Objectives

• Describe the evidence analysis process that was used to develop:
  — Summaries
  — Conclusion statements
  — Grades of evidence
  — Recommendations for dietitians treating individuals with Chronic Kidney Disease.
• Medical nutrition therapy for persons with Chronic Kidney Disease.
• Utilize evidence-based guidelines to practice medical nutrition therapy for persons with Chronic Kidney Disease.

ADA Definition

What is Evidence-based Dietetics Practice?

"Evidence-Based Dietetics Practice is the use of systematically reviewed scientific evidence in making food and nutrition practice decisions by integrating best available evidence with professional expertise and client values to improve outcomes."

ADA Scope of Dietetics Practice Framework: Approved by ADA House of Delegates

Overall Guideline 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 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.
## Stages of Chronic Kidney Disease

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>GFR</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-CKD</td>
<td>At increased risk w/ or w/o GFR risk factors</td>
<td>&gt; 90 w/CKD risk factors</td>
<td>Screening &amp; CKD risk reduction</td>
</tr>
<tr>
<td>1</td>
<td>Kidney damage w/ or w/o GFR</td>
<td>&gt; 90</td>
<td>Diagnosis &amp; treatment&lt;br&gt;- Treat co-morbid cond&lt;br&gt;- Slow progression&lt;br&gt;- CVD risk reduction&lt;br&gt;- Treat complications&lt;br&gt;- Prepare for RRT</td>
</tr>
<tr>
<td>2</td>
<td>Mild GFR</td>
<td>60-89*</td>
<td>Estimation of progression&lt;br&gt;- Treat complications&lt;br&gt;- Prepare for RRT</td>
</tr>
<tr>
<td>3</td>
<td>Moderate GFR</td>
<td>30-59</td>
<td>Evaluation &amp; treat complications&lt;br&gt;- Start nutrition intervention</td>
</tr>
<tr>
<td>4</td>
<td>Severe GFR</td>
<td>15-29</td>
<td>Preparation of RRT. Should have nutrition counseling</td>
</tr>
<tr>
<td>5 &amp; 5D</td>
<td>Kidney Failure</td>
<td>&lt; 15 or Dialysis</td>
<td>RRT if uremia present</td>
</tr>
</tbody>
</table>


### Guideline Narrative Overview

*The focus of this guideline is on MNT for adults with 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.*

### Medical Nutrition Therapy

Scientific evidence supports the effectiveness of MNT to increase effectiveness of therapy for CKD, including post kidney transplant. Topics included in this guideline are:

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

### Medical Nutrition Therapy ctd.

*The RD 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 CKD.*

*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.*

### Statement of Intent

*Evidence-based nutrition practice guidelines are developed to help RDs, 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.*
Disclaimer

Evidence-based nutrition practice guideline represent practice based on the latest available evidence at the time of publication.

- Guidelines are not intended to overrule professional judgment.
- 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 guidelines are provided with the express understanding that they do not establish or specify particular standards of care, whether legal, medical or other.

Chronic Kidney Disease

Executive Summary of Recommendations

http://www.adaevidencelibrary.com/topic.cfm?cat=3929

Guideline Rating

Each Recommendation is Rated:

- Strong,
- Fair,
- Weak,
- Consensus, or
- Insufficient Evidence

Each Recommendation Statement is:

- Conditional or
- Imperative

Guideline Rating Chart (2 of 2)

<table>
<thead>
<tr>
<th>Recommendation Statement</th>
<th>Definition</th>
<th>Implication for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditioned</td>
<td>Consensus</td>
<td>Practitioners should be flexible in deciding whether to follow a recommendation classified as Consensus, although they may set boundaries on alternatives. Patient preference should have a substantial influencing role.</td>
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<tr>
<td>Imperative</td>
<td>Insufficient Evidence</td>
<td>Practitioners should feel little constraint in deciding whether to follow a recommendation classified as Insufficient Evidence and should exercise judgment and be alert to emerging publications that report evidence that clarifies the balance of benefit versus harm. Patient preference should have a substantial influencing role.</td>
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Conditional / Imperative

