Utilizing the Nutrition Care Process Across Care Settings in Infants and Children

Presenter: Patricia J. Becker, MS RDN CSP FAND

Live event date: September 20th, 2023 - *Recording on NutriciaLearningCenter.com*

Learning Objectives:

Compare and contrast the screening, assessment, diagnosis, and intervention of medically complex infants & children across the continuum of care

Develop PES statements for medically complex infants and children, such as those with food allergies and complex gastrointestinal conditions

Identify opportunities to communicate PES statement and recommendations to the medical team, and its impact on patient care, coding and billing for care

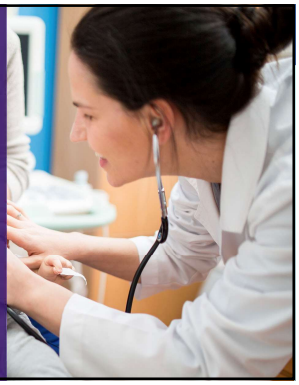
Notes:

Nutricia North America supports the use of breast milk wherever possible.

©2023 Nutricia North America – Nurses may claim CE credit for this webinar. RDs may claim CE credit for this webinar through 05/31/2024. To obtain a certificate of attendance: 1) Complete this survey

NLC
NUTRICIA LEARNING CENTER

Utilizing the Nutrition Care Process Across Care Settings in Infants and Children



Patricia J. Becker
MS RDN CSP FAND
September 20, 2023

1

Disclosures

- Speaker Disclosures:
  - Honorarium provided by Nutricia
  - Adjunct Professor Columbus State Community College
- ***None pose any conflict of interest for this presentation***

The opinions reflected in this presentation are those of the speaker and independent of Nutricia North America

2

Learning Objectives

Participants in this activity will learn to:

- Compare and contrast the screening, assessment, diagnosis, and intervention of medically complex infants & children across the continuum of care
- Develop PES statements for medically complex infants and children, such as those with food allergies and complex gastrointestinal conditions
- Identify opportunities to communicate PES statement and recommendations to the medical team, and its impact on patient care, coding and billing for care

3

© 2023 Nutricia North America

The Continuum of Care in Pediatrics

- Pediatrics is unique
- Prenatal(fetal) – birth – neonatal – infant – child – teen – adults with pediatric conditions
- Care settings
  - The primary care / community setting
  - The homecare setting
  - The outpatient / ambulatory care setting
  - The partial or day treatment setting
  - The inpatient acute care setting

4

The Continuum of Care in Pediatrics

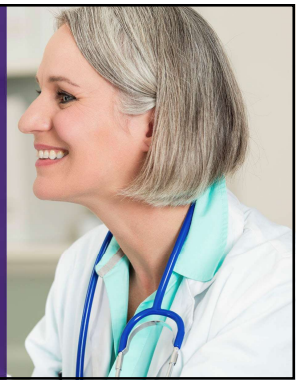
- Pediatrics is unique
- The well child
- The acutely ill child
  - Critical care
  - trauma
- The child with complex care needs
  - Disease related
  - Behavioral health relate

5

NUTRICIA LEARNING CENTER

Caring for children across the continuum

Tools and processes



6

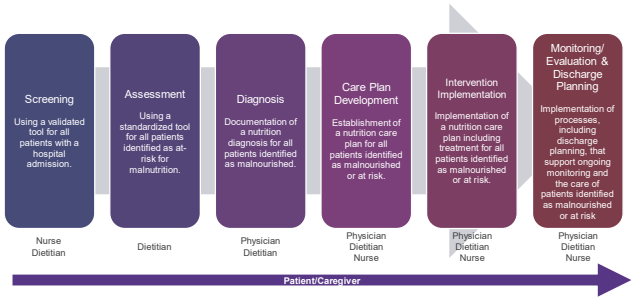
© 2023 Nutricia North America

MQii

- Malnutrition quality improvement initiative
  - https://malnutritionquality.org
  - https://malnutritionquality.org/mqii-toolkit
  - https://malnutritionquality.org/starting-qi/quick-start-guide

7

Malnutrition care work flow



8

MQii

- Screen
  - Is a validated tool used?
  - Are at risk results communicated?
  - Is an RDN consulted?
- Assessment
  - Is an assessment completed, documented, communicated?

https://malnutritionquality.org/starting-qi/quick-start-guide/

9

© 2023 Nutricia North America

MQii

- Diagnosis
  - Is a diagnosis made, document, communicated?
  - Do RDNs have order writing privileges?
  - Are providers aware of their role in documenting a nutrition diagnosis and its addition to the problem list
- Intervention
  - Are interventions clearly defined and communicated?
  - Are they administered to the child?

10

MQii

Monitoring and evaluation

Is there a plan to reassess / rescreen?

Is there a method to discuss / obtain feedback regarding nutrition care?

Discharge planning

Are nutrition instruction / planning part of the plan of care?

Is there coordination with next-in-line providers?

