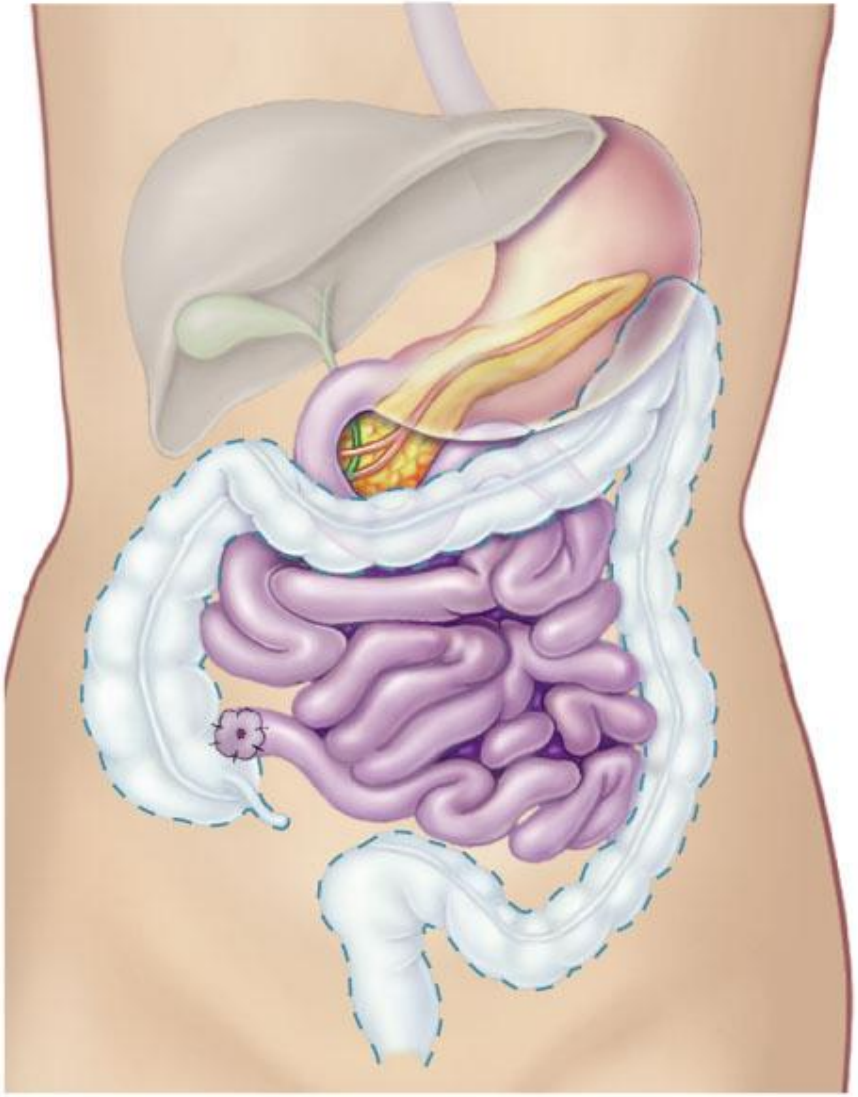
- Intestinal
  - Significant effects on digestion, absorption of nutrients
  - Malabsorption and steatorrhea
  - Colorectal cancer risk factors
    - Family hx, lack of physical activity, obesity, smoking, hx of IBD
    - Treated with colostomy or ileostomy
    - Electrolyte (K) and fluid loss (dehydration)

Colostomy



In a colostomy, the rectum and anus are removed, and the stoma is formed from the remaining colon.

Ileostomy



In an ileostomy, the entire colon, rectum, and anus are removed, and the stoma is formed from the ileum.

Surgery

- Pancreatic
  - Weight loss and anorexia
  - Pancreatic exocrine insufficiency
    - Malabsorption
  - Hyperglycemia
  - Delayed gastric emptying
  - Placement of feeding tube common

Chemotherapy

- Common side effects due to toxicity to rapidly dividing cells:
  - Neutropenia
  - Thrombocytopenia
  - Anemia
  - Diarrhea
  - Mucositis
  - Alopecia
  - Cardiotoxicity, neurotoxicity, nephrotoxicity

