Nutrition Intervention

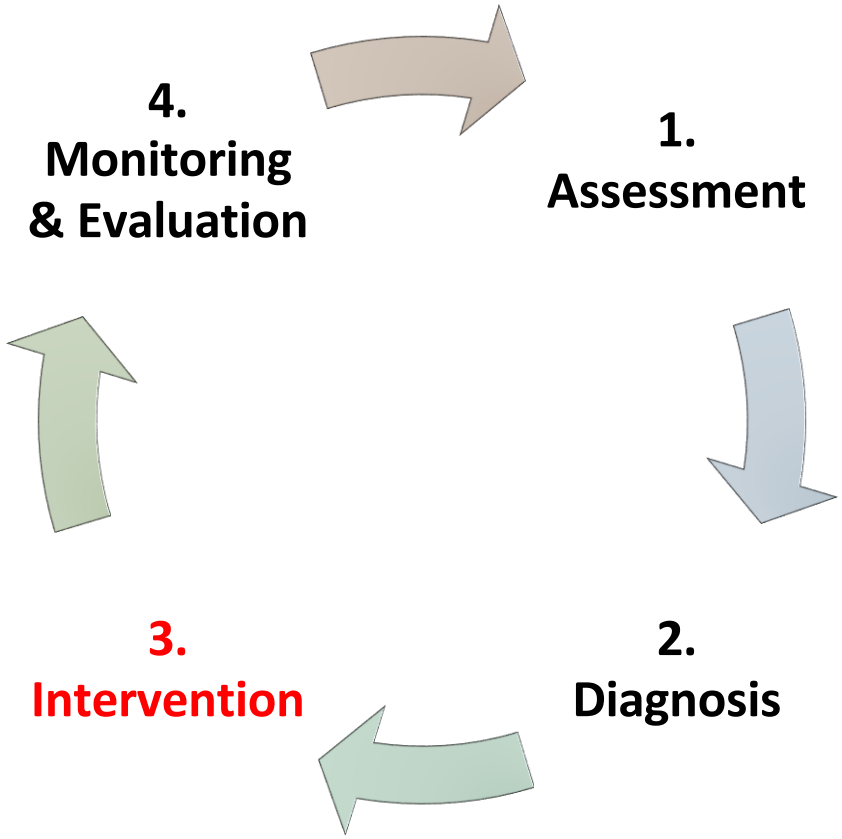
Course: Chapter 2

Book: Chapter 18, in addition to sections from Chapters 19 and 22

Chapter Outline

1. Documenting Nutrition Care
2. Nutrition Care Approaches
3. Energy Intake Calculation
4. Dietary Modification
5. Food Service
6. Diet-Drug Interaction

Review: NCP



Nutrition Intervention

Methods of addressing the nutritional problems and providing nutritional care.

Steps of providing the nutritional intervention:

Planning Nutritional Care:

- Prioritize diagnosis
- Consult guidelines
- Review policies
- Determine recommendations
- Confer with patient/caregiver
- Establish goals

Implement Nutritional Care:

- Document
- Discuss with patient/caregiver
- Individualize treatment
- Continue data collection and documentation
- Revise care plan

Part 1: Documenting Nutrition Care

- Each step needs to be documented in the patient's medical records
- Brief as possible, easy to read and understand

- Different formats include:

PES, ADIME, SOAP

PES Examples

Medical Diagnosis	Nutrition Diagnosis (Problem)	Etiology	Sign/Symptom
Obesity	Obesity	Energy intake is higher than requirements	BMI 35 kg/m2
	Excessive energy intake	Consumption of calorie-dense foods multiple times/day	Diet history shows intake of 150% of requirement
	Lack of physical activity	Lack of time to exercise	Patient report
Dysphagia	Inadequate oral food/beverage intake	Swallowing difficulty	Inability to consume the served food
Unintentional weight loss	Inadequate oral intake	Loss of appetite	Percentage of energy intake is <25%

ADIME

- This format closely reflects NCP steps

A	66 y.o. male referred for weight reduction **Medical/Clinical:** T2DM, HT, cholesteroleamia, hypothyroidism **Anthropometry**: Wt 99 kg, Ht 155 cm, BMI 41kg.m2, 80kg 1 year ago **Biochemistry:** All within range **Social:** Lives alone, Office worker, full time, Reports no time for exercise, reports nil prior dieting **Diet:** ▪BF: nutrigrain and 2 toast with nutella ▪MT: 2 timtams with hot chocolate ▪L: takeaways, usually chinese, large serve ▪AT: yoghurt, biscuits, cake, a few chips if around ▪Dinner: pasta (lg serve), stirfrys with 2 cups rice ▪Dinner takeaway 1/week, usually pizza, ▪Wine occasionally, softdrink 2-3/7
D	**Diagnosis:** Excessive oral intake **as related to** frequent consumption of energy dense foods due to food and nutrition related knowledge deficit **as evidenced by** reported intake of high fat, high energy meals and drinks, with weight gain of 19kg in the last 12/12 and current BMI of 41.
I	**Intervention:** 1. Educated regarding relationship between excessive energy and obesity with an emphasis on: meal size (halve rice and pasta, double vegies, takeaway serves), healthier take away options (breadrolls vs Chinese), healthier snacks and water 2. Provided with an individualized meal plan and educational resources (name here). 3. Goal – To reduce weight by 0.5-1kg per week
M& E	**Monitoring & Evaluation** Will RV in 3/12 to assess dietary intake, weight and knowledge Victorian ADIME/IDNT Working Party Version 3: May 2014

ADIME Evaluation

	Outstanding (2 points)	Above Expectations (1 Point)	Below Expectations (0 points)
Assessment	Relevant components documented Capture patient's perception of medical problem	Accurately summarize most relevant information	Not present OR one or more elements missing
Diagnosis	PES statements accurate and prioritized	No more than one item missing	Not written in PES format
Intervention	Appropriate & specific plans Implementation documented	Vague plans documented	Inappropriate plan or intervention
Monitoring & Evaluation	Appropriate outcomes relevant to plan Defined, specific indicators Compared w/ established criteria	No more than one item missing	Not relevant Cannot be measured Not present

SOAP

- Oldest method used, still popular

FIGURE 18-1 Example of a SOAP Note

SOAP NOTE

Patient Name: James Steiner **Date:** Sept. 15, 2011

Age: 58 **Gender:** Male **Medical diagnosis:** Hypercholesterolemia

Subjective:

Mr. Steiner recently learned of his hypercholesterolemia; wants to try dietary/lifestyle changes to reduce need for the medication. Reports frequent snacking and little time for exercise. Willing to attempt weight loss.

Objective:

Total cholesterol: 288 mg/dl
LDL-C: 214 mg/dl; HDL-C: 48 mg/dl
Triglycerides: 132 mg/dl
Height: 6'1"; Weight: 268 lb.
BMI: 35.4
Waist circumference: 45"

Assessment:

Abdominal obesity; analysis reveals intake of approximately 4200 kcal per day, about 1500 kcal above estimated needs; snack food choices are high in kcal and saturated fat.

