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Chronic Kidney Disease

CKD: Introduction (2010)

Guideline Title

Chronic Kidney Disease (2010) Evidence-Based Nutrition Practice Guideline

Guideline Narrative Overview

The focus of this guideline is on medical nutrition therapy (MNT) for adults with chronic kidney disease (CKD stages 1 - 5, including post kidney transplant) not on dialysis.

The primary goals of MNT are to prevent and treat protein-energy malnutrition, mineral and electrolyte disorders, and to minimize the impact of other comorbidities on the progression of kidney disease, e.g. diabetes, obesity, hypertension and disorders of lipid metabolism.

Guideline Development

This guideline is an update to the ADA 2001 Chronic Kidney Disease MNT Evidence-Based Guide for Practice and builds on the topic areas and recommendations that were made in the previous version.

This guideline is intended for use by Registered Dietitians (RDs) involved in providing MNT to adults with CKD. The application of the guideline must be individualized to assist the Registered Dietitian in successfully integrating MNT into the overall medical management of adults with CKD. The recommendations in the guideline were based on a systematic review of the literature and incorporate existing guidelines for [KDOQI Clinical Practice Guidelines](#) (accessed at <http://www.kidney.org/Professionals/kdoqi/>). These recommendations for chronic kidney disease are based on a combination of recent ADA evidence analysis and recommendations from the evidence-based guidelines developed by [KDOQI](#). Kidney Disease: Improving Global Outcomes ([KDIGO](#), accessed at www.kdigo.org) and other international guidelines will be reviewed for use in future updates.

The recommendations are based on the work performed by the American Dietetic Association CKD Expert Work Group. The number of supporting documents for these topics is below:

- *Recommendations:* Twenty-four (24)
- *Conclusion Statements:* Seventeen (17)
- *Evidence Summaries:* Twenty-one (21)
- *Article Worksheets:* One hundred and fifty-eight (158).

To view the guideline development and review process, [click here](#).

Application of the Guideline

This guideline will be accompanied by a set of companion documents to assist the practitioner in applying the guideline. A toolkit will contain materials such as the Medical Nutrition Therapy protocol, documentation forms, outcomes management tools, client education resources and case studies. The toolkit is currently under development and will undergo pilot-testing through the ADA's Dietetic Practice-Based Research Network prior to publication.

Revision

The literature search will be repeated for each guideline topic on an annual basis to identify new research that has been published since the previous search was completed. Based on the quantity and quality of new research, a determination will be made about whether the new information could change the published recommendation or rating.

If a revision is unwarranted, then the search is recorded, dated and saved until the next review and no further action is taken. If the determination is that there could be a change in the recommendation or rating, then the supporting evidence analysis question(s) will be re-analyzed following the standard ADA Evidence Analysis Process (see ADA *Evidence Analysis Manual*).

When the analysis is completed, the expert workgroup will approve and re-grade the conclusion statements and recommendations. The guideline will undergo a complete revision every three to five years.

Medical Nutrition Therapy and Chronic Kidney Disease

Scientific evidence supports the effectiveness of medical nutrition therapy to increase effectiveness of therapy for chronic kidney disease, including post kidney transplant. Topics included in this guideline are:

- Medical nutrition therapy and dietitian intervention
- Energy needs
- Protein needs
- CKD-bone mineral disorder
- Anemia
- Diabetes
- Obesity
- Hypertension
- Disorders of lipid metabolism
- Physical activity
- Fish oil therapy

The Registered Dietitian plays an integral role on the interdisciplinary care team by determining the optimal nutrition prescription and developing the nutrition care plan for patients undergoing therapy for chronic kidney disease. Based on the patient's treatment plan and comorbid conditions, other nutrition practice guidelines, such as critical care guidelines, may be needed in order to provide optimal treatment.

Populations to Whom This Guideline May Apply

This guideline applies to adults with chronic kidney disease (CKD stages 1 - 5, including post kidney transplant) not on dialysis.