11

MQii

If you answered "No" to any of these questions, these are you opportunities for improvement.

https://malnutritionquality.org/mqii-toolkit/

12

© 2023 Nutricia North America

MQii: eCQM electronic composite quality measures

1	2	3	4
Screen for malnutrition risk	Conduct nutrition assessment	Document malnutrition diagnosis	Document nutrition care plan
Nutrition screening using a validated tool upon admission	Nutrition assessment using a standardized tool for those identified with malnutrition risk	Documentation of malnutrition diagnosis for those identified as malnourished	Development and documentation of a nutrition care plan for those identified as malnourished

13

MQii

Reasons to Report to the GMCS

The GMCS Is the First Malnutrition-Specific Quality Measure Adopted into a CMS Payment Program

- The GMCS represents the first 4 steps of the standard clinical nutrition care process
- The GMCS is in the eCQM Category
- Hospitals choose 3 of 9 measures from this category for IQR reporting to CMS

Malnutrition Quality Improvement Initiative. Global Malnutrition Composite Score: frequently asked questions. https://malnutritionquality.org/wp-content/uploads/GMCS_FAQs_2023.pdf. Published May 4, 2023.

14

The NCP: a review

- Screening
- Assessment – monitoring/evaluation
- Diagnosis
- Interventions

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. J Am Diet Assoc. 2008 Aug;108(8):1287-93. doi: 10.1016/j.jada.2008.06.368. PMID: 18656567.

15

© 2023 Nutricia North America

Nutrition assessment

Definition: a systematic approach to collect, classify and analyze the relevant data required to identify nutrition related problems and their causes.

NCP step 1: nutrition assessment terminology / domains				
Food – nutrition related history	**Anthropometric measurements**	**Biochemical data, medical tests, procedures**	**NFPF**	**Client history**
Nutrient intake, medications, beliefs, food availability, activity, quality of life	Height/length, weight, weight gain/loss, growth, growth patterns / charting	Lab data, tests, medical / surgical procedures	Fat / muscle status, overall appearance, micronutrient status	Personal history, family history, social history

Academy of Nutrition and Dietetics. Nutrition Terminology Reference Manual (eNCPT): Dietetics Language for Nutrition Care. http://www.ncpro.org. Accessed: July 15, 2023

16

Nutrition diagnosis

Definition: A nutrition diagnosis is a nutrition related problem that can be corrected by a nutrition intervention. A nutrition diagnosis is a nutrition problem the treatment of which is within the scope of practice of a Registered Dietitian Nutritionist.

NCP step 2: nutrition diagnosis terminology / domains		
Intake	**Clinical**	**Behavioral / environmental**
Too much / little of a food or nutrient compared to need	Nutrition problems related to disease or health conditions	Knowledge, belief, social, physical, access or food safety issues

Academy of Nutrition and Dietetics. Nutrition Terminology Reference Manual (eNCPT): Dietetics Language for Nutrition Care. http://www.ncpro.org. Accessed: July 15, 2023

17

Nutrition diagnosis

(P) Problem or nutrition diagnosis	(E) etiology	(S) signs / symptoms
Describes alterations in the child's nutritional status or contributing factors	Causes or contributing factors linked to the nutrition diagnosis "related to"	Data or indicators used to determine the child's nutrition problem or diagnosis. Linked to "as evidenced by"
Can the practitioner resolve or improve the problem? When there is a choice among domains consider the "Intake" domain as the most specific to the RDN role.	Evaluate if the etiology for the problem is the specific "root cause" that is to be address by the intervention. If the cause cannot be resolved, can it be ameliorated?	Are the signs / symptoms specific enough to monitor-evaluate, communicate improvement and change?
PES overall: do the nutrition assessment data included in the statement support the diagnosis, etiologies, signs and symptoms?		

Communicating a Nutrition Diagnosis: a nutrition diagnosis should be communicated using a PES statement. The PES statement describes the root cause(s) and the assessment data that provides the evidence for the nutrition diagnose(s).

Academy of Nutrition and Dietetics. Nutrition Terminology Reference Manual (eNCPT): Dietetics Language for Nutrition Care. http://www.ncpro.org. Accessed: July 15, 2023

18

© 2023 Nutricia North America

Nutrition intervention

Food/nutrient delivery	Nutrition education	Nutrition counseling	Coordination of nutrition care	Population based nutrition action
Nutrition prescription	Instruction or training in a skill, or providing nutrition knowledge	Supportive process to establish nutrition goals to treatment nutrition problem	Consultation, referral, coordination of nutrition care with other providers	Interventions to improve nutrition health of populations
Terminology for nutrition intervention: five domains				
Definition: a planned action with the intent to change or improve a nutrition problem or diagnosis.				

Academy of Nutrition and Dietetics. Nutrition Terminology Reference Manual (eNCPT): Dietetics Language for Nutrition Care. http://www.ncpro.org. Accessed: July 15, 2023

19

Nutrition Care Process

Across Care Settings

20

Nutrition risk screening

- A nutrition screen triggers entry into the NCP.
- Nutrition risk screening identifies children who may have a nutrition diagnosis and may benefit from nutrition assessment and intervention.
- Malnutrition risk screening identifies children at risk for malnutrition or who are malnourished to determine whether assessment by a pediatric RDN is indicated.