Nutrition Diagnoses:

1. Obesity related to excess energy intake of 1500 kcal/day and physical inactivity as evidenced by BMI of 35.4
2. Undesirable food choices related to inadequate access to appropriate foods at work as evidenced by elevated body weight and LDL cholesterol

Plan:

Goal: 15 lb. weight loss over next 6 months.
Mr. Steiner to start 45-minute walking program, evenings.
Nutrition prescription: reduction of food intake to about 2400 kcal per day with about 30% kcal from fat, and 7% of kcal from saturated fat.
Initial education: appropriate food portions, low-kcal foods and snacks, food sources of saturated fat, pre-planning lunches at work.
Referral: Heart-healthy workshop on Sept. 22 (one week); Mr. Steiner to attend with wife.
Follow-up visit: Oct 15 (one month); Mr. Steiner to keep 3-day food record before visit; will identify appropriate food portions and between-meal snacks.

Form completed by: Genevieve Johnson, MPH, RD **Position:** Dietitian, Nutrition Services

ADIME Case Study Example

Ahmad is a 70 year old male admitted to the hospital for a knee replacement surgery. He is a widower, living alone, and hasn't been able to prepare his meals for the past 6 months. NRS shows that he lost weight unintentionally and has been eating poorly for several weeks prior to admission.

Irregular meals throughout the day, drinks 4-6 cups of coffee. Total energy intake estimated at 1200 kcal/day.

History of hypertension

Height 177 cm

Weight 59 kg

Loss of 7 kg over 3 months

1. Assessment

Personal information: _____

Anthropometrics: _____

Medical history: _____

Surgical history: _____

Food and diet history: _____

Biochemical data: _____

Medications: _____

2. Diagnosis (PES)

1. Unintended weight loss related to poor oral food intake as evidenced by 7 kg loss in the past 3 months

2. Inadequate oral intake related to lack of interest in eating as evidenced by reported intake of 1200 kcal/day (less than requirements)

3. Limited access to food related to inability to prepare meals as evidenced by patient report

3 . Intervention

- Objectives

Short-term: Maintain current weight during hospitalization & include nutrient-dense foods in his meals

Long-term: Modify diet to include adequate calories and proteins to prevent weight loss and promote weight gain. Attend a local senior center for meals and socialization

- Nutrient calculations and requirements
- Education and counseling plan
- Referrals

4 . Monitoring & Evaluation

Weekly plan

Monitor:

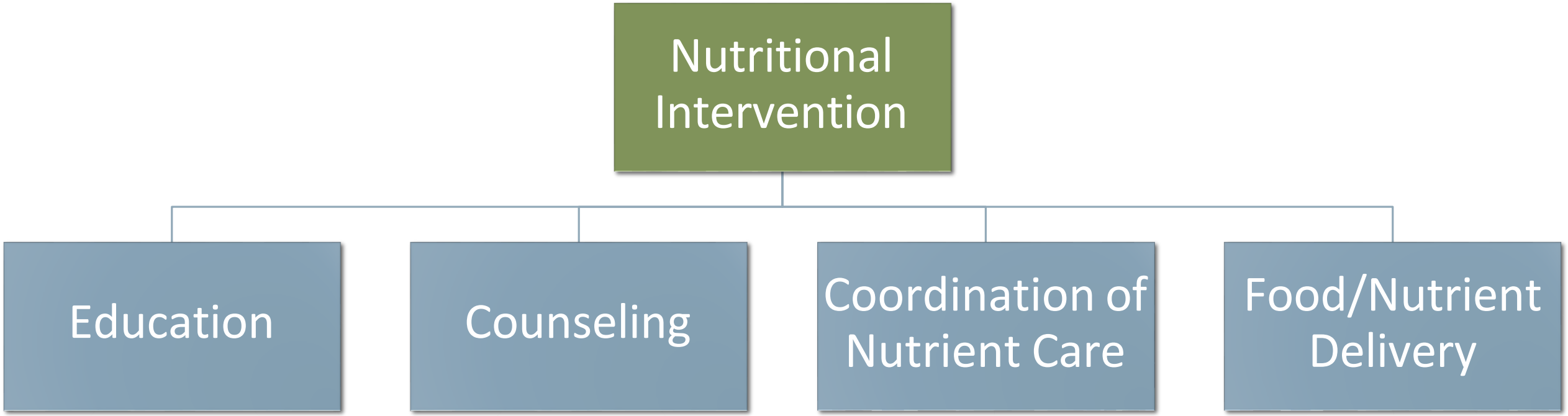
Weight

Energy and protein intake

Access to programs

Evaluation criteria? detailed for each monitoring indicator

Part 2: Types of Nutrition Intervention



1. Education

Nutrition education allows patients to *learn about the dietary factors* that affect their particular medical condition. Ideally, this knowledge will motivate them to change their diet and lifestyle

An educational intervention includes:

- Providing basic nutrition-related instruction
- Providing in-depth training to increase dietary knowledge or skills
- Providing information about a modified diet or change in formula

1. Education

Consider the following:

- Program should be tailored to a person's *age, level of literacy, and cultural background*.
- Consider the *learning method*
- The initial meeting should include an *assessment* of the person's understanding of the material and commitment to making changes. Follow-up sessions can reveal whether the person has successfully adopted the new dietary plan.
- What is an appropriate education plan for a woman with lactose intolerance?

Example:

1. Provides **sample menus** of a nutritionally adequate diet that limits milk and milk products.
2. Design menus that consider the woman's **food preferences**.
3. Describes the types and amounts of milk products that would likely be **tolerated**.
4. Using diet analysis software, **demonstrate** how altering intakes of calcium- and vitamin D–containing foods changes a meal's nutrient content.
5. Explains how to use the Daily Values on **food labels**.
6. Provide information about the **advantages and disadvantages** of different calcium and vitamin D supplements.
7. Assesses the woman's understanding.

For children?

- Keep your message short, clear, and simple
- Emphasize positive points avoid negative or judgmental statements
- Relate the message to the child’s interests & make learning fun
- Make practical, concrete suggestions
- Involve the child(ask questions, relate to his or her experiences and activities)
- Show the child how to, not why.

2 . Counseling

Counseling includes:

- Helping the individual set priorities and goals
- Motivating the individual to change behaviors to achieve goals
- Solving problems that interfere with the nutrition care plan

2 . Counseling

For long-term change plans, consider:

- A person's current food *practices, lifestyle, and degree of motivation*
- Behavior change *occurs in stages*; therefore, determine the individual's readiness for change, and more than one consultation is usually necessary.
- Emphasize *what to eat*, rather than what not to eat.
- Suggest only *one or two changes at a time*.

3 . Coordination of Care

This step includes:

- Providing referrals or consulting other health professionals or agencies
- Organizing treatments that involve other health professionals or health care facilities
- Arranging transfer of nutrition care to another professional or location

4 . Food/Nutrient Delivery

This includes:

1. Providing appropriate meals, snacks, and dietary supplements
2. Providing specialized nutrition support (tube feedings or parenteral nutrition)
3. Determining the need for feeding assistance or adjustment in feeding environment
4. Managing nutrition-related medication problems
5. Managing foodservice, including menu planning, food selection, preparation & delivery, food safety, and improving food intake

Part 3: Energy Requirements

Determining Energy requirements during illness can be challenging!

