NUTRITION CARE PROCESS TEACHING AND LEARNING MANUAL

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SUMMARY

INTRODUCTION

Nutrition care development has been evolving in the last decades. For some years, the *Academy of Nutrition and Dietetics* (AND) elaborated a process where it would be possible to describe and evidence the nutritionists' work. And in 2003 it formally adopted the *Nutrition Care Process* (NCP) standardization – providing a structure for nutritionists to customize care, supporting critical thinking and decision making.

Certainly, nutritionists' competences and responsibilities in health services are one of the main challenges for this profession. Quality improvement initiatives that take place in several countries, with special attention to aspects such as safety, process quality and focus in displaying outcomes, have been demanding that the nutritionist perform care according to the practices, registering the it and allowing its systematic assessment and the search for more effective outcomes.

In Brazil, an obstacle that nutritionists can find in this scenario is the lack of a systematization and standardization of care. Without a standardization, it becomes difficult to communicate nutrition problems and demonstrate the intervention's outcomes. Standardization is a care process that favours the establishment of objectives, outcomes measurement and interventions planning. It also contributes to the improvement of medical record documentation and to the quality of provided care.

In this manual, we'll understand what an NCP is and how it must be used in practice.

The term "care process" is an organized pathway, used by health practitioners to guide their care approaches. It's referred to the collective term for all activities that occur in health services. It comprises the means by which patients receive assistance, performed investigations, diagnostics, received treatments, from the first medical care and/or hospitalization until medical release or transfer to another institution.

Nutrition isn't the only health profession that has a formal care process. Nursing, Occupational Therapy and Physiotherapy, e.g., have established service processes that specify each profession.

The objective isn't to standardize care, but to provide a higher precision and cohesion in the care process compliance when treating patients. When practitioners use a care process to guide their approaches, it's less probable that important care aspects are forgotten.

Another reason to adopt a formal care process is its relationship with quality improvement. Quality improvement consists in making a safe, effective, patient-centered, expedient, efficient and equitable healthcare.

Quality evaluation of provided care is performed through a study of the very care outcomes, as well as the methods by which the care is provided.

To evaluate care effectiveness and its value, it's necessary that practitioners file the outcomes following a single standardized process, allowing cumulative data collection, becoming paramount that services use working processes with enough capability to systematically monitor different interventions usage and its impacts on clinical outcomes.

CHAPTER 1: NUTRITION CARE PROCESS GENERAL VIEW

Nutrition Care Process (NCP) is defined, according to Lacey and Pritchett (2003), as "a systematic problem-solving method that dietetics practitioners use to critically think and make decisions to address nutrition related problems and provide safe and effective quality nutrition care". The process' objective is to improve nutrition care quality and effectiveness, helping nutritionists to identify interventions that can, most probably, improve care outcomes.

It consists in four interrelated steps that are coherently distributed, favouring the problem-solving method. The four steps are seen in the center of Picture 1 and they are: (1) Nutrition Assessment, (2) Nutrition Diagnostics, (3) Nutrition Intervention and (4) Nutrition Monitoring and Evaluation.

Beyond those four steps, the model presents around the center, external factors that are important for care but that aren't necessarily determined by the nutritionist. These are the nutritional triage and the reference systems for another practitioner/institution and the outcome management system.

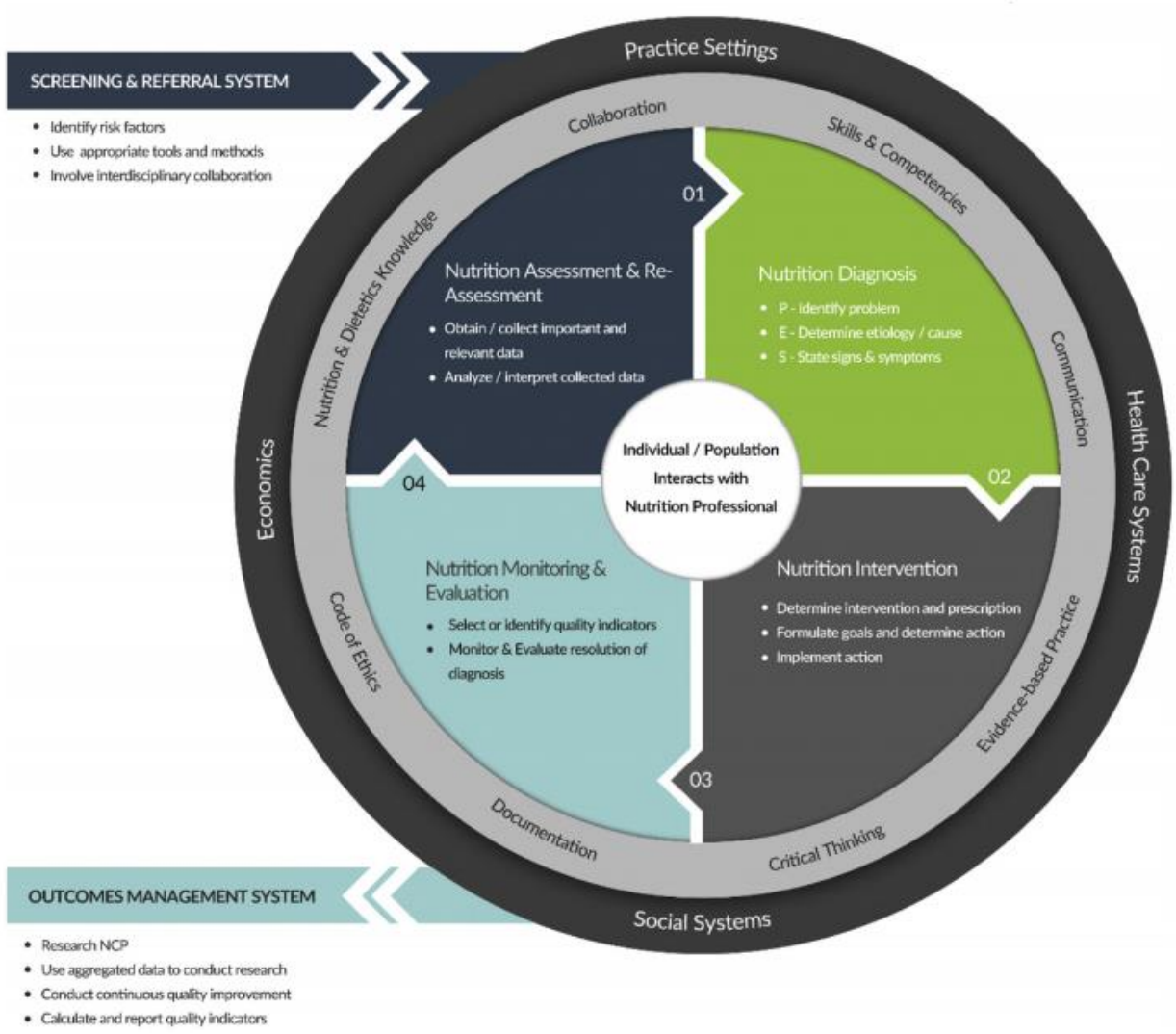
The model also comprises the knowledge and necessary skills for nutritionist practitioners, namely: critical thinking, collaboration, communication, evidence-based practice, ethical code, dietetics knowledge, skills and competences.

In 2008, the Academy of Nutrition and Dietetics (AND) published an NCP update introducing small modifications, along with a more detailed explanation of the new International Dietetics and Nutrition Terminology (IDNT) (*Writing Group of the Nutrition Care Process/Standardized Language Committee,* 2008). IDNT standardizes the terminology used in nutrition healthcare and defines four NCP steps, facilitating communication between nutrition practitioners and others, and promoting care documentation standardization. Moreover, IDNT allows the differentiation of the kind and quantity of provided nutrition care and helps connecting the activities with real or foreseen outcomes.

In 2014, the academy published an Electronic Nutrition Care Process Terminology (eNCPT) in substitution of IDNT's Reference Manual. The electronic edition is yearly updated.

Picture 1 displays the complete NCP model.

Picture 1 – Nutrition Care Process and Model



Source: SWAN ET AL. (2017).

The first model step, Nutrition Assessment, is a continuous process that has the purpose to identify, analyse and interpret subjective and objective data to detect nutritional problems and their causes.

The second step involves the establishment of a Nutrition Diagnosis and it can be considered as the most challenging step for nutritionists' work, representing a real change in nutrition culture. A Nutrition Diagnosis is a specific nutrition problem that can be improved or completely solved through a nutrition intervention.

The third step is the Nutrition intervention, propelled by the Nutrition Diagnosis and its causes. The intervention's objective is to solve or improve the nutritional problem and/or its signs

and symptoms. Intervention strategies must be adapted to the patient's individual necessities and conditions.

The last process step is the Nutrition Monitoring and Evaluation, when data are collected to check achieved progress. Data are collected again in selected nutrition indicators to measure shifts in nutritional status.

CHAPTER 2: NUTRITION ASSESSMENT

Nutrition Assessment is the first of four steps in Nutrition Process Care (NCP) and, probably, the most familiar step for nutritionists, considering they learn since undergraduation how to assess nutritional status in individual and populational levels. However, before the NCP creation, it lacked a standardized way to assure that every nutrition assessment used a common thinking process, being sufficiently broad, evidence-based and providing information that could be understood by other practitioners.

Therefore, Nutrition Assessment is a systematic method used to obtain, check and interpret necessary data to identify nutrition related problems, their causes and their importance.

Assessment data are compared with trustworthy norms and standards for evaluation whenever possible. Furthermore, Nutrition Assessment starts a data collection that continues along the NCP forming the reassessment basis and data reanalysis in the Nutrition Monitoring and Evaluation step. For individuals, data are collected directly with the patient through an interview, or by observation, medical record, information from other practitioners and measurements.

Patients start a Nutrition Assessment through nutrition triage, with data from surveillance and/or referral systems, all pertaining to external NCP components.

NCP considers five components for Nutrition Assessment:

- Nutrition and food related history
- Anthropometric measurements
- Biochemical data
- Nutrition-focused physical findings
- Client's history

Beyond these assessment components, some critical thinking skills are essential for selection, collection and relevant data interpretation for the patients. Each patient presents a unique combination of factors that impact the Nutrition Assessment approach.

The following are considered critical thinking skills in Nutrition Assessment:

- Determining the appropriate data to be collected
- Determining the need for additional information
- Selection of tools and assessment procedures corresponding to the situation
- Assessment tools application in a valid and trustworthy manner
- Distinction between relevant and irrelevant data
- Distinction between important and unimportant data
- Data validation

Let's understand a bit more about each component in the Nutrition Assessment step.

Nutrition and food related history

History is used to detect alteration symptoms in nutritional status and all aspects involved with the problem.

Nutrition related history alerts the evaluator about macro and micronutrients alterations or hydration status. It can be collected including the following components: demographic data, main complaint, current and past diseases, current health status, family record (genetics), food history, socioeconomic status, personal stress and psychological status, amongst others. More specific data also grasp surgery records or recent trauma, chronic diseases or malabsorption, recent weight loss/gain, unintentional of 10% or more than the usual weight, gastrointestinal symptoms, medicine use that don't interact with nutrients, chewing and swallowing problems and food intake reduction.

An important part of this method regards to food or dietetic history, based on records. Food history tools comprise data survey about the quantity and quality of ingested nutrients by the individual. It has as its objective to assess if an individual's or group's diet is adequate. For this, consumption information must be collected and assessed.

There are several ways of collecting nutrition related food history; the chosen method depends on the service applied to the patient and the kind of necessary information. For all methods, interviewers must develop specialized techniques to collect information in a quick and precise manner.

Collection may take some period (a day, some days, weeks or several months). Collected data about intake must be compared to what is recommended for individual or a population, considering age, gender or physiological condition.

One of the simplest methods is simply asking "What do you eat?". This is the most used tactic and usually results in vague or even useless answers. A 24 hours diet record is the most adequate way to ask this same question, reformulating it to: "Could you describe the food and beverages that you consumed in the last 24 hours?". It brings some focus to the assessment.

The kind of data that a nutritionist would collect as part of the interview or essay during a patient's assessment (food record) include:

- Food and nutrients intake
- Food and nutrients administration
- Medication
- Knowledge, beliefs, attitudes
- Behavioral factors
- Medication
- Factors that affect access to food
- Physical activity and function

Anthropometric Measurements

Body measurements serve to measure body dimensions. They include anthropometry and the body composition assessment.

Anthropometry provides an estimate or real determination of some body composition aspects. The measured body weight provides a real assessment of a body's total weight and the determination of body fat percentages, using skinfold measurements, providing an estimation of overall body fat.

These measurements are important to assess the difference between real measurements and reference values.

There's a variety of anthropometric measurements used in clinical practice. All of them demand attention to the used technique, as well as a calibration of the equipment used. The measurement choice is strongly dependent on the kind of service, available time and precision need.

In most clinical contexts, weight and height measurements must be obtained during admission. These are usually used to assess an individual's nutritional status. From them, one can compare the current status to the ideal and usual status, also providing a percentage shift analysis.

The body mass index (BMI) describes the relative weight to the height and it's significantly correlated to the overall fat composition of the body, however not describing fat composition *per se*. It is used to assess weight excess and obesity and to monitor body weight changes. In adults, BMI is determined by dividing a person's weight in kilograms (kg) by the height in square meters (m^2).

The main anthropometric measurements that must be collected are:

- Height
- Weight
- BMI
- Standard growth indices
- Weight history
- Body compartment estimates

The choice of anthropometric parameters to be assessed will also depend on the life stage of the public in question. Table 1 displays the anthropometric indices adopted for nutritional surveillance, according to recommendations from the World Health Organization and the Brazilian Ministry of Health (2011), containing the sources for its references.

Table 1 – Anthropometric indices for nutritional surveillance according to each life stage

Life Stage	Indices and Parameters
Children	Weight per age [a, b] Height per age [a, b] Weight per stature [a] BMI per age [a, b]
Adolescents	BMI per age [b] Height per age [b]
Adults	BMI [c] Waist circumference [d]
Elders	BMI [e]
Pregnants	BMI per pregnancy week [f] Pregnancy weight gains [c, g]

Sources: [a] (WHO, 2006); [b] (WHO, 2007); [c] (WHO, 1995); [d] (WHO, 2000); [e] (THE NUTRITION SCREENING INITIATIVE, 1994); [f] (ATALAH SAMUR, E., 1997); [g] (INSTITUTE OF MEDICINE, 1990)

Biochemical data

There are hundreds of diagnosis tests used by healthcare providers that support in medical conditions diagnosis. In most care environments, nutritionists assess the test outcomes requested by a doctor as part of the diagnosis for a medical problem or to assess chronical diseases management. Based on the patient's history and/or the referral reason, additional tests can be requested as part of Nutrition Assessment.