Radiation

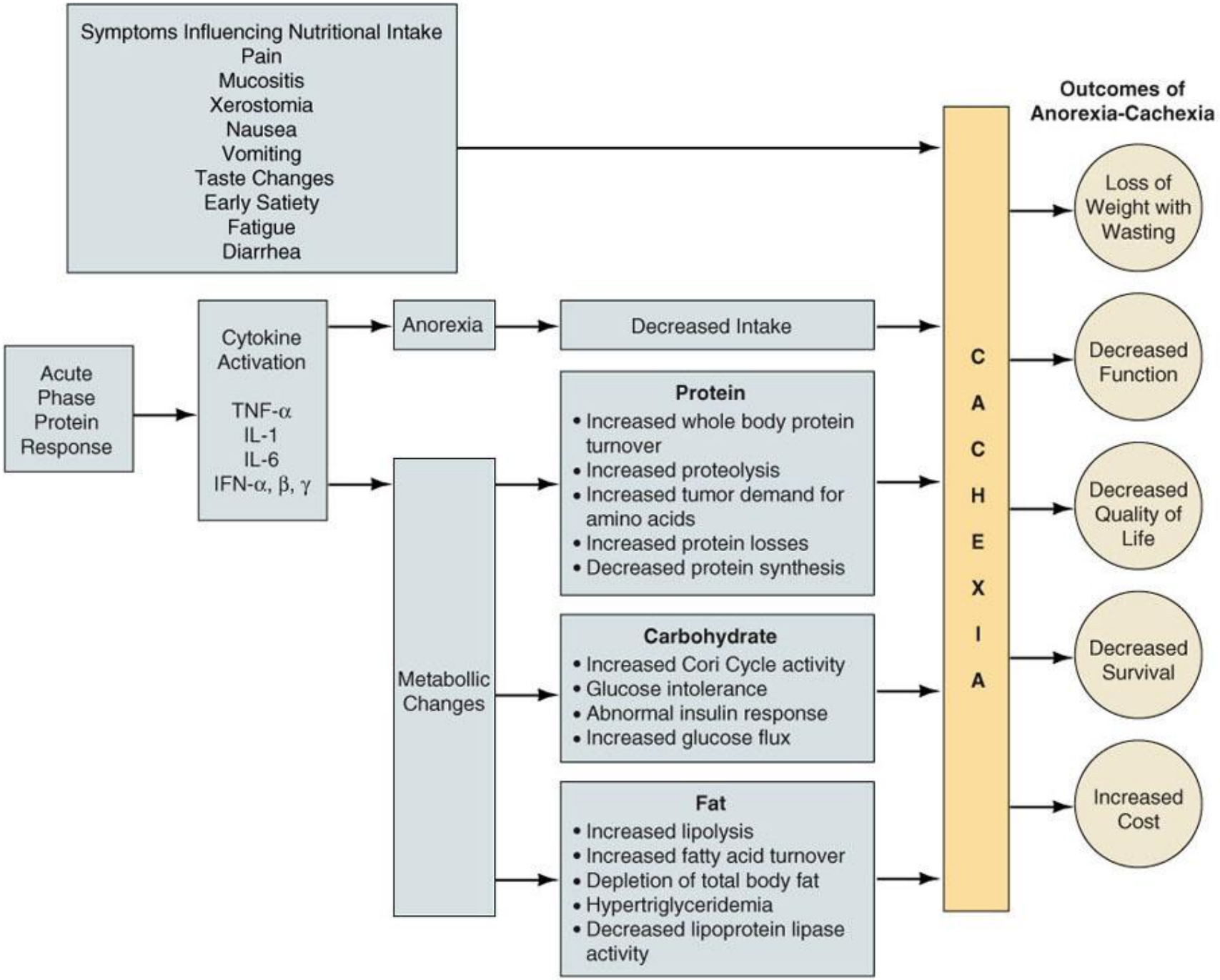
- Side effects:
  - Delayed wound healing
  - Fatigue, mucositis, dysguesia, xerostomia, dysphagia, odynophagia, severe esophagitis, dehydration
  - Radiation enteritis, fistulas, strictures, chronic malabsorption, severe diarrhea
  - TPN may be warranted to prevent weight loss

Nutrition Therapy

- Prevent malnutrition
  - Screening and assessment important
  - Be aware of cancer dg and treatments most likely to cause malnutrition

Nutrition Implications

- Cachexia –
  - Metabolic alterations
  - Tumor induces hypermetabolic catabolic state through chemical mediators
  - Tumor specific “cachectic factors”
  - Weight loss, anorexia, muscle wasting, fatigue, early satiety
  - Standard therapy – nutrition support



Nutrition Implications

- Abnormalities in CHO, lipid, protein metabolism
  - Normal physiologic conservation seen in starvation does not occur
  - CHO – insulin resistance, increased glucose synthesis, gluconeogenesis, increased Cori cycle activity, decreased glucose tolerance and turnover

Nutrition Implications

- Abnormalities in CHO, lipid, protein metabolism
  - Protein - amino acids not spared, depletion of lean body mass, increased protein catabolism, or decreased protein synthesis
  - Lipid – increased lipid metabolism, decreased lipogenesis, decreased LPL, presence of lipid-mobilizing factor (LMF)

Nutrition Implications

- Cancer treatment
  - Nausea, vomiting
  - Early satiety
  - Dysgeusia
  - Diarrhea
  - Mucositis
  - Xerostomia
  - Constipation
  - Weight loss
  - Anemia

Nutrition Interventions

- Nutrition Assessment
  - SGA
  - Anthropometrics including height, weight, detailed weight hx, fluid retention, body composition
  - Biochemical including serum hepatic proteins
  - Clinical signs and symptoms

Nutrition Interventions

- Nutrition Assessment
  - Detailed diet hx and current intake
    - Foods tolerated, special diets, use of CAM, supplements, liquid nutritional supplement preferences

