

Chapter 1

Chronic Kidney Disease, Evidence-Based Practice, and the Nutrition Care Process

This guide follows the steps of the Nutrition Care Process (NCP)—nutrition assessment, nutrition diagnosis, nutrition intervention, and nutrition monitoring and evaluation—as outlined in the *International Dietetics & Nutrition Terminology (IDNT) Reference Manual* published by the Academy of Nutrition and Dietetics (also referred to as the Academy) (1). The following are also incorporated into the text, tables, and boxes in this guide:

- The Evidence-Based Nutrition Practice Guidelines (EBNPG) for Chronic Kidney Disease (CKD), which are published in the Evidence Analysis Library (EAL) of the Academy of Nutrition and Dietetics (2)
- Recommendations from publications of the National Kidney Foundation Kidney Disease Outcomes Quality Initiative (NKF-KDOQI) on nutrition (3); diabetes and CKD (4,5); CKD evaluation (6); anemia in CKD (7); hypertension and antihypertensive agents in CKD (8); and managing dyslipidemia in CKD (9)
- Recommendations from similar publications by Kidney Disease: Improving Global Outcomes (KDIGO), an international consortium of profes-

- sional and patient-based organizations dedicated to kidney disease, especially its report on CKD–mineral and bone disorder (CKD-MBD) (10) and a recent update on CKD evaluation and management (11)
- Criteria for reimbursement and required documentation established by the Centers for Medicare & Medicaid Services (CMS) Conditions for Coverage (CfC) for end-stage renal disease (ESRD) facilities and CMS Medicare Part B reimbursement criteria for medical nutrition therapy (MNT) for CKD and renal transplant (12,13)
 - Key points from the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) clinical guidelines regarding nutrition support in adult acute and chronic renal failure and A.S.P.E.N. adult critical care guidelines for renal failure (14,15)
 - Recommendations from the European Best Practice Guidelines (EBPG) for hemodialysis nutrition (16)
 - Post–kidney transplant nutrition guidelines from the Caring for Australasians with Renal Impairment (CARI) initiative (17)

Findings and recommendations from the aforementioned sources are integrated into the chapters to which they apply—Chapter 2: Nutrition Assessment; Chapter 3: Nutrition Diagnosis; Chapter 4: Nutrition Intervention: Part 1—Planning the Nutrition Prescription; Chapter 5: Nutrition Intervention: Part 2—Implementation; and Chapter 6: Nutrition Monitoring and Evaluation.

INTRODUCTION TO CHRONIC KIDNEY DISEASE

In 2002, NKF-KDOQI published a system for classifying the five original stages of CKD (see Table 1.1) (6).

Table 1.1 Stages of Chronic Kidney Disease (CKD)

<i>Stages of CKD</i>	<i>Glomerular Filtration Rate (GFR)</i>
Stage 1	≥ 90 mL/min/1.73 m ² with kidney damage
Stage 2	60–89 mL/min/1.73 m ²
Stage 3	30–59 mL/min/1.73 m ²
Stage 4	15–29 mL/min/1.73 m ²
Stage 5 and Stage 5D (D = Dialysis)	<15 mL/min/1.73 m ²

Source: Reprinted from reference 6: National Kidney Foundation. KDOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. *Am J Kidney Dis.* 2002;39(suppl 1):S1–S266. www.kidney.org/professionals/KDOQI/guidelines_ckd/p4_class_g1.htm. Reprinted with permission from National Kidney Foundation, Inc.

The KDIGO 2012 Clinical Practice Guidelines for the Evaluation and Management of Chronic Kidney Disease maintained the glomerular filtration rate (GFR) ranges for stage 1 through stage 5 CKD but split stage 3 into two categories (11).

- Stage 3a is defined by a GFR range of 45 to 59 mL/min/1.73m².
- Stage 3b is defined by a GFR range of 30 to 44 mL/min/1.73m².

