

The Dual Pillars of Clinical and Community Care

1. Nutritional Assessment vs. Nutritional Surveillance

Nutritional Assessment (Individual / Clinical Level)

- Focus Scale: **Individual Patient Level**.
- Core Objective: Personal diagnosis and clinical therapy.
- Key Methodology: systematic, multi-dimensional screening of a single client using clinical, biochemical, anthropometric, and dietary criteria.
- Field Example: Identifying a pregnant woman with severe gestational **iron-deficiency anemia** in a barangay clinic and giving immediate daily therapeutic iron-folate doses.

Nutritional Surveillance (Population / Community Level)

- Focus Scale: **Population, Municipality, or Regional Level**.
- Core Objective: Macro tracking, advocacy, and program allocation.
- Key Methodology: continuous, systematic collection, analysis, and interpretation of community-wide nutrition indicators.
- Field Example: Mapping municipal **stunting** and **wasting** patterns across a province to guide DOH budget and food-supply allocation.

2. Defining and Classifying Malnutrition Indicators (DOH & WHO Standards)

- **Wasting** (*Acute Malnutrition*): disproportional thinness for height, reflecting severe, rapid, recent weight loss from acute food shortage or illness. Threshold: **Weight-for-Height < -2 SD**. Requires emergency enrollment in Ready-to-Use Therapeutic Food (RUTF) programs.
- **Stunting** (*Chronic Malnutrition*): shortness of stature relative to age, indicating long-term, cumulative growth failure. Threshold: **Height-for-Age < -2 SD**. Requires inter-sectoral community interventions.
- **Underweight** (*Composite Metric*): a combined indicator reflecting both acute wasting and chronic stunting, useful for rapid community screening. Threshold: **Weight-for-Age < -2 SD**.

3. Anthropometrics: Age Computation & Measurement Protocol

Age Computation

- Age in months is the core denominator for **stunting** (Height-for-Age) and **underweight** (Weight-for-Age) — a single month error causes clinical misclassification.
- Rule: subtract the Date of Birth from the Measurement Date (Year, Month, Day), borrowing 30 days/12 months when needed, then convert years and months into total months.
- Rounding Rule: if remaining days are **≥ 15 days**, round up to the next full month.

Length vs. Height Standards

- **Recumbent Length** (< 2 years old): measured lying flat on an infantometer board with two operators — one stabilizes the head, the other extends the legs.
- **Standing Height** (≥ 2 years old): measured vertically on a stadiometer; the child stands barefoot with 4 points of contact — heels, buttocks, shoulder blades, and back of the head.
- Conversion Rule: lying down naturally stretches the spine — add 0.7 cm if a child under 2 is measured standing, or subtract 0.7 cm if a child 2 or older is measured lying down.

4. Anthropometrics: Z-Score Distributions and SD Curves

- Why use Standard Deviations (SD)? Absolute weight and height are meaningless without comparing them to a reference standard for the child's age and sex.
- **Z-Score:** a value measuring exactly how many Standard Deviations a child's measurement is away from the healthy population median.
- Formula: $Z = (\text{Observed Value} - \text{Median Reference Value}) / \text{Standard Deviation (SD) of Reference Population}$.
- +2 SD and above: overweight (Weight-for-Height) or tall stature (Height-for-Age).
- -1 SD to +1 SD: the healthy range — where 68.2% of the healthy reference population falls.
- Below **-2 SD** (Diagnostic Cut-off): statistically defines Moderate Acute Malnutrition (wasting) or Moderate Chronic Malnutrition (stunting).
- Below **-3 SD** (Severe Range): defines Severe Acute Malnutrition (SAM) or Severe Stunting — imminent risk of cardiac and multi-organ failure.

5. Major Micronutrient Deficiencies in the Philippines

- **Vitamin A Deficiency (VAD):** essential for retinal function and immune resistance. Clinical Signs: night blindness, conjunctival and corneal xerosis, Bitot's spots (silvery-gray keratin foam), and irreversible keratomalacia (blindness). Intervention: universal high-dose Vitamin A capsule distribution.
- **Iron Deficiency Anemia (IDA):** iron is a core substrate for hemoglobin synthesis. Clinical Signs: severe paleness of the conjunctiva, tongue, and nail beds; extreme fatigue; impaired cognitive development. Intervention: preventive and therapeutic oral iron-folate supplementation.
- **Iodine Deficiency (IDD):** iodine is essential for thyroid hormone (T3/T4) synthesis. Clinical Signs: endemic goiter, congenital mental retardation, spontaneous miscarriage, and fetal cretinism. Intervention: the ASIN Law (Republic Act 8172), mandating nationwide salt iodization.

6. Methods of Assessment: Clinical Surveys

- Clinical surveys are the most cost-effective diagnostic tools — they require zero laboratory transport, refrigeration, or expensive machinery.
- Key Principle: physical clinical signs are late-stage manifestations of malnutrition — by the time signs appear, internal tissue reserves are already depleted.
- Hair & Skin Inspection: sparse, dry, pluckable hair (Kwashiorkor); 'flaky paint' skin lesions; facial pallor; temporal muscle wasting.
- Ocular (Vision) Protocol: conjunctival/corneal dryness, foamy **Bitot's spots** (highly diagnostic for VAD), night blindness, or keratomalacia.
- Oral Cavity Examination: angular stomatitis, swollen red tongue (glossitis — B-Complex deficiency), spongy bleeding gums (Scurvy).

7. Methods of Assessment: Biochemical Surveys

- Biochemical surveys measure nutrient levels directly in biological fluids (blood, urine, serum).
- Key Principle: unlike clinical surveys, biochemical tests detect 'hidden hunger' and subclinical malnutrition before physical signs or growth delays appear. These are the most objective methods, but invasive, expensive, and require lab logistics.
- **Serum Hemoglobin (Hb) Screen:** primary marker for anemia; levels < 11.0 g/dL confirm iron deficiency anemia.
- **Serum Albumin & Prealbumin:** visceral protein reserve markers — Albumin has a long half-life (~20 days); Prealbumin (~2-day half-life) is highly sensitive to acute dietary change.
- **Urinary Iodine Excretion (UIE):** the global standard marker for population surveillance of iodine intake and salt iodization compliance.