- Conditional statements clearly define a specific situation and contain conditional text that would limit their applicability to specified circumstances, or to a sub-population group. More specifically, a conditional recommendation can be stated in if/then terminology.
  - e.g., If an individual does not eat food sources of omega-3 fatty acids, then 1g of EPA and DHA omega-3 fatty acid supplements may be recommended for secondary prevention.
- Imperative recommendations are broadly applicable to the target population and are stated as "require," or "must," or "should achieve certain goals."
  - e.g., MNT is recommended for persons with CKD to prevent and treat protein/energy malnutrition.
Recommendations:

a series of guiding statements that propose a course of action for practitioners

CKD Topics – pg 1 of 2

Nutrition Intervention
- Protein Intake for eGFR
- Very Low Pro. Intake for eGFR
- Pro. Intake for Diabetic Nephropathy
- Pro. Intake for Kidney Transplant
- Energy Intake
- Control Sodium Intake
- Control Potassium Intake
- Phosphorus
- Adjust Phosphate Binders
- Phosphorus Management for Kidney Transplant
- Calcium
- Vitamin D Supplementation
- Iron Supplementation
- Vit. B12 & Folic Acid for Anemia
- Vit. C for Treatment of Anemia
- L-Carnitine for Treatment of Anemia

Nutrition Assessment
- Initially Assess: Food/nutrition-related hx
- Use Clinical Judgment in Assessing Body Wt.
- Use Published Wt Norms w/ Caution
- Assessment of Body Composition
- Methods for Body Comp Assessment
- Assess Biochemical Parameters
- Assess CKD-Mineral & Bone Disorders
- Assessment of Medical/Health History

Screening & Referral
- Medical Nutrition Therapy
- Initiation of MNT
- Frequency of MNT

Nutrition Intervention (continued)
- Management of Hyperglycemia in Diabetes and CKD
- Multi-faceted Approach to Intervention in DM & CKD
- Multi-faceted Approach to Intervention in Dyslipidemias & CKD
- Education on Self-Management Behaviors
- Fish Oil/Omega-3 Fatty Acids
- Physical Activity
- Coordination of Care
- Multivitamin Supplementation

Nutrition Monitoring & Evaluation
- Monitor & Evaluate Biochemical Parameters
- Monitor & Evaluate Adherence to Nutrition & Lifestyle Recommendations

Screening & Referral Recommendations

Renal Organizations and Abbreviations
- Chronic Kidney Disease = CKD
- National Kidney Foundation = NKF
- National Kidney Foundation Kidney Disease Outcome Quality Initiatives = NKF KDOQI™ or KDOQI™
- Kidney Disease: Improving Global Outcomes = KDIGO®
- Council on Renal Nutrition = NKF/CRN
  - Journal of Renal Nutrition = JRN
  - Pocket Guide to Nutrition Assessment of the CKD Patient
- Renal Practice Group = ADA/ RPG
  - Renal Nutrition Forum

The Nutrition Care Process

Chronic Kidney Disease

– Journal of Renal Nutrition = JRN
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– Renal Nutrition Forum
CKD: Medical Nutrition Therapy

MNT provided by a RD is recommended for individuals with CKD stages 1-5 including post kidney transplant, not on dialysis.

MNT prevents and treats:
- protein-energy malnutrition
- mineral and electrolyte disorders
- minimizes impact of other comorbidities on progression of kidney disease (e.g., diabetes, obesity, HTN and disorders of lipid metabolism).

Studies re: effectiveness of MNT report significant improvements in anthropometric and biochemical measurements sustained >1 yr.

*Strong Imperative

CKD: Initiation of Medical Nutrition Therapy

- Referral for MNT per federal or state guidelines, should be initiated at diagnosis of CKD, in order to maintain adequate nutritional status, prevent disease progression and delay renal replacement therapy (RRT). MNT should be initiated at least 12 months prior to the anticipation of RRT (dialysis or transplant).

*Strong
*Imperative

CKD: Frequency of Medical Nutrition Therapy

- Depending on the care setting and the initiation of MNT, the RD should monitor the nutritional status of individuals with CKD every 1-3 mo. 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.