Post-kidney transplant patients/clients have varying levels of renal function. Their level of CKD should be determined based on the individual's estimated glomerular filtration rate (eGFR) with MNT applied accordingly.

MNT is an essential intervention to promote ideal health parameters. Patients/clients with various health conditions and illnesses can improve their health and quality of life when they are educated on and adhere to MNT recommendations. During MNT interventions, registered

dietitians (RDs) educate and counsel patients/clients on behavioral and lifestyle changes essential to encourage positive lifelong eating habits and health measures. Box 1.1 illustrates how MNT relates to the steps of the NCP (18).

Box 1.1 Medical Nutrition Therapy (MNT) and the Nutrition Care Process (NCP)

In the context of the NCP, providing MNT requires:

- Performing a comprehensive nutrition assessment (A)
- Determining the nutrition diagnosis (D)
- Planning and implementing a nutrition intervention (I) using evidence-based nutrition practice guidelines
- Monitoring (M) an individual's progress over subsequent visits with the registered dietitian (RD)
- Evaluating (E) an individual's progress over subsequent visits with the RD

Source: Data are from reference 18.

This guide focuses on the appropriate MNT for CKD stages 3 to 5D, including renal transplant. Acute kidney injury (AKI) is not addressed. The focus of MNT depends on the stage of CKD and the patient-/client-associated medical history as well as whether the encounter is an initial or follow-up visit. For instance, MNT provided for a patient/client with stage 5 CKD and diabetes who has elevated potassium and phosphorus levels but an Hgb A1c of 6.8% would be different from MNT for a stage 3a CKD patient/client with normal potassium and phosphorus levels but an Hgb A1c of 9%. Nutrition prescriptions and nutrition interventions are discussed further in Chapters 4 and 5.

Medicare Part B reimburses MNT provided by an RD or other qualified nutrition professional for patients/clients

whose GFR is between 13 and 50 mL/min/1.73m² (pre-dialysis). Post-kidney transplant patients/clients with any level of allograft function are covered by Medicare Part B for up to 3 years with a physician referral (19). More information can be found at the CMS Web site (www.cms.gov) by searching for “MNT.” See Table 1.2 for a summary of Medicare Part B coverage for MNT (13,19).

Table 1.2 Medicare Part B Reimbursement for Medical Nutrition Therapy (MNT) for Patients/Clients with eGFR 13–50 mL/min/1.73m² and for Posttransplant Patients/Clients

<i>Timeline</i>	<i>MNT Units Reimbursed</i>	<i>Total Hours per Year</i>
1st year	12	3
Each subsequent year	8	2

Source: Data are from references 13 and 19.

Based on medical necessity, additional hours of MNT may be covered if the treating physician orders them due to a change in medical condition, diagnosis, or treatment regimen (13). For the first 3 years after a transplant, MNT is a Medicare Part B benefit regardless of GFR. After that time period, however, only those posttransplant patients/clients with an eGFR between 13 and 50 mL/min/1.73m² and a physician referral are eligible for Medicare Part B reimbursement for MNT.

SCREENING AND REFERRAL FOR MEDICAL NUTRITION THERAPY ENCOUNTERS

The Academy’s EBNPG for CKD (2) recommend the following practices for screening and referral of patients/clients with CKD:

- MNT should be provided by the RD for individuals with CKD because “MNT prevents and treats protein-energy malnutrition and mineral and electrolyte disorders and minimizes the impact of other comorbidities on the progression of kidney disease (eg, diabetes, obesity, hypertension, and disorders of lipid metabolism).”
- MNT “should be initiated at diagnosis of CKD, in order to maintain adequate nutritional status, prevent disease progression, and delay renal replacement therapy (RRT) . . . or transplant. MNT should be initiated at least 12 months prior to the anticipation of RRT.”
- “The RD should monitor the nutritional status of individuals with CKD every 1 to 3 months and more frequently if there is inadequate nutrient intake, protein-energy malnutrition, mineral and electrolyte disorders, or the presence of an illness that may worsen nutritional status, as these are predictive of increased mortality risk.”