21

© 2023 Nutricia North America

Nutrition screening across care settings

- Inpatient
  - Mandated by accrediting bodies
  - Validated and non-validated tools in use
  - Most facilities referral to RDN within 24 hours
  - RNs, RDNs, DTRs completing screens upon admission

22

Malnutrition risk screening tools

Nutrition Screening Tool	Questions
STRONGkids	1.Is the child in poor nutritional status? 2.Is there an underlying illness with a risk of malnutrition or expected 3.major surgery? 4.Has the child had excessive diarrhea / vomiting in the past week? 5.Has the child had a significant reduction in food intake recently? 6.Has the child had weight loss or poor growth?
PNST	1.Has the child had unintentional weight loss? 2.Has the child had poor weight gain over the past few months? 3.Has the child been eating less than usual over the past few weeks? 4.Is the child visually underweight?

23

Malnutrition risk screening tools

Nutrition Screening Tool	Questions
STAMP	1.Does the child have a medical condition that impacts their nutritional status? Definite impact / possible impact / no impact 2.What is the child's nutrition intake? None / decreased / normal 3.Weight for height: is the child's weight for height proportional? 4.Scoring is based on BMI percentile chart.
PYMS	1. Is the BMI below the cut off value in the table overleaf? (separate chart required) Yes/No 2. Has the child lost weight? Yes/No 3. Has the child had reduced intake? Yes/No 4. Will the child's nutrition be affected by the recent admission/ illness for at least the next week? Yes/No

White. Simple Nutrition Screening Tool for Pediatric Inpatients. JPEN J Parenter Enteral Nutr 2016;40(3):392-8.
Hulst. Dutch national survey to test the STRONGkids nutritional risk screening tool in hospitalized children. Clin Nutr 2010;29(1):106-11.
McCarthy. The development and evaluation of the Screening Tool for the Assessment of Malnutrition in Paediatrics (STAMP(c)) for use by healthcare staff. J Hum Nutr Diet 2012;25(4):311-8.
Gerasimidis. A four-stage evaluation of the Paediatric Yorkhill Malnutrition Score in a tertiary paediatric hospital and a district general hospital. Br J Nutr 2010;104(5):751-6.

24

© 2023 Nutricia North America

Nutrition screening across care settings

- Outpatient
  - Very few organizations are screening in the outpatient / ambulatory care setting
  - Those that are some are using validated tools
  - RDNs are doing the majority of screening
  - There are a few validated tools for the OP setting
- Primary care

25

Nutrition screening

Outpatient and primary care

- Prevalence of Pediatric Malnutrition (PMN) in the Ambulatory Care Setting
- Referral to a pediatric RDN?

26

Prevalence of Undernutrition in the Pediatric Outpatient Population

- The prevalence of pediatric undernutrition in the outpatient / ambulatory care setting is not known as NRS is not routinely done
- In a prospective study Yoruk, et al reported that 36.5% of patients were at high risk for malnutrition by the Pediatric Yorkhill Malnutrition Score in a pediatric outpatient oncology population
- Study by Tukkola published in the journal: Nutrition in Clinical Practice
  - Used the pediatric malnutrition risk screening tool: STRONGkids
  - Found that 20% of children in the ambulatory care setting were at moderate to high risk of malnutrition

Tuokkola J, et al. *Nutr Clin Pract*. 2021;36(6):1270-1275. Yoruk MA, et al. *J Pediatr Hematol Oncol*. 2019;41(5):e308-e321.

27

© 2023 Nutricia North America

Nutrition assessment across care settings

- Inpatient
- Nutrition history
  - Admission history and physical
- Anthropometrics
  - Admission measurements, past admission data
- Medical info (tests/labs)
  - Current admission data, past admission
- NFPF
  - Previous RDN documentation

28

https://nutritioncareincanada.ca/sites/default/uploads/files/Pediatrics/Subjective_Global_Nutrition_AssessmentForm(SGNA).pdf

TECHNIQUES AND PROCEDURES

Update to the pediatric Subjective Global Nutritional Assessment (SGNA)

Laura Carter MSc, RD[1] | Jessie M. Hulst MD, PhD[2,3,4] | Nooran Afzal MSc[2] | Khurseed Jeejeebhoy PhD, MBBS[4] | Kim Brunet-Wood MSc, RD[4]

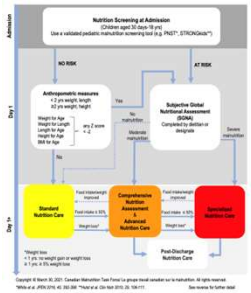
Subjective Global Nutrition Assessment Form (SGNA)

Subjective Global Nutrition Assessment Form(SGNA) Patient name:_____ DOB_____ Date:_____ Length/Height:_____ cm Weight:_____ kg	SGNA Score		
Nutrition Focused Medical History	Normal	Moderate	Severe
Appropriateness of current height for age: Normal: ≥ -2 z score Moderate: < -2 to ≥ -3 z score Severe: < -3 z score			
If Serial growth: Normal: z scores following growth channel or moving upwards Moderate: z scores gradually trending downwards Severe: z scores rapidly or sharply trending downwards			
If Appropriate considering mid-parental height: Boys:[paternal height(cm)+maternal height(cm)+13cm]/2			

Carter L, Hulst JM, Afzal N, Jeejeebhoy K, Brunet-Wood K. Update to the pediatric Subjective Global Nutritional Assessment (SGNA). Nutr Clin Pract. 2022 Dec;37(6):1448-1457. doi: 10.1002/ncp.10859. Epub 2022 May 20. PMID: 35594373.