- Research related to the time requirements for MNT provided by an RD indicate that approximately 2 hrs per mo. for up to 1 yr may be required to provide an effective intervention for adults with CKD.

*Strong
*Conditional

Chronic Kidney Disease

Nutrition Assessment Recommendations

Follows the Nutrition Care Process (NCP)

- Assessment
- Diagnosis
- Intervention
- Monitor/Evaluation

Gold shading indicates

A link to Guideline Recommendation

Pages (online)

Follows the Nutrition Care Process (NCP)

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CKD Algorithm Example

Algorithms are available online: www.adaevidencelibrary.com

Evidence-Based Guidelines > Guideline List > Chronic Kidney Disease > Algorithms

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

The RD should assess the food- and nutrition-related hr of adults with CKD (including post kidney transplant), incl. but not limited to the following:

- Food and nutrient intake (e.g., diet history, diet experience and intake of macro and micronutrients [such as energy, pro., Na, K, Ca, phos., others], as appropriate)
- Medication (prescription and over-the-counter), dietary supplements (vitamin, minerals, protein, etc.), herbal or botanical supplement use
- Knowledge, beliefs or attitudes (e.g., readiness to change nutrition and lifestyle behaviors) and Behavior
- Factors affecting access to food and food and nutrition-related supplies (e.g., safe food and meal availability).

Assessment of the above factors is needed to effectively determine nutrition diagnoses and plan nutrition interventions. Inability to achieve optimal nutrient intake may contribute to poor outcomes.

*Imperative* 

---

**CKD: Reassessment of Food/Nutrition-Related History**

On subsequent visits, the RD should reassess the food- and nutrition-related history of adults with CKD (including post kidney transplant), related to changes in other assessment parameters (laboratory and anthropometric changes), including but not limited to the following:

- Food/nutrient intake, targeted to changes in biochemical parameters
- Medication, dietary supplements, herbal/botanical supplement use
- Knowledge, beliefs or attitudes
- Behavior
- Factors affecting access to food and food/nutrition-related supplies.

Assessment of the above factors is needed to explain changes in the other assessment parameters and plan additional nutrition interventions. Inability to achieve optimal nutrient intake may contribute to poor outcomes.

*Imperative* 

---

**CKD: Use Clinical Judgment in Assessing Body Weight**

- Due to the absence of standard reference norms in the CKD (including post kidney transplant), the RD should use clinical judgment to determine which data to include in estimations of body weight:
  - Actual measured weight
  - History of weight changes (both long-term and recent)
  - Serial weight measurements, monitored longitudinally
  - Adjustments for suspected impact of edema, ascites and polycystic organs.

Body wt. estimates are used for calculation of nutritional needs, such as protein & energy requirements. Body wt. can be difficult to determine because as kidney function declines, the ability to regulate fluid balance may be compromised and multiple factors must be considered.

*Imperative* 

---

**CKD: Use Published Weight Norms with Caution**

- The RD may use other published weight norms in the anthropometric assessment of individuals with CKD (including post kidney transplant), but each norm has significant drawbacks and must be used with caution:
  - IBW is the body weight associated with the lowest mortality for a given height, age, sex and frame size and is based on the Metropolitan Life Insurance Height and Weight Tables. [Caution: Not generalizable to the CKD population and data-gathering methods were not standardized.]
  - Hamwi Method determines the optimal body weight. [Caution: A quick and easy method for determining optimal body weight, but has no scientific data to support its use.]
  - Standard Body Weight, NHANES II (SBW as per KDOQI Nutrition Practice Guidelines) describes the median body weight of average Americans from 1976 to 1980 for height, age, sex and frame size. [Caution: Although data is validated and standardized and uses a large database of ethnically-diverse groups, data is provided only on what individuals weigh, not what they should weigh in order to reduce mortality and mortality.]