8. Methods of Assessment: Dietary Surveys

- **24-Hour Food Recall:** clinician guides the client to recall every item consumed over the previous 24 hours. Advantage: fast, low burden, high compliance. Limitation: prone to memory bias.
- **Food Diary (3–7 Days):** patient records, weighs, and measures every food and beverage in real time. Advantage: highly detailed, removes memory bias. Limitation: high participant burden, may alter normal eating behavior.
- **Food Frequency Questionnaire (FFQ):** tracks how often a list of foods is consumed (daily/weekly/monthly). Advantage: good for long-term habitual patterns. Limitation: lacks precise portion detail.

9. Operation Timbang Plus (OPT+)

- **Operation Timbang Plus (OPT+):** *an annual, nationwide community-based nutritional surveillance survey conducted by Barangay Health Workers (BHWs) and Midwives in the Philippines*, universally screening all children aged 0–59 months in every barangay.
- Core Tasks: weighing (calibrated scales), measuring height/length, and recording date of birth, sex, weight, and height on official municipal OPT+ logs.
- Local Level: directly identifies severely acute malnourished (SAM) children for immediate clinical enrollment.
- Municipal Level: aggregated data lets the Local Nutrition Committee declare high-prevalence 'priority zones' for budget deployment.
- National Level: the National Nutrition Council (NNC) uses annual OPT+ reports to set public health targets aligned with WHO nutrition goals.
- Clinical Takeaway: *a scale that is poorly calibrated by just 0.5 kg can cause a healthy child to be logged as underweight, leading to massive misallocation of feeding budgets.*

10. National Nutritional Surveillance: The Community Data Lifecycle

- Stage 1 — **Data Generation:** midwives and BHWs conduct monthly child monitoring, weigh infants, compute age in months, and compare measurements against DOH standard tables.
- Stage 2 — **Processing & Analysis:** local health offices aggregate barangay records, clean mathematical anomalies, map high-prevalence 'hotspots', and trace local ecological causes.
- Stage 3 — **Mobilization & Action:** municipalities mobilize local budgets to deploy food supplies, feeding programs, maternal nutrition workshops, and safe water infrastructure.

11. The Ecology of Malnutrition: Epidemiology Triad Model

- **Host Factors** (*the biological human system*): vulnerable age groups (infancy, toddlers, pregnancy) due to rapid cell division; increased metabolic demands (pregnancy, lactation, illness recovery); internal obstacles like chronic diarrhea, malabsorption, or intestinal parasites.
- **Agent Factors** (*the nutrient & food vehicle*): nutritional quality (density of proteins, vitamins, minerals); biological utilization (bioavailability); preparation techniques (e.g., over-washing rice strips water-soluble thiamine, causing infantile beriberi).
- **Environmental Factors** (*the socio-cultural & sanitary setting*): socio-economic barriers (poverty limiting protein access); socio-cultural taboos (e.g., local superstitions restricting pregnant women's diets); sanitation & water issues (contaminated water triggering diarrhea and parasite transmission).

12. Worked Example: Age Computation & Z-Score Classification

Scenario

During a monthly Under-Five Clinic (like **Operation Timbang Plus**), the midwife assesses a female child, Baby Liza.

- Date of Birth: 2024-12-25
- Measurement Date: 2026-09-04
- Recumbent Length: 78.3 cm

- Weight: 8.6 kg
- Reference median length-for-age (20-month-old girl): 79.0 cm, SD = 2.9 cm
- Reference median weight-for-length at 78.3 cm: 9.5 kg, SD = 0.9 kg

Step 1 — Compute Age in Months (Age Computation Protocol)

Subtract Date of Birth from Measurement Date (Year, Month, Day), borrowing when needed:

- Measurement Date: 2026 - 09 - 04
- Date of Birth: 2024 - 12 - 25
- Days: $04 - 25$ is negative, so borrow 30 days from the month $\rightarrow (4 + 30) - 25 = 9$ days.
- Months: after borrowing for days, the month count drops from 9 to 8. $8 - 12$ is negative, so borrow 12 months from the year $\rightarrow (8 + 12) - 12 = 8$ months.
- Years: after borrowing for months, the year drops from 2026 to 2025 $\rightarrow 2025 - 2024 = 1$ year.
- Convert to months: $(1 \times 12) + 8 = 20$ months, remainder 9 days.
- Rounding Rule: 9 days is less than 15 days, so do not round up.

Final computed age = **20 months**.

Step 2 — Check Measurement Method

Baby Liza is under 2 years old (20 months), so she should be measured as **Recumbent Length** on an infantometer — which is exactly how she was measured. No $+0.7$ cm / -0.7 cm conversion is needed since the correct protocol was already followed.

Step 3 — Compute the Height-for-Age Z-Score

Formula: $Z = (\text{Observed Value} - \text{Median Reference Value}) / \text{SD of Reference Population}$

- $Z = (78.3 - 79.0) / 2.9 = -0.7 / 2.9 \approx -0.24$ SD
- Classification: -0.24 SD falls within the **-1 SD to +1 SD** healthy range.

Height-for-Age: **Normal** (not stunted).

Step 4 — Compute the Weight-for-Length Z-Score

- $Z = (8.6 - 9.5) / 0.9 = -0.9 / 0.9 = -1.0$ SD
- Classification: -1.0 SD sits at the lower edge of the healthy range — technically normal, but bordering the **-2 SD** diagnostic cut-off for wasting.

Weight-for-Height: **Normal, low-normal** — flag for monitoring.