MEDICAL NUTRITION THERAPY BASED ON THE STAGE OF CHRONIC KIDNEY DISEASE

The RD evaluates the stage of CKD and prioritizes the strategy for MNT based on nutrition issues that arise during that stage of CKD. Additionally, the RD assesses the patient’s/client’s level of interest in learning about his or her stage of CKD and the available social support, and, on that basis, tailors MNT education and counseling. MNT for post-kidney transplant patients/clients should be based on posttransplant renal function, which may decline over time.

Stage 3 Chronic Kidney Disease and Renal Transplant

In clinical practice, evidence-based guidelines for MNT should be applied as appropriate based on a review of the patient's/client's medical history (eg, diabetes, hypertension, lipid disorders, or obesity), stage of CKD (including kidney transplant), nutritional status, and any mineral or electrolyte imbalances. The RD should plan to coordinate care of the CKD patient/client with the interdisciplinary team to maximize the individual's care (2,12).

Stage 4 Chronic Kidney Disease and Renal Transplant

Because stage 4 CKD is defined by an eGFR of 15 to 29 mL/min/1.73m², MNT for CKD and posttransplant patients/clients in this stage is covered by Medicare Part B (6,11,13). As in earlier stages of CKD, MNT is based on a thorough assessment and includes coordination of care.

Stage 5 CKD, not on Dialysis, and Renal Transplant

Stage 5 CKD, not on dialysis, is defined by an eGFR of less than 15 mL/min/1.73m² (6,11). Medicare Part B provides MNT coverage only for patients/clients with an eGFR of 13 mL/min/1.73m² or greater within stage 5 CKD or for posttransplant patients/clients with this level of renal function (13). As in earlier stages of CKD, MNT is based on a thorough assessment and includes coordination of care.

Stage 5D—Hemodialysis and Peritoneal Dialysis

Stage 5D CKD, also known as ESRD, is defined by the initiation of RRT (either hemodialysis [HD] or peritoneal dialysis [PD]) (8). According to NKF-KDOQI nutrition guidelines, nutritional status should be evaluated using a combination of measures, such as protein and energy intake, body composition, and functional status (3).

CMS has released CfC for ESRD, which outline the mandatory nutrition care plan and documentation to be completed for each dialysis patient/client (12). Box 1.2 summarizes the CfC and corresponding interpretive guidelines (IGs) that relate to the four steps of the NCP (20,21). Interpretive guidelines are published by government agencies such as CMS to guide surveyors who are applying standards such as the CfC in the field.

Box 1.2 Medicare Conditions for Coverage (CfC) Mandates Related to the Nutrition Care Process (NCP) and Documentation

Nutrition Assessment

- CfC§494.80 describes requirements for patient/client assessment.
- Interpretive guideline (IG) tags V500-515 describe information to be included in assessments.
 - V509 is specific to nutrition.
 - Topics discussed in other tags, such as factors associated with renal bone disease, also relate to nutrition and may be completely or partially addressed by the nephrology dietitian in accordance with accepted practice patterns at a given end-stage renal disease (ESRD) facility.

Nutrition Diagnosis

- Not mandated by the Centers for Medicare & Medicaid Services (CMS) but a vital component of what the registered dietitian (RD) does.
- Should be included in documentation of nutrition care.

(continued)

Box 1.2 Medicare Conditions for Coverage (CfC) Mandates Related to the Nutrition Care Process (NCP) and Documentation (continued)

Nutrition Intervention (Including Care Plan) and Nutrition Monitoring and Evaluation

- CfC§494.90 states that an interdisciplinary team must develop and implement a comprehensive plan of care (POC) that describes services needed (ie, interventions) and outcomes (ie, monitoring and evaluation step of NCP).
- IG Tag 545 sets expectations for an outcome-oriented POC related to nutritional status.

Source: Data are from reference 20.