29

Nutrition care from admission to discharge



- Screening
- Assessment
- Diagnosis
- Intervention
- Discharge
  - Communication is key

https://nutritioncareincanada.ca/sites/default/uploads/files/Pediatrics/P-INPAC_ENG_30March2021_Final.pdf

30

Nutrition assessment across care settings

- Outpatient - Primary care
  - Nutrition / Client history
  - Anthropometrics
  - Medical info (tests/labs)
  - NFPF

31

Client – nutrition history

- Motivational interviewing
- The open-ended question
  - Where does your child eat meals vs. does your child eat at the table?
  - What is your child's first meal of the day vs. does your child eat breakfast?
- The 5As approach:
  - *Asking* about a specific health-related behavior
  - *Advising* the patient about the behavior
  - *Assessing* readiness to change
  - *Assisting* with goal setting
  - *Arranging* follow-up

Resnicow K, Davis R, Rollnick S. Motivational interviewing for pediatric obesity: Conceptual issues and evidence review. J Am Diet Assoc. 2006 Dec;106(12):2024-33. doi: 10.1016/j.jada.2006.09.015. PMID: 17126634.
Welsh JA, Lange SJ, Figueroa J, Walsh S, Gooding H, Cheung P. Impact of a brief training on motivational interviewing and the 5A's approach on weight-related counseling practices of pediatricians. Obes Sci Pract. 2022 Jan 19;8(4):466-473. doi: 10.1002/osp4.588. PMID: 35949275; PMCID: PMC9358740.

32

Nutrition focused physical exam

The outpatient / primary care setting provide an opportunity for hands-on care by the RDN. To obtain additional anthropometric measurements.

33

© 2023 Nutricia North America

NFPE

And to complete a nutrition focused physical examination of the child in the outpatient or primary care setting

34

NFPE

- Physical exam techniques include inspection, palpation, percussion, and auscultation.
- Inspection and palpation are the main techniques used for the NFPE.
- Inspection includes a broad observation of physical appearance, posture, color, texture, size, and symmetry.
- Palpation includes using the hands to examine for bulk, tone, texture, size, quality of volume/mass, swelling, symmetry, and temperature of the body

Green Corkins K. Nutrition-focused physical examination in pediatric patients. Nutr Clin Pract. 2015 Apr;30(2):203-9. doi: 10.1177/0884533615572654. Epub 2015 Mar 4. PMID: 25739708.

35

NFPE

Pediatric Nutrition Focused Physical Assessment Check List

Body Part	Characteristic						
Head							
Hair	Dry	Pluckable	Pale	Dull	Thin	Striped	Normal
Skull	Sunken temples (temporal wasting)		Sunken fontanelle (infant)		Buccal fat pad wasting (infant - toddler)		Normal
Eye	Dark circles	Pale conjunctive	Dry	Sunken	Dull	Spots on cornea	Normal
Nose	Red	Cracked	Fissures	Scaling			Normal
Mouth	Cracks at corners	Gums: spongy - bleeding		Lesions	Thrush	Receding	Normal
Tongue	White patches	Atrophy papillae	Edema	Red, swollen	Dry		Normal
Teeth	Decay	Missing	Mottled	Malocclusion	Horizontal lines		Normal
Lips	Cracked, dry	Lesions, ulcers	Angular fissures	Red, swollen			Normal
Body							
Shoulders	Squared / right angle		Angel wings - scapula		Rounded		Normal
Back	Spine prominence		Discoloration	Bruising			Normal
Ribs – chest	Prominent rib cage	Boney prominence; beady appearance (rickety rosary)					Normal
Arms	Thin	Skin separates from muscle/fat mass					Normal
Hands	Veins visible	Dry cracked	Discolored	Pale			Normal
Nails	Spoon shaped	Ridges present, white lines	Dry, cracked	Peeling	Pale, dull	Thinning	Normal
Lower extremities							
Thighs	Thin	Low muscle tone	Muscle weakness	Bowed legs			Normal
Calves	Thin	Skin separates from muscle/fat mass					Normal
Feet	Pitting edema	Dry, cracked	Cold				Normal
Skin	Dry	Pallor	Scaly	Petechial	Bruising	Lesions	Normal

Over all appearance:

Green Corkins K. Nutrition-focused physical examination in pediatric patients. Nutr Clin Pract. 2015 Apr;30(2):203-9. doi: 10.1177/0884533615572654. Epub 2015 Mar 4. PMID: 25739708.