*Caution: The researchers may not have statistically adjusted for all confounders related to comorbid conditions occurring in CKD on dialysis (diabetes, malignancy, etc) and it is unclear how it may relate to CKD patients not on dialysis.*

- ABW is based on the theory that 25% of the excess body weight (adipose tissue) in obese patients is metabolically active tissue. KDOQI supports the concept of subtracting 25% for obese patients and adding 25% for underweight patients. [Caution: This has not been validated for use in CKD and may either overestimate or underestimate energy and pro. requirements.]

- Body weight estimates are used for calculation of nutritional needs, such as protein and energy requirements. Body weight can be difficult to determine because as kidney function declines, the ability to regulate fluid balance may be compromised and multiple factors must be considered.

*Conditional* 

---

**CKD: Use Published Weight Norms with Caution continued**

- BMI often defines generalized obesity and CKD research, specific to dialysis patients, has identified that patients at higher BMIs have a lower mortality risk. [Caution: Although data is validated and standardized and uses a large database of ethnically-diverse groups, data is provided only on what individuals weigh, not what they should weigh in order to reduce mortality and mortality.]

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- Body weight estimates are used for calculation of nutritional needs, such as protein and energy requirements. Body weight can be difficult to determine because as kidney function declines, the ability to regulate fluid balance may be compromised and multiple factors must be considered.

*Conditional* 

---

**CKD: Assessment of Body Composition**

The RD should assess the body composition of individuals with CKD (including post kidney transplant).

Studies suggest that CKD patients exhibit altered body composition, as compared to healthy individuals.

*Imperative* 

---
CKD: Methodologies for Body Composition Assessment

- When assessing the body composition of individuals with CKD (including post kidney transplant), the RD may use any valid measurement methodology, such as anthropometrics (including waist circumference and body mass index) and body compartment estimates.
- Currently, there is no reference standard for assessing body composition in CKD patients and studies do not show that any one test is superior to another in assessing body composition among CKD patients.
- Fair
- Imperative

CKD: Assess Biochemical Parameters

- The RD should assess various biochemical parameters in adults with CKD (including post-kidney transplant), related to:
  - Glycemic control
  - Protein-energy malnutrition
  - Inflammation
  - Kidney function
  - Mineral and bone disorders
  - Anemia
  - Dyslipidemia
  - Electrolyte disorders
  - Others as appropriate.
- Assessment of the above factors is needed to effectively determine the nutrition diagnoses and nutrition prescription in adults with CKD and post-kidney transplant.
- Consensus
- Imperative

CKD: Assess CKD-Mineral and Bone Disorders

- The RD should assess measurements of mineral and bone disorders (MBD) in adults with CKD (including post kidney transplant), for prevention and treatment.
- Adults with CKD have altered mineral-bone metabolism and increased risk of vascular disease.
- Consensus
- Imperative

CKD: Assessment of Medical/Health History

- When implementing MNT, the RD should assess the medical and health history of individuals with CKD (including post kidney transplant), for the presence of other disease states and conditions, such as diabetes, hypertension, obesity and disorders of lipid metabolism.
- Adults with CKD, including post kidney transplant, have a higher prevalence of comorbidities, which are risk factors for the progression of kidney disease.
- Strong
- Imperative

Chronic Kidney Disease Nutrition Intervention Recommendations
**CKD: Energy Intake**

For adults with CKD, (including post kidney transplant after surgical recovery), the RD should recommend or prescribe an energy intake between 23kcal to 35kcal per kg of body weight per day, based on the following factors:

- Weight status and goals
- Age and gender
- Level of physical activity
- Metabolic stressors.

Research reports that energy intakes between 23kcal to 35kcal per kg body weight per day are adequate to prevent signs of malnutrition.

- Fair
- Imperative

---

**CKD: Protein Intake for eGFR <50ml per minute per 1.73m²**

*For adults with CKD without diabetes, not on dialysis, with an eGFR below 50ml per minute per 1.73m², the RD should recommend or prescribe a protein-controlled diet providing 0.6g-0.8g dietary protein per kg of body weight per day. Clinical judgment should be used when recommending lower protein intakes, considering the client's level of motivation, willingness to participate in frequent follow-up and risk for protein-energy malnutrition.