Step 5 — Clinical Interpretation

- Height-for-Age: -0.24 SD $\rightarrow$ Normal (no stunting).
- Weight-for-Height: -1.0 SD $\rightarrow$ Normal, low-end (watch for wasting risk).

Frontline Action: Baby Liza is not currently malnourished by WHO/DOH standards, but because her weight-for-height is trending toward the -2 SD cut-off, the midwife should monitor her growth velocity over the next few monthly visits and reinforce dietary counseling with the mother.

■ NUTRITION & DIETETICS REVIEWER

Meal Planning and Preparation

1. What is a Meal?

A meal is a combination of foods and beverages eaten at a specific time of the day to provide the body with energy and essential nutrients.

In **Nutrition and Dietetics**, meals are planned according to a person's nutritional needs, age, health condition, lifestyle, culture, and food preferences.

Examples of Meals

Meal	Sample Foods
Breakfast	Rice, egg, vegetables, and fruit
Lunch	Rice, grilled fish, vegetables, and fruit
Dinner	Rice, chicken, vegetables, and water
Snack	Banana, yogurt, or nuts

A balanced meal consists of 50% vegetables or fruit, 25% protein, and 25% whole grains or carbohydrates.

A healthy meal should include a variety of foods such as **carbohydrates**, **protein**-rich foods, vegetables, fruits, and healthy sources of **fat**.

2. Basic Steps in Meal Planning

- **Step 1: Know your needs** — Consider your age, health, activity level, and nutrition needs.
- **Step 2: Set a budget** — Decide how much you can spend on food.
- **Step 3: Plan your meals** — Choose balanced meals for breakfast, lunch, dinner, and snacks.
- **Step 4: Check what you already have** — Look in your pantry and refrigerator before buying.
- **Step 5: Make a shopping list** — List the ingredients you need.
- **Step 6: Buy and prepare food** — Shop wisely and prepare meals ahead if possible.
- **Step 7: Evaluate and adjust** — Check if the meals worked well and improve the plan for next time.

4. Nutritious Meals (Masustansyang Pagkain)

Nutritious meals give your body the right nutrients to grow, stay healthy, and have energy — the right mix of energy, building blocks, and vitamins.

What Makes a Meal "Nutritious"? — The 5 Nutrient Categories

1. Carbohydrates — Your body's preferred fuel source, especially for the body and brain. Fiber, starches, and sugars turn into glucose (blood sugar) to give you energy.

2. Proteins — Found throughout the body — muscle, bone, skin, hair, and nearly every tissue. Helps keep the immune system strong and energy steady.

3. Fats — One of the three main macronutrients — an essential, energy-dense nutrient the body needs daily.

- 4. Vitamins** — Essential nutrients needed in small amounts to keep the body working properly.
- 5. Minerals** — Inorganic nutrients found in food and water; needed in small but steady amounts.

5. Food Fallacies and Practices

Food Fallacies

Food fallacies are false, incorrect, or misleading beliefs about food and its effects on health and the body.

- Exist because of ignorance of basic scientific information about the subject.
- Passed on unquestioned from one generation to the next.
- May be spread deliberately by those who wish to promote their products.

Food Practices

Food practices are the usual ways or habits of selecting, preparing, cooking, serving, and consuming food.

These practices may be useful and beneficial to health, or harmful, depending on whether they are supported by proper nutritional and scientific evidence.

Fallacy vs. Scientific Fact Table

Memorize the classification in the last column — these are common exam items.

Fallacy/Belief	Scientific Point	Classification
"Potatoes are fattening."	Plain potatoes are not inherently fattening. They are a nutritious starchy vegetable providing carbohydrates, potassium, vitamin C, and other nutrients.	Harmful/False Belief
"Honey provides significant vitamins and minerals."	Honey does contain small amounts of some vitamins and minerals, but the amounts are generally too low to be a significant source.	Harmful/False Belief
"Jaggery contributes more nutrients than white sugar."	Jaggery does contain trace minerals and antioxidants that white sugar lacks, but the amount is too small to provide meaningful nutritional benefit.	Harmful/False Belief
"Sucrose is harmful because it is refined."	Refining itself does not make sucrose harmful. It is the cheapest sweetener available and is used in infant milk formulas and medical preparations.	Harmful/False Belief
"Maida is nutritionally poorer than atta (whole wheat flour)."	TRUE — When grains are milled and refined, the bran (nutrient-rich outer coat) is removed, leaving only the starchy endosperm.	Useful Belief
"Full-fat products equal weight gain."	Full-fat foods do not automatically cause weight gain. Weight gain occurs when calorie intake consistently exceeds the body's energy needs. Healthy fats promote fullness.	Harmful/False Belief
"Avoid carbs to lose weight."	Carbohydrates do not need to be eliminated for weight loss. Weight loss mainly depends on maintaining a calorie deficit, not avoiding a food group.	Harmful/False Belief
"Everyone should follow a gluten-free diet."	Not everyone needs a gluten-free diet. It is mainly necessary for celiac disease, gluten sensitivity, or wheat allergy; otherwise it may reduce fiber/nutrient intake.	Harmful/False Belief
"Cooking vegetables destroys their nutrition."	Cooking does not completely destroy nutrients. Heat may reduce some vitamins but can increase absorption of others, depending on the cooking method.	Harmful/False Belief

Fallacy/Belief	Scientific Point	Classification
"Detox diets clean toxins from the body."	Scientific evidence shows commercial detox diets do not clean toxins — the organs already handle natural detoxification.	Harmful/False Belief
"Organic-grown produce has greater nutritive value."	TRUE (partly) — Organic manure is useful because it improves soil fertility and health, but it's a misconception that organic-grown crops are always more nutritious.	Useful Belief
"Pregnant women should not eat twin bananas."	Twin/fused bananas are safe to eat during pregnancy. They provide the same nutrients (potassium, fiber, vitamin B6) as regular bananas.	Harmful/False Belief
"Iodized salt is worse/more 'chemical' than rock salt."	Iodized salt is not less healthy. Both mainly contain sodium chloride, but iodized salt supports normal thyroid function; rock salt may lack enough iodine.	Harmful/False Belief
"Cutting longevity noodles shortens your life."	Cutting longevity noodles does not shorten life — this is a cultural superstition with no scientific basis.	Harmful/False Belief
"Washing rice too many times removes all its nutrients."	Excessive washing can reduce some water-soluble nutrients (B vitamins, minerals), but it does not remove all of them.	Harmful/False Belief

6. Principles of Food Selection

Food selection means choosing foods that are healthy, safe, affordable, and suitable for a person's needs.