36

Nutrition diagnosis across care settings

- Inpatient
- Communicating to the team

37

Patient care rounds

- Discussion of infant's nutrition status and risk of malnutrition
- Report of current feeding plan
- Growth
- Weight gain – height gain velocity report
- Report of malnutrition criteria and diagnosis
- Consensus by team

38

Patient care conference

- Weekly discussion of patient status
- Interdisciplinary
- Social work
- Nursing staff
- Provider responsible for the care of the child
- Pharmacist
- Pediatric dietitian

39

© 2023 Nutricia North America

The electronic medical record

- Example 1: PMN care plan creation of a "power note" in the EHR system that included the PMN criteria, problem, etiology, and signs/ symptoms statement, and supporting evidence for the diagnosis. was forwarded to the provider for their adoption. When that occurred, the documentation was automatically inserted into the provider's progress note section of the EHR
- Example 2: In an automated process, the RDN diagnosis and criteria are inserted into the provider's daily progress note and discharge summary w/signature acceptance

40

Strategies to increase the adoption of the nutrition diagnosis by providers

*RDN notification of nutrition diagnosis in provider electronic medical record sticky note	*Creation of malnutrition criteria badge cards	*RDN notification of patient nutrition diagnosis to team in rounds	*RDN notification of patient nutrition diagnosis to team in weekly patient care conference
*RDN notification of patient nutrition to the family after rounds	*Team mentor supporter created to relate to medical providers concerned over diagnosing malnutrition	*RDN and med provider responding to queries from coding team; improved communication	*Clinical nutrition director and medical director obtaining clearance for RDN to add diagnosis to problem list

41

Nutrition diagnosis across care settings

- Outpatient
- Primary care

42

© 2023 Nutricia North America

Nutrition intervention across care settings

- Implementation
- Communication
- RD order writing privileges

Arney. Effect of Registered Dietitian Nutritionist Order-Writing Privileges on Enteral Nutrition Administration in Selected Intensive Care Units. Nutr Clin Pract. 2019 Dec;34(6):899-905. doi: 10.1002/ncp.10259. Epub 2019 Feb 11. PMID: 30741444.

43

Coding – reimbursement and billing across healthcare settings.

- Documentation matters
- All pertinent information must be included in the PES statement

44

Reimbursement: Medicare Severity Diagnosis – Related Groups (MS-DRG)

- Organization receives $ based on the diagnosis
- Regardless of the LOS or resources used
- Assigned based on principal diagnosis and any secondary diagnosis
  - Complication conditions or co-morbidities
    - Result in the assignment of a higher DRG
  - Major complicating conditions or co-morbidities
    - Result in the assignment of the highest DRG

45

© 2023 Nutricia North America

Explaining ICD 10 Codes

E44.1	▪ Malnutrition of a Mild degree ▪ Complicating condition (CC)
E44	▪ Malnutrition of a Moderate degree ▪ Complicating condition (CC)
E46.2	▪ Unspecified protein calorie malnutrition ▪ Complicating condition (CC)
E43	▪ Other Severe protein calorie malnutrition ▪ Major complicating condition (MCC)

46

SOI & ROM: Severity DRGS

- APR DRG is a system in use that calculates the severity of illness (SOI) and risk of mortality (ROM) for the Hospital.
  - SOI is the extent of physiologic decompensation or organ system loss of function
  - ROM is the likelihood of dying
  - Secondary diagnosis are assigned 1 of 4 levels for SOI and ROM:
- SOI and ROM are dependent on the patient's underlying conditions:
  - **A higher SOI and ROM are characterized by multiple serious diseases and the interaction among those diseases**
  - **Documentation specificity of diagnoses is important in accurately reporting the SOI and ROM**

1 = Minor
2 = Moderate
3 = Major
4 = Extreme

47

Word Game

Diagnosis Code Detail

Code		Description	Affect	MCC	CC	SOI	ROM	Sort
J210	Principal	Acute bronchiolitis due to respiratory syncytial virus	✓			2	1	
E43		Unspecified severe protein-calorie malnutrition	✓	✓		3	2	
E441		Mild protein-calorie malnutrition			✓	3	1	
E440		Moderate protein-calorie malnutrition			✓	3	1	
E46		Unspecified protein-calorie malnutrition			✓	3	1	
R1311		Dysphagia, oral phase				3	1	
R1312		Dysphagia, oropharyngeal phase				3	1	
R1310		Dysphagia, unspecified				P	P	
P0738		Preterm newborn, gestational age 35 completed weeks				1	1	
P929		Feeding problem of newborn, unspecified				1	1	
P599		Neonatal jaundice, unspecified				1	1	
P928		Neonatal difficulty in feeding at breast				1	1	
P923		Underfeeding of newborn				1	1	
E639		Nutritional deficiency, unspecified				1	1	
R633		Feeding difficulties				1	1	
L704		Infantile acne				1	1	
R05		Cough				1	1	

Every October the rules change, this year mild malnutrition's severity increased.

48

Coding Accurately

Case Study: *Six month old with seizure disorder and failure to thrive has T 38.6, HR 158, RR 34, and WBC 24.6. Nutrition note documents protein calorie malnutrition, severe.*

Sepsis Failure to thrive Seizure disorder Severity of Illness: Moderate Risk of Mortality: Minor Reimbursement: $8,440	Sepsis Protein calorie malnutrition Seizure disorder Severity of Illness: Major Risk of Mortality: Moderate Reimbursement: $14,487

49

Coding – reimbursement and billing across healthcare settings.

Reimbursement in the outpatient – Ambulatory care and Primary care setting differs from the inpatient / acute care setting. RDNs maybe require to be credentialed and contracted by third party payors for billing and reimbursement.