Research reports that protein-restricted diets (0.7g dietary protein per kg of body weight per day, ensuring adequate caloric intake) can slow GFR decline and maintain stable nutrition status in adult non-diabetic patients with CKD.

- Strong
- Conditional

---

**CKD: Very-Low-Protein Intake for eGFR <20ml per minute per 1.73m²**

*In international settings where keto acid analogs are available, a very-low protein-controlled diet may be considered. For adults with CKD without diabetes, not on dialysis, with an eGFR below 20ml per minute per 1.73m², a very-low protein-controlled diet providing 0.3g to 0.5g dietary protein per kg of body weight per day with addition of keto acid analogs to meet protein requirements may be recommended.

*International studies report that additional keto acid analogs and vitamin or mineral supplementation are needed to maintain adequate nutrition status for patients with CKD who consume a very-low-protein controlled diet (0.3g to 0.5g per kg per day).

- Strong
- Conditional

---

**CKD: Protein Intake for Diabetic Nephropathy**

For adults with diabetic nephropathy, the RD should recommend or prescribe a protein-controlled diet providing 0.8g to 0.9g of protein per kg of body weight per day.

Providing dietary protein at a level of 0.7g per kg of body weight per day may result in hypoalbuminemia. Research reports that protein-restricted diets improved microalbuminuria.

- Fair
- Conditional

---

**Control Sodium Intake in CKD**

For adults with CKD, (including post-kidney transplant), the RD should recommend/prescribe a sodium intake of less than 2.4g (Stages One to Five), with adjustments based on the following:

- Blood pressure
- Medications
- Kidney function
- Hydration status
- Acidosis
- Glycemic control
- Catabolism
- Gastrointestinal issues, including vomiting, diarrhea and constipation.

Dietary and other therapeutic lifestyle modifications are recommended as part of a comprehensive strategy to reduce CVD risk in adults w/ CKD.

- Fair
- Imperative
Control Potassium Intake in CKD

For adults with CKD, (including post kidney transplant) who exhibit hyperkalemia, the RD should recommend or prescribe a potassium intake of less than 2.4g (Stages Three to Five), with adjustments based on:

- Serum potassium level, Blood pressure, Medications, Kidney function, Hydration status, Acidosis, Glycemic control, Catabolism, GI issues, including vomiting, diarrhea, constipation and GI bleed.

Dietary and other therapeutic lifestyle modifications are recommended as part of a comprehensive strategy to reduce CVD risk in adults with CKD. The degree of hypokalemia or hyperkalemia can have a direct effect on cardiac function, with potential for cardiac arrhythmia and sudden death.

*Fair
*Conditional

CKD: Phosphorus

*For adults with CKD (Stages Three to Five), the RD should recommend or prescribe a low-phosphorus diet providing 800mg to 1,000mg per day or 10mg to 12mg phosphorus per gram of protein.

*For adults with CKD (Stages Three to Five), the dose and timing of phosphate binders should be individually adjusted to the phosphate content of meals and snacks to achieve desired serum phosphorus levels.

• Serum phosphorus levels are difficult to control with dietary restrictions alone.

*Strong
*Conditional

CKD: Adjust Phosphate Binders

Abnormalities in Mineral Metabolism Occur as GFR Decreases

Data from the SEEK Study

CKD: Phosphorus Management for Kidney Transplant

*For adult kidney transplant recipients exhibiting hypophosphatemia, the RD should recommend or prescribe a high-phosphorus intake (diet or supplements) to replete serum phosphorus as needed.

*Hypophosphatemia is common post kidney transplant.

*Consensus
*Conditional

CKD: Calcium

*For adults with CKD, Stages Three to Five, including post kidney transplant), the RD should recommend a total elemental calcium intake (including dietary calcium, calcium supplementation and calcium-based phosphate binders) not exceeding 2,000mg per day.

*For adults with CKD, Stages Three to Five, including post kidney transplant), the RD should recommend or prescribe a high-phosphorus intake (diet or supplements) to replete serum phosphorus as needed.