- **1. Nutritional Value** — Choose foods with essential nutrients (carbs, protein, fats, vitamins, minerals). Ex: vegetables, fruits, eggs, fish, whole grains.
- **2. Variety** — Eat different kinds of foods to get different nutrients. Ex: don't eat rice and meat only — include vegetables and fruits.
- **3. Balance** — Choose the right amount of different food groups. Ex: rice + protein + vegetables + fruit.
- **4. Quality and Freshness** — Select fresh, good-quality ingredients without unusual smell or appearance.
- **5. Safety and Sanitation** — Choose foods free from contamination; check expiration dates; avoid spoiled food.
- **6. Availability and Cost** — Consider what's locally available and fits the budget; choose affordable local vegetables.
- **7. Personal Needs and Preferences** — Consider age, health needs, allergies, culture, and food preferences.

7. Principles for Food Preparation

Food preparation means handling and cooking food properly while preserving its nutrients, flavor, appearance, and safety.

- **1. Keep Food Clean** — Wash hands, utensils, and ingredients properly before preparing food.
- **2. Prevent Cross-Contamination** — Keep raw foods separate from cooked/ready-to-eat foods. Ex: separate chopping boards.
- **3. Use Proper Cooking Methods** — Choose a method appropriate for the food — steaming, boiling, baking, grilling, sautéing.

- **4. Preserve Nutrients** — Avoid overcooking vegetables; use only enough water when boiling.
- **5. Control Time and Temperature** — Cook at the proper temperature and for the right amount of time to make it safe.
- **6. Maintain Good Appearance and Flavor** — Keep food appetizing — proper color, texture, taste, presentation.
- **7. Use the Right Amount of Ingredients** — Follow proper measurements for the desired taste, texture, and nutritional value.

8. Planning a Low-Cost Meal

Part 1: Food Budget Planning

- Plan meals for the whole week.
- Base food purchases on the planned menu.
- Consider both nutritional needs and available budget.
- Good planning helps families use their money wisely.

Part 2: Buy Smart and Save Money

- Buy staple foods in bulk when prices are lower.
- Buy affordable, seasonal fruits and vegetables.
- Compare prices before buying.
- Buy commonly used items in larger amounts when practical.

Part 3: Prepare Some Foods at Home

- Prepare food items at home when possible.
- Make homemade spice mixes or simple ingredients.
- Buying raw ingredients may be cheaper; reduces expenses.

Part 4: Government Food Assistance Programs

- Some government programs provide subsidized food.
- School feeding programs support children's nutrition.
- Supplemental food may be given to mothers and children.

Why is a meal considered low-cost?

- Uses affordable and locally available ingredients.
- Includes carbohydrates, protein, and vegetables.
- Some ingredients can be used for more than one meal.
- Avoids unnecessary expensive or processed foods.

9. Tools in Meal Planning

- **Meal calendar** — Helps you decide what food to prepare for each day of the week.
- **Recipe book** — Gives you ideas and instructions on how to cook different meals.

- **Grocery list** — Helps you remember everything you need to buy.
- **Budget planner** — Helps you plan meals without overspending.
- **Nutrition guide** — Helps you choose foods that are healthy and nutrient-rich.
- **Measuring tools** — Cups, spoons, food scales — help you get the right ingredient amounts.
- **Pantry checklist** — Helps you track food/ingredients you already have at home.
- **Meal-planning apps** — Help organize meals, find recipes, and make shopping lists.
- **Food substitution list** — Helps you find another ingredient when the one you need isn't available.

10. Basic Meal Planning — Core Principles

Meal planning means preparing balanced, adequate, and healthy meals that meet daily nutrient needs, fit budget, culture, and lifestyle.

1. Know the Nutrient Needs

Age, gender, activity level, and health status (e.g., hypertension, diabetes, pregnancy) change how much energy and nutrients you need.

2. Food Groups — GO, GROW, GLOW

- **GO** — Carbohydrates (rice, corn, bread, root crops, noodles): fuel for body & brain.
- **GROW** — Protein (fish, meat, chicken, eggs, beans, milk): build & repair muscles/tissues.
- **GLOW** — Vitamins & Minerals (veggies, fruits): protect from sickness, keep skin/eyes healthy.

3. Balance & Variety

- Eat different foods daily — no single food has all nutrients.
- Balance portions: not too much, not too little.
- Match calories eaten with calories used to maintain healthy weight.

4. Regular Meal Pattern

- 3 main meals + 1–2 snacks (breakfast, lunch, dinner; morning/afternoon snacks).
- Do not skip meals, especially breakfast — boosts energy & focus.
- Consistent meal times help digestion and prevent overeating.

5. Consider Practical Factors

- Budget: choose affordable, local, seasonal foods.
- Cultural & personal preferences: include familiar/traditional foods.
- Availability: use what is accessible in the community.
- Food safety & hygiene: clean, fresh, properly cooked food.

6. Portion Control & Moderation

- Limit sugar, salt, fried/fatty foods, and processed items.
- Use appropriate serving sizes — adjust for children, adults, elderly.

7. Special Diet Adjustment (if needed)

- **Hypertension** — low salt / low sodium.
- **Diabetes** — controlled carbs, high fiber.