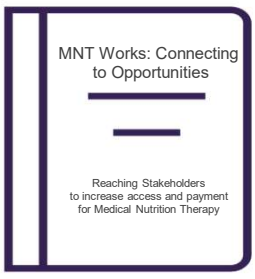
https://www.eatrightpro.org/career/payment

www.eatrightpro.org/-/media/files/eatrightpro/career/mnt/mnt-works-toolkit.pdf

50

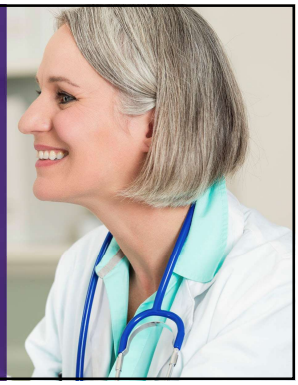
Billing and coding

- Medical nutrition therapy reimbursement by CMS and third-party payors maybe based on CPT® codes
- CPT® or current procedural terminology refers to a set of medical codes used to describe the procedures and services that healthcare providers perform.



51

NLC
NUTRICIA LEARNING CENTER



A case study

An infant with CMPA

52

Case study

- Infant born at 36 weeks 4 days
- What classification is this infant?
  - Term or preterm?
- Birth weight: 2.83 kg 47 cm
- Feeds on admission were human milk – direct breast fed or expressed human milk

53

Case study

- Admission diagnosis: failure to thrive / malnutrition / Rhino-enterovirus
- Admission weight: 2.45 kg. on DOL 15
- On admission day 3 infant developed high stool output / Acute kidney injury / respiratory distress.
- Feeds were held / parenteral nutrition provided for 72 hours

54

© 2023 Nutricia North America

Case study

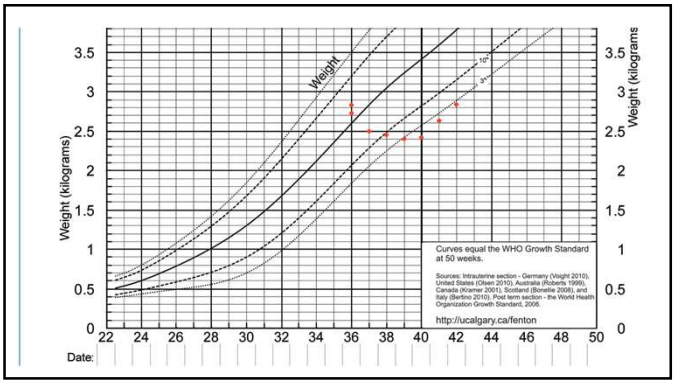
- Feeds of aminos acid-based formula resumed due to concerns for cow's milk protein intolerance
- Stool output, renal and respiratory status slowly improved
- Mother removed cow's milk protein from diet

55

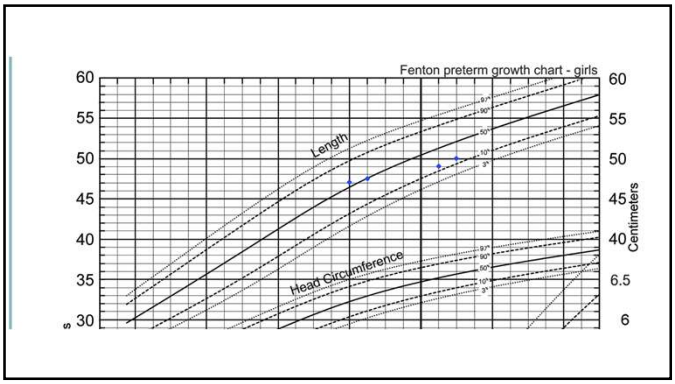
Case study

- Feeds were fortified to 24 calories per ounce with an amino acid based infant formula and tolerated
- Weight gain met goals
- Infant and mother were discharged home

56



57



58

Gender	Female								
Date	CGA	Weight (g)	Head (cm)	Length (cm)	Weight % (Z score)	Head % (Z score)	Length % (Z score)	g/week gain from previous	g/week to maintain %
	36 0/7	2830		47	69% (0.51)		58% (0.21)		242
	36 0/7	2730			61% (0.29)			inf	238
	37 0/7	2500		47.5	22% (-0.76)		49% (-0.03)	-230	205
	38 0/7	2450			8% (-1.37)			-50	174
	39 0/7	2400			3% (-1.94)			-50	154
	40 0/7	2420			1% (-2.28)			20	149
	41 0/7	2630		49	2% (-2.13)		15% (-1.04)	210	157
	42 0/7	2840		50	2% (-2.00)		16% (-0.98)	210	163

59

Case study: assessment

- Client history
- Food related history
- Clinical data
- Anthropometrics
- NFPF
- Comparative standards

60

© 2023 Nutricia North America

Malnutrition Indicators in Preterm and Neonatal Populations[1]

Primary Indicators Requiring One Indicator

Indicator	Mild Malnutrition	Moderate Malnutrition	Severe Malnutrition	Use of Indicator
Decline in weight-for-age z score	Decline of 0.8-1.2 SD	Decline of >1.2-2 SD	Decline of >2 SD	Not appropriate for first 2 weeks of life
Weight gain velocity	<75% of expected rate of weight gain to maintain growth rate	<50% of expected rate of weight gain to maintain growth rate	<25% of expected rate of weight gain to maintain growth rate	Not appropriate for first 2 weeks of life
Nutrient intake	≥35 consecutive days of protein/energy intake ≥75% of estimated needs	≥57 consecutive days of protein/energy intake ≥75% of estimated needs	≥7 consecutive days of protein/energy intake ≥75% of estimated needs	Preferred indicator during first 2 weeks of life