*Hypophosphatemia is common post kidney transplant.

*Consensus
*Conditional
CKD: Vitamin D Supplementation

* In adults with CKD, including post kidney transplant, the RD should recommend vitamin D supplementation to maintain adequate levels of vitamin D if the serum level of 25-hydroxyvitamin D is less than 30ng per ml (75nmol per L).
* CKD patients have a predisposition for mineral and bone disorders, as well as other conditions that may be affected by insufficient vitamin D. Sufficient vitamin D should be recommended to maintain adequate levels of serum vitamin D.

*Consensus
*Conditional

CKD: Multivitamin Supplementation

* In adults with CKD, including post kidney transplant, with no known nutrient deficiency (biochemical or physical) and who may be at higher nutritional risk due to poor dietary intake and decreasing GFR, the RD should recommend or prescribe a multivitamin preparation.
* Sufficient vitamin supplementation should be recommended to maintain indices of adequate nutritional status.

*Consensus
*Conditional

CKD: Iron Supplementation for Anemia

* In adults with CKD, including post kidney transplant, the RD should recommend oral or IV iron administration if serum ferritin is below 100ng per ml and TSAT is below 20%.
* CKD patients have a predisposition for anemia. Sufficient iron should be recommended to maintain adequate levels of serum iron to support erythropoiesis.

*Consensus
*Conditional

CKD: Vitamin B12 and Folic Acid for Anemia

* In adults with CKD (including post kidney transplant), the RD should recommend vitamin B12 and folic acid supplementation if the MCV is over 100ng per ml and serum levels of these nutrients are below normal values.
* CKD patients have a predisposition for anemia and all potential causes should be investigated.

*Consensus
*Conditional

CKD: Vitamin C for Treatment of Anemia

* If the use of vitamin C supplementation is proposed as a method to improve iron absorption for adults with CKD (including post kidney transplant) who are anemic, the RD should recommend the DRI for vitamin C.
* There is insufficient evidence to recommend the use of vitamin C supplementation above the DRI in the management of anemia in patients with CKD, due to risk of hyperoxalosis.

*Consensus
*Conditional
**CKD: L-Carnitine for Treatment of Anemia**

- For adults with CKD (including post kidney transplant) who are anemic, the RD should **not** recommend L-carnitine supplementation.
- There is insufficient evidence to recommend the use of L-carnitine in the management of anemia in adults with CKD including post kidney transplant.

*Consensus  
*Conditional

**CKD: Management of Hyperglycemia in Diabetes and CKD**

- For adults with diabetes and CKD, (including post kidney transplant), the RD should implement MNT for diabetes care to manage hyperglycemia to achieve a target A1C of approximately 7%.
- Intensive treatment of hyperglycemia, while avoiding hypoglycemia, prevents diabetic kidney disease (DKD) and may slow progression of established kidney disease.

*Strong  
*Conditional

**CKD: Multi-Faceted Approach to Intervention in Diabetes and CKD**

- For adults with diabetes and CKD, (including post kidney transplant), the RD should implement MNT using a multi-faceted approach, including education and counseling in healthy behaviors, treatment to reduce risk factors and self-management strategies.
- Multiple risk factors are managed concurrently in adults with diabetes and CKD and the incremental effects of treating each of these risk factors results in substantial clinical benefits.

*Consensus  
*Conditional

**CKD: Multi-Faceted Approach to Intervention in Dyslipidemias and CKD**

- For adults with dyslipidemia and CKD, (including post kidney transplant), the RD should implement MNT, using a multi-faceted approach, including education and counseling in therapeutic lifestyle changes (TLC), treatment to reduce risk factors and self-management strategies.
- Multiple risk factors are managed concurrently in adults with dyslipidemia and CKD and the incremental effects of treating each of these risk factors results in substantial clinical benefits.