Other Guideline Overview Material

For more details on the guideline components, use the links on the left to access:

- Scope of Guideline
- Statement of Intent
- Guideline Methods
- Implementation of the Guideline
- Benefits and Harms of Implementing the Recommendations

Contraindications

Clinical judgment is crucial in the application of these guidelines. Careful consideration should be given to the application of these guidelines for patients with significant medical co-morbidities.

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CKD: Scope of Guideline (2010)

Below, you will find a list of characteristics that describe the **scope** of this guideline.

Guideline Category

Assessment of Therapeutic Effectiveness, Counseling, Evaluation, Management, Treatment

Clinical Specialty

Cardiology, Critical Care, Endocrinology, Family Practice, Geriatrics, Hematology, Nephrology, Nutrition, Surgery

Intended Users

Registered Dietitians, Advanced Practice Nurses, Health Care Providers, Nurses, Pharmacists, Physician Assistants, Physicians, Students

Guideline Objective(s)

Overall Objective

- To provide MNT guidelines for chronic kidney disease to prevent and treat protein-energy malnutrition, mineral and electrolyte disorders, and to minimize the impact of other comorbidities on the progression of kidney disease, e.g. diabetes, obesity, hypertension and disorders of lipid metabolism.

Specific Objectives

- To define evidence-based CKD nutrition recommendations for registered dietitians (RDs) that are carried out in collaboration with other healthcare providers
- To guide practice decisions that integrate medical, nutritional and behavioral strategies
- To reduce variations in practice among RDs
- To provide the RD with data to make recommendations to adjust MNT or recommend other therapies to achieve desired outcomes
- To develop guidelines for interventions that have measurable clinical outcomes
- To define the highest quality of care within cost constraints of the current healthcare environment.

Target Population

Adult (19 to 44 years), Middle Age (45 to 64 years), Aged (65 to 79 years), Male, Female

Target Population Description

Adults with CKD.

Interventions and Practices Considered

This guideline is based on ADA's Nutrition Care Process and Model, which involves the following steps:

- Nutrition Assessment
- Nutrition Diagnosis
- Nutrition Intervention
- Nutrition Monitoring and Evaluation.

This guideline addresses topics that correspond to the following areas of the Nutrition Care Process. Please refer to the Algorithms in this guideline for a more detailed view of the recommendations and their application within the Nutrition Care Process.

- I. Referral to a Registered Dietitian
- II. Medical Nutrition Therapy

A. Nutrition Assessment

Below you will find the nutrition assessment terms related to CKD care from *International Dietetics & Nutrition Terminology Reference Manual. Standardized Language for the Nutrition Care Process*. Third Edition.

1. Client history
 - Medical/health history
 - Medication and supplement history
 - Social history
 - Personal history
2. Biochemical data—relevant laboratory values
3. Anthropometric measurements
 - Height, weight and BMI, waist circumference
 - Weight change rate
4. Food/nutrition history
 - Food intake
 - Nutrition and health awareness
 - Physical activity and exercise
 - Food availability
 - Psychosocial and economic issues impacting nutrition therapy
 - Consideration of co-morbid conditions and need for additional modifications in nutrition care plan
5. Physical examination findings

B. Nutrition Diagnosis

Below you will find the nutrition diagnoses related to CKD care from *International Dietetics & Nutrition Terminology Reference Manual. Standardized Language for the Nutrition Care Process*. Third Edition.

- Inadequate energy intake
- Excessive energy intake
- Inadequate oral food/beverage intake
- Excessive oral food/beverage intake
- Inadequate intake from enteral/Parenteral nutrition
- Excessive intake from enteral/Parenteral nutrition
- Inappropriate infusion of enteral or Parenteral nutrition
- Inadequate fluid intake
- Excessive fluid intake
- Excessive alcohol intake
- Evident protein-energy malnutrition
- Inadequate fiber intake
- Excessive fiber intake
- Altered GI function
- Altered nutrition-related laboratory values
- Underweight
- Involuntary weight loss
- Overweight/obesity
- Involuntary weight gain
- Food- and nutrition-related knowledge deficit
- Swallowing difficulty
- Biting/Chewing (Masticatory) difficulty
- Physical inactivity
- Inability or lack of desire to manage self-care
- Impaired ability to prepare foods/meals
- Self-feeding difficulty
- Limited access to food