Primary Indicators Requiring Two or More Indicators

Indicator	Mild Malnutrition	Moderate Malnutrition	Severe Malnutrition	Use of Indicator
Days to regain birthweight	15-18	19-21	>21	Use in conjunction with nutrient intake
Linear growth velocity	<75% of expected rate of linear gain to maintain expected growth rate	<50% of expected rate of linear gain to maintain expected growth rate	<25% of expected rate of linear gain to maintain expected growth rate	Not appropriate for first 2 weeks of life May be deferred in critically ill, unstable infants Use in conjunction with another indicator when accurate length measurement available
Decline in length-for-age z score	Decline of 0.8-1.2 SD	Decline of >1.2-2 SD	Decline of >2 SD	Not appropriate for first 2 weeks of life May be deferred in critically ill, unstable infants Use in conjunction with another indicator when accurate length measurement available

Recommended Parenteral and Enteral Energy and Protein Intakes

		Parenteral		Enteral	
Infant Age	Week	Energy Goals (kcal/kg)	Protein Goals (g/kg)	Energy Goals (kcal/kg)	Protein Goals (g/kg)
Preterm	<34 0/7	85-111	3-4	110-130	3.5-4.5
Late Preterm	34 0/7 to 36 6/7	100-110	3-3.5	120-135	3-3.2
Term	≥37 0/7	90-108	2.5-3	105-120	2-2.5

61

Case study: diagnosis

NLC NUTRICIA LEARNING CENTER

PES Statement

- Problem: malnutrition
- Etiology: related to increased nutrient loses
- Signs / symptoms: as evidenced by weight gain velocity less than 25% of expected, wasting of fat free mass, failure to regain birth weight within first 21 days of life

eNCPT Clinical Case Studies. 2nd edition. Student Companion Guide. 2021. Academy of Nutrition and Dietetic, publisher. Chicago, IL.

62

Case study

NLC NUTRICIA LEARNING CENTER

PES Statement

- Problem: altered GI function
- Etiology: related to suspected cow's milk protein intolerance
- Signs / symptoms: as evidenced by high stool output, weight loss, hyponatremia

63

© 2023 Nutricia North America

Case study

PES Statement

- Problem:
- Etiology:
- Signs / symptoms:

64

Case Study: intervention

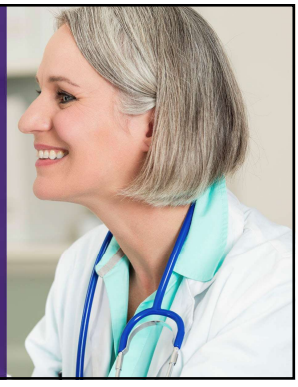
- Food/nutrient delivery(nutrition prescription)
  - Maternal Dairy free diet
  - 24 calorie supplemental feeds of amino acid based infant formula
- Nutrition education
  - Cow's milk protein free diet education
- Nutrition counseling
  - Maternal nutrition counseling on lactation, diet, supplemental feeds,
- Coordination of nutrition care
  - Lactation clinic, nutrition clinic referral

65

NUTRICIA LEARNING CENTER

A case study

A teen with IBD



66

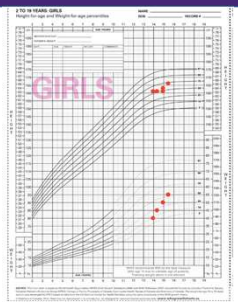
Case Study

- Sukie is a 14-year-old who presented to the outpatient GI clinic with abdominal pain, diarrhea, and weight loss.
- Medical history included: Chronic, active gastritis and duodenitis. Prior history of moderate, chronic malnutrition. Laboratory evaluation consistent with iron deficiency anemia, vitamin D deficiency, and elevated inflammatory markers.
- She was classified as having moderate Crohn's disease.

67

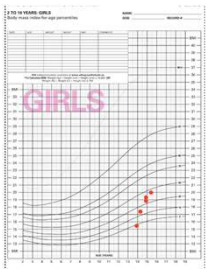
Case study: anthropometrics

Date of visit	Height (cm)	Weight (Kg)	BAZ
7/14/23	166	55	- 0.2
01/04/23	163	50	- 0.5
06/01/22	161	45	- 1.0
01/10/22	161	40	- 2.0



68

- Client history:
  - Sukie had eliminated wheat and dairy foods from diet due to concerns with tolerance
  - She was avoiding most raw fruits, vegetables, juice, whole grains, fats



69

© 2023 Nutricia North America

Case study: assessment

- Client history
- Food related history
- Clinical data
- Anthropometrics
- NFPF
- Comparative standards

70

Assessment

- Vitamin mineral deficiency noted
- Inadequate energy protein intake
- Increased losses
- Fat and muscle wasting noted
  - Buccal fat pad (flat cheeks – prominent clavicle)

71

Case study: diagnosis

- PES
- Problem: malnutrition
- Etiology: related to inadequate nutrient intake and increased nutrient losses
- Signs / symptoms: as evidenced by BMI for age z score between – 2 and – 2.99.