Indirect Calorimetry

Predictive Equations

Consider these steps:

1. Calculate patient's Resting Metabolic Rate
2. Adjust values with stress factors
3. Activity level factors may be added

Resting Metabolic Rate

Note: in overweight & obese patients, Mifflin-St. Jeor equation has been found to yield more accurate results.

TABLE 18-3 Selected Equations for Estimating Resting Metabolic Rate (RMR)

Harris–Benedict[a]
Women: RMR = 655.1 + [9.563 × weight (kg)] + [1.85 × height (cm)] − [4.676 × age (years)
Men: RMR = 66.5 + [13.75 × weight (kg)] + [5.003 × height (cm)] − [6.755 × age (years
Mifflin–St. Jeor[b]
Women: RMR = [9.99 × weight (kg)] + [6.25 × height (cm)] − [4.92 × age (years)] − 161
Men: RMR = [9.99 × weight (kg)] + [6.25 × height (cm)] − [4.92 × age (years)] + 5
WHO/FAO/UNU[a,c]
Girls and women (age range, years):
10–18: RMR = [7.4 × weight (kg)] + [482 × height (m)] + 217
18–30: RMR = [13.3 × weight (kg)] + [334 × height (m)] + 35
30–60: RMR = [8.7 × weight (kg)] − [25 × height (m)] + 865
>60: RMR = [9.2 × weight (kg)] + [637 × height (m)] − 302
Men and boys (age range, years):
10–18: RMR = [16.6 × weight (kg)] + [77 × height (m)] + 572
18–30: RMR = [15.4 × weight (kg)] − [27 × height (m)] + 717
30–60: RMR = [11.3 × weight (kg)] + [16 × height (m)] + 901
>60: RMR = [8.8 × weight (kg)] + [1128 × height (m)] − 1071

Stress Factors

Examples of Stress Factors[a]

- Intensive care: 1.0 to 1.1
- Minor surgery 1.2
- Acute kidney injury: 1.3
- Burns (more than 20 percent of body surface): 1.3 to 1.5
- Repletion after acute inflammation: 1.3 to 1.5
- Acute pancreatitis: 1.4 to 1.8

Physical activity factor

- The physical activity factor for a hospitalized patient often falls between 1.1-1.4
- Likely to change as condition improves
- In other, non-hospitalized cases:

Common Physical Activity Correction Factors

Category	Description	Correction
Sedentary	Inactive job + very rare or minimal exercise	1.2
Lightly Active	Light exercise 1-3 days/week	1.375
Moderately Active	Moderate exercise 3-5 days/week	1.55
Very Active	Hard exercise 6-7 days/week	1.725
Extremely Active	Hard daily exercise and other regular, physically demanding tasks	1.9

Estimated Energy Requirements (See Appendix F)

TABLE F-1 Equations to Determine Estimated Energy Requirement (EER)

Infants	
0–3 months	EER = (89 × weight − 100) + 175
4–6 months	EER = (89 × weight − 100) + 56
7–12 months	EER = (89 × weight − 100) + 22
13–15 months	EER = (89 × weight − 100) + 20
Children and Adolescents	
Boys	
3–8 years	EER = 88.5 − (61.9 × age) + PA × [(26.7 × weight) + (903 × height)] + 20
9–18 years	EER = 88.5 − (61.9 × age) + PA × [(26.7 × weight) + (903 × height)] + 25
Girls	
3–8 years	EER = 135.3 − (30.8 × age) + PA × [(10.0 × weight) + (934 × height)] + 20
9–18 years	EER = 135.3 − (30.8 × age) + PA × [(10.0 × weight) + (934 × height)] + 25
Adults	
Men	EER = 662 − (9.53 × age) + PA × [(15.91 × weight) + (539.6 × height)]
Women	EER = 354 − (6.91 × age) + PA × [(9.36 × weight) + (726 × height)]
Pregnancy	
1st trimester	EER = nonpregnant EER + 0
2nd trimester	EER = nonpregnant EER + 340
3rd trimester	EER = nonpregnant EER + 452
Lactation	
0–6 months postpartum	EER = nonpregnant EER + 500 − 170
7–12 months postpartum	EER = nonpregnant EER + 400 − 0

NOTE: Select the appropriate equation for gender and age and insert weight in kilograms, height in meters, and age in years. See the text and Table F-3 to determine PA.

1351 × 1.2 = 1621 kcal

For example, if the patient in the example begins limited activ
while in the hospital, an activity factor of 1.2 can be multiplie
by the results obtained in Step 3:

Example

the energy needs of a 57-year-old female patient who is 5 feet 3 inches tall, weighs 115 pounds, and is confined to bed.

Step 1: The patient's weight and height are converted to the units used in the equation:

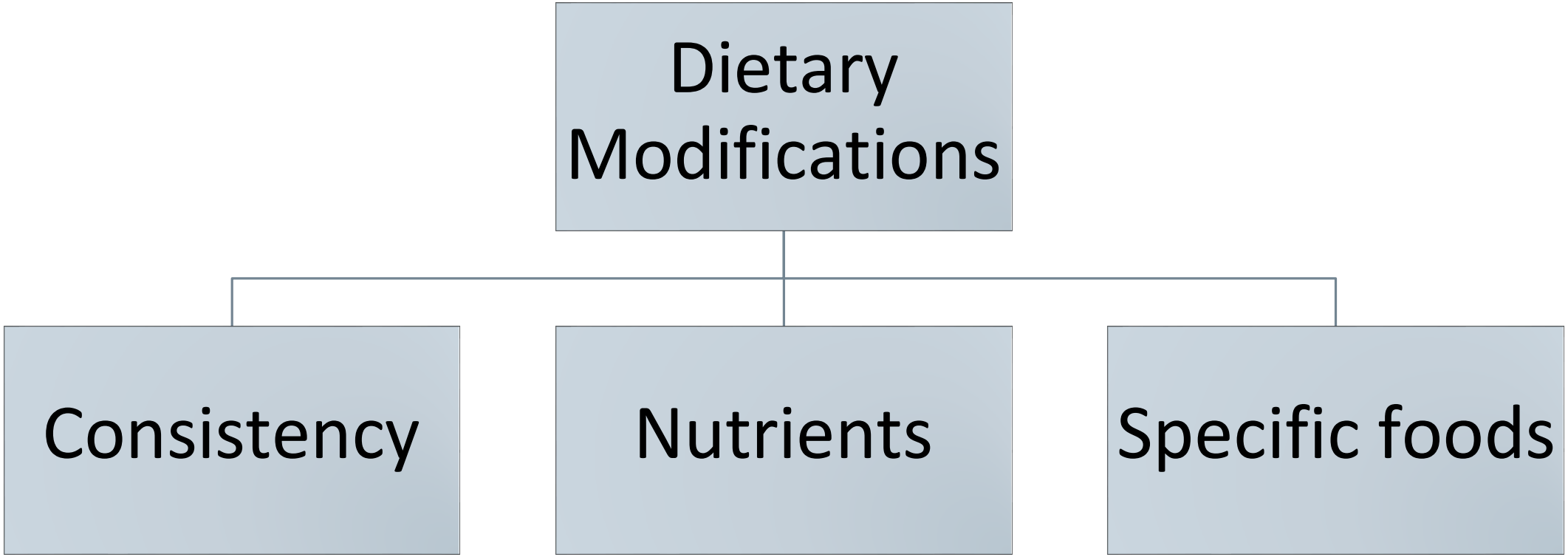
$$\text{Weight in kilograms} = 115 \text{ lb} \div 2.2 \text{ lb/kg} = 52.3 \text{ kg}$$