C. Nutrition Intervention (Planning and Implementation)

Individualized prescription based on:

1. Food/Nutrition Intervention
2. Physical activity Interventions
3. Behavioral Interventions
4. Pharmacotherapy, when indicated

Below you will find the nutrition interventions related to CKD care from *International Dietetics & Nutrition Terminology Reference Manual. Standardized Language for the Nutrition Care Process*. Third Edition.

- Meals and snacks
- Enteral or Parenteral nutrition
- Medical Food Supplements
- Bioactive Substance Supplements
- Feeding Assistance
- Feeding Environment
- Comprehensive nutrition education
- Nutrition counseling
- Strategies
- Coordination of nutrition care
- Discharge planning and transfer of nutrition care to new setting or provider

D. Monitoring and Evaluation

The monitoring or progress, measuring of outcomes, and evaluating of outcomes against criteria to determine changes in specific indicators of MNT outcomes.

Below you will find the nutrition monitoring and evaluation terms related to CKD care from *International Dietetics & Nutrition Terminology Reference Manual. Standardized Language for the Nutrition Care Process*. Third Edition.

- Nutrition-related ADLs and IADLs
- Physical activity
- Food and nutrient intake outcomes
- Nutrition-related physical sign/symptoms outcomes
- Nutrition-related patient/client centered outcomes

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Chronic Kidney Disease

CKD: Statement of Intent (2010)

Chronic Kidney Disease Statement of Intent

Evidence-based nutrition practice guidelines are developed to help Registered Dietitians, practitioners, patients, families, and consumers make shared decisions about health care choices in specific clinical circumstances. If properly developed, communicated, and implemented, guidelines can improve care.

While the evidence-based nutrition practice guideline represents a statement of promising practice based on the latest available evidence at the time of publication, the guideline is not intended to overrule professional judgment. Rather, it may be viewed as a relative constraint on individual clinician discretion in a particular clinical circumstance. The independent skill and judgment of the health care provider must always dictate treatment decisions. These nutrition practice guidelines are provided with the express understanding that they do not establish or specify particular standards of care, whether legal, medical or other.

The Role of Patient and Family Preference

This guideline recognizes the role of patient and family preferences for possible outcomes of care, when the appropriateness of a clinical intervention involves a substantial element of personal choice or values. With regard to types of evidence that are associated with particular outcomes, Shaughnessy and Slawson (1-3) describe two major classes. Patient-oriented evidence that matters (POEM) deals with outcomes of importance to patients, such as changes in morbidity, mortality, or quality of life. Disease-oriented evidence (DOE) deals with surrogate end-points, such as changes in laboratory values or other measures of response. Although the results of DOE sometimes parallel the results of POEM, they do not always correspond.

When possible, ADA recommends using POEM-type evidence rather than DOE. When DOE is the only guidance available, the guideline indicates that key clinical recommendations lack the support of outcomes evidence.

References

1. Slawson DC, Shaughnessy AF. Becoming an information master: using POEMs to change practice with confidence. Patient-Oriented Evidence that Matters. *J Fam Pract*. 2000 Jan;49(1):63-7. Erratum in: *J Fam Pract* 2000 Mar;49(3):276.
2. Slawson DC, Shaughnessy AF, Ebell MH, Barry HC. Mastering medical information and the role of POEMs--Patient-Oriented Evidence that Matters. *J Fam Pract*. 1997 Sep;45(3):195-6.
3. Shaughnessy AF, Slawson DC. POEMs: patient-oriented evidence that matters. *Ann Intern Med*. 1997 Apr 15;126(8):667.

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CKD: Guideline Methods (2010)

General and Specific Methods for CKD Guideline

This guideline is an update to the ADA 2001 Chronic Kidney Disease MNT Evidence-Based Guide for Practice and builds on the topic areas and recommendations that were made in the previous version.