- **Overweight** — lower calorie, more veggies/fiber.

11. Purpose of a Regular Meal Menu

- **Ensure Nutritional Adequacy** — Satisfy the nutritional needs of all family members according to age, occupation, and health status.
- **Maintain Food Budget** — Plan purchases to maximize nutritional value for money spent.
- **Meet Family Preferences and Needs** — Consider family size, composition, and individual preferences.
- **Efficient Use of Resources** — Plan for food storage space and conditions.
- **Enhance Meal Acceptability and Enjoyment** — Serve meals that are appetizing, attractive, and fit the family's schedule.
- **Promote Good Food Habits and Variety** — Encourage variety of foods and traditional practices that support good nutrition.
- **Support Health and Well-being** — Prevent malnutrition and related issues via regular, balanced meals.

In summary: Meal planning is a practical tool to ensure that meals are nutritionally adequate, cost-effective, enjoyable, and tailored to the needs and preferences of all family members.

12. Factors Affecting Menu Planning

- **Family size and composition** — age, activity, health needs.
- **Budget** — use seasonal/local foods for cost savings.
- **Availability** — seasonal and home-grown foods.
- **Preparation skills** — enhance acceptability and variety.
- **Schedules** — meal timing and packed meals.

Traditional and Desirable Practices

- Use whole grains (e.g., whole wheat chapati).
- Include fermented and germinated foods (e.g., idli, usal).
- Emphasize leafy vegetables and salads.
- Incorporate fruits regularly.

Nutritional Adequacy — Example (Adult Woman)

Nutrient	Menu Provides	RDA
Total Energy	1,927 kcal	1,900 kcal
Protein	53 g	45 g
Vitamin A	3,550 mcg	3,000 mcg
Iron	39.3 mg	32 mg

Practical Menu Example (Daily Plan)

- **Breakfast** — Bread with butter, fruit, milk
- **Lunch** — Rice, chapati, dal, vegetables, curd

- **Dinner** — Chapati, dal, vegetable, milk
 - **Snacks** — Fruit, tea, light snacks
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■ Key Takeaways

- A regular meal should be balanced, varied, and adapted to individual/family needs.
- Menu planning ensures nutritional adequacy, cost-effectiveness, and enjoyment.
- Use the food guide and score card for planning and evaluation.

DIET THERAPY REVIEWER

PART 1 — TERMS, DEFINITIONS & KEY CONCEPTS

A. Basic Terminology

Diet Therapy: modification of a person's usual food intake to help prevent, manage, or treat a disease or medical condition.

Nutrition Therapy: the broader concept of improving health by adjusting the quantity, quality, and method of nutrient intake.

Therapeutic Diet: a diet that has been modified from a person's usual diet to meet specific medical or nutritional needs.

Medical Nutrition Therapy (MNT): individualized nutrition care used to help manage a disease or medical condition.

Diet Prescription: the specific diet ordered or recommended for a patient according to the patient's medical and nutritional needs.

Regular or Normal Diet: a normal, balanced diet without a specific therapeutic restriction, provided the patient has no condition requiring dietary modification.

Indication: the reason a particular diet is recommended (e.g., the indication for a low-sodium diet may be hypertension; the indication for a clear liquid diet may be preparation for a procedure).

A diet may involve modifying: calories, protein, carbohydrates, fats and fiber, sodium, potassium, phosphorus, fluids, texture and consistency, and meal timing.

B. Basic Concepts & Principles of Diet Therapy

A therapeutic diet must be individualized.

1. **Assess the Patient First:** Assess medical and nutritional condition; consider diagnosis, weight, labs, medications, and food preferences.
2. **Meet Nutritional Needs:** Provide adequate calories and essential nutrients; prevent one dietary restriction from causing another nutritional problem.
3. **Modify Only What Needs to Be Modified:** Avoid unnecessary restrictions; adjust only the nutrients or components requiring modification.
4. **Consider the Patient's Condition:** Match diet consistency to physical ability to chew and swallow, and to gastrointestinal needs.

5. **Consider Culture & Food Preferences:** Respect culture, religion, and food preferences; adapt familiar foods to support diet adherence.
6. **Make the Diet Practical & Acceptable:** Ensure food is appetizing, affordable, and accessible; consider preparation, portions, and patient acceptance.
7. **Monitor & Evaluate:** Monitor weight, blood glucose, blood pressure, and laboratory values; assess food intake, symptoms, and nutritional status; adjust the diet as the patient's condition changes.

C. General Diets

Regular Diet: *a normal diet with no specific therapeutic restrictions — normal consistency, balanced food choices, adequate calories/nutrients, variety of foods.*

High-Fiber Diet: *a diet emphasizing foods naturally rich in dietary fiber.*

Food Sources:

- Whole grains, fruits and vegetables, legumes, nuts and seeds

Benefits:

- Supports normal bowel function
- Adds bulk to stool
- May help with fullness, cholesterol, and blood glucose management

Therapeutic Diet (as a category): *a modified diet prescribed to meet a specific medical or nutritional need.*

Examples: low-sodium diet, diabetic meal plan, renal diet, low-fiber diet, high-protein diet, low-calorie diet, low-purine diet.

D. Vegetarian Diet

Vegetarian Diet: *a diet emphasizing plant foods and excluding some or all animal foods.*

Types:

- **Lacto-vegetarian:** Plant foods + dairy
- **Ovo-vegetarian:** Plant foods + eggs
- **Lacto-ovo vegetarian:** Plant foods + eggs and dairy
- **Vegan:** Excludes all animal-derived foods

Important Nutrients to Watch:

Protein, vitamin B12, iron, calcium, vitamin D, zinc, and omega-3 fatty acids.

E. Diets Modified in Consistency

Purpose: modify the texture or consistency of food according to the patient's chewing ability, swallowing ability, gastrointestinal condition, and medical needs.