$$\text{Height in centimeters} = 63 \text{ in} \times 2.54 \text{ cm/in} = 160 \text{ cm}$$

the Mifflin–St. Jeor equation for estimating RMR in
n:

Step 3: The RMR value is multiplied by

Part 4: Modified Diets



Consistency – Mechanically altered diets

Description:

Contain foods that are modified in texture. Pureed diets include only pureed foods; mechanical soft diets may include solid foods that are mashed, minced, ground, or soft

Use:

Pureed diets are used for people with swallowing difficulty, and poor lip and tongue control. Mechanical soft diets are appropriate for people with limited chewing ability or certain swallowing impairments.

Consistency – Mechanically altered diets

Pureed Food Diets	Mechanically Altered or Soft Food Diets
Milk products: Milk, smooth yogurt, pudding, custard	**Milk products:** Milk, yogurt with soft fruit, pudding, cottage cheese
Fruit: Pureed fruit and fruit juice without pulp, seeds, skins, or chunks; well-mashed fresh bananas; applesauce	**Fruit:** Canned or cooked fruit without seeds or skin, fruit juice with small amounts of pulp, ripe bananas
Vegetables: Pureed cooked vegetables without seeds, skins, or chunks; mashed potatoes; pureed potatoes with gravy	**Vegetables:** Soft, well-cooked vegetables that are not rubbery or fibrous; well-cooked, moist potatoes
Meat and meat substitutes: Pureed meat; smooth, homogeneous soufflés; hummus or other pureed legume spreads	**Meat and meat substitutes:** Ground, minced, or tender meat, poultry, or fish with gravy or sauce; tofu; well-cooked, moist legumes; scrambled or soft-cooked eggs
Breads and cereals: Smooth cooked cereals such as Cream of Wheat, slurried bread or pancakes,[a] pureed rice and pasta	**Breads and cereals:** Cooked cereals or moistened dry cereals with minimal texture, soft bread or pancakes, well-cooked noodles or dumplings in sauce or gravy

Consistency – Clear liquid diet

Description:

Contains clear fluids or foods that are liquid at room temperature and leave minimal residue in the colon.

Use:

For preparation for bowel surgery or colonoscopy, for acute GI disturbances (such as after GI surgeries), or as a transition diet after intravenous feeding. For short-term use only.

Clear Liquid Diet Sample Menu

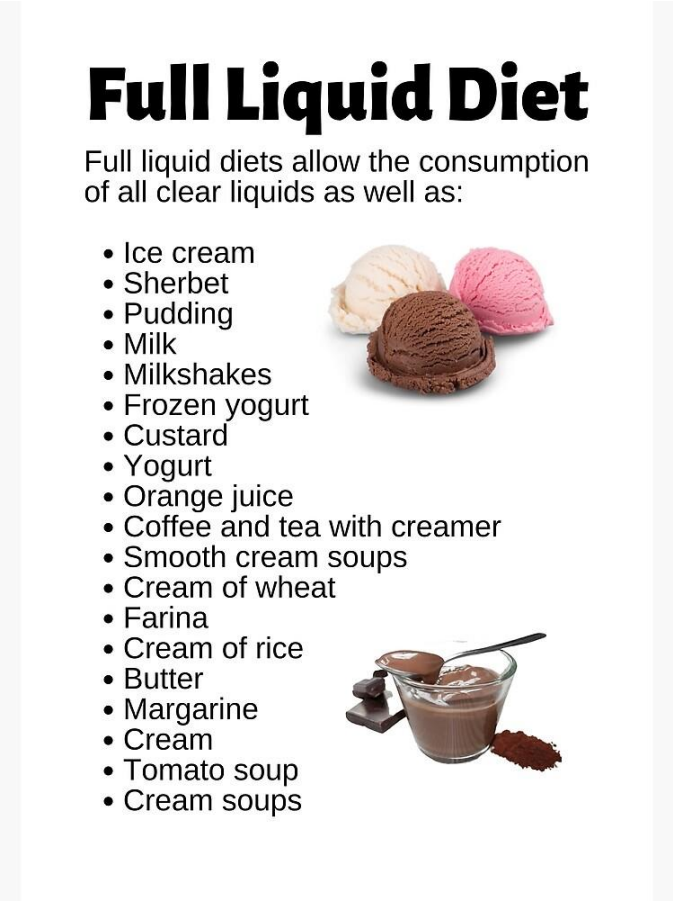
SAMPLE MENU	
Breakfast	Strained orange juice
	Flavored gelatin
	Ginger ale
	Coffee or tea, sugar
Lunch	Bouillon or consommé
	Flavored gelatin
	Frozen juice bars
	Apple or grape juice
	Coffee or tea, sugar
Supper	Bouillon or consommé
	Flavored gelatin
	Fruit ice
	Cranberry juice
	Coffee or tea, sugar
Snacks	Soft drinks
	Fruit ices
	Hard candy

Consistency – Full liquid diet

Description:
A liquid diet that is not limited to clear liquids, is used as a transitional diet between liquids and solid foods.

Includes: milk, yogurt, eggnog, cream soups, and thin cereal gruels.

A note to consider: A gradual progression from clear liquids to solid foods is generally unnecessary, so the **usefulness of this diet is in question**.



Consistency – Full liquid diet

Points to discuss:

1. Scientific Evidence
2. Patient Comfort and Satisfaction
3. Nutritional Deficiency
4. Clinical Efficiency
5. Situations Where a Gradual Progression May Still Be Needed

Consistency – Blenderized liquid diet

Description:

Contains fluids and foods that are blenderized to liquid form

Use:

For people who cannot chew, swallow easily, or tolerate solid foods.

Nutrient Modification – Fat Controlled Diet

Description:

Limits dietary fat to low (<50 g/day) or very low (<25 g/day) intakes.

Use:

For people who have certain malabsorptive disorders or symptoms of diarrhea, flatulence, or steatorrhea (fecal fat) resulting from dietary fat intolerance.

1. **Which patients may need this?**
2. **Which food groups should we consider?**

Nutrient Modification – Fiber-restricted diet

Description:

Limits dietary fiber; degree of restriction depends on the patient's condition and reason for restriction.