This guideline is intended for use by Registered Dietitians (RDs) involved in providing MNT to adults with CKD. The application of the guideline must be individualized to assist the Registered Dietitian to successfully integrate MNT into the overall medical management of adults with CKD. The recommendations in the guideline were based on a systematic review of the literature and incorporating existing guidelines for [KDOQI Clinical Practice Guidelines](#) (accessed at <http://www.kidney.org/Professionals/kdoqi/>). These recommendations for chronic kidney disease are based on a combination of recent ADA evidence analysis and recommendations from the evidence-based guidelines developed by [KDOQI](#). Kidney Disease: Improving Global Outcomes ([KDIGO](#), accessed at www.kdigo.org) and other international guidelines will be reviewed for use in future updates.

Below are links to both the general methods that ADA has put in place for evidence analysis and creating the guidelines, as well as the specific search methods and criteria for each question.

General Methods

[Click here](#) to view a description of the ADA's process of evidence analysis and guideline creation.

Methods for Specific Topics

Click on Specific Methods in Introduction to view descriptions of search criteria and findings for each topic covered in this guideline.

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CKD: Specific Methods (2010)

Search Criteria and Results for Specific Topics

Each evidence analysis topic has a link to supporting evidence, where the **Search Plan and Results** can be found. Here, you can view when the search plan was performed, inclusion and exclusion criteria, search terms, databases that were searched and the excluded articles.

Below are a list of the recommendations and the related evidence analysis questions, with the link to each search plan. Some recommendations are supported by multiple conclusion statements and therefore have multiple search plans listed.

Consensus-rated recommendations were not developed using ADA's evidence analysis process, but based on consensus documents. Therefore, these recommendations do not have links to *Search Plans*.

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CKD: Medical Nutrition Therapy

[Search Plan and Results](#)

CKD: Initiation of Medical Nutrition Therapy

[Search Plan and Results](#)

CKD: Frequency of Medical Nutrition Therapy

[Search Plan and Results](#)

Assessment

CKD: Use Clinical Judgment in Assessing Body Weight

[Search Plan and Results](#)

CKD: Use Published Weight Norms with Caution

[Search Plan and Results](#)

CKD: Assessment of Body Composition

[Search Plan and Results](#)

CKD: Methodologies for Body Composition Assessment

[Search Plan and Results](#)

Intervention

CKD: Protein Intake for eGFR

[Search Plan and Results](#)

[Search Plan and Results](#)

[Search Plan and Results](#)

CKD: Very Low Protein Intake for eGFR

[Search Plan and Results](#)

[Search Plan and Results](#)

[Search Plan and Results](#)

CKD: Protein Intake for Diabetic Nephropathy

[Search Plan and Results](#)

[Search Plan and Results](#)

[Search Plan and Results](#)

CKD: Protein Intake for Kidney Transplant

[Search Plan and Results](#)

[Search Plan and Results](#)

[Search Plan and Results](#)

CKD: Energy Intake

[Search Plan and Results](#)

CKD: Phosphorus

[Search Plan and Results](#)

CKD: Adjust Phosphate Binders

[Search Plan and Results](#)

CKD: Phosphorus Management for Kidney Transplant

[Search Plan and Results](#)

CKD: Iron Supplementation

[Search Plan and Results](#)

CKD: Vitamin B12 and Folic Acid for Anemia

[Search Plan and Results](#)

CKD: Vitamin C for Treatment of Anemia

[Search Plan and Results](#)

CKD: L-Carnitine for Treatment of Anemia

[Search Plan and Results](#)

CKD: Control Sodium Intake in CKD

[Search Plan and Results](#)

[Search Plan and Results](#)

CKD: Fish Oil/Omega-3 Fatty Acids

[Search Plan and Results](#)

[Search Plan and Results](#)

CKD: Physical Activity

[Search Plan and Results](#)

[Search Plan and Results](#)

CKD: Multivitamin Supplementation

[Search Plan and Results](#)

CKD: Control Potassium Intake in CKD

[Search Plan and Results](#)

The following recommendations were not analyzed through ADA's evidence analysis, but developed based on available consensus documents.