Types (in order of progression): 1. Clear Liquid 2. Full Liquid 3. Soft/Bland Diet 4. Residue-Restricted & Low-Fiber Diet 5. High-Fiber Diet (as tolerated)

Clear Liquid Diet: *a diet containing foods and beverages that are transparent or become clear at room temperature.*

- Examples: water, clear broth, clear fruit juice without pulp, tea without milk, gelatin
- Indications: before certain procedures, around certain surgeries, temporary GI recovery, selected nausea/vomiting situations
- Limitation: generally not nutritionally complete for long-term use

Full Liquid Diet: *a diet containing foods that are liquid or become liquid at room temperature.*

- Examples: milk, yogurt, strained cream soups, pudding and custard, milkshakes, liquid nutritional supplements

- Indications: inability to tolerate solid food, certain stages of postoperative recovery, selected chewing/swallowing difficulties, transition between clear liquids and solid foods

Soft Bland Diet & Bland Diet: diets consisting of soft, easily digestible foods.

Soft Blend Diet:

- Soft = easy to chew and digest; Bland = mild and avoids irritating ingredients
- Examples: soft rice, porridge, eggs, tender fish, bananas

Bland Diet:

- Foods that are generally soft, mild, and not highly irritating; may be recommended temporarily for GI symptoms

Residue-Restricted & Low-Fiber Diet: aims to reduce undigested material remaining in the gastrointestinal tract.

- Foods limited: whole grains, nuts, seeds, raw vegetables, fruit skins, and some legumes

Low-Fiber Diet: reduces dietary fiber and stool bulk.

- Examples: white rice, refined bread, peeled potatoes, well-cooked vegetables, tender meats
- Indications: selected GI conditions, flare-ups, or intestinal procedures when medically indicated

F. Diets Modified in Composition

Purpose: diets modified according to the amount or type of specific nutrients.

Types: 1. Low-Calorie 2. High-Calorie 3. High-Protein 4. Heart-Healthy/Low-Cholesterol 5. Low-Sodium 6. Low-Purine

Low-Calorie Diet: provides fewer calories than usual intake or energy requirements.

- Strategies: portion control, vegetables, lean protein, limiting energy-dense foods and sugary beverages
- Indication: weight management when clinically appropriate

High-Calorie Diet: provides increased energy to meet requirements or restore body weight.

- Indications: underweight, unintended weight loss, poor appetite, recovery from illness, or malnutrition

High-Protein Diet: a diet providing more protein than a standard diet when medically appropriate.

Functions of Protein:

- Tissue repair, wound healing, muscle maintenance, immune function, growth and development
- Food Sources: eggs, fish, chicken, lean meat, milk, tofu, legumes
- Indications: selected wounds, burns, postoperative conditions, and malnutrition

Caution: not appropriate for every patient, including some patients with chronic kidney disease.

Heart-Healthy Diet: a dietary pattern emphasizing heart-healthy foods and replacing saturated fats with unsaturated fats.

- Recommended: fruits and vegetables, whole grains, fish and lean proteins, beans/nuts/seeds, unsaturated oils
- Limit: saturated fats, highly processed foods, excessive added sugars, and trans fats
- Indications: dyslipidemia, cardiovascular disease risk, and elevated LDL cholesterol

Low-Sodium Diet: a diet that limits sodium intake.

- Foods commonly limited: processed meats, canned soups, instant noodles, salty snacks/chips, soy sauce and fish sauce, pickled/heavily salted foods
- Better Choices: fresh foods, fruits, vegetables, fresh meat or fish, herbs, spices, and calamansi

General Target: no more than 2,300 mg sodium/day; lower targets may be prescribed.

Low-Purine Diet: a diet that reduces foods particularly high in purines.

- Foods commonly limited: organ meats (liver and kidney), certain red meats in excessive amounts, some seafood, meat extracts

- Foods that may be emphasized: fruits and vegetables, whole grains when appropriate, low-fat dairy, appropriate protein sources
- Indications: gout, hyperuricemia, and uric acid-related conditions

G. Special Therapeutic Diets

Diabetic Diet

Diabetic Diet: *individualized nutrition therapy for people with diabetes.*

- Meal plan considers: blood glucose goals, medications/insulin use, physical activity and body weight, food preferences and lifestyle, other medical conditions, kidney function
- Goals: manage blood glucose, support adequate nutrition, manage blood pressure and lipids, reduce cardiovascular risk

Carbohydrate Management:

Carbohydrates have a major effect on blood glucose.

- Better choices: vegetables, whole grains when appropriate, legumes, whole fruits, high-fiber foods
- Limit: foods high in added sugars and highly refined carbohydrates

Renal Diet

Renal Diet: *a nutrition plan designed for people with kidney disease.*

- Diet depends on: stage of kidney disease, laboratory results, dialysis status, urine output and blood pressure, potassium and phosphorus levels, protein needs and fluid status

Important Principle: there is no single renal diet for every patient.

Important Components:

- **Sodium:** May need restriction to help manage fluid retention and blood pressure
- **Protein:** Intake depends on kidney condition and treatment; dialysis may increase protein needs
- **Potassium:** Restriction depends on blood potassium level and clinical condition
- **Phosphorus:** May need limitation when phosphorus accumulates
- **Fluids:** Restriction may be needed for some patients with advanced kidney disease or kidney failure

Sample Renal Hospital Meal:

- Appropriately portioned rice, suitable portion of fresh chicken or fish, selected vegetables based on potassium needs, appropriate fruit based on labs, prescribed amount of fluid

Reminder: the actual renal meal must be individualized according to kidney function and laboratory values.