Use:

For acute phases of intestinal disorders or to reduce fecal output before surgery and after surgery during transition to a regular diet. Not recommended for long-term use

** Compare this with *a low-residue diet*

Residue: material left in the intestine after digestion; includes dietary fiber, undigested starches and proteins, GI secretions, and cellular debris.

Nutrient Modification – Sodium controlled diet

Description:

Limits dietary sodium; degree of restriction depends on symptoms and disease severity. In most cases, sodium intake is restricted to 2000-3000 mg/day.

Use:

To help lower blood pressure or prevent fluid retention; used in hypertension, congestive heart failure, renal disease, and liver disease.

How easy is it to follow this diet?
Which food items do we need to consider?

Nutrient Modification – High-calorie, high-protein diet

Description:

Contains foods that are calorie and protein dense. Please see next slide for examples

Use:

Used for patients with high calorie and protein requirements (due to cancer, AIDS, burns, trauma, and other conditions); also used to reverse malnutrition, improve nutritional status, or promote weight gain

Nutrient Modification – High-calorie, high-protein diet

Milk products	Whole milk, half-and-half, cream
	Milkshakes, eggnog
	Cheese
	Ice cream, whipped cream
Meat and other high-protein foods	All types of meat, fish, and poultry, including bacon, frankfurters, and luncheon meat; eggs; beans; tofu
	Meat prepared by frying or served with cream sauce or gravy
	Protein bars
	Nuts and seeds, peanut and other nut butters, coconut
Breads and cereals	Granola and other dry cereals prepared with whole milk or cream and dried fruit
	Hot cereals with whole milk or cream, or added fat
	Pasta, rice, and biscuits with added fat
	Pancakes, waffles, French toast
Vegetables	High-kcalorie vegetables such as potatoes, corn, and peas
	Vegetables prepared with butter, margarine, sour cream, cheese sauce, mayonnaise, or salad dressing
	Cream of vegetable soups
Fruit	Dried fruit
	Canned fruit in heavy syrup
	Avocado
Beverages	Fruit juices, fruit smoothies, sweetened beverages
	Meal replacement drinks
	Beverages with added protein powder

These foods are used liberally in diets for malnourished patients to help correct their immediate nutrition problems—weight loss and muscle wasting

Specific Foods - Allergies

- Occurs when a food component, usually an incompletely digested protein fragment, is absorbed into the blood and elicits a certain type of immune response
- It may trigger symptoms in the GI tract, skin, respiratory system, and circulatory system.

TABLE H18-1 Milk, Egg, and Peanut Allergies: Foods to Avoid

Food Allergy	Food Ingredients to Exclude	Hidden Sources
Milk allergy	Milk (including dried, evaporated, and condensed milks), milk solids, buttermilk, yogurt, cheese, butter, ghee, artificial butter flavor, half-and-half, cream, whipped cream, custard, pudding, ice cream, casein (or caseinates), whey, milk protein hydrolysates, lactalbumin, lactoferrin, lactoglobulin, lactulose	Margarine, luncheon meats, frankfurters and sausages, baked goods, high-protein products (including bars, flours, and beverages), nougat candy, chocolate bars, caramel color or flavorings, coffee whiteners, bakery glazes, salad dressings, sauces. Meats sliced at a delicatessen are subject to cross-contamination from sliced cheeses.
Egg allergy	Eggs (including powdered eggs and egg substitutes), eggnog, egg white, meringue, albumin, globulin, lysozyme, ovalbumin, ovoglobulin, ovomucin, ovomucoid, ovovitellin, egg lecithin (some food labels may indicate that a "binder" or "emulsifier" was added)	Many baked goods and baking mixes, noodles and pastas, casseroles, mayonnaise, béarnaise and hollandaise sauces, breaded meats and vegetables, candies, fondants, marshmallows, marzipan, frozen desserts, ice cream, custard, pudding, frankfurters and sausages, processed meats, surimi, cocoa drinks, salad dressings, bakery glazes.
Peanut allergy	Peanuts (also called ground nuts), peanut butter, peanut flour, nut pieces, mixed nuts, beer nuts, artificial nuts, mandalona nuts, peanut sauces (common in Asian cuisine), hydrolyzed vegetable protein (HVP), cold-pressed or gourmet peanut oils (may contain peanut residue), lupine flour	Baked goods (cookies, muffins, cakes), chocolate and candy bars, protein or energy bars, granola bars, marzipan, nougat, breakfast cereals, egg rolls, satay sauce, curries, salad dressings. Cross-contamination is possible from food-processing equipment; caution is required when purchasing baked goods, ice creams, candies, nut butters, and sunflower seeds.

Would managing a food allergy be different from managing a food intolerance?

Nothing by Mouth (NPO)

Non per os (Nothing by mouth)

Used for:

- Certain acute illnesses
- Diagnostic tests involving the GI tract

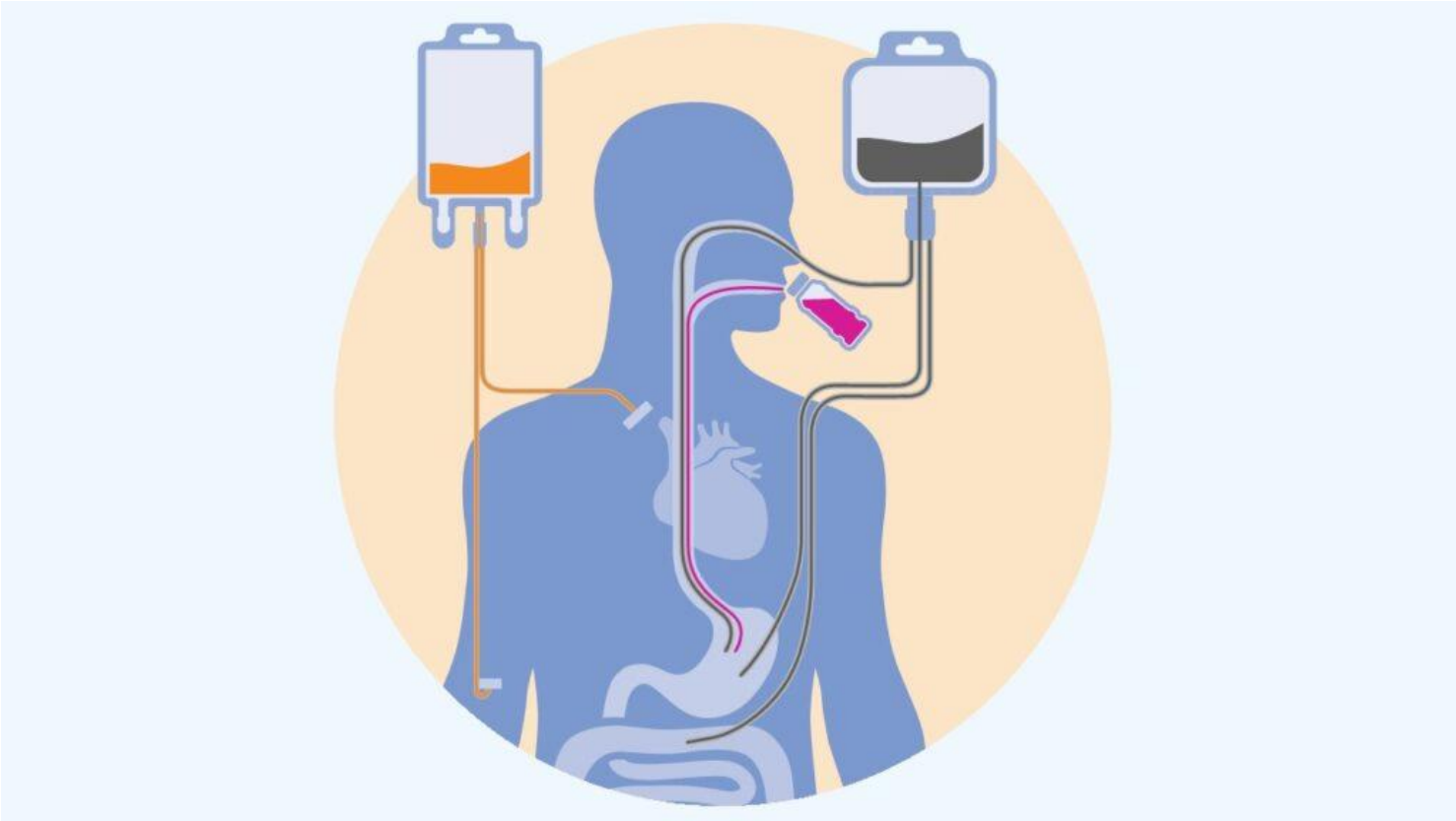
Food and Nutrient Delivery Alternative Feeding Routes