Nutrition Interventions

- Determining Nutrient Requirements
  - Individualized
  - Kcal to maintain weight and prevent loss
  - Protein to prevent negative nitrogen balance and meet synthesis needs
  - Fluid needs - 30-35 mL/kg
  - Multivitamin mineral supplement < 150% DRI

Nutrition Interventions

- Nausea & Vomiting
  - Avoid noxious odors
  - Review medication list for potential causes
  - Small, frequent meals
  - Pro-kinetics
  - CAM – acupressure, acupuncture, hypnosis, guided imagery

Nutrition Interventions

- Nausea & Vomiting - Chemotherapy
  - Small, low-fat meals morning of, avoid fried, greasy and favorite foods for several days
  - Clear liquid diet
  - Electrolyte-fortified beverages
  - Non-acid fruit drinks
  - Avoid favorite foods
  - Avoid “creamy” liquid nutritional drinks
  - Anti-emetics 30-45 min. before meal

Nutrition Interventions

- Early Satiety
  - Small, frequent nutrient-dense meals
  - Beverages between meals and should contain nutrients
  - Avoid high-fiber and raw vegetables
  - Pro-kinetics

Nutrition Interventions

- Mucositis
  - Thorough and systematic assessment of mouth
  - Good oral hygiene important
  - Oral glutamine
  - Narcotic analgesics
  - Eat soft, non-fibrous, non-acidic foods
  - Avoid hot foods
  - Encourage liquids; non-acidic juices
  - High-kcal, high-protein shakes & supplements

TABLE 24.5

High-Kilocalorie, High-Protein Nutritional Beverages

	Manufacturer	Kcalories (per 240 mL)*	Protein (g/240 mL)*
Ensure HP	Ross	230	12
Ensure Plus	Ross	360	13
Ensure Plus HN	Ross	355	15
Prosure Shake	Ross	300	17
Boost	Novartis	240	10
Boost High Protein	Novartis	240	15
Boost Plus	Novartis	360	14
Resource Standard	Novartis	250	9
Resource Plus	Novartis	360	13
Resource 2.0	Novartis	475	21
Resource Fruit Beverage	Novartis	250	9
Resource Nutritious Juice Drink	Novartis	210	6
6 oz			
Resource Healthshake			
4 oz	Novartis	200	6
6 oz		300	9
Resource Shake Plus	Novartis	480	15
Scandishake (made with 8 oz whole milk)	Scandipharm	600	12
Carnation Instant Breakfast drink (made with 8 oz whole milk)	Nestlé	300	12
Carnation Instant Breakfast Plus	Nestlé	375	12
Carnation Instant Breakfast VHC	Nestlé	560	22.5
Replete	Nestlé	250	15.6
Probalance	Nestlé	300	13.5
Nutren 1.5	Nestlé	375	15
Nutren 2.0	Nestlé	500	20

* Unless otherwise noted.

Nutrition Interventions

- Diarrhea
  - Drink small amounts of fluid frequently throughout day
  - Avoid large amounts of fruit juice
  - Oral rehydration fluids and nutritional beverages
  - Antidiarrheal medications
  - Foods high in soluble fiber

Nutrition Interventions

- Dysgeusia
  - Assess taste changes – metallic taste, aguesia, heightening of certain tastes (sweets), aversions
  - Avoid metal utensils, drink from glass
  - Incorporate other high-protein foods if aversion to meats exists
  - Increase spices, flavors
  - Non-sweet supplements, or juice- or yogurt-based alternatives

Nutrition Interventions

- Xerostomia
  - Artificial saliva/ mouth moisturizers
  - Gels, lozenges, mouthwashes
  - Sugar-free gum, sour-flavored hard candy

Nutrition Interventions

- Anorexia
  - Pharmacologic agents to increase appetite
  - Pharmacologic agents to treat weight loss
  - Physical activity
  - Oral supplements

TABLE 24.6

Nutrition Therapy for the Treatment of Anorexia

Eat small, frequent meals.

Eat at times when appetite is most normal.

Limit fluid with meals to avoid feeling of fullness.

Keep favorite foods readily available at all times.

Mild exercise, as tolerated (check with physician).

Eat meals in a pleasant environment.

A glass of wine before a meal may help to stimulate the appetite (check with the physician first).

Avoid noxious odors; ventilate eating area.

Find a nutritional supplement that is appealing and drink only 2–4 ounces at a time (to avoid a feeling of fullness); keep unopened beverage in the refrigerator.

Try relaxation exercises before mealtimes.

Consider pharmacologic agents/appetite stimulants.

Nutrition Interventions

- Nutrition Support
  - Enteral vs. parenteral
  - Nutrition support inappropriate for those with terminal cancer or for pts. with poor prognosis for whom other therapies have been exhausted
  - ASPEN practice guidelines for nutrition support

Nutrition Interventions

- Nutrition Support
  - Home nutrition support
    - May maintain quality of life
    - Lack of appetite and food intake may be greater concern to family members, caregivers than to pt.