NUTR 374: ADVANCED CLINICAL NUTRITION PRACTICE IN KIDNEY DISEASE
Fall, 2021

Class Meetings: Wednesdays 4:00 pm – 7:00 pm

Location: Meeting Remotely via Zoom synchronously.

Instructor(s): Haewook Han, PhD, RD, LDN, FNKF
haewook.han@tufts.edu.
Phone 617-320-2804

Instructor Office Hours: By appointment only

Semester Hour Units: 1.5 SHUs

Prerequisites: Nutrition Biochemistry (NUTR 0315) or equivalent, and Medical Nutrition Therapy (NUTR 0316 or NUTB 0316) or equivalent and graduate standing or instructor consent

Course Description:

Chronic Kidney Disease (CKD) is an extremely complex condition and one in which nutritional management is key to prevention and treatment. This course is designed to provide an overview of CKD as well as other forms for kidney dysfunction including its causes, treatments, as well as the nutritional management of CKD. This course will provide updated knowledge of the etiology of CKD which includes diabetes, hypertension, other kidney injury, medications, as well as management of pediatric kidney disease, effects of current diet on CKD, and kidney stones.

Course Goals: The goal of the course is to increase students’ knowledge on a variety of kidney diseases. They will also learn about causes, medical and nutritional management and apply that knowledge to their clinical practice. At the completion of the course, students should be able to:

- Describe diagnosis, symptoms, nutritional evaluation and interventions of various types of kidney disease
- Distinguish among different nutritional goals and interventions for chronic kidney disease (CKD) and end stage kidney disease (ESKD) patients
- Plan individualized medical nutrition therapy (MNT) for different types of kidney diseases using evidence-based practice guidelines
- Identify different types of medical coverage among kidney disease patients including insurance coverage upon inpatients, outpatients with ESKD

Texts or Materials:

There is no one textbook assigned for this course but the optional textbook will be available as an electronic version via Medical Education Library in Boston Campus.

https://tuftsprimo.hosted.exlibrisgroup.com/permalink/f/14dinuo/01TUN_ALMAS1299776050003851

Academic Conduct:

Each student is responsible for upholding the highest standards of academic integrity, as specified in the Friedman School’s Policies and Procedures Handbook https://nutrition.tufts.edu/sites/default/files/documents-forms/PoliciesProceduresHandbook20-21Jan11.pdf and Tufts University policies (http://students.tufts.edu/student-affairs/student-life-policies/academic-integrity-policy). It is the responsibility of each student to understand and comply with these standards, as violations will be sanctioned by penalties ranging from failure on an assignment and the course to dismissal from the school.

Classroom Conduct:

All students should be present in the classroom via Zoom. Students will be expected to read the assigned background materials prior to coming to class and complete homework provided by the instructor to participate in the interactive case discussion.

Assessment and Grading:

All students should complete the homework due the day of the class with same topic. The cases will be discussed at the class and the participation of discussion will be included in grading.

Grading Range:

Grading for the course will be based on the below distribution:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>40%</td>
</tr>
<tr>
<td>Class participation with case discussion</td>
<td>10%</td>
</tr>
<tr>
<td>Written paper</td>
<td>30%</td>
</tr>
<tr>
<td>Paper presentation</td>
<td>20%</td>
</tr>
</tbody>
</table>

A passing grade in the course is B- or better. Course grades will be based on the below (subject to revision during the course):

- **A** > 94%
- **A-** 90 - <94%
- **B+** 87 - <90%
- **B** 84 - <87%
- **B-** 80 - <84%

Instructions for Submission of Assignments and Exams:

Assignments for this course include readings, homework, in class discussions of case studies, and paper presentation. There is no online discussion. For the most up to date information regarding assigned readings, instructions, and due dates of lecture.
Readings: each lecture has assigned readings and all students are required for finish them before the class to understand the lectures and to participate in class discussion.

Homework: homework assignment will be provided by the course instructor week before the lecture topic and due is 3 PM on the lecture day. Late submissions will not be accepted.

Class discussion of case studies: there will be at least 2 cases presented by the lecturers and students will participate in discussion and background information which is from the homework.

Paper Presentation: Students should decide the topic of their paper presentation (same as written paper) by September 29th. The topics should be nutritional management of kidney disease which is not covered by the lectures and approved by the instructor. For example, a