Hypertensive Diet (DASH Diet)

Hypertensive Diet / DASH Diet: *Dietary Approaches to Stop Hypertension — a diet designed to help manage high blood pressure.*

- Emphasizes: fruits and vegetables, whole grains, beans and nuts, low-fat or fat-free dairy, fish and poultry, lean protein and healthy fats
- Limits: sodium, saturated fat, highly processed foods, sugary foods and beverages

Sodium & Hypertension:

- Sodium can cause the body to retain water
- Higher sodium intake may contribute to increased blood pressure in some people

Common DASH Sodium Levels:

- 2,300 mg/day (standard) or 1,500 mg/day for appropriate individuals

Flavor Alternatives (to salt):

Garlic, onion, ginger, herbs, pepper, lemon, or calamansi.

Sample Hypertensive Hospital Meal:

- Breakfast: oatmeal, banana, low-fat milk, boiled egg, no added salt
- Lunch: rice, grilled fish, steamed vegetables, fruit, water
- Dinner: rice, skinless chicken, mixed vegetables, fruit, water

H. Summary Comparison Table

Diet	Main Focus
Regular	Balanced food without specific therapeutic restrictions
High-Fiber	Increase dietary fiber
Vegetarian	Emphasize plant foods
Clear Liquid	Transparent liquids
Full Liquid	Liquids or foods liquid at room temperature
Low-Fiber	Reduce fiber and stool bulk
Low-Sodium	Limit sodium intake
Diabetic	Individualized carbohydrate and nutrition management
Renal	Adjust nutrients based on kidney function
Hypertensive	DASH pattern and sodium reduction

I. Important Clinical Reminders

- Diet therapy is individualized.
- A therapeutic diet should provide adequate nutrition.
- Restrictions must be purposeful and medically appropriate.
- Patient response must be monitored.
- Diet therapy should be coordinated with the healthcare team.
- Food preferences and culture matter.

J. Conclusion

Food is more than a source of energy. It can become an important part of a patient's treatment plan. A good therapeutic diet considers the patient's:

- Medical condition
- Nutritional needs
- Laboratory results
- Medications
- Preferences and culture
- Lifestyle and treatment goals

UNIT 1: BASIC NUTRITION

The Blueprint of Human Health — Reviewer

1. Course Roadmap: How We Study Nutrition

Basic nutrition is not merely the study of food — it is **the engineering of human vitality**. The lesson follows 5 logical steps:

- **1. Define** — Map out the core terminology of nutrition and health.
- **2. Assess** — Use tools and guidelines to evaluate a person's dietary status.
- **3. Deconstruct** — Break down the functions, qualities, and behavioral factors of food.
- **4. Analyze** — Classify and trace how macro- and micronutrients move through the body.
- **5. Compute** — Calculate exact calorie values and nutritional requirements.

2. The Core Ontology of Nutrition (Key Terms, Smallest to Biggest)

Think of these as nested circles — each idea sits inside the next bigger one.

- **Metabolism** (Mechanism) — the chemical processes within cells that convert nutrients into energy and biological materials.
- **Nutrients** (Cargo) — the chemical components of food that the body absorbs and uses.
- **Nutrition** — the science of how the body utilizes the nutrients found in food.
- **Food** (Vehicle) — any substance that, when digested and absorbed, sustains life, promotes growth, and yields energy.
- **Diet** (Input) — the customary allowance of food and drink taken by a person from day to day.
- **Health / Dietary Status** (Outcome) — the condition of the body resulting from the utilization of essential nutrients.

3. The Three Pillars of Food Function

Food does three main jobs in the body:

- **Energy Provision** — Fuels voluntary actions (physical activity) and involuntary metabolic processes. **Key sources:** Carbohydrates and Fats.
- **Tissue Building & Repair** — Constructs cellular architecture, repairs damaged tissues, and synthesizes enzymes. **Key sources:** Proteins and essential minerals.
- **Bodily Regulation** — Maintains fluid balance, facilitates nerve impulses, and regulates core temperature. **Key sources:** Vitamins, minerals, and water.

Beyond function, food quality also depends on biological safety, nutritional density, and sensory acceptability.

4. The Behavioral Filter: Food Acceptance & Rejection

Nutritional requirements mean nothing if the food cannot pass through these human filters. All edible food passes through 4 filters before it becomes a person's actual diet:

- **Sensory Filter** — Taste, smell, texture, and visual appeal; the first, immediate trigger for acceptance or rejection.
- **Cultural & Social Filter** — Traditional food practices, religious dietary laws, and peer influence.
- **Psychological Filter** — Emotional associations, learned aversions, and psychological comfort tied to certain foods.
- **Economic & Environmental Filter** — Accessibility, affordability, and seasonal availability.

End result → **Personal Diet.**

5. The Compass: Assessment Tools (ABCD) & National Guidelines

Nutritional Guidelines for Filipinos — *evidence-based recommendations designed to promote nutritional well-being and prevent deficiency diseases, tailored to Filipinos.*

Letter	Method	What it Checks
A — Anthropometric	Physical body measurements	e.g., BMI, skinfold thickness, height, weight, waist circumference
B — Biochemical	Laboratory testing	Blood, urine, or tissue tests to detect nutrient levels
C — Clinical	Physical examination	Outward signs of nutritional deficiency or toxicity
D — Dietary	Food history analysis	Past food intake, habits, and specific dietary requirements

6. The Nutrient Divide: Macronutrients vs. Micronutrients

Aspect	Macronutrients	Micronutrients
Primary Role	Energy yield and structural mass	Metabolic catalysts and physiological regulation
Required Volume	Grams (large quantities)	Milligrams/Micrograms (trace amounts)
Energy Yield	Caloric — provides quantifiable energy	Non-caloric — provides zero energy
Core Components	Carbohydrates, Fats, Proteins	Vitamins, Minerals

Remember: macro means large, micro means small — but the difference is about required amount, not physical size of the nutrient itself.