*Fair  
*Conditional

**CKD: Fish Oil/Omega-3 Fatty Acids**

- If the use of fish oil or omega-3 fatty acid supplementation is proposed as a method to improve renal function, the RD should advise on the conflicting evidence regarding effectiveness of this strategy.
- Research reports that renal outcomes were inconsistent among patients with IgA nephropathy who received fish oil supplementation. There is insufficient evidence to support fish oil therapy to improve renal function and patient or graft survival for kidney transplant patients. However, evidence does support a benefit of fish oil supplementation in reducing oxidative stress and improving lipid profile in adults with CKD, (including post kidney transplant).

*Fair  
*Conditional
CKD: Education on Self-Management Behaviors

*For individuals with CKD, (including post kidney transplant), the RD should provide education and counseling regarding self-management behaviors.
*Therapy must take into consideration the patient's perception of the health-care provider's advice and prescriptions, factors that may influence self-management behaviors and the likelihood that the patient will adhere to recommendations.

*Fair
*Imperative

CKD: Physical Activity

*If not contraindicated, the RD should encourage adults with CKD, (including post kidney transplant), to increase frequency or duration of physical activity as tolerated.
*Studies report that physical activity may minimize the catabolic effects of protein restriction and improve quality of life.

*Fair
*Conditional

CKD: Coordination of Care

For adults with CKD, (including post kidney transplant), the RD should implement MNT and coordinate care with an interdisciplinary team, through:
*Requesting appropriate data (biochemical and other)
*Communicating with referring provider
*Indicating specific areas of concern or needed reinforcement.

This approach is necessary to effectively integrate MNT into overall management for patients with CKD.

*Consensus
*Imperative

Chronic Kidney Disease Nutrition Monitoring and Evaluation Recommendations

The RD should monitor and evaluate various biochemical parameters in adults with CKD, (including post-kidney transplant), related to:
Glycemic control
Protein-energy malnutrition
Inflammation
Kidney function
Mineral and bone disorders
Anemia
Dyslipidemia
Electrolyte disorders, Others as appropriate.

*Monitoring and evaluation of the above factors is needed to determine the effectiveness of MNT in adults with CKD and post kidney transplant.

*Consensus
*Imperative
**CKD: Monitor and Evaluate Adherence to Nutrition and Lifestyle Recommendations**

The RD should monitor the following in adults with CKD, (incl. post kidney transplant):

- **Food and nutrient intake** (e.g., diet history, diet experience and intake of macronutrients and micronutrients, such as energy, protein, sodium, potassium, calcium, phosphorus and others, as appropriate)
- **Medication** (prescription and OTC) dietary supplements (vit., min., protein, etc.), herbal or botanical supplement use
- **Knowledge, beliefs or attitudes** (e.g., readiness to change nutrition and lifestyle behaviors)
- **Behavior**
- **Factors affecting access to food and food- and nutrition-related supplies** (e.g., safe food and meal availability).

Monitoring & evaluation of the above factors is needed to determine the effectiveness of MNT in adults w/ CKD and post kidney transplant.

**Consensus, Imperative**

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**Next Step: CKD Toolkit**

1. **Step 1: Toolkit development**
   - Develop companion documents to the guideline
2. **Step 2: Conduct Usability Test**
   - After development, Conduct 60-day usability test.
3. **Step 3: Internal/external review and revision**
   - Workgroup reviews results of usability test and revises by consensus.
4. **Step 4: Published**
   - Copyedited Toolkits are published.
5. **Step 5: Make available on EAL Store**
   - Toolkits available for purchase on EAL store. Electronic and print copy.

**Evidence-Based Toolkits**

- Set of companion documents for application of the practice guideline includes:
  - documentation forms
  - outcomes monitoring sheets
  - client education resources
  - case studies
  - MNT protocol for treatment of disease/condition

- Incorporate Nutrition Care Process

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- Evidence-based Nutrition Practice Guidelines are intended to summarize best available research as a decision tool for ADA members.

Conclusion

- MNT for Chronic Kidney Disease should begin at Stage 3 (GFR <60 ml/min/1.73 m²)
- ADA EAL Chronic Kidney Disease guidelines are a resource for the general clinical/outpatient dietitian and the renal dietitian
- Provides you with evidence based information that is applicable in the clinical setting

For additional information visit:

www.adaevidencelibrary.com