1. Tube feeding

Discussed in Chapter 20

2. Intravenous feeding

Discussed in Chapter 21



Part 5: Foodservice

Menu Planning

Food Selection

Food Preparation & Delivery

Food Safety

Improving Food Intake

Improving Food Intake

1. Empathize with the patient. Help to motivate the patient by explaining how important good nutrition is to recovery.

2. Help patients select the foods they like and mark menus appropriately. When appropriate and permissible, let friends or family members bring favorite foods from outside the hospital.

3. For patients who are weak, suggest foods that require little effort to eat.

4. During mealtimes, make sure the patient's room is quiet and has sufficient lighting for viewing the food. See that the room is free of odors that may interfere with the appetite.

5. Help patients prepare for meals. Help them wash their hands and get comfortable, either in bed or in a chair. Adjust the extension table to a comfortable distance and height and make sure it is clean.

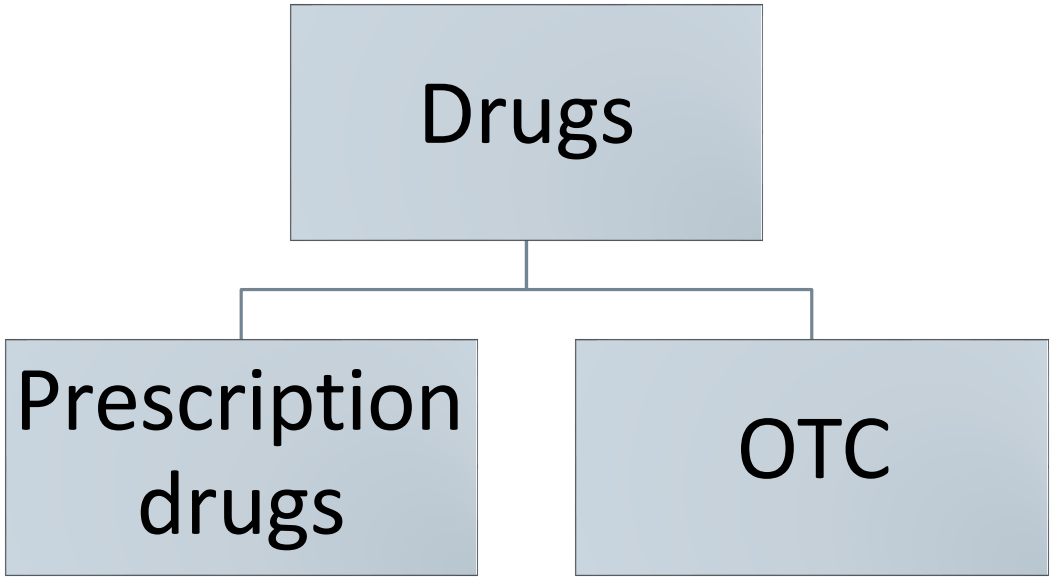
6. When the food cart arrives, check the patient's tray. Confirm that the patient is receiving the right diet, the foods on the tray are those selected from the menu, and the foods look appealing. Order a new tray if the foods are not appropriate.

7. Help with eating, if necessary. Encourage patients with little appetite to eat the most nutritious foods first and to drink liquids between meals.

8. Take a positive attitude toward the hospital's food.

Part 6: Diet/Drug Interactions

- FDA is responsible for approving sales of new drugs. Drugs must be proved to be safe and effective.

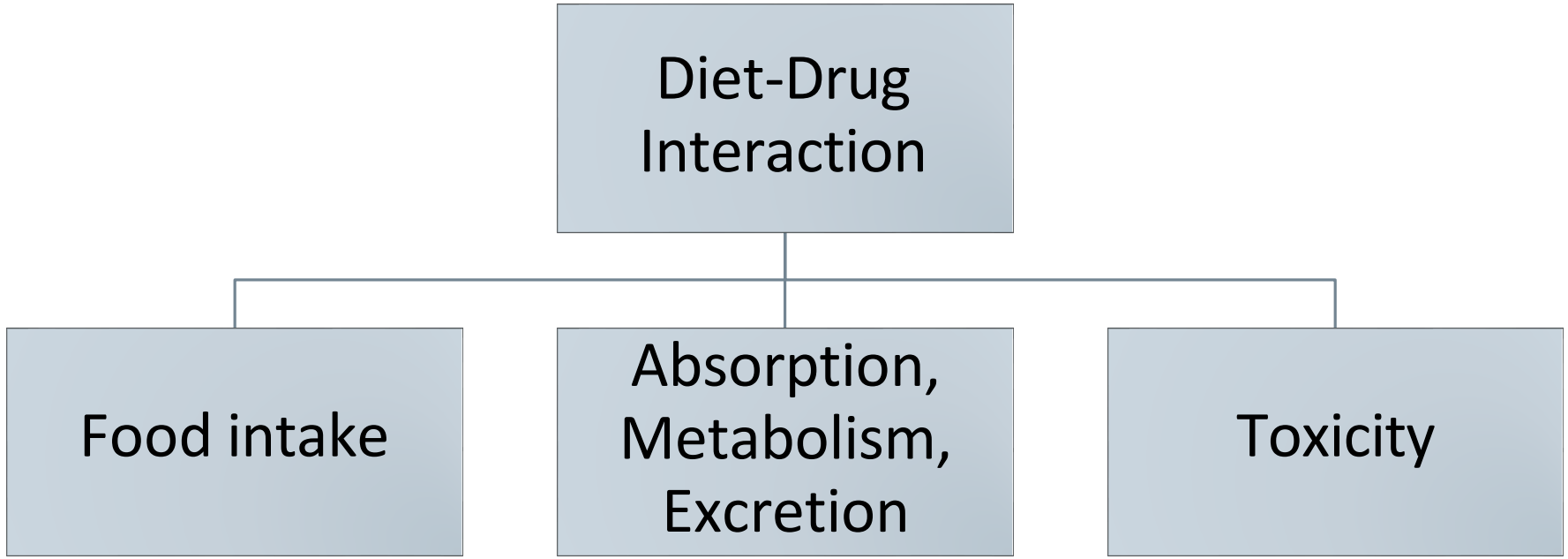


Drug Administration Routes

Administration:

- Orally
- IV
- IM
- Subcutaneous route
- Sublingual route
- Rectum
- Transdermal route
- Inhalation

Diet/Drug Interactions



Food Intake

1. Alter appetite
   - Amphetamines: suppress appetite
   - Corticosteroids: increase appetite

Drug complications that reduce food intake are significant only when they continue for a long period

2. Interfere with taste/smell
   - Amphetamines: change taste perception

3. Induce nausea/vomiting
   - Digitalis: induces both

antinauseants and antiemetics can help to reduce nausea and vomiting

Food Intake

4. Interfere with oral function
   - ❖ Antidepressants: cause dry mouth

5. Cause sores/inflammation in the mouth
   - ❖ Methotrexate: painful mouth ulcers

Other: abdominal pain, diarrhea, constipation, drowsiness.

Absorption

- Drugs alter nutrient absorption

1. Change digestive tract acidity
   - Antacids: interfere with Fe and B9 and B12 absorption
2. Damage Mucosal Cells
   - Cancer chemotherapy
3. Bind to nutrients
   - Bile acid binders bind to fat soluble vitamins
   - Types of antibiotics (tetracycline and ciprofloxacin) and calcium

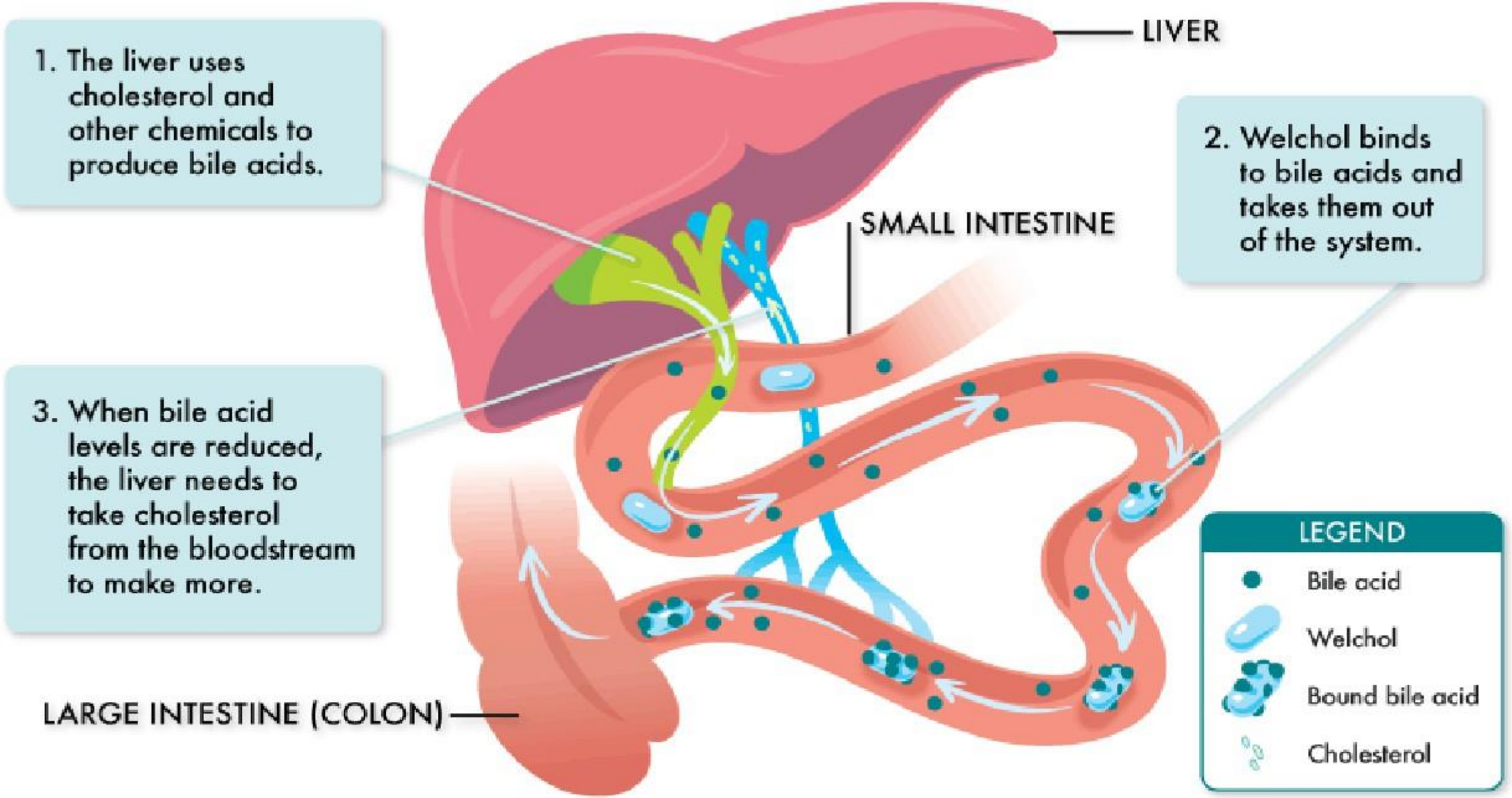


Figure 1.6 – Bile acid sequestrant (Welchol) effect on the enterohepatic

https://www.drugs.com/

Doxycycline

Pronunciation: *DOX i SYE kleen*
Generic name: doxycycline
Brand names: Acticlate, Adoxa CK, Adoxa Pak, Adoxa TT, Alodox, ... show all 18 brands
Dosage form: tablet, capsule, suspension, injection
Drug classes: Miscellaneous antimalarials, Tetracyclines