6.1 The Energy Foundation: Macronutrients

- Carbohydrates** — *organic compounds of carbon, hydrogen, and oxygen; the body's preferred, immediate energy source.* Sources: rice, corn, root crops, sugars. **Energy Yield: 4 kcal/gram.**
- Proteins** — *complex chains of amino acids containing nitrogen; build and repair cellular structures and synthesize hormones.* Sources: meat, fish, poultry, legumes, eggs. **Energy Yield: 4 kcal/gram.**
- Fats (Lipids)** — *dense organic compounds insoluble in water; provide high-density energy storage, organ insulation, and transport fat-soluble vitamins.* Sources: oils, butter, nuts, fatty fish. **Energy Yield: 9 kcal/gram.**

6.2 The Catalysts: Micronutrients

- Vitamins** (Organic) — *essential organic compounds required in tiny amounts.* Water-soluble: B-complex, C. Fat-soluble: A, D, E, K. Function: help release energy from macros, support immunity, maintain tissue health.
- Minerals** (Inorganic) — *inorganic elements originating from the earth.* Major minerals: Calcium, Potassium. Trace minerals: Iron, Zinc. Function: maintain skeletal structure, regulate fluid balance, enable oxygen transport.

7. The Processing Pipeline: Digestion & Absorption

Consuming calories does not automatically mean adequate nutrition — food must first be processed by the body in three steps:

- Step 1 — Mechanical Breakdown (Ingestion):** Mastication (chewing) in the mouth alters the physical qualities of food and increases surface area.
- Step 2 — Chemical Liquefaction (Digestion):** Enzymes and gastric acids in the stomach and intestines break down complex macromolecules into their simplest absorbable forms — **glucose, amino acids, and fatty acids.**
- Step 3 — Cellular Uptake (Absorption):** Digested nutrients transfer across the intestinal wall (villi) directly into the bloodstream or lymphatic system for distribution throughout the body.

8. The Engine: Metabolism

Metabolism — *the totality of biochemical reactions occurring within living cells to maintain life.* It has two opposite phases:

- **Catabolic Phase (Energy Release):** Breaks down large molecules (e.g., glycogen → glucose). **Result:** generates immediate energy (ATP) for cellular function.
- **Anabolic Phase (Energy Storage & Growth):** Synthesizes complex molecules from simpler ones (e.g., linking amino acids to build muscle tissue). **Result:** consumes energy to build structural mass and store reserves.

9. The Variables: What Regulates the System

Metabolic needs are not the same for everyone. Four factors adjust a person's requirements:

- **Factor 1 — Age & Lifecycle Stage:** Metabolic rate peaks during rapid growth (infancy, adolescence, pregnancy) and slows in later adulthood.
- **Factor 2 — Body Composition & Gender:** Higher lean muscle mass increases basal metabolic rate (BMR); males typically have higher BMR due to body composition differences.
- **Factor 3 — Physical Activity Level:** The most variable factor; exertion increases both energy demand and repair processes.
- **Factor 4 — Health Status & Genetics:** Endocrine function (e.g., thyroid), infections, fever, or chronic disease can alter digestion efficiency and metabolic speed.

10. The Metabolic Budget: Defining Requirements

Dietary Requirement — *the minimum amount of a nutrient needed to maintain normal physiological function and health, tailored to an individual's specific variables.*

This is a balancing act between **Nutritional Input** (calories/nutrients eaten) and **Metabolic Output** (energy expenditure):

- **Deficiency** — Input is insufficient for the metabolic output.
- **Adequacy** — Perfect biological equilibrium (input = output).
- **Toxicity/Excess** — Input overwhelmingly exceeds output.

11. The Calculation: Computing Calorie Values (The 4-4-9 Rule)

To turn grams of macronutrients into calories, use each nutrient's **energy factor**:

Macronutrient	Multiply Grams By	Result
Carbohydrates	× 4	Total Carb kcal
Protein	× 4	Total Protein kcal
Fat	× 9	Total Fat kcal

Step-by-Step: How to Calculate Total Calories

Sample problem: A person's dietary intake is **250g Carbohydrates, 60g Protein, 40g Fat**. Find the total calorie value.

- **Step 1 — Identify the grams of each macronutrient:** 250g carbs, 60g protein, 40g fat (given by a food diary or food label).
- **Step 2 — Multiply each by its energy factor:**
 - Carbs: $250\text{g} \times 4 \text{ kcal/g} = \mathbf{1,000 \text{ kcal}}$
 - Protein: $60\text{g} \times 4 \text{ kcal/g} = \mathbf{240 \text{ kcal}}$
 - Fat: $40\text{g} \times 9 \text{ kcal/g} = \mathbf{360 \text{ kcal}}$
- **Step 3 — Add all the results together:** $1,000 + 240 + 360 = \mathbf{1,600 \text{ kcal total}}$

Key Insight: By determining a person's specific caloric requirement, practitioners can work backward to compute the exact gram ratios of carbs, protein, and fat needed to build a customized diet plan.

Practice Example (Try it Yourself)

A patient eats 200g Carbohydrates, 50g Protein, and 30g Fat in a day. What is the total calorie intake?

- Carbs: $200 \times 4 = 800$ kcal
- Protein: $50 \times 4 = 200$ kcal
- Fat: $30 \times 9 = 270$ kcal
- **Total:** $800 + 200 + 270 = 1,270$ kcal

Tip: Carbs and Protein always use the SAME multiplier ($\times 4$). Only Fat is different because it is more energy-dense ($\times 9$).

12. Synthesis: From Plate to Cellular Math

Putting it all together, nutrition science flows in one direction:

- **1. The Guidelines (The Target)** — Use national nutrition guidelines and ABCD assessment to set the benchmark for health.
 - **2. The Materials (The Input)** — Source macronutrients (energy/mass) and micronutrients (catalysts) from real food.
 - **3. The Machinery (The Process)** — Break down food through digestion, converting it via the anabolic/catabolic engine of metabolism.
 - **4. The Math (The Control)** — Compute exact calorie values using the 4-4-9 formula to precisely match individual dietary requirements.
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