- CKD: Initial Assessment of Food/Nutrition-Related History
- CKD: Rassessment of Food/Nutrition-Related History

- CKD: Assess Biochemical Parameters
- [CKD: Assess CKD-Mineral and Bone Disorders](#)
- [CKD: Assessment of Medical/Health History](#)
- [CKD: Calcium](#)
- CKD: Vitamin D Supplementation
- [CKD: Management of Hyperglycemia in Diabetes and CKD](#)
- [CKD: Coordination of Care](#)
- [CKD: Multi-Faceted Approach to Intervention in Diabetes and CKD](#)
- [CKD: Multi-Faceted Approach to Intervention in Dyslipidemias and CKD](#)
- [CKD: Education on Self-Management Behaviors](#)
- [CKD: Monitor and Evaluate Biochemical Parameters](#)
- [CKD: Monitor and Evaluate Adherence to Nutrition and Lifestyle Recommendations](#)

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Chronic Kidney Disease

CKD: Implementation of the Guideline (2010)

This publication of this guideline is an integral part of the plans for getting the ADA MNT evidence-based recommendations on spinal cord injury to all dietetics practitioners engaged in, teaching about or researching the topic. National implementation workshops at various sites around the country and during the ADA Food Nutrition Conference Expo (FNCE) are planned. Additionally, there are recommended dissemination and adoption strategies for local use of the *ADA Chronic Kidney Disease Evidence-Based Nutrition Practice Guideline*.

The guideline development team recommended multi-faceted strategies to disseminate the guideline and encourage its implementation. Management support and learning through social influence are likely to be effective in implementing guidelines in dietetic practice. However, additional interventions may be needed to achieve real change in practice routines.

Implementation of the guideline will be achieved by announcement at professional events, presentations and training. Some strategies include:

- **National and local events:** State dietetic association meetings and media coverage will help launch the guideline
- **Local feedback adaptation:** Presentation by members of the work group at peer review meetings and opportunities for CEUs for courses completed
- **Education initiatives:** The guideline and supplementary resources will be freely available for use in the education and training of dietetic interns and students in approved Commission on Accreditation of Dietetics Education (CADE) programs
- **Champions:** Local champions will be identified and expert members of the guideline team will prepare articles for publications. Resources will be provided that include PowerPoint presentations, full guidelines and pre-prepared case studies.
- **Practical tools:** Some of the tools that will be developed to help implement the guideline include specially-designed resources such as clinical algorithms, slide presentations, training and toolkits.

Specific distribution strategies include:

Publication in full: The guideline is available electronically at the Evidence Analysis Library website (www.andevidencelibrary.com) and announced to all ADA Dietetic Practice Groups. The ADA Evidence Analysis Library will also provide downloadable supporting information and links to relevant position papers.

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CKD: Benefits and Risks/Harms of Implementation (2010)

Benefits and Risks or Harms of Implementing the Recommendations

Safety issues must be reviewed carefully for each adult. General benefits and risks associated with implementation of the guideline are addressed for each recommendation.

Potential Benefits

A primary goal of implementing these recommendations includes improving a person's ability to achieve optimal nutrition through healthful food choices and physically active lifestyle.

Although costs of medical nutrition therapy (MNT) sessions and reimbursement vary, MNT is essential for improved outcomes. MNT education can be considered cost effective when considering the benefits of nutrition interventions on the onset and progression of comorbidities versus the cost of the intervention.

Risk or Harm Considerations

When using these recommendations:

- Review the patient's age, socioeconomic status, cultural issues, health history, and other health conditions.
- Consider referral to a behavioral specialist if psychosocial issues are a concern.
- Consider a referral to social services to assist patients with financial arrangements if economic issues are a concern.
- Use clinical judgment in applying the guidelines when evaluating adults with chronic kidney disease.

In addition to the above, a variety of barriers may hinder the application of these recommendations.