In nutritional status assessment, the biochemical or laboratory method include the measurement of a nutrient or its metabolite in blood, feces or urine. It also includes the measurements of several other components related to nutritional status in blood and other tissues. Albumin levels or other proteins in blood, e.g., is frequently indicative of the body's protein status. Haemoglobin levels in blood can reflect the anaemia condition that may be nutritional. Cholesterol levels that are influenced by food reflect the risk for cardiovascular diseases.

Several biochemical data, tests and medical procedures that can be important in assessing nutritional status are usually available. In most times, a battery of tests is required when a patient is hospitalized with an acute condition or in long term treatment environments. These tests frequently include a basic metabolic profile in serum, including glycose, sodium, potassium, chloride, bicarbonate, urea and creatinine.

Table 2 displays useful information for assessment of the most common tests used in clinical practice.

Beyond laboratory test, other tests and procedures can be added in this domain, e.g., gastric emptying time, basal metabolic rate, intestinal biopsies, intolerance tests to specific nutrients, abdominal X-ray, amongst others.

Table 2 – Useful information for common biochemical data assessment in clinical practice.

Test	Reference Values*	Comments
Haemoglobin	Men: 13 to 18 g/dL. Women: 11,5 to 16,5 g/dL. Children: 6 to 12 years old: 11,5 to 15,5 g/dℓ.	It is a fundamental laboratory parameter for anaemia diagnosis and for determining the severity level of such clinical manifestation.
Haematocrit	Men: 41 to 54%. Women: 37 to 47%. Children 6 to 12 years old: 35 to 45% 12 to 18 years old Boys: 37 to 49% Girls: 36 to 46%.	Haematocrit corresponds to the total volume occupied by haemocytes in a blood column after centrifugation. This exam's outcomes are expressed in percentages. Like the haemocyte count exam, an outcome above the reference level indicates polycythaemias or even a dehydration. But an outcome below reference values suggests anaemias.
Serum Albumin	Nourished: > 3,5 mg/dℓ. Slightly malnourished: 3 to 3,5 mg/dℓ. Moderately malnourished: 2,4 to 2,9 mg/dℓ. Gravely malnourished: < 2,4 mg/dℓ. Children < 5 years old: 3,9 to 5,0 g/dℓ. 5 to 19 years old: 4,0 to 5,3 g/dℓ.	Reflect the liver's functional capability. It can be used for protein energy malnutrition investigation and in proteins intestinal malabsorption investigation.
Fasting Glucose	Normal: < 100 mg/dℓ. Pre-diabetes: ≥ 100 mg/dℓ and < 125 mg/dℓ. Diabetes mellitus: ≥ 126 mg/dℓ. Children: 60 to 100 mg/dℓ	High blood fasting glucose indicates the need for diabetes evaluation.
Glycated Haemoglobin	3,6 to 5,3%. Children 1 to 5 years old: 2,1 to 7,7%. 5 to 16 years old: 3,0 to 6,2%.	Long term metabolic control monitoring for diabetes mellitus patients.
Total Serum Cholesterol	Adults > 20 years old: Desirable < 190 mg/dℓ. Children 1 to 3 years old: 45 to 182 mg/dℓ. 4 to 6 years old: 109 to 189 mg/dℓ.	It assesses the risk for cardiovascular diseases.
Serium Sodium	135 to 145 mEq/ℓ.	It assesses the hydroelectricity balance in association with a physical exam.
Serum Potassium	3,6 to 5,0 mEq/ℓ.	Important for some patients with chronic kidney diseases or those that take some diuretics.

Serium Chloride	96-106 mmol/l.	Indicator of acid-base balance, hydric balance and osmolality.
Bicarbonate	22 – 29 mEq/ℓ.	Used to assess acid-base disturbances, along with other blood gas parameters.
Serum Urea	10 to 45 mg/dℓ.	Urea levels are directly related to the liver's metabolic function and to the kidney's excretory function. Therefore, serum urea raises when kidney function is reduced. Values slightly higher than normal can indicate urine incapability of concentration or dehydration.
Serum Creatinine	Men: 0,7 to 1,3 mg/dℓ. Women: 0,6 to 1,1 mg/dℓ. Children: 0,3 to 0,7 mg/dℓ. Adolescents: 0,5 to 1,0 mg/dℓ.	Assessment and initial follow up of patients with suspected kidney failures.
***normal ranges for laboratory tests can fluctuate according to the function of the test method and local practice. Check out normal values in the laboratory in question.**		
Source: Andrighetti, L. *et al*. (2018); Martins (2008) and Mussoi (2014); Faludi *et al*. (2017).		

Nutrition-Focused Physical Findings

All health practitioners that collect a patient's history and take physical exams use the same overall techniques. It's up to each profession to adapt the basic techniques to support their diagnosis needs. For Nutrition, impaired physical signs or even nutritional excesses are identified.

The combination of physical exam with the patient's history is also called nutritional status clinical assessment. It involves the interpretation of symptoms and physical signs associated to the body's nutritional shifts. Clinical assessment can be efficient and effective to identify an individual's nutritional status, without entirely depending on objective tests.

Physical exam must be taken in a sequential and organized way, assessing all body systems. The head to toe approach (head and neck, cardiopulmonary system, gastrointestinal, urinary, musculoskeletal and neurological) is efficient and complete. This way, nutritional status and other assessment parameters can be interpreted.

Physical examination uses four techniques:

- Inspection (visual)
- Palpation (using fingertips and a slight pressure to identify subcutaneous structures under the skin)
- Auscultation (with a stethoscope)
- Percussion (tapping on a body's surface to assess fluid and solid structures)

Summarizing, a physical examination focused on nutrition starts with two components:

1. Overall observation:

- Observing overall appearance, personal hygiene
- Body positioning and posture
- Skin: wound detection and overall condition
- Consciousness level
- Presence of feeding devices, venous accesses, other medical devices
- Preferred communication method
- Facial expression
- Global muscular mass
- Subcutaneous fat presence and its distribution

2. Vital signs:

- Blood pressure
- Pulse
- Breathing
- Temperature

Once completing the patient's overall observation and checking vital signs, the next step is a more specific systems' evaluation focused in nutrition, including:

• Head and neck:

Observing hair condition, eye movement and sclera color, conjunctive, xanthomas presence, oral lesions, dentition and tongue movement.

• Skin:

Observing color, pigmentation, wounds, bruises or other lesions, wound cicatrisation quality, edema presence, petechia, temperature.

• Chest:

Observing symmetry, breathing sounds, heart sounds, muscular loss signs.

• Gastrointestinal:

Observing ascites, intestinal noises, distention, firmness when touching, presence and quality of intestinal sounds, presence of feeding devices and/or ostomies.

• Musculoskeletal and extremities:

Observing amputation, motor control, way of walking, muscular loss signs, strength, symmetry, involuntary movements presence, pain when moving, edema.

• Neurological:

Checking consciousness level, movement coordination, aphasia and dysphasia.

Client's History

The Client's History consists in current and past information related to personal, medical and social records.

Personal history contains overall client information such as age, gender, race, ethnicity, language, education and family functions.

Medical history presents the client's or its family's disease and health conditions that may have a nutritional impact.

Social history displays items such as socioeconomic status, living conditions, healthcare support systems and social support networks.

AND TERMINOLOGY FOR NUTRITION ASSESSMENT

This section presents a combined terms list of Nutrition Assessment and of Monitoring and Evaluation, such as described at eNCPT (2019). The terms for these two steps are practically the same, being client history terms used for Nutrition Assessment but not for Nutrition Monitoring and Evaluation. All other terms are used for assessment and monitoring and evaluation.

Each term is associated with a code from the Nutrition Care Process Terminology (NCPT).

Nutrition Assessment terminology is organised in five domains (categories) identified by initials corresponding to the original term in English. Each domain has classes and subclasses represented by alphanumeric codes. The domains contained in this step are:

- **Food/Nutrition-related history**: food and nutrient intake, food and nutrient administration, medication and complementary/alternative medicine use, knowledge/beliefs/attitudes, behavior, food and supply availability, physical activity and function, nutrition-related patient/client-centered measures.
- **Anthropometric measurements**: height, weight, Body Mass Index (BMI), growth pattern indices/percentile ranks and weight history.
- **Biochemical data, medical tests and procedures:** laboratory data, (e.g., electrolytes, glucose and lipid panel) and tests (e.g. gastric emptying time, resting metabolic rate).
- **Nutrition-Focused Physical Findings**: findings from a nutrition-focused physical exam, interview or the medical record including muscle and subcutaneous fat, oral health, suck/swallow/breathe ability, appetite and affect.
- **Client history**: current and past information related to personal, medical, family and social history. This domain's terms are just used in the Nutritional Assessment step and not in the Nutritional Monitoring and Evaluation.

Beyond these five domains, it also presents a terminology to support nutritionists in comparing data obtained with standards, with the terms list for **comparative standards**, referring to the energy estimated needs, from macro and micronutrients and the weight and growth recommendations.

Below follows a terms list of each one of these domains and comparative standards:

DOMAIN: FOOD/NUTRITION-RELATED HISTORY (FH)

Class: Food and Energy Intake (1)
Energy Intake (1.1)
Estimated Energy Intake (1.1.1)
Total energy estimated intake in 24 hours FH-1.1.1.1

Food and Beverage Intake (1.2)
Fluid Intake (1.2.1)
Estimated fluid intake FH-1.2.1.1
Measured fluid intake FH-1.2.1.2
Liquid meal replacement FH-1.2.1.3

Food Intake (1.2.2)
Amount of food FH-1.2.2.1
Types of food FH-1.2.2.2
Meal/snack patternFH-1.2.2.3
Diet quality indexFH-1.2.2.4
Food variety FH-1.2.2.5

Breastmilk/Infant Formula Intake (1.2.3)
Breastmilk intake FH-1.2.3.1
Infant formula intake FH-1.2.3.2

Enteral and Parenteral Intake (1.3)
Enteral Nutrition Intake (1.3.1)
Enteral nutrition formula/solution FH-1.3.1.1
Enteral tube feeding flush estimated volume in 24 hours FH-1.3.1.2

Parenteral Nutrition Intake (1.3.2)
Parenteral nutrition formula/solution FH-1.3.2.1
IV fluids FH-1.3.2.2

Bioactive Substance Intake (1.4)
Alcohol Intake (1.4.1)
Alcohol intake in one week FH-1.4.1.1
Alcohol intake in 24 hours FH-1.4.1.2
Days per week alcoholic drinks consumed FH-1.4.1.3

Bioactive Substance Intake (1.4.2)
Estimated bioactive substance intake FH-1.4.2.1
Measured bioactive substance intake FH-1.4.2.2
Food additive intake FH-1.4.2.3
Psyllium measured intake in 24 hours FH-1.4.2.2.4
Beta glucan measured intake in 24 hours FH-1.4.2.2.5
Food additives FH-1.4.2.6
Others (specify) FH-1.4.2.7

Caffeine Intake (1.4.3)
Total caffeine estimated intake in 24 hours FH-1.4.3.1

Macronutrient Intake (1.5)
Fat Intake (1.5.1)
Estimated fat intake FH-1.5.1.1
Measured fat intake FH-1.5.1.2
Trans fatty acid intake in 24 hours FH-1.5.1.3
Polyunsaturated fat intake FH-1.5.1.4
Linoleic acid intake in 24 hours FH-1.5.1.4.1
Monounsaturated fat intake in 24 hours FH-1.5.1.5
Omega-3 fatty acid intake in 24 hours FH-1.5.1.6
Alpha linolenic acid intake in 24 hours FH-1.5.1.6.1
Eicosapentaenoic acid intake in 24 hours FH-1.5.1.6.2
Docosahexaenoic acid intake in 24 hours FH-1.5.1.6.3
Essential fatty acid intake in 24 hours FH-1.5.1.7
Medium chain triglyceride intake in 24 hours FH-1.5.1.8

Cholesterol Intake (1.5.2)
Cholesterol estimated intake in 24 hours FH-1.5.2.1

Protein Intake (1.5.3)
Estimated protein intake FH-1.5.3.1
Measured protein intake FH-1.5.3.2
Casein intake in 24 hours FH-1.5.3.3
Whey intake in 24 hours FH-1.5.3.4
Gluten intake in 24 hours FH-1.5.3.5
Total protein intake per kg in 24 hours FH-1.5.3.6

Amino Acid Intake (1.5.4)
Estimated amino acid intake FH-1.5.4.1
Essential amino acid intake in 24 hours FH-1.5.4.2
Histidine intake in 24 hours FH-1.5.4.2.1
Methionine intake in 24 hours FH-1.5.4.2.2
Isoleucine intake in 24 hours FH-1.5.4.2.3
Leucine intake in 24 hours FH-1.5.4.2.4
Lysine intake in 24 hours FH-1.5.4.2.5
Threonine intake in 24 hours FH-1.5.4.2.6
Tryptophan intake in 24 hours FH-1.5.4.2.7
Phenylalanine intake in 24 hours FH-1.5.4.2.8
Valine intake in 24 hours FH-1.5.4.2.9
Nonessential amino acid intake in 24 hours FH-1.5.4.3
Arginine intake in 24 hours FH-1.5.4.3.1
Glutamine intake in 24 hours FH-1.5.4.3.2
Homocysteine intake in 24 hours FH-1.5.4.3.3
Tyramine intake in 24 hours FH-1.5.4.3.4
Tyrosine intake in 24 hours FH-1.5.4.3.5

Carbohydrate Intake (1.5.5)
Estimated carbohydrate intake FH-1.5.5.1
Complex carbohydrate intake in 24 hours FH-1.5.5.2
Simple carbohydrate intake in 24 hours FH-1.5.5.3
Galactose intake in 24 hours FH-1.5.5.4
Lactose intake in 24 hours FH-1.5.5.5
Fructose intake in 24 hours FH-1.5.5.6
Estimated total daily glycemic index value FH-1.5.5.7
Estimated total daily glycemic load FH-1.5.5.8
Total carbohydrate measured intake FH-1.5.5.9
Total carbohydrate intake from enteral nutrition in 24 hours FH-1.5.5.10
Total carbohydrate intake from parenteral nutrition in 24 hours FH-1.5.5.11
Total carbohydrate intake from intravenous fluids in 24 hours FH-1.5.5.12

Fiber Intake (1.5.6)
Total fiber intake in 24 hours FH-1.5.6.1
Soluble fiber intake in 24 hours FH-1.5.6.2
Insoluble fiber intake in 24 hours FH-1.5.6.3

Micronutrient Intake (1.6)
Vitamin Intake (1.6.1)
A (1)
C (2)
D (3)
E (4)
K (5)
Thiamin (6)
Riboflavin (7)
Niacin (8)
Folate (9)
B6 (10)
B12 (11)
Pantothenic acid (12)
Biotin (13)
Multivitamin (14)

Mineral/Element Intake (1.6.2)
Calcium (1)
Chloride (2)
Iron (3)
Magnesium (4)
Potassium (5)
Phosphorus (6)
Sodium (7)
Zinc (8)
Sulfate (9)
Fluoride (10)
Copper (11)
Iodine (12)
Selenium (13)
Manganese (14)
Chromium (15)
Molybdenum (16)
Boron (17)
Cobalt (18)
Multi-mineral (19)
Multi-trace element (20)

Class: Food and Nutrient Administration (2)
Diet History (2.1)
Diet Order (2.1.1)

General, healthful diet order FH-2.1.1.1
Modified diet order FH-2.1.1.2
Enteral nutrition order FH-2.1.1.3
Parenteral nutrition order FH-2.1.1.4

Diet Experience (2.1.2)
Previously prescribed diets FH-2.1.2.1
Previous diet/nutrition education/counselling FH-2.1.2.2
Self-selected diet/s followed FH-2.1.2.3
Dieting attempts FH-2.1.2.4
Food allergies FH-2.1.2.5
Food intolerance FH-2.1.2.6

Eating Environment (2.1.3)
Location FH-2.1.3.1
Atmosphere FH-2.1.3.2
Caregiver/companion FH-2.1.3.3
Appropriate breastfeeding accommodations/facility FH-2.1.3.4
Eats alone FH-2.1.3.5

Enteral and Parenteral Nutrition Administration
Enteral access FH-2.1.4.1
Parenteral access FH-2.1.4.2
Body position, EN FH-2.1.4.3

Fasting (2.1.5)
Fasting pattern in one calendar day, reported FH-2.1.5.1
Fasting pattern in one calendar week, reported FH-2.1.5.2
Fasting pattern in one calendar month, reported FH-2.1.5.3
Fasting pattern in one calendar year, reported FH-2.1.5.4
Fasting tolerance, reported FH-2.1.5.5

Class: Medication and Complementary/Alternative Medicine Use (3)
Medications (3.1)
Prescription medication use FH-3.1.1
Insulin sensitivity factor FH-3.1.1.1
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Edema of eyelid PD-1.1.6.8
Edema of foot PD-1.1.6.9
Edema of hand PD-1.1.6.10
Edema of scrotum PD-1.1.6.11
Edema of thigh PD-1.1.6.12
Edema of vulva PD-1.1.6.13
Mucosal edema PD-1.1.6.14
Sacral edema PD-1.1.6.15

Extremities (1.1.7)
Amputated foot PD-1.1.7.1
Amputated hand PD-1.1.7.2
Amputated leg PD-1.1.7.3
Athetoid movement PD-1.1.7.4
Decreased range of ankle movement PD-1.1.7.5
Decreased range of cervical spine movement PD-1.1.7.6
Decreased range of elbow movement PD-1.1.7.7
Decreased range of finger movement PD-1.1.7.8
Decreased range of foot movement PD-1.1.7.9
Decreased range of hip movement PD-1.1.7.10
Decreased range of knee movement PD-1.1.7.11
Decreased range of lumbar spine movement PD-1.1.7.12
Decreased range of shoulder movement PD-1.1.7.13
Decreased range of subtalar movement PD-1.1.7.14
Decreased range of thumb movement PD-1.1.7.15
Decreased range of toe movement PD-1.1.7.16
Decreased range of thoracic spine movement PD-1.1.7.17
Decreased range of wrist movement PD-1.1.7.18
Hypertonia PD-1.1.7.19
Hypotonia PD-1.1.7.20
Joint arthralgia PD-1.1.7.21
Lower limb spasticity PD-1.1.7.22
Peripheral cyanosis PD-1.1.7.23
Spasticity PD-1.1.7.24
Tetany PD-1.1.7.25
Upper limb spasticity PD-1.1.7.26

Eyes (1.1.8)
Abnormal vision PD-1.1.8.1
Angular blepharitis PD-1.1.8.2
Bitot's spots PD-1.1.8.3
Circles under eyes PD-1.1.8.4
Corneal arcus PD-1.1.8.5
Conjunctival discoloration PD-1.1.8.6
Conjunctival hemorrhage PD-1.1.8.7
Conjunctival keratinization PD-1.1.8.8
Excessive tear production PD-1.1.8.9
Keratomalacia PD-1.1.8.10
Jaundiced sclera PD-1.1.8.11
Night blindness PD-1.1.8.12
Ophthalmoplegia PD-1.1.8.13
Sunken eyes PD-1.1.8.14
Xerophthalmia PD-1.1.8.15
Xanthelasma PD-1.1.8.16
Pale conjunctiva PD-1.1.8.17

Genitourinary System (1.1.9)
Amenorrhea PD-1.1.9.1
Anuria PD-1.1.9.2
Delay in sexual development and/or puberty PD-1.1.9.3
MenorrhagiaPD-1.1.9.4
Oliguria PD-1.1.9.5
Polyuria PD-1.1.9.6

Hair (1.1.10)
Abnormal keratinization of hair follicle PD-1.1.10.1
Alopecia PD-1.1.10.2
Brittle hair PD-1.1.10.3
Corkscrew hairs PD-1.1.10.4
Dry hair PD-1.1.10.5
Fine hair PD-1.1.10.6
Follicular hyperkeratosis PD-1.1.10.7
Hair changes due to malnutrition PD-1.1.10.8
Hair lacks luster PD-1.1.10.9
Hypertrichosis PD-1.1.10.10
Increased loss of hair PD-1.1.10.11
Nutritional hair color change PD-1.1.10.12
White hair PD-1.1.10.13
Easily pluckable hair PD-1.1.10.14
Lanugo hair formationPD-1.1.10.15

Head (1.1.11)
Altered olfactory sense PD-1.1.11.1
Anosmia PD-1.1.11.2
Bulging fontanelle PD-1.1.11.3
Epistaxis PD-1.1.11.4
Headache PD-1.1.11.5

Hyposmia PD-1.1.11.6
Macrocephaly PD-1.1.11.7
Microcephaly PD-1.1.11.8
Nasal mucosa dry PD-1.1.11.9
Sunken fontanelle PD-1.1.11.10

Hand and Nails (1.1.12)
Beau's lines PD-1.1.12.1
Clubbing of nail PD-1.1.12.2
Flaking of nails PD-1.1.12.3
Koilonychia PD-1.1.12.4
Leukonychia PD-1.1.12.5
Longitudinal grooving of nails PD-1.1.12.6
Muehrcke's lines PD-1.1.12.7
Nail changes PD-1.1.12.8
Palmar erythema PD-1.1.12.9
Ridged nails PD-1.1.12.10
Splits in nails PD-1.1.12.11
Thin nails PD-1.1.12.12
Trachyonychia PD-1.1.12.13
Splinter hemorrhage under nail PD-1.1.12.14
White flecks in nails PD-1.1.12.15
Blue nail bed PD-1.1.12.16
Pale nail bed PD-1.1.12.17
Russell's sign PD-1.1.12.18

Mouth (1.1.13)
Ageusia PD-1.1.13.1
Angular stomatitis PD-1.1.13.2
Aphthous ulcer of mouth PD-1.1.13.3
Aptyalism PD-1.1.13.4
Blue lips PD-1.1.13.5
Blue line on gingiva PD-1.1.13.6
Candidiasis of the mouth PD-1.1.13.7
Cheilosis PD-1.1.13.8
Cheilitis PD-1.1.13.9
Cleft palate PD-1.1.13.10
Cracked lips PD-1.1.13.11
Drooling PD-1.1.13.12
Dry mucous membranes PD-1.1.13.13
Dysgeusia PD-1.1.13.14
Excessive salivation PD-1.1.13.15
Excessive thirst PD-1.1.13.16
Gingival hypertrophy PD-1.1.13.17
Gingivitis PD-1.1.13.18
Halitosis PD-1.1.13.19
Hemorrhagic gingivitis PD-1.1.13.20
Hypogeusia PD-1.1.13.21
Ketotic breath PD-1.1.13.22
Micrognathia PD-1.1.13.23
Swollen gums PD-1.1.13.24
Oral candidiasis PD-1.1.13.25
Oral lesion PD-1.1.13.26
Parotid swelling PD-1.1.13.27
Poor oral hygiene PD-1.1.13.28
Retains food in mouth PD-1.1.13.29
Stomatitis PD-1.1.13.30
Uremic breath PD-1.1.13.31
Pale gums PD-1.1.13.32

Muscles (1.1.14)
Muscle atrophy PD-1.1.14.1
Muscle contracture PD-1.1.14.2
Muscle cramp PD-1.1.14.3
Muscle pain PD-1.1.14.4
Muscle weakness PD-1.1.14.5
Quadriceps muscle atrophy PD-1.1.14.6
Deltoid muscle atrophy PD-1.1.14.7
Gastrocnemius muscle atrophy PD-1.1.14.8
Gluteal muscle atrophy PD-1.1.14.9
Interosseous hand muscle atrophy PD-1.1.14.10
Pectoral muscle atrophy PD-1.1.14.11
Temporalis muscle atrophy PD-1.1.14.12
Trapezius muscle atrophy PD-1.1.14.13
Latissimus dorsi muscle atrophy PD-1.1.14.14

Neck (1.1.15)
Goiter PD-1.1.15.1

Nerves, cognition and feelings (1.1.16)
Abnormal gait PD-1.1.16.1
Absent reflex PD-1.1.16.2
Asterixis PD-1.1.16.3
Ataxia PD-1.1.16.4
Clouded consciousness PD-1.1.16.5
Cranial nerve finding PD-1.1.16.6
Decreased vibratory sense PD-1.1.16.7
Delirious PD-1.1.16.8
Dementia PD-1.1.16.9
Depressed mood PD-1.1.16.10
Disoriented PD-1.1.16.11
Dizziness PD-1.1.16.12
Feels cold PD-1.1.16.13
Flat affect PD-1.1.16.14
Hyperreflexia PD-1.1.16.15
Hyporeflexia PD-1.1.16.16
Inappropriate affect PD-1.1.16.17
Many seizures a day PD-1.1.16.18
Numbness of foot PD-1.1.16.19
Numbness of hand PD-1.1.16.20
Peripheral nerve disease PD-1.1.16.21
Tremor of outstretched hand PD-1.1.16.22
Tingling of foot PD-1.1.16.23
Tingling of hand PD-1.1.16.24

Skin (1.1.17)
Acanthosis nigricans PD-1.1.17.1
Calcinosis PD-1.1.17.2
Carotenemia PD-1.1.17.3
Cutaneous xanthoma PD-1.1.17.4
Decreased skin turgor PD-1.1.17.5
Dermatitis PD-1.1.17.6
Diaper rash PD-1.1.17.7
Dry skin PD-1.1.17.8
Ecchymosis PD-1.1.17.9
Erythema PD-1.1.17.10
Eczema PD-1.1.17.11
Flushing PD-1.1.17.12
Hirsutism PD-1.1.17.13
Hyperpigmentation of skin PD-1.1.17.14
Impaired skin integrity PD-1.1.17.15
Jaundice PD-1.1.17.16
Keratinization of skin PD-1.1.17.17
Pale complexion PD-1.1.17.18
Peeling skin PD-1.1.17.19
Petechiae PD-1.1.17.20
Impaired wound healing PD-1.1.17.21
Pressure injury of ankles PD-1.1.17.22

Pressure injury of back PD-1.1.17.23
Pressure injury of breast PD-1.1.17.24
Pressure injury of buttock PD-1.1.17.25
Pressure injury of dorsum of foot PD-1.1.17.26
Pressure injury of elbow PD-1.1.17.27
Pressure injury of head PD-1.1.17.28
Pressure injury of heel PD-1.1.17.29
Pressure injury of hip PD-1.1.17.30
Pressure injury of knee PD-1.1.17.31
Pressure injury of natal cleft PD-1.1.17.32
Pressure injury of shoulder PD-1.1.17.33
Pressure injury stage 1 PD-1.1.17.34
Pressure injury stage 2 PD-1.1.17.35
Pressure injury stage 3 PD-1.1.17.36
Pressure injury stage 4 PD-1.1.17.37
Pruritus of the skin PD-1.1.17.38
Psoriasis PD-1.1.17.39
Scaling skin PD-1.1.17.40
Seborrheic dermatitis PD-1.1.17.41
Skin rash PD-1.1.17.42
Stasis ulcer PD-1.1.17.43
Yellow skin PD-1.1.17.44
Perifollicular hemorrhages PD-1.1.17.45
Pressure injury of the coccyx PD-1.1.17.46
Pressure injury of the sacrum PD-1.1.17.47
Vesiculobullous rash PD-1.1.17.48

Teeth (1.1.18)
Baby bottle tooth decay PD-1.1.18.1
Broken denture PD-1.1.18.2
Broken teeth PD-1.1.18.3
Dental caries PD-1.1.18.4
Dental fluorosis PD-1.1.18.5
Dental plaque PD-1.1.18.6
Denture loose PD-1.1.18.7
Denture lost PD-1.1.18.8
Denture present PD-1.1.18.9
Edentulous PD-1.1.18.10
Erosion of teeth PD-1.1.18.11
Impaired dentition PD-1.1.18.12
Ill fitting denture PD-1.1.18.13
Mottling of enamel PD-1.1.18.14
Partially edentulous mandible PD-1.1.18.15
Partially edentulous maxilla PD-1.1.18.16
Rampant dental caries PD-1.1.18.17

Throat and swallowing (1.1.19)
Choking during swallowing PD-1.1.19.1
Cough PD-1.1.19.2
Dysphagia PD-1.1.19.3
Esophageal lesion PD-1.1.19.4
Food sticks on swallowing PD-1.1.19.5
Gagging PD-1.1.19.6
Hoarse voice PD-1.1.19.7
Hypoactive gag reflex PD-1.1.19.8
Odynophagia PD-1.1.19.9
Swallow impairment PD-1.1.19.10
Suck, swallow, breath, incoordination PD-1.1.19.11

Tongue (1.1.20)
Atrophy of tongue papillae PD-1.1.20.1
Beefy red tongue PD-1.1.20.2
Difficulty moving tongue PD-1.1.20.3
Dry tongue PD-1.1.20.4
Glossitis PD-1.1.20.5
Glossodynia PD-1.1.20.6
Hypertrophy of tongue papillae PD-1.1.20.7
Lesion of the tongue PD-1.1.20.8
Strawberry tongue PD-1.1.20.9
Macroglossia PD-1.1.20.10
Short frenulum of tongue PD-1.1.20.11
Split frenulum of tongue PD-1.1.20.12
Blue tongue PD-1.1.20.13
Cracked tongue PD-1.1.20.14
Magenta tongue PD-1.1.20.15
Pale tongue PD-1.1.20.16

Vital Signs (1.1.21)
Blood pressure, systolic PD-1.1.21.1
Blood pressure, diastolic PD-1.1.21.2
Blood pressure, systolic, reported PD-1.1.21.3
Blood pressure, diastolic, reported PD-1.1.21.4
Heart rate PD-1.1.21.5
Jugular venous pressure PD-1.1.21.6
Mean arterial pressure PD-1.1.21.7
Pulse rate PD-1.1.21.8
Respiratory rate PD-1.1.21.9
Temperature PD-1.1.21.10

DOMAIN: CLIENT HISTORY (CH)

Personal History (1)
Personal Data (1.1)
Age CH-1.1.1
Gender CH-1.1.2
Sex CH-1.1.3
Race CH-1.1.4
Ethnicity CH-1.1.5
Language CH-1.1.6
Literacy factors CH-1.1.7
Education CH-1.1.8
Role in family CH-1.1.9
Tobacco use CH-1.1.10
Physical disability CH-1.1.11
Mobility CH-1.1.12

Patient/Client/Family Medical/Health History (2)
Patient/Client or Family Nutrition-Oriented Medical/Health History (2.1)
Patient/client chief nutrition complaint (specify) CH-2.1.1
Cardiovascular (specify) CH-2.1.2
Endocrine/metabolism (specify) CH-2.1.3
Excretory (specify) CH-2.1.4
Gastrointestinal (specify) CH-2.1.5
Gynecological (specify) CH-2.1.6
Hematology/oncology (specify) CH-2.1.7
Immune (e.g., food allergies) (specify) CH-2.1.8
Integumentary (specify) CH-2.1.9
Musculoskeletal (specify) CH-2.1.10
Neurological (specify) CH-2.1.11
Psychological (specify) CH-2.1.12
Respiratory (specify) CH-2.1.13
Other (specify) CH-2.1.14

Treatments/Therapy (2.2)
Medical treatment/therapy (specify) CH-2.2.1
Surgical treatment (specify) CH-2.2.2

Palliative/end of life care (specify) CH-2.2.3

Social History (3)
Social History (3.1)
Socioeconomic factors (specify) CH-3.1.1
Living/housing situation CH-3.1.2
Domestic issues CH-3.1.3
Social and medical support CH-3.1.4
Geographic location of home CH-3.1.5
Occupation CH-3.1.6
Religion CH-3.1.7
History of recent crisis CH-3.1.8
Daily stress level CH-3.1.9

DOMAIN: COMPARATIVE STANDARDS (CS)

Energy Needs (1)
Estimated Energy Needs (1.1)
Total energy estimated needs in 24 hours CS-1.1.1
Method for estimating total energy needs CS-1.1.2

Macronutrient Needs (2)
Estimated Fat Needs (2.1)
Total fat estimated needs in 24 hours CS-2.1.1
Total fat estimated needs per kg body weight CS-2.1.2
Method for estimating total fat needs CS-2.1.3

Estimated Protein Needs (2.2)
Total protein estimated needs in 24 hours CS-2.2.1
Total protein estimated needs per kg body weight CS-2.2.2
Method for estimating total protein needs CS-2.2.3

Estimated Carbohydrate Needs (2.3)
Total carbohydrate estimated needs in 24 hours CS-2.3.1
Total carbohydrate estimated needs per kg body weight CS-2.3.2
Method for estimating total carbohydrate needs CS-2.3.3

Estimated Fiber Needs (2.4)
Total fiber estimated needs in 24 hours CS-2.4.1
Method for estimating total fiber needs CS-2.4.2
Method for estimating needs CS-2.4.3

Fluid Needs (3)
Estimated Fluid Needs (3.1)
Total fluid estimated needs CS-3.1.1
Method for estimating needs CS-3.1.2

Micronutrient Needs (4)
Estimated Vitamin Needs (4.1)
A (1)
C (2)
D (3)
E (4)
K (5)
Thiamin (6)
Riboflavin (7)
Niacin (8)
Folate (9)
B6 (10)
B12 (11)
Pantothenic acid (12)
Biotin (13)
Method for estimating needs (14)

Estimated Mineral Needs (4.2)
Calcium (1)
Chloride (2)
Iron (3)
Magnesium (4)
Potassium (5)
Phosphorus (6)
Sodium (7)
Zinc (8)
Sulfate (9)
Fluoride (10)
Copper (11)
Iodine (12)
Selenium (13)
Manganese (14)
Chromium (15)
Molybdenum (16)
Boron (17)
Cobalt (18)
Method for estimating needs (19)

Weight and Growth Recommendation (5)
Recommended Body Weight/Body Mass Index/Growth (5.1)
Ideal/reference body weight (IBW) CS-5.1.1
Recommended body mass index (BMI) CS-5.1.2
Goal weight CS-5.1.3
Goal weight gain/day CS-5.1.4
Goal weight for length z score CS-5.1.5
Goal mid upper arm circumference z score CS-5.1.6
Goal BMI for age z score CS-5.1.7
Percent median BMI CS-5.1.8

Source: ACADEMY OF NUTRITION AND DIETETICS. **Electronic Nutrition Care Process Terminology (eNCPT)**: A Standardized Terminology to Ensure Optimal Nutrition Care. [*S. l.*]: 2019. Available at: http://ncpt.webauthor.com. Access on: 27 jun. 2020.

Nutrition Assessment Example in a Study Case

Part 1 – Conducting a Nutrition Assessment

This exercise's objective is to exemplify the Nutrition Assessment terminology usage through a patient's study case to facilitate this chapter's understanding.

– The patient is a 50 years old woman called Ana. Ana received an adrenal cancer diagnosis 3 months ago, when she began to present thoracic pain and fatigue, and she's currently in chemotherapy and radiotherapy treatment. Her doctor referred her to a nutritionist due to Ana's weight loss. She's a teacher, currently licensed from her professional activities, what makes her very sad. She lives by herself but counts on an assistant. She has a son that she misses a lot since he works in another town, usually visiting her during weekends. Ana reports a 9.07kg loss in 2 months and complaints about appetite loss, fatigue and oral lesions. Her ideal weight is 61.2 kg and height: 1.67m. Food history collection and the 24 hours diet record indicates that she ingests < 50% of her meals and frequently refuses some meals, ingesting between 1000-1200Kcal/day. She also reports that she used to go out every morning for a walk, but she's not feeling well disposed for that anymore.

Exercise suggestion: Based on your previous Nutrition knowledge and on information contained in this chapter, list which are the most important data for a nutrition assessment in this case.

After this exercise, check out the standardized Nutrition Assessment terms list and identify those that are adequate and that can be extracted from this patient's available information.

Also indicate which parameters or comparative standards can be used to assess the data; which data seem more important to provide a nutrition diagnosis and which unavailable terms in the current report can be collected in an upcoming assessment.

Now, let's go to the nutritionist selected terms in this patient's Nutrition Assessment:

Domain: Food/Nutrition-Related History

Class: Energy Intake (1.1). Subclass: Estimated Energy Intake (1.1.1)

- Total energy estimated intake in 24 hours (FH 1.1.1.1) = 1000 – 1200 Kcal/day.

Subclass: Food Intake (1.2.2)

- Amount of food (FH 1.2.2.1): Ingestion of < 50% of meals

Domain: Nutrition-Focused Physical Findings (PD)

- Decrease in appetite (PD-1.1.5.10)
- Oral lesion (PD-1.1.13.26)

Domain: Anthropometric Measurements (AD)

Class: Body Composition/Growth/Weight History (1.1)

- Height (AD-1.1.1): 1.67m
- Weight (AD-1.1.2): 61.2 kg
- Weight change (AD-1.1.4): 9.07kg reduction in 2 months
- BMI (AD-1.1.5.1): 21.9kg/m²

Domain: Client History

Class: Personal History (1). Subclass: Personal Data (1.1)

- Age (CH 1.1.1): 50 years old
- Gender (CH 1.1.2): Feminine

Class: Patient/Client/Family Medical/Health History (2)

- Medical treatment/therapy (CH 2.2.1): patient in chemotherapy and radiotherapy

Class: Social History (3)

- Occupation (CH 3.1.6): Teacher (licensed from her professional activities)

Comparative standards

Class: Energy Needs (1). Subclass: Estimated Energy Needs (1.1)

- Total energy estimated needs in 24 hours (CS 1.1.1): 1600 Kcal/day for weight maintenance
- Method for estimating total energy needs (CS 1.1.2): Mifflin-St Jeor equation with activity level for sedentary

Class: Weight and Growth Recommendation (5). Subclass: Recommended Body Weight/Body Mass Index/Growth (5.1)

- Recommended body mass index (BMI) (CS 5.1.2): 18.5-24.9 kg/m²

This concludes the study case referring to the Nutrition Assessment step. Proceed to the Nutrition Diagnosis step to continue with this study case.

CHAPTER 3: NUTRITION DIAGNOSIS

The second Nutrition Care Process (NCP) step is the Nutrition Diagnosis, defined at the eNCPT (c2020) as "the identification and labelling, by a nutrition practitioner, of one or more existing nutritional problems that can be solved by a nutrition intervention". This concept is essential for Nutrition practice, since it recognizes the nutritionist as the single professional responsible for diagnosing nutrition problems, consolidating its role in Healthcare. Nutrition diagnostics are different from medical diagnostics. A medical diagnosis is referred to a disease or specific organs or body systems condition, that can be treated or prevented. A medical diagnosis doesn't change whilst the disease or condition exists. Nutrition Diagnosis changes according to the individual's or populational group's answer. By definition, every nutrition diagnosis must have the possibility of being solved and belongs to the nutritionist's responsibility.

In order to determine a Nutrition Diagnosis, nutritionists must use a standard diagnosis terminology to label the client's diagnostics through collected and analysed data during Nutrition Assessment. These diagnostics must have a broad focus, pointing abnormal characteristics of specific nutrients ingestions, of clinical nutrition aspects and from the patient's behaviour and environment. Depending on the client/patient's condition, more than one nutrition diagnosis can be defined. In this case, it's appropriate to determine the priority diagnostics, choosing at most three diagnostics that allow an immediate intervention. The interventions' planner must be elaborated for a single nutrition diagnosis per time.

eNCPT provides a reference sheet for each nutrition diagnosis that includes its definition, etiology/possible causes and signs or common symptoms identified at Nutrition Assessment step. At NCP, nutrition diagnostics must be written with the exact same words used by every nutritionist.

Communicating a Nutrition Diagnosis

For Nutrition Diagnosis record, the Academy of Nutrition and Dietetics (AND) suggests using a structured and summarized format. This format is called PES statement (Problem, Etiology Signs and Symptoms) and it describes each problem, their main causes and the assessment data that provide evidences for Nutrition Diagnostics, bringing the whole Nutrition Assessment to a clearer vision (eNCPT, 2018).

The format for each PES statement is "[**Nutrition diagnosis term** (problem) **related to** (etiology), **as evidenced by** (signs / symptoms)]".

(P) Problem or Nutrition diagnosis term: it describes shifts in a client's nutritional status.	(E) Etiology: cause/contributing risk factors linked with a nutrition diagnosis term by the words "related to".	(S) Signs/symptoms: data or indicators used to determine a client's nutrition diagnosis. Linked with etiology by the words "as evidenced by".

Guidelines to write a clear PES statement:

When writing the PES statement, nutrition practitioners can make a series of questions that help clarifying a nutrition diagnosis.
P – Can the nutrition practitioner solve or improve the client's Nutrition Diagnosis?
E – Check if the etiology of each problem comprises its specific "root cause" that can be treated with a Nutrition Intervention. And if recurring to etiology doesn't solve the problem, can the nutritionist's intervention, at least, reduce the signs and symptoms?
S – Does the signs and symptoms measurement indicate if a problem was solved or improved? Are the signs and symptoms specific enough to monitor (measure/assess changes) and communicate a Nutrition Diagnosis solution?
Global PES – Do the Nutrition Assessment data support the nutrition diagnosis, etiology and signs and symptoms?

Critical thinking skills for Nutrition Diagnosis

Some critical thinking skills are necessary for Nutrition Diagnosis step. These skills can change according to the nutritionist's practice level. Namely:

- Finding a correlation between data and possible causes
- Inferencing
- Registering each problem in a clear and distinct manner
- Knowing how to include or exclude specific diagnostics
- Indicate an etiology for each problem that can be solved, minimized or managed by intervention(s)
- Identify measurable signs and symptoms whose shifts can be traced
- Knowing how to prioritize identified problems

AND TERMINOLOGY FOR NUTRITION DIAGNOSIS

This section will present the Nutrition Diagnosis terms list, such as described at eNCPT (2019).

The Nutrition Diagnosis terminology is organised in three domains (categories):

- **Intake**: actual problems related to intake of energy, nutrients, fluids, bioactive substances through oral diet or nutrition support. Intake excess or deficiency of a food or nutrient compared to real or estimated needs.
- **Clinical**: nutritional findings/problems identified that relate to medical or physical conditions.
- **Behavioral/Environmental**: nutritional findings/problems identified that relate to knowledge, attitudes/beliefs, physical environment, access to food, or food safety.

Below follows the terms list of each one of these domains:

DOMAIN: INTAKE – NI

Energy Balance (NI-1)
Actual or estimated changes in energy (calorie/kcal/kJ) balance
Increased Energy Expenditure NI-1.1
Inadequate Energy Intake NI-1.2
Excessive Energy Intake NI-1.3
Predicted Inadequate Energy Intake NI-1.4
Predicted Excessive Energy Intake NI-1.5

Oral or Nutrition Support Intake (NI-2)
Actual or estimated food and beverage intake from oral diet or nutrition support compared with client goal
Inadequate Oral Intake NI-2.1
Excessive Oral Intake NI-2.2
Inadequate Enteral Nutrition Infusion NI-2.3
Excessive Enteral Nutrition Infusion NI-2.4
Enteral Nutrition Composition Inconsistent with Needs NI-2.5
Enteral Nutrition Administration Inconsistent with Needs NI-2.6
Inadequate Parenteral Nutrition Infusion NI-2.7
Excessive Parenteral Nutrition Infusion NI-2.8
Parenteral Nutrition Composition Inconsistent with Needs NI-2.9
Parenteral Nutrition Administration Inconsistent with Needs NI-2.10
Limited Food Acceptance NI-2.11

Fluid Intake (NI-3)
Actual or estimated fluid intake compared with client goal
Inadequate Fluid Intake NI-3.1
Excessive Fluid Intake NI-3.2

Bioactive Substances (NI-4)
Actual or estimated intake of bioactive substances, including single or multiple functional food components, ingredients, dietary supplements, alcohol
Inadequate Bioactive Substance Intake (specify) NI-4.1
Inadequate plant stanol ester intake NI-4.1.1
Inadequate plant sterol ester intake NI-4.1.2
Inadequate soy protein intake NI-4.1.3
Inadequate psyllium intake NI-4.1.4
Inadequate beta glucan intake NI-4.1.5
Excessive Bioactive Substance Intake NI-4.2
Excessive plant stanol ester intake NI-4.2.1
Excessive plant sterol ester intake NI-4.2.2
Excessive soy protein intake NI-4.2.3
Excessive psyllium intake NI-4.2.4
Excessive beta glucan intake NI-4.2.5
Excessive food additive intake NI-4.2.6
Excessive caffeine intake NI-4.2.7
Excessive Alcohol Intake NI-4.3

Nutrient (NI-5)
Actual or estimated intake of specific nutrient groups or single nutrients as compared with desired levels
Increased nutrient needs NI-5.1
Inadequate protein-energy intake NI-5.2
Decreased nutrient needs NI-5.3
Imbalance of Nutrients NI-5.4

Fat and Cholesterol (NI-5.5)
Inadequate Fat Intake NI-5.5.1
Excessive Fat Intake NI-5.5.2
Intake of Types of Fats Inconsistent with Needs NI-5.5.3

Protein (NI-5.6)
Inadequate Protein Intake NI-5.6.1
Excessive Protein Intake NI-5.6.2
Intake of Types of Proteins Inconsistent with Needs, Intake of Types of Fats Inconsistent with Needs NI-5.6.3
Amino Acid (NI-5.7)
Intake of Types of Amino Acids Inconsistent with Needs NI-5.7.1

Carbohydrate and Fiber (NI-5.8)
Inadequate Carbohydrate Intake NI-5.8.1

Excessive Carbohydrate Intake NI-5.8.2
Intake of Types of Carbohydrate Inconsistent with Needs NI-5.8.3
Inconsistent Carbohydrate Intake NI-5.8.4
Inadequate Fiber Intake NI-5.8.5
Excessive Fiber Intake NI-5.8.6

Vitamin (NI-5.9)
Inadequate vitamin intake (specify) NI-5.9.1
A (1); C (2); D (3); E (4); K (5); Thiamin (6); Riboflavin (7); Niacin (8); Folate (9); B6 (10); B12 (11); Pantothenic acid (12); Biotin (13).

Excessive Vitamin Intake(Specify) NI-5.9.2
A (1); C (2); D (3); E (4); K (5); Thiamin (6); Riboflavin (7); Niacin (8); Folate (9); B6 (10); B12 (11); Pantothenic acid (12); Biotin (13)

Mineral (NI-5.10)
Inadequate Mineral Intake (Specify): NI-5.10.1
Calcium (1); Chloride (2); Iron (3); Magnesium (4); Potassium (5); Phosphorus (6); Sodium (7); Zinc (8); Sulfate (9); Fluoride (10); Copper (11); Iodine (12); Selenium (13); Manganese (14); Chromium (15); Molybdenum (16); Boron (17); Cobalt (18).

Excessive Mineral Intake (Specify): NI-5.10.2
Calcium (1); Chloride (2); Iron (3); Magnesium (4); Potassium (5); Phosphorus (6); Sodium (7); Zinc (8); Sulfate (9); Fluoride (10); Copper (11); Iodine (12); Selenium (13); Manganese (14); Chromium (15); Molybdenum (16); Boron (17); Cobalt (18).

Multinutrient (NI-5.11)
Predicted Inadequate Nutrient Intake (Specify) NI-5.11.1
Predicted Excessive Nutrient Intake (Specify) NI-5.11.2

DOMAIN: CLINICAL- NC
Nutritional findings/problems identified that relate to medical or physical conditions.

Functional (NC-1)
Change in physical or mechanical functioning that interferes with or prevents desired nutritional consequences
Swallowing Difficulty NC-1.1
Biting/Chewing (Masticatory) Difficulty NC-1.2
Breastfeeding Difficulty NC-1.3
Altered Gastrointestinal (GI) Function NC-1.4
Predicted Breastfeeding Difficulty NC-1.5

Biochemical (NC-2)
Change in capacity to metabolize nutrients as a result of medications, surgery, or as indicated by altered laboratory values.
Impaired Nutrient Utilization NC-2.1
Altered nutrition related laboratory values NC-2.2
Food Medication Interaction NC-2.3
Predicted Food Medication Interaction NC-2.4

Weight (NC-3)
Chronic weight or changed weight status when compared with usual or desired body weight.
Underweight NC-3.1
Unintended Weight Loss NC-3.2
Overweight/Obesity NC-3.3
Overweight, adult or pediatric NC-3.3.1
Obese, pediatric NC-3.3.2
Obese, Class I NC-3.3.3
Obese, Class II NC-3.3.4
Obese, Class III NC-3.3.5
Unintended Weight Gain NC-3.4
Growth Rate Below Expected NC-3.5
Excessive Growth Rate NC-3.6

Malnutrition Disorders (NC-4)
Health consequences resulting from insufficient or excessive energy and/or nutrient intake compared to physiologic needs and/or utilization.
Malnutrition (undernutrition) NC-4.1
Starvation related malnutrition NC-4.1.1
Moderate starvation related malnutrition NC-4.1.1.1
Severe starvation related malnutrition NC-4.1.1.2
Chronic disease or condition related malnutrition NC-4.1.2
Moderate chronic disease or condition related malnutrition NC-4.1.2.1
Severe chronic disease or condition related malnutrition NC-4.1.2.2
Acute disease or injury related malnutrition NC-4.1.3
Moderate acute disease or injury related malnutrition NC-4.1.3.1
Severe acute disease or injury related malnutrition NC-4.1.3.2
Non illness related pediatric malnutrition NC-4.1.4
Mild non illness related pediatric malnutrition NC-4.1.4.1
Moderate non illness related pediatric malnutrition NC-4.1.4.2
Severe non illness related pediatric malnutrition NC-4.1.4.3
Illness related pediatric malnutrition NC-4.1.5
Mild illness related pediatric malnutrition NC-4.1.5.1
Moderate illness related pediatric malnutrition NC-4.1.5.2
Severe illness related pediatric malnutrition NC-4.1.5.3

DOMAIN: BEHAVIORAL-ENVIRONMENTAL - NB
Nutritional findings/problems identified that relate to knowledge, attitudes/beliefs, physical environment, access to food, or food safety.

Knowledge and Beliefs (NB-1)
Actual knowledge and beliefs as related, observed, or documented.
Food and Nutrition Related Knowledge Deficit NB-1.1
Unsupported Beliefs/Attitudes About Food or Nutrition Related Topics NB-1.2
Not Ready for Diet/Lifestyle Change NB-1.3
Self Monitoring Deficit NB-1.4
Disordered Eating Pattern NB-1.5
Limited Adherence to Nutrition Related Recommendations NB-1.6
Undesirable Food Choices NB-1.7

Physical Activity and Function (NB-2)
Actual physical activity, self care, and quality of life

problems as reported, observed, or documented.

Inatividade física NB-2.1
Physical Inactivity NB-2.1
Excessive Physical Activity NB-2.2
Inability to Manage Self Care NB-2.3
Impaired Ability to Prepare Foods/Meals NB-2.4
Poor nutrition quality of life NB-2.5
Self Feeding Difficulty NB-2.6

Food Safety and Access (NB-3)
Intake of Unsafe Food NB-3.1
Limited Access to Food NB-3.2
Limited Access to Nutrition Related Supplies NB-3.3
Limited Access to Potable Water NB-3.4

DOMAIN: OTHER - NO
Nutrition findings that are not classified as intake, clinical or behavioral-environmental problems.
No Nutrition Diagnosis At This Time NO-1.1

Source: ACADEMY OF NUTRITION AND DIETETICS. **Electronic Nutrition Care Process Terminology (eNCPT)**: A Standardized Terminology to Ensure Optimal Nutrition Care. [*S. l.*]: 2019. Available at: http://ncpt.webauthor.com. Access on: 27 jun. 2020.

NUTRITION DIAGNOSIS EXAMPLE IN A STUDY CASE

Part 2 – Identifying and communicating a Nutrition Diagnosis

Here the Nutrition Diagnosis terminology use and the communication development in a PES statement will be exemplified, following the study case started at the Nutrition Assessment step.

- Remembering this is about patient Ana, a female, 50 years old and diagnosed with adrenal cancer, currently in consultation with a nutritionist.

These are Nutrition Assessment data considered to be relevant for a Nutrition Diagnosis:

- 9.07kg weight loss in 2 months
- Normal BMI
- Chemotherapy and radiotherapy treatment in course
- Fatigue, appetite loss, oral lesions, generally indisposed
- Partial acceptance (<50%) and meals refusal
- The 24 hours diet record indicates a 1000-1200Kcal/day caloric intake

Which are the possible PES format statements for the patient in question, based on Nutrition Assessment data?

1. Inadequate energy intake (problem) **related to** appetite reduction and oral lesions (etiology), **as evidenced by** 9.07kg weight loss in 2 months (sign/symptom).
2. Inadequate energy intake (problem) **related to** appetite reduction and oral lesions (etiology), **as evidenced by** low caloric intake and weight loss (sign/symptom).
3. Inadequate energy intake (problem) **related to** appetite reduction and oral lesions (etiology), **as evidenced by** < 50% meals ingestion and frequent meals and snacks refusal (sign/symptom).

    - Observe that the PES statement format connects assessment, intervention and monitoring. Etiology indicates what kind of intervention is necessary and signs and symptoms indicate what must be monitored and reassessed by the nutritionist.
    - The nutrition diagnostics used in these examples were selected from the domain: INTAKE (NI) and they are, respectively: Inadequate energy intake (NI-1.2) and Inadequate oral intake (NI-2.1)
    - To support in reasoning and to assess if the issued PES statement is adequate, think about the questions that can be made:

- The identified problem can be solved by a nutritionist?
- Does the etiology make sense? Does it relate to the assessment data?
- Are there one or more possible interventions?
- The nutritionist will be able to monitor this patient based on the stated signs and symptoms?

In the listed example, we can answer yes to these questions. In this case, the most adequate PES statement choice can be made based on the resources available to the nutritionist when reassessing this patient. In other words, the stated signs and symptoms will be able to be reassessed for the intervention(s) goal(s) monitoring.

In this context, we'll use the PES statement number 2: Inadequate energy intake **related to** appetite loss and oral lesions **as evidenced by** low caloric intake (between 1000-1200Kcal) and weight loss.

This concludes the study case referring to Nutrition Diagnosis step.

To proceed with, what about using your previous Nutrition knowledge and list which nutrition intervention(s) could be performed for this patient based on the chosen PES statement?
After listing one or more interventions, proceed to Nutrition Intervention step to continue this study case.

CHAPTER 4: NUTRITION INTERVENTION

After problem identification, we progress to the Nutrition Care Process (NCP) problem solution step, when practitioners plan and execute nutrition interventions focused, whenever possible, on the problem(s) etiology(ies) or in nutrition diagnosis signs and symptoms reduction.

A Nutrition Intervention is a planned action intentioned to shift a nutrition related behavior, a risk factor, an environmental condition or a health status aspect, solving or improving the identified diagnosis or nutritional problems.

In other words, nutrition diagnosis and its etiology determine the selection of a nutrition intervention. The nutrition planned actions chosen to shift or eliminate the etiology or reduce the signs and symptoms of a nutritional problem and the usage of the defined Nutrition Intervention terminology facilitate the understanding between all health practitioners and other collaborators, showing that nutritional interventions are capable of maintaining or improving health and minimizing the disease.

Nutritional prescription declares in a concise and customized way the recommended energy and/or food or nutrients intake based on reference standards and current food guidelines and in the client's health condition diagnosis. It is an essential part of Nutrition Intervention planning and it is established using Nutrition Assessment data; the Nutrition Diagnosis (PES) statement; evidences, policies and current procedures; and the client's values and preferences.

With the client's goals and nutritional prescription established, the nutrition practitioner creates an action plan based on people centered care goals and in scientific evidences to solve or reduce nutritional problems.

Nutrition Intervention goals, ideally developed in collaboration with the client, constitute the base for progress monitoring and outcomes evaluation.

Nutrition Intervention is performed in two distinct and interrelated stages: planning and implementation.

Planning a Nutrition Intervention involves:

– Prioritizing interventions based on urgency, impact and available resources;

– Defining with the client the intervention goals for each diagnosis;

– Writing a customized nutritional prescription based on recommended diet energy and/or food or nutrients intake chosen according to current reference standards and diet guidelines and in a client's health and nutrition status diagnosis;

– Choosing specific nutrition intervention strategies focused on the problem's etiology and renowned for being effective based on the best knowledge and current evidence;

– Setting the time and frequency of care.

Implementation is the action step and it encompasses:

– Agreeing the care plan execution with the client;
– Communicating the nutritional care plan;
– Modifying the care plan, when necessary;
– Following up and checking if the plan's being implemented;
– Reviewing strategies based on condition shifts or intervention answers.

Critical thinking skills for Nutrition Intervention step

- Knowing how to establish and prioritize goals
- Defining the nutritional prescription or a basic plan
- Making interdisciplinary connections
- Establishing nutritional intervention strategies according to the client's needs and values and the nutrition diagnosis(tics)
- Determining an action plan
- Determining care time and frequency

AND TERMINOLOGY FOR NUTRITION INTERVENTION

This section will present a Nutrition Intervention terms list, as described at eNCPT (2019).

Nutrition Intervention terminology is organised in four domains (categories):

- **Food and/or nutrient delivery**: individualized approach for food /nutrient provision.
- **Nutrition Education**: formal process to instruct or train clients in a skill or to impart knowledge to help patients/clients voluntarily manage or modify food, nutrition and physical activity choices and behavior to maintain or improve health.
- **Nutrition Counseling**: a supportive process, characterized by a collaborative counselor–patient/client relationship to establish food, nutrition and physical activity priorities, goals, and individualized action plans that acknowledge and foster responsibility for self-care to treat an existing condition and promote health.
- **Coordination of Nutrition Care by a Nutrition Professional**: consultation with, referral to, or coordination of nutrition care with other providers, institutions, or agencies that can assist in treating or managing nutrition-related problems.

Each one of these domains has classes and subclasses that can be used by all Nutrition practitioners in all nutrition intervention environments (e.g. communities, public health service, home care, long-term care, private clinic and ambulatory care) for all age groups.

Below follows the terms list of each one of these domains:

NUTRITION PRESCRIPTION (NP) NP-1.1
The client's tailored recommended dietary intake of energy and/or selected foods or nutrients based on current reference standards and evidenced based practice nutrition guidelines and related to the client's health and nutrition diagnosis (specify).

DOMAIN: FOOD AND/OR NUTRIENT DELIVERY (ND)
Individualized approach for food /nutrient provision.

Meals and Snacks (1)
Regular eating episode (meal); food served between regular meals (snack).
General healthful diet ND-1.1

Modify composition of meals/snacks ND-1.2
Texture modified diet (1) ND-1.2.1
Easy to chew diet ND-1.2.1.1
Mechanically altered diet ND-1.2.1.2
Pureed diet ND-1.2.1.3
Liquid consistency thin liquids ND-1.2.1.4
Liquid consistency nectar thick liquids ND-1.2.1.5
Liquid consistency honey thick liquids ND-1.2.1.6
Liquid consistency spoon thick liquids ND-1.2.1.7

Energy modified diet (2) ND-1.2.2
Increased energy diet ND-1.2.2.1
Decreased energy diet ND-1.2.2.2

Protein modified diet (3) ND-1.2.3
Consistent protein diet ND-1.2.3.1
Increased protein diet ND-1.2.3.2
Decreased protein diet ND-1.2.3.3
Decreased casein diet ND-1.2.3.4
Decreased gluten diet ND-1.2.3.5
Gluten free diet ND-1.2.3.5.1
Amino acid modified diet ND-1.2.3.6
Arginine modified diet ND-1.2.3.6.1
Increased arginine diet ND-1.2.3.6.1.1
Decreased arginine diet ND-1.2.3.6.1.2
Glutamine modified diet ND-1.2.3.6.2
Increased glutamine diet ND-1.2.3.6.2.1
Decreased glutamine diet ND-1.2.3.6.2.2
Histidine modified diet ND-1.2.3.6.3
Increased histidine diet ND-1.2.3.6.3.1
Decreased histidine diet ND-1.2.3.6.3.2
Increased homocysteine diet ND-1.2.3.6.4
Isoleucine modified diet ND-1.2.3.6.5
Increased isoleucine diet ND-1.2.3.6.5.1
Decreased isoleucine diet ND-1.2.3.6.5.2
Leucine modified diet ND-1.2.3.6.6
Increased leucine diet ND-1.2.3.6.6.1
Decreased leucine diet ND-1.2.3.6.6.2
Lysine modified diet ND-1.2.3.6.7
Increased lysine diet ND-1.2.3.6.7.1
Decreased lysine diet ND-1.2.3.6.7.2
Methionine modified diet ND-1.2.3.6.8
Increased methionine diet ND-1.2.3.6.8.1
Decreased methionine diet ND-1.2.3.6.8.2
Phenylalanine modified diet ND-1.2.3.6.9

Increased phenylalanine diet ND-1.2.3.6.9.1
Decreased phenylalanine diet ND-1.2.3.6.9.2
Threonine modified diet ND-1.2.3.6.10
Increased threonine diet ND-1.2.3.6.10.1
Decreased threonine diet ND-1.2.3.6.10.2
Tryptophan modified diet ND-1.2.3.6.11
Increased tryptophan diet ND-1.2.3.6.11.1
Decreased tryptophan diet ND-1.2.3.6.11.2
Decreased tyramine diet ND-1.2.3.6.12
Tyrosine modified diet ND-1.2.3.6.13
Increased tyrosine diet ND-1.2.3.6.13.1
Decreased tyrosine diet ND-1.2.3.6.13.2
Valine modified diet ND-1.2.3.6.14
Increased valine diet ND-1.2.3.6.14.1
Decreased valine diet ND-1.2.3.6.14.2

Carbohydrate modified diet (4) ND-1.2.4
Consistent carbohydrate diet ND-1.2.4.1
Increased carbohydrate diet ND-1.2.4.2
Increased complex carbohydrate diet ND-1.2.4.2.1
Increased simple carbohydrate diet ND-1.2.4.2.2
Decreased carbohydrate diet ND-1.2.4.3
Decreased complex carbohydrate diet ND-1.2.4.3.1
Decreased simple carbohydrate diet ND-1.2.4.3.2
Galactose modified diet ND-1.2.4.4
Increased galactose diet ND-1.2.4.4.1
Decreased galactose dietND-1.2.4.4.2
Lactose modified diet ND-1.2.4.5
Increased lactose diet ND-1.2.4.5.1
Decreased lactose diet ND-1.2.4.5.2
Fructose modified diet ND-1.2.4.6
Increased fructose diet ND-1.2.4.6.1
Decreased fructose diet ND-1.2.4.6.2

Fat modified diet (5) ND-1.2.5
Increased fat diet ND-1.2.5.1
Decreased fat diet ND-1.2.5.2
Monounsaturated fat modified diet ND-1.2.5.3
Increased monounsaturated fat diet ND-1.2.5.3.1
Decreased monounsaturated fat diet ND-1.2.5.3.2
Polyunsaturated fat modified diet ND-1.2.5.4
Increased polyunsaturated fat diet ND-1.2.5.4.1

Increased linoleic acid diet ND-1.2.5.4.1.1
Decreased polyunsaturated fat diet ND-1.2.5.4.2
Decreased linoleic acid diet ND-1.2.5.4.2.1
Saturated fat modified diet ND-1.2.5.5
Decreased saturated fat diet ND-1.2.5.5.1
Trans fat modified diet ND-1.2.5.6
Decreased trans fat modified diet ND-1.2.5.6.1
Omega 3 fatty acid modified diet ND-1.2.5.7
Increased omega 3 fatty acid diet ND-1.2.5.7.1
Increased alpha linolenic acid diet ND-1.2.5.7.1.1
Increased eicosapentaenoic acid diet ND-1.2.5.7.1.2
Increased docosahexaenoic acid ND-1.2.5.7.1.3
Decreased omega 3 fatty acid diet ND-1.2.5.7.2
Decreased alpha linolenic acid diet ND-1.2.5.7.2.1
Decreased eicosapentaenoic acid diet ND-1.2.5.7.2.2
Decreased docosahexaenoic acid diet ND-1.2.5.7.2.3
Medium chain triglyceride modified diet ND-1.2.5.8
Increased medium chain triglyceride diet ND-1.2.5.8.1
Decreased medium chain triglyceride diet ND-1.2.5.8.2

Cholesterol modified diet (6) ND-1.2.6
Decreased cholesterol diet ND-1.2.6.1

Fiber modified diet (7) ND-1.2.7
Increased fiber diet ND-1.2.7.1
Decreased fiber diet ND-1.2.7.2
Soluble fiber modified diet ND-1.2.7.3
Increased soluble fiber diet ND-1.2.7.3.1
Decreased soluble fiber diet ND-1.2.7.3.2
Insoluble fiber modified diet ND-1.2.7.4
Increased insoluble fiber diet ND-1.2.7.4.1
Decreased insoluble fiber diet ND-1.2.7.4.2

Fluid modified diet (8) ND-1.2.8
Increased fluid diet ND-1.2.8.1
Fluid restricted diet ND-1.2.8.2
Clear liquid diet ND-1.2.8.3
Full liquid diet ND-1.2.8.4

Diets modified for specific foods or ingredients (9) ND-1.2.9
Vitamin modified diet (10) ND-1.2.10
Vitamin A modified diet ND-1.2.10.1
Increased vitamin A diet ND-1.2.10.1.1
Decreased vitamin A diet ND-1.2.10.1.2
Vitamin C modified diet ND-1.2.10.2
Increased vitamin C diet ND-1.2.10.2.1
Decreased vitamin C diet ND-1.2.10.2.2
Vitamin D modified diet ND-1.2.10.3
Increased vitamin D diet ND-1.2.10.3.1
Decreased vitamin D diet ND-1.2.10.3.2
Vitamin E modified diet ND-1.2.10.4
Increased vitamin E diet ND-1.2.10.4.1
Decreased vitamin E diet ND-1.2.10.4.2
Vitamin K modified diet ND-1.2.10.5
Increased vitamin K diet ND-1.2.10.5.1
Decreased vitamin K diet ND-1.2.10.5.2
Thiamine modified diet ND-1.2.10.6
Increased thiamine diet ND-1.2.10.6.1
Decreased thiamine diet ND-1.2.10.6.2
Riboflavin modified diet ND-1.2.10.7
Increased riboflavin diet ND-1.2.10.7.1
Decreased riboflavin diet ND-1.2.10.7.2
Niacin modified diet ND-1.2.10.8
Increased niacin diet ND-1.2.10.8.1
Decreased niacin diet ND-1.2.10.8.2
Folic acid modified diet ND-1.2.10.9
Increased folic acid dietND-1.2.10.9.1
Decreased folic acid diet ND-1.2.10.9.2 11004
Vitamin B6 modified diet ND-1.2.10.10 10924
Increased vitamin B6 diet ND-1.2.10.10.1
Decreased vitamin B6 diet ND-1.2.10.10.2
Vitamin B12 modified diet ND-1.2.10.11
Increased vitamin B12 diet ND-1.2.10.11.1
Decreased vitamin B12 diet ND-1.2.10.11.2
Pantothenic acid modified diet ND-1.2.10.12
Increased pantothenic acid diet ND-1.2.10.12.1
Decreased pantothenic acid diet ND-1.2.10.12.2
Biotin modified diet ND-1.2.10.13 10917
Increased biotin diet ND-1.2.10.13.1
Decreased biotin dietND-1.2.10.13.2

Mineral modified diet (11) ND-1.2.11
Calcium modified diet ND-1.2.11.1
Increased calcium diet ND-1.2.11.1.1

Decreased calcium diet ND-1.2.11.1.2
Chloride modified diet ND-1.2.11.2
Iron modified diet ND-1.2.11.3
Increased iron diet ND-1.2.11.3.1
Decreased iron diet ND-1.2.11.3.2
Magnesium modified diet ND-1.2.11.4
Increased magnesium diet ND-1.2.11.4.1
Decreased magnesium diet ND-1.2.11.4.2
Potassium modified diet ND-1.2.11.5
Increased potassium diet ND-1.2.11.5.1
Decreased potassium diet ND-1.2.11.5.2
Phosphorus modified dietND-1.2.11.6
Increased phosphorus diet ND-1.2.11.6.1
Decreased phosphorus diet ND-1.2.11.6.2
Sodium modified diet ND-1.2.11.7
Increased sodium diet ND-1.2.11.7.1
Decreased sodium diet ND-1.2.11.7.2
Zinc modified diet ND-1.2.11.8
Increased zinc diet ND-1.2.11.8.1
Decreased zinc diet ND-1.2.11.8.2
Sulfur modified diet ND-1.2.11.9
Fluoride modified diet ND-1.2.11.10
Copper modified diet ND-1.2.11.11
Increased copper diet ND-1.2.11.11.1
Decreased copper diet ND-1.2.11.11.2
Iodine modified diet ND-1.2.11.12
Increased iodine diet ND-1.2.11.12.1
Decreased iodine diet ND-1.2.11.12.2
Selenium modified diet ND-1.2.11.13
Manganese modified diet ND-1.2.11.14
Chromium modified diet ND-1.2.11.15
Increased chromium diet ND-1.2.11.15.1
Molybdenum modified diet ND-1.2.11.16
Boron modified diet ND-1.2.11.17
Cobalt modified diet ND-1.2.11.18

Modify schedule of food/fluids ND-1.3
Modify schedule of intake to limit fasting ND-1.3.1

Specific foods/beverages or groups ND-1.4
Fruit modified diet ND-1.4.1
Vegetable modified diet ND-1.4.2
Starchy vegetable modified diet ND-1.4.2.1
Bean and pea modified diet ND-1.4.2.2
Grain modified diet ND-1.4.3
Diet modified for uncooked food starch ND-1.4.3.1
Protein food modified diet ND-1.4.4
Diet with foods modified to be low in protein ND-1.4.4.1
Diet modified for egg ND-1.4.4.2
Raw egg free diet ND-1.4.4.2.1
Other ND-1.5

Enteral and Parenteral Nutrition (2)
Nutrition provided through the GI tract via tube, catheter, or stoma (enteral) or intravenously, centrally or peripherally (parenteral).

Enteral Nutrition (2.1)
Nutrition provided through the GI tract.
Modify composition of enteral nutrition ND-2.1.1
Modify concentration of enteral nutrition ND-2.1.2
Modify rate of enteral nutrition ND-2.1.3
Modify volume of enteral nutrition ND-2.1.4
Modify schedule of enteral nutrition ND-2.1.5
Modify route of enteral nutrition ND-2.1.6
Insert enteral feeding tube ND-2.1.7
Enteral nutrition site care ND-2.1.8
Feeding tube flush ND-2.1.9

Parenteral Nutrition/IV Fluids (2.2)
Nutrition and fluids provided intravenously.
Modify composition of parenteral nutrition ND-2.2.1
Modify concentration of parenteral nutrition ND-2.2.2
Modify rate of parenteral nutrition ND-2.2.3
Modify volume of parenteral nutrition ND-2.2.4
Modify schedule of parenteral nutrition ND-2.2.5
Modify route of parenteral nutrition ND-2.2.6
Parenteral nutrition site care ND-2.2.7
IV fluid delivery ND-2.2.8

Nutrition Supplement Therapy (3)
Medical Food Suplement Therapy (3.1)
Commercial or prepared foods or beverages intended to supplement energy, protein, carbohydrate, fiber, and/or fat intake.
Commercial beverage medical food supplement therapy ND-3.1.1
Commercial food medical food supplement therapy ND-3.1.2
Modified beverage medical food supplement therapy ND-3.1.3
Modified food medical food supplement therapy ND-3.1.4
Purpose of medical food supplement therapy ND-3.1.5

Vitamin and Mineral Supplement Therapy (3.2)
Supplemental vitamins or minerals.
Multivitamin mineral supplement therapy ND-3.2.1
Multitrace element supplement therapy ND-3.2.2
Vitamin supplement therapy ND-3.2.3
A (1); C (2); D (3); E (4); K (5); Thiamin (6); Riboflavin (7); Niacin (8); Folate (9); B6 (10); B12 (11); Pantothenic acid (12); Biotin (13).

Mineral supplement therapy ND-3.2.4
Calcium (1); Chloride (2); Iron (3); Magnesium (4); Potassium (5); Phosphorus (6); Sodium (7); Zinc (8); Sulfate (9); Fluoride (10); Copper (11); Iodine (12); Selenium (13); Manganese (14); Chromium (15); Molybdenum (16); Boron (17); Cobalt (18).

Bioactive Substance Management (3.3)
Addition or change in provision of bioactive substances.
Plant stanol esters management ND-3.3.1
Plant sterol esters management ND-3.3.2
Soy protein management ND-3.3.3
Psyllium management ND-3.3.4
Beta glucan management ND-3.3.5
Food additives management ND-3.3.6
Alcohol management ND-3.3.7
Caffeine management ND-3.3.8
Other (specify) ND-3.3.9

Feeding Assistance Management (4)
Accommodation or assistance in eating.
Adaptive eating device management ND-4.1

Feeding position management ND-4.2
Meal set up management ND-4.3
Mouth care management ND-4.4
Menu selection assistance ND-4.5
Other ND-4.6

Manage Feeding Environment (5)
Adjustment of the factors where food is served that impact food consumption.
Feeding environment lighting management ND-5.1
Feeding environment odors management ND-5.2
Feeding environment distractions management ND-5.3
Feeding environment table height management ND-5.4
Feeding environment table service management ND-5.5
Feeding environment room temperature management ND-5.6
Feeding environment meal service management ND-5.7
Feeding environment meal location management ND-5.8
Other ND-5.9

Nutrition Related Medication Management (6)
Modification of a medication or complementary/alternative medicine to optimize patient/client nutritional or health status.
Management of nutrition related prescription medication ND-6.1
Management of nutrition related over the counter (OTC) medication ND-6.2
Management of nutrition related complementary and alternative medicine ND-6.3

DOMAIN: NUTRITION EDUCATION (E)
Formal process to instruct or train clients in a skill or to impart knowledge to help patients/clients voluntarily manage or modify food, nutrition and physical activity choices and behavior to maintain or improve health.

Nutrition Education Content (1)
Instruction or training intended to lead to nutrition-related knowledge.

Content related nutrition education E-1.1
Education on nutrition's influence on health E-1.2
Physical activity guidance E-1.3
Nutrition relation with health/disease E-1.4
Recommended modifications E-1.5
Other and related topics E-1.6
Other E-1.7
Physical activity directive E-1.8

Nutrition Education Application (2)
Instruction or training intended to lead to results in interpretation and/or nutrition related skills.
Result interpretation E-2.1
Skill development E-2.2
Other E-2.3

NUTRITION COUNSELING (C)
A supportive process, characterized by a collaborative counselor–patient/client relationship to establish food, nutrition and physical activity priorities, goals, and individualized action plans that acknowledge and foster responsibility for self-care to treat an existing condition and promote health.

Theoretical Basis/Approach (1)
The theories or models used to design and implement an intervention.
Nutrition counseling based on cognitive behavioral theory approach C-1.1
Nutrition counseling based on health belief model C-1.2
Nutrition counseling based on social learning theory approach C-1.3
Nutrition counseling based on transtheoretical model stages of change approach C-1.4
Other C-1.5

Strategies (2)
Selectively applied evidence-based methods or plans of action designed to achieve a particular goal.
Nutrition counseling based on motivational interviewing strategy C-2.1
Nutrition counseling based on goal setting strategy C-2.2
Nutrition counseling based on self monitoring strategy C-2.3
Nutrition counseling based on problem solving strategy C-2.4
Nutrition counseling based on social support strategy C-2.5
Nutrition counseling based on stress management strategy C-2.6
Nutrition counseling based on stimulus control strategy C-2.7
Nutrition counseling based on cognitive restructuring strategy C-2.8
Nutrition counseling based on relapse prevention strategy C-2.9
Nutrition counseling based on rewards and contingency management strategy C-2.10
Other C-2.11

DOMAIN: COORDINATION OF NUTRITION CARE BY A NUTRITION PROFESSIONAL (RC)
Consultation with, referral to, or coordination of nutrition care with other providers, institutions, or agencies that can assist in treating or managing nutrition-related problems.

Collaboration and Referral of Nutrition Care (1)
Facilitating services with other professionals, institutions, or agencies during nutrition care.
Team meeting involving nutrition professional RC-1.1
Referral by nutrition professional to another nutrition professional with different expertise RC-1.2
Collaboration by nutrition professional with other nutrition professionals RC-1.3
Collaboration by nutrition professional with other providers RC-1.4
Referral by nutrition professional to other providers RC-1.5
Referral by nutrition professional to community

agencies and programs RC-1.6	
Discharge and Transfer of Nutrition Care to a New Setting or Provider (2) *Discharge planning and transfer of nutrition care from one level or location of care to another.*	Discharge and transfer of nutrition care to other providers RC-2.1 Discharge and transfer of nutrition care to community agencies and programs RC-2.2 Discharge and transfer of nutrition care from nutrition professional to another nutrition professional RC-2.3

Fonte: ACADEMY OF NUTRITION AND DIETETICS. **Electronic Nutrition Care Process Terminology (eNCPT)**: A Standardized Terminology to Ensure Optimal Nutrition Care. [*S. l.*]: 2019. Available at: http://ncpt.webauthor.com. Access on: 27 jun. 2020.

NUTRITION INTERVENTION EXAMPLE IN A STUDY CASE

Part 3 – Defining the Nutrition Intervention

In this section we'll use the nutrition intervention terminology to develop a nutritional prescription.

- ✓ We'll continue with the case of patient Ana, of 50 years of age, with an adrenal cancer diagnosis, being attended by a nutritionist.

These Nutrition Assessment data are relevant for the Nutrition Intervention:

- 9.07kg weight loss in 2 months
- Normal BMI
- Chemotherapy and radiotherapy treatment in course
- Fatigue, appetite loss, oral lesions, generally indisposed
- Partial acceptance (<50%) and meals refusal
- The 24 hours diet record indicates a 1000-1200Kcal/day caloric intake

Reviewing the PES statements and the signs and symptoms that could potentially be solved with an adequate nutritional prescription, which would be the possible nutritional prescriptions for Ana, based on the etiology from PES statements issued at the Nutrition Diagnosis step?
Remember that PES statements are developed from data collected at Nutrition Assessment. The problem defines Nutrition Diagnosis. Etiologies indicate the kind of necessary Nutrition Intervention. And the signs and symptoms indicate what will be necessary for monitoring and evaluation.

Assessing the PES statement:

- ✓ Inadequate oral intake **related to** appetite loss and oral lesions **as evidenced by** low caloric intake (between 1000-1200Kcal) and weight loss.

In this case, the nutritionist can resort to the appetite loss and oral lesions etiology and plan an intervention that corrects the inadequate oral intake. The signs and symptoms of low caloric intake and weight loss can be effectively monitored.

Having used your knowledge to list some possible conducts for this case, check the Nutrition Intervention terms list and choose the standardized terms that are similar to your recommended conduct.

For this patient, the main Nutrition Intervention could be:

- ✓ Meal set up management (ND-4.3), with orientations for changing to an increased energy diet (ND-1.2.2.1). In this intervention, the nutritionist could plan a diet with a higher caloric density and higher meals fractioning.

Complimentary intervention could also be:

- ✓ Using Nutrition Supplement Therapy (ND-3), prescribing a commercial beverage (ND-3.1.1).

- ✓ It would also be important to use the Nutrition Education (E) domain to guide over recommended modifications (E-1.5) as well as care with hygiene and food preparation and adapting the meals according to the treatment's collateral effects.

This concludes the study case referring to Nutrition Intervention step. Proceed to Nutrition Monitoring and Evaluation to continue this study case.

CHAPTER 5: NUTRITION MONITORING AND EVALUATION

The fourth Nutrition Care Process step (NCP), Nutrition Monitoring and Evaluation, is the step when the nutritionist can determine how much progress has been achieved in the nutritional intervention goals established in the previous step. In it, one checks the care outcomes and relevant indicators for the diagnosis and nutrition intervention. After the Nutrition Diagnosis, the nutritionist determines the most adequate nutrition intervention based on the assessment, the client's goals and the (etiological) cause of this diagnosis. Planning for Nutrition Monitoring and Evaluation is the final component of nutrition intervention step.

In initial care, indicators must be chosen for monitoring and evaluation. In subsequent sessions, also known as nutritional reassessments, practitioners evaluate and communicate if the nutrition problem or related problems still exist and the progress made in problem(s) solving. For each session, the nutritionist previously defines the appropriate reassessment data or the nutritional care indicators that will be revised and compared with reference standards, recommendations, client goals or previous data.

At the Nutrition Monitoring and Evaluation step, there are three actions that consist in monitoring, measuring and evaluating changes in nutritional care indicators, namely:

– Monitoring: at this stage the professionals monitor, presenting evidences that nutritional intervention is or isn't altering any behavior or status. Monitoring usually begins during nutrition interventions planning, when the nutritionist must decide which data will be necessary to post-evaluate if the intervention is being successful. For this, it's important to choose the indicators that have the potential to change during the determined monitoring period.

– Measuring: it consists in measuring outcomes gathering data for indicators. There are several ways of measuring a nutritional interventions answer. An example would be to apply a pre-test before providing a patient's/client's nutrition education intervention and, afterwards, apply a post-test. Changes in test scoring can be used as a nutrition education success measurement.

– Evaluating: the moment when the nutritionist compares current outcomes with previous ones, evaluating the Nutritional Intervention goals and the intervention's general impact over the client's nutrition, at the Nutrition Diagnosis and at the health outcomes. A precise evaluation depends on the correct reference selection for the indicators that are being monitored.

For this step, it's also important to define what are nutrition outcomes and indicators.

Nutrition Outcomes: it can be seen as outcomes obtained from an intervention directly linked with actions taken by a nutritionist. The outcomes will be related to Nutrition Diagnosis and the intervention plan goals. Short and long-term outcomes can be defined.

Outcomes can be measured by indicators of nutrition related history, of anthropometric measurements, of biochemical data, of medical tests and procedures, of nutrition-focused physical findings, of acquired knowledge and behavior shift.

Indicators: markers that can be measured and evaluated to determine the nutritional care effectiveness. At NCP, they're called signs and symptoms.

At evaluation, indicators are collected and gathered to identify and label a nutrition

diagnosis. They also identify the problem cause. Chosen indicators can be used, in the future, to evaluate changes in nutrition diagnosis and in intervention goals. They are also used in nutrition care quality management.

Indicators are compared to criteria or norms and relevant reference standards. Norms and reference standards can be national, international or regulatory.

Monitoring and Measurement evaluation involves the simultaneous evaluation of multiple indicators and the determination of general progress towards nutritional diagnostics solution. It's suggested that professionals use the following definitions to communicate the status of each nutrition diagnosis:

- New: when a diagnosis that hasn't been identified in the previous evaluation is identified in the current one
- Active: nutrition diagnosis signs and symptoms still require nutrition intervention and monitoring and evaluation to achieve the goal
- Solved: identified signs and symptoms in nutrition diagnosis achieved the goal
- Discontinued: the nutrition diagnosis no longer exists because the patient/client condition has changed. The client's current assessment data no longer sustains this nutrition diagnosis.

Critical thinking skills for Nutrition Monitoring and Evaluation

- Choose appropriate indicators
- Use appropriate reference standards for data comparison
- Identify how the client is in terms of expected outcomes
- Know how to explain the expected outcomes variation to the client
- Ability to determine the factors that help or complicate the progress
- Know how to decide between medical release or continued care

AND TERMINOLOGY FOR NUTRITION MONITORING AND EVALUATION

The terms for the steps of Nutrition Assessment and Nutrition Monitoring and Evaluation are practically the same, just exclusively using the client's history terms for Assessment, but not for Monitoring and Evaluation. All the other terms are used for both. For this reason, you can see the terms for Nutrition Monitoring and Evaluation step at Chapter 2 – Nutrition Assessment.

NUTRITION MONITORING AND EVALUATION EXAMPLE IN A STUDY CASE

Part 4 – Performing reassessment and monitoring a nutrition diagnosis

We reached the last NCP exercise stage, where we'll exemplify the Nutrition Monitoring and Evaluation terminology use.

- Now, patient Ana returns for a review with the nutritionist.

These are the Nutrition Assessment data considered relevant for Nutrition Intervention:

- 9.07kg weight loss in 2 months
- Normal BMI
- Chemotherapy and radiotherapy treatment in course
- Fatigue, appetite loss, oral lesions, generally indisposed
- Partial acceptance (<50%) and meals refusal
- The 24 hours diet record indicates a 1000-1200Kcal/day caloric intake

For Nutrition intervention, the nutritionist opted for concentration in the PES statement: Inadequate oral intake **related to** appetite loss and oral lesions **as evidenced by** low caloric intake (between 1000-1200Kcal) and weight loss.

Remembering that PES statements connect the Nutrition Assessment, Nutrition Intervention and Nutrition Monitoring and Evaluation steps.
– The **P**roblem is the nutrition diagnosis
– The **E**tiology indicates which type of intervention may be necessary
– The **S**igns and symptoms indicate what will be needed to monitor and evaluate

Using these data, the nutritionist recurred to the etiology of appetite loss and oral lesions and provided orientations for an increase in caloric density and higher meals fractioning.

- ✓ If the signs and symptoms indicate what will be monitored, for this patient, the nutritionist will monitor the caloric intake and weight loss. These indicators, therefore, will be evaluated again by the nutritionist, as a way to assess if the nutritional interventions achieved the expected outcomes.

The prescription for this patient was:

- ✓ Meals set up management (ND-4.3), with instructions for a shift to an increased energy diet (ND-1.2.2.1). In this intervention, the nutritionist planned a diet with higher caloric density and higher meals fractioning.

Therefore, the terminology used for Monitoring and Evaluation would be:

- ✓ Total energy estimated intake in 24 hours (FH 1.1.1.1)
- ✓ Weight (AD 1.1.2)
- ✓ Weight change (AD 1.1.4)

After assessing these chosen indicators, the nutritionist will be able to determine the overall progress towards the identified diagnosis solutions and, by classifying if the diagnosis status is new, active, solved or discontinued, it will define if a new NCP cycle begins or if the process has been concluded for this patient.

Remembering that NCP steps aren't necessarily linear. In other words, if diagnosis remains active at Monitoring and Evaluation step, a new intervention may be necessary, and the same indicators can be reassessed, or new indicators may be identified during monitoring. If diagnosis is solved, a new assessment may be necessary and so on.

CONCLUSION AND CLINICAL CASE DISCUSSION

As we've seen, Nutrition Care Process (NCP) serves as a script for Nutrition care, guiding, through its four steps, the care decisions. In theory, we can split these four steps in two components: identification and problem solving. This distinction can be useful for application purposes. Problem identification includes Nutrition Assessment and Reassessment (Step 1) and Nutrition Diagnosis (Step 2). Problem solving covers Nutrition Intervention (Step 3) and Nutrition Monitoring and Evaluation (Step 4).

This manual intended to show how NCP clarifies the nutritionist role in medical care, favouring the practice based on evidence and research. The content displayed here is a summarized NCP reading and aims at stimulating the progression of necessary skills for its learning and application, considering that it will depend on the apprentice's exploration of previous knowledge and practice level.

It's important to highlight that the model passes through constant reviews. Therefore, we suggest the immersion and update on the Academy of Nutrition and Dietetics (AND) website, https://www.eatrightpro.org/.

In order to bring together theoretical learning and practice, shall we discuss a new clinical case?

PROBLEMATIZATION

It's about a woman, 30 years old, called Camila, diagnosed with diabetes mellitus 16 years ago. At the current moment, she has been hospitalized with nausea, vomit and abdominal pain that worsened in the last two days. During the nutritionist's admission visit, she was accompanied by her father. She was a little lethargic and complained about a "slight" nausea. She reported using insulin glargine every morning and insulin aspart for carbohydrate count. This routine was maintained at the hospital. At the assessment moment, she received venous hydration. When collecting the client's food and nutrition related history, Camila reported that she recently had an appointment with a gastroenterologist, since she noticed that when her blood glucose is decompensated, she has gastroparesis crisis that last between one or two days, combined with nauseas and pain that limit her food intake capacity during these days and noticing that she really eats a bit more than the usual in the following day. It has been occurring, more or less, once per month in the last eight months. She affirms that, for having diabetes for many years, she has no doubts about its management since she regularly attends an endocrinologist. But she associates these decompensations with the periods when she works in irregular hours and, for many times, when she's travelling. She works in event productions and affirms that in some weeks she gets really busy and "she doesn't know how to organise her feeding".

In the last weeks, she had a 3kg weight loss, associated with an intense work week with unregulated food intake, followed by a week of low food intake, about 50% of usual, when the nauseas already manifested. Physical exam reveals a lean appearance with little body fat.

Body Composition/Growth/Weight History (AD-1.1)
Height (AD-1.1.1): 1.65 m
Weight (AD-1.1.2): 48 Kg
BMI (AD-1.1.5.1): 17.68 Kg/m²
Usual stated body weight (UBW) (AD-1.1.2.5): 51 Kg
Weight change Percentage (AD-1.1.4.3): 5.88% of loss in 2 weeks

Laboratory test: Urea: 35mg/dL. Creatinine: 1.1mg/dL. K: 4.0mEq/L. Na: 138mEq/L Glucose: 156mg/dL. Glycated haemoglobin: 7.4%. Albumin: 3.6g/dL.

1. Which are the nutrition diagnostics for the patient Camila and in which domain they are found?
2. Identify the signs and symptoms and the indicators for these diagnostics and write the PES statement.
3. Once nutritional problems are identified, we'll progress to the problem-solving stage. We can focus in etiology or signs and symptoms reduction. For this, it's necessary to establish the goals with the patient and to elaborate a nutritional prescription. Therefore, answer the following:
   a. Which goals can be established for Camila in each diagnosis?
   b. Define the nutritional prescription based on urgency, impact and available resources.
4. Which indicators can be monitored for identified nutrition diagnostics?

Try to solve the questions and, afterwards, check the answers below.

1. Which are the nutrition diagnostics for the patient Camila and in which domain they are found?

Answer: It's possible to identify two nutrition diagnostics:
1 – Inadequate oral intake (NI-2.1), at Intake domain (NI)
2 – Unintended weight loss (NC-3.2), at Clinical domain (NC)

2. Identify the signs and symptoms and the indicators for these diagnostics and write the PES statement.

Answer: For each diagnosis, we'll issue a PES statement
1 – Inadequate oral intake related to nausea as evidenced by a 50% inferior intake compared to the usual, last week.
2 – Unintended weight loss related to inadequate oral intake in the last two weeks as evidenced by a 5.88% weight loss.

3. Once nutritional problems are identified, we'll progress to the problem-solving stage. We can focus in etiology or signs and symptoms reduction. For this, it's necessary to establish the goals with the patient and to elaborate a nutritional prescription. Therefore, answer the following:

a. Which goals can be established for Camila in each diagnosis?

Answer: Considering that the patient has a reduced food intake due to nauseas, the goal for Intake diagnosis domain could be that Camila consume more than 75% of meals before hospital release. This would be a priority goal.
At the Clinical domain diagnosis, unintended weight loss, the goal could be to assure that Camila keep an adequate intake to match her nutritional needs after medical release to recover her lost weight in 30-40 days.

b. The main prescription could be:

General healthful diet (ND- 1.1)

This intervention refers to an unrestricted diet, prioritizing estimated need at the moment. Considering that the patient is experienced in carbohydrate count, she'll be able to make choices based on her condition and appetite. It's indispensable that this conduct is agreed with the patient and that this planning is followed up and modified, if necessary.

4. Which indicators can be monitored for identified nutrition diagnostics?

Answer:
1 – Intake > 75% of meals – by current intake estimate
2 – Weight at medical release

It's important to note that intake domain diagnostics will be naturally a priority, since those are the most capable to be solved in short term. At Camila's example, a probable short hospitalization may be necessary. For Clinical domain diagnosis, a new intervention could be prescript at hospital release based on a third goal, that could be: Don't proceed with a new hospitalization for the same reason in 30 days.

The intervention would be:

Discharge and transfer of nutrition care from a nutrition professional to another nutrition professional (RC-2.3)

A transfer can be performed containing the information about the indicators to be monitored by the nutritionist in ambulatory level. An alert can be defined to indicate if Camila has been readmitted in the next 30 days.

REFERENCES

ACADEMY OF NUTRITION AND DIETETICS. **Electronic Nutrition Care Process Terminology (eNCPT)**: A Standardized Terminology to Ensure Optimal Nutrition Care. [*S. l.*]: 2019. Available at: http://ncpt.webauthor.com. Access on: 27 Jun. 2020.

ACADEMY OF NUTRITION AND DIETETICS. **Electronic Nutrition Care Process Terminology (eNCPT)**: **The Nutrition Care Process (NCP)**. [*S. l.*]: c2020. Available at: https://www.ncpro.org/nutrition-care-process. Access on: 22 Aug. 2020.

ACADEMY OF NUTRITION AND DIETETICS. **Electronic Nutrition Care Process Terminology (eNCPT)**: **The Nutrition Care Process (NCP)**. [*S. l.*]: 2018. Available at: https://www.ncpro.org/nutrition-diagnosis-snapshot. Access on: 17 Feb. 2020.

ANDRIGHETTI, L. H. *et al*. **Farmacologia aplicada à nutrição e interpretação de exames laboratoriais**. 2. ed. Porto Alegre: SAGAH, 2018.

ATALAH SAMUR, E. et al. Propuesta de um nuevo estándar de Evaluación nutricional em embarazadas. **Rev. Med. Chile**, [S. l.], v. 125, n. 12, p. 1429-1436, 1997.

FALUDI, A. et al. Atualização da Diretriz Brasileira de Dislipidemias e Prevenção da Aterosclerose - 2017. **Arquivos Brasileiros de Cardiologia**, v. 109, n. 1, 2017.

BRASIL. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Título. Brasília, DF: Ministério da Saúde, 2011. (Série G. Estatística e Informação em Saúde). Available at: https://bvsms.saude.gov.br/bvs/publicacoes/orientacoes_coleta_analise_dados_antropometricos.pdf. Access on: 11 Oct. 2020.

DE ONIS, M. et al. Development of a WHO growth reference for school-aged children and adolescents. Bulletin of the World Health Organization, [S. l.], v. 85, p. 660-667, 2007.

INSTITUTE OF MEDICINE. **Nutrition during pregnancy**. Washington D.C. US: National Academy Press, 1990.

LACEY, K.; PRITCHETT, E. Nutrition Care Process and Model: ADA adopts road map to quality care and outcomes management. **Journal of the American Dietetic Association**, [*S. l.*], v. 103, n. 8, p. 1061–1072, Aug. 2003.

MARTINS, C. **Avaliação do Estado Nutricional e Diagnóstico**. Curitiba (PR): Nutroclínica, 2008.

MARTINS, C. **Diagnósticos em Nutrição:** fundamentos e implementação da padronização internacional. 1. edição. Porto Alegre: Artmed, 2016.

MUSSOI, T. **Avaliação nutricional na prática clínica**: da gestação ao envelhecimento. 1st ed. Rio de Janeiro: Guanabara Koogan, 2014.

THE NUTRITION SCREENING INITIATIVE. **Incorporating nutrition screening and interventions into medical practice**: a monograph for physicians. Washington D.C. US: American Academy of Family Physicians, The American Dietetic Association, National Council on Aging Inc., 1994.

WORLD HEALTH ORGANIZATION. **Who child growth standards**: length/height-for-age, weight-for-age, weight- for-length, weight-for-height and body mass index-for-age. Methods and development. WHO (nonserial publication). Geneva, Switzerland: WHO, 2006.

WORLD HEALTH ORGANIZATION. **Obesity**: preventing and managing the global epidemic: Report of a WHO consultation on obesity. (WHO Technical Report Series n. 894). Geneva, Switzerland: WHO, 2000.

WORLD HEALTH ORGANIZATION. **Physical Status**: the use and interpretation of anthropometry. Geneva, Switzerland: WHO, 1995. (WHO Technical Report Series, n. 854).

WRITING GROUP OF THE NUTRITION CARE PROCESS/STANDARDIZED LANGUAGE COMMITTEE. Nutrition

Care Process and Model Part I: The 2008 Update. **Journal of the Academy of Nutrition and Dietetics**, [*S. l.*], v. 108, n. 7, p. 1113-1117, 2008.

FURTHER READINGS SUGGESTIONS

GRABOIS, V. Gestão do cuidado. *In*: OLIVEIRA, R. G. *et al*. **Qualificação de gestores do SUS**. Rio de Janeiro: EAD/Ensp, 2009. chapter 6, p. 159-197.

HAMMOND, M. I.; MYERS, E. F.; TROSTLER, N. Nutrition Care Process and Model: An Academic and Practice Odyssey. **Journal of the Academy of Nutrition and Dietetics**, [*S.I*], v. 114, n. 12, p. 1879–1894, Dec. 2014.

MAHAN, L. K.; ESCOTT-STUMP, S.; RAYMOND, J. L. **Krause**: alimentos, nutrição e dietoterapia. Translation from Claudia Coana *et al*. 13. ed. Rio de Janeiro: Elsevier, 2013. 1.228 p.

MATHIEU, J.; FOUST, M.; OUELLETTE, P. Implementing nutrition diagnosis, step two in the Nutrition Care Process and model: challenges and lessons learned in two health care facilities. **Journal of the American Dietetic Association**, [*S. l.*], v. 105, n. 10, p. 1636-1640, 2005.

MOORE, M. **Pocket guide to nutrition assessment and care**. [*S.I.*], 6. ed. Mosby, 2009.

MORDARSKI, B. WOLFF, J. **Nutrition Focused Physical Exam Pocket Guide**. [*S.I.*], AND, 2008.

WOLFE, A. Institute of Medicine Report: crossing the quality chasm: a new health care system for the 21st century. **Policy, Politics, & Nursing Practice**, [*S. l.*], v. 2, n. 3, p. 233–235, 1 Aug. 2001.

WRITING GROUP OF THE NUTRITION CARE PROCESS/STANDARDIZED LANGUAGE COMMITTEE. Nutrition Care Process Part II: Using the International Dietetics and Nutrition Terminology to Document the Nutrition Care Process. **Journal of the Academy of Nutrition and Dietetics**, [*S. l.*], v. 108, n. 8, p. 1291-1293, 1 Aug. 2008.