Absorption

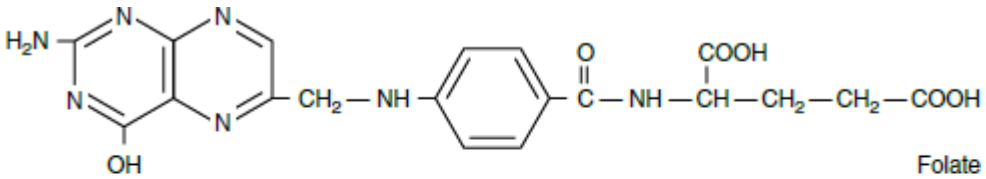
- Nutrients alter drug absorption

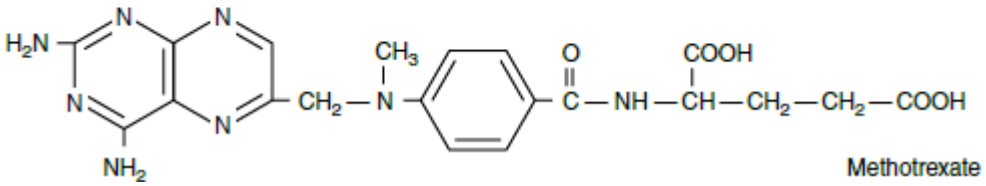
1. Stimulate gastric acid secretion
   - Reduced stomach acidity reduces antifungal agent (ketoconazole) absorption, but enhances digoxin absorption
2. Alter gastric emptying rate
   - Intestinal absorption of drugs delayed when taken with food
3. Bind to drugs
   - Ca binds to tetracycline, reducing both of their absorption
   - Phytates and fiber (some antidepressants)

Metabolism

- Drugs and nutrients alter metabolism by:

1. Alter the effect of the drug
   - Warfarin and vitamin K
2. Use similar enzyme systems
   - Methotrexate and folate
3. Compete for plasma protein transport
   - Fatty acids and drugs compete for same site on albumin





Vitamin K consistent diet guidelines

- You don't need to stop eating food high in vitamin K. But you do need to know what foods contain vitamin K.
- Vitamin K RDA: Males 120 mcg, Female 90 mcg
- You might limit foods that are **high in vitamin K** to about 1 serving a day. (Cooked leafy green vegetables. Examples are kale, spinach, turnip greens, collard greens, Swiss chard, and mustard greens. One serving is ½ cup)
- You might limit foods that are **medium-high in vitamin K** to about 3 servings a day. (Cooked Brussels sprouts, broccoli, cabbage, and asparagus (serving=½ cup), and raw leafy green vegetables, such as spinach, green leaf lettuce, romaine lettuce, and endive (serving=1 cup.))
- Manage taking vitamin K from supplements

Excretion

- Drugs alter nutrient excretion

1. Alter nutrient reabsorption
   - Diuretics increase Na and K excretion
   - Corticosteroids effects

2. Cause diarrhea or vomiting
   - leads to electrolytes losses

Excretion

- Nutrients alter drug excretion

1. Alter the amount reabsorbed in the kidneys
   - Sodium & Lithium
2. Alter urine acidity
   - Quinidine

Toxicity

- Interactions cause toxicity

1. Increase side effects
   - Caffeine increase adverse effects of stimulants
2. Increase drug actions
   - Grapefruit inhibits enzymes that degrade certain drugs
3. Interfere with enzyme systems
   - Tyramine and Monoamine oxidase (MAO) inhibitors

Drug Category	Drugs Affected by Grapefruit Juice
Anticoagulants	—
Antidiabetic drugs	Repaglinide Saxagliptin
Anti-infective drugs	Erythromycin Saquinavir
Cardiovascular drugs	Amiodarone Felodipine Nicardipine
Central nervous system drugs	Buspirone Carbamazepine Diazepam
Cholesterol-lowering drugs	Atorvastatin Lovastatin Simvastatin
Immunosuppressants	Cyclosporine Tacrolimus

Tyramine content in foods

- When at risk of tyramine toxicity, advise to buy mainly fresh foods and eat them promptly

TABLE 19-4 Examples of Foods with a High Tyramine Content[a]

- Aged cheeses (cheddar, Gruyère)
- Aged or cured meats (sausage, salami)
- Beer
- Fermented vegetables (sauerkraut, kim chee)
- Fish or shrimp sauce
- Prepared soy foods (miso, tempeh, tofu)
- Soy sauce
- Yeast extracts (Marmite, Vegemite)

[a]The tyramine content of foods depends on storage conditions and processing; thus, the amounts in similar products can vary substantially.

Preventing diet-drug interactions

To prevent diet-drug interactions, first list the types and amounts of over-the-counter drugs, prescription drugs, and dietary supplements that the patient uses on a regular basis. Look up each drug in a drug reference and make a note of:

1. The appropriate method of administration (twice daily or at bedtime, for example).
2. How the drug should be administered with respect to foods, beverages, and specific nutrients (for example, take on an empty stomach, take with food, do not take with milk, or do not drink alcoholic beverages while using the medication)
3. How the drug should be used with respect to other medications.
4. The side effects that may influence food intake (nausea and vomiting, diarrhea, constipation, or sedation, for example) or nutrient needs (interference with nutrient absorption or metabolism, for example)

Herbal Products

- Use has grown rapidly in the past decade.
- Benefits of their use are uncertain
- Uses are in the hope of improving general health and preventing/treating specific diseases.

Efficacy

- Centuries of using certain herbs, many have acquired a reputation for being beneficial with specific diseases
- Only a limited number of clinical studies support the traditional uses
- Results of studies that suggest little or no benefit are rarely publicized
- Labels on herbal products cannot make claims about preventing or treating specific diseases
- Suggestive statements are common (Example: “promotes restful sleep” but not “cures insomnia”)
- Moreover, salespersons often give inappropriate advice about the use of herbal supplements

Consistency of Herbal Ingredients

- Herbs contain numerous compounds, and it is often unclear which of these ingredients, if any, might produce the implied beneficial effects.

- Different samples of an herb can have different chemical compositions (Affected by plant's growing conditions and preparation method)

Safety Issues

- Consumers often assume that it is harmless because plants are “natural”. However, many herbal remedies have toxic effects

- Most commonly: diarrhea, nausea, and vomiting. Possibly: liver damage, alterations in blood pressure and heart arrhythmias

- Adverse effects are seldom listed on label. Also, don’t need FDA approval before marketed

- Contamination with lead and other toxic metals, molds, bacteria, and pesticides

Herb-Drug Interaction

- Herbs may either intensify or interfere with the effects of other herbs and drugs
- They may raise the risk of toxicity
- Examples:
  1. Ginseng (stimulate metabolism, alleviate fatigue, lower blood glucose, improve immune system) contains compounds that raise blood pressure and may increase the toxicity of drugs that have a similar side effect.
  2. St. John's wort (depression, nervousness, tiredness, poor appetite, sleep trouble) has been found to inhibit the actions of oral contraceptives, anticoagulants, and other drugs.
- information about herb-drug interactions is limited

Uses in Illness

- In self-medication or asking the advice of store clerks instead of seeking effective medical treatment, consequences can be serious and irreversible.
- Less stressful than a doctor visit, but may delay getting an appropriate treatment
- Retailers are not legally permitted to provide medical advice, however, improper claims are routinely made
- Patients are often unaware of safety and interactions
- Health professionals should turn to credible resources to help patients who plan to use herbal supplements (pharmacology textbooks, consumer websites, periodicals)