72

© 2023 Nutricia North America

Case study

- PES
- Problem: altered GI function
- Etiology: related to moderate Crohn's disease
- Signs / symptoms: as evidenced by high stool output, weight loss,

73

Case study

PES Statement

- Problem:
- Etiology:
- Signs / symptoms:

74

Case Study: intervention

- Food/nutrient delivery(nutrition prescription)
- Nutrition education
- Nutrition counseling
- Coordination of nutrition care

75

© 2023 Nutricia North America

Case Study: intervention

- Food/nutrient delivery(nutrition prescription)
  - Exclusive enteral nutrition
  - Oral nutrition supplement (peptide based 1.5 calorie per ml formula)
- Nutrition education
  - 90 / 10 EEN diet pattern
- Nutrition counseling
  - Counseling and goal setting on adherence to EEN in the outpatient / community setting
- Coordination of nutrition care
  - Hand off to primary care provider (Sukie's pediatrician)
  - Follow up appointment in Nutrition clinic (referral)

76

Thank you!

Nutricia Learning Center
is provided by
Nutricia North America

© 2022 Nutricia North America

77

References

1. Carter L, Hulst JM, Afzal N, Jeejeebhoy K, Brunet-Wood K. Update to the pediatric Subjective Global Nutritional Assessment (SGNA). Nutr Clin Pract. 2022 Dec;37(6):1448-1457. doi: 10.1002/ncp.10859. Epub 2022 May 20. PMID: 35594373.
2. Arney BD, Senter SA, Schwartz AC, Meily T, Pelekhaty S. Effect of Registered Dietitian Nutritionist Order-Writing Privileges on Enteral Nutrition Administration in Selected Intensive Care Units. Nutr Clin Pract. 2019 Dec;34(6):899-905. doi: 10.1002/ncp.10259. Epub 2019 Feb 11. PMID: 30741444.
3. www.eatrightpro.org/-/media/files/eatrightpro/career/mnt/mnt-works-toolkit.pdf
4. eNCPT Clinical Case Studies. 2nd edition. Student Companion Guide. 2021. Academy of Nutrition and Dietetic, publisher. Chicago, IL.
5. Gerasimidis K, Keane O, Macleod I, et al. A four-stage evaluation of the Paediatric Yorkhill Malnutrition Score in a tertiary paediatric hospital and a district general hospital. Br J Nutr 2010;104(5):751-6.
6. Green Corkins K. Nutrition-focused physical examination in pediatric patients. Nutr Clin Pract. 2015 Apr;30(2):203-9. doi: 10.1177/0884533615572654. Epub 2015 Mar 4. PMID: 25739708.
7. Hulst JM, Zwart H, Hop WC, et al. Dutch national survey to test the STRONGkids nutritional risk screening tool in hospitalized children. Clin Nutr 2010;29(1):106-11.
8. McCarthy HD, M.; Crabtree, I.; Eaton-Evans, M. J.; McNulty, H. The development and evaluation of the Screening Tool for the Assessment of Malnutrition in Paediatrics (STAMP(c)) for use by healthcare staff. J Hum Nutr Diet 2012;25(4):311-8.
9. https://nutritioncareincanada.ca/sites/default/uploads/files/Pediatrics/PNNPAC_ENG_30March2021_Final.pdf
10. Reznicow K, Davis R, Rollnick S. Motivational interviewing for pediatric obesity: Conceptual issues and evidence review. J Am Diet Assoc. 2006 Dec;106(12):2024-33. doi: 10.1016/j.jada.2006.09.015. PMID: 17126634.
11. Tuokkola J, Heikkilä A, Junttila K, Orell H. Prevalence of malnutrition risk and acute malnutrition in pediatric population in a tertiary hospital and their burden on healthcare. Nutr Clin Pract. 2021 Dec;36(6):1270-1275. doi: 10.1002/ncp.10656. Epub 2021 May 6. PMID: 33955581.
12. Welsh JA, Lange SJ, Figueroa J, Walsh S, Goodingh, Cheung R. Impact of a brief training on motivational interviewing and the 5A's approach on weight-related counseling practices of pediatricians. Obes Sci Pract. 2022 Jan 19;8(4):466-473. doi: 10.1002/osp4.588. PMID: 35949275; PMCID: PMC9358740.
13. White M, Lawson K, Ramsey R, et al. Simple Nutrition Screening Tool for Pediatric Inpatients. JPEN J Parenter Enteral Nutr 2016;40(3):392-8.
14. 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. J Am Diet Assoc. 2008 Aug;108(8):1287-93. doi: 10.1016/j.jada.2008.06.368. PMID: 18656567.
15. Yoruk MA, Durakbasa CU, Timur C, Sahin SS, Taskin EC. Assessment of Nutritional Status and Malnutrition Risk at Diagnosis and Over a 6-Month Treatment Period in Pediatric Oncology Patients With Hematologic Malignancies and Solid Tumors. J Pediatr Hematol Oncol. 2019 Jul;41(5):e308-e321. doi: 10.1097/MPH.0000000000001350. PMID: 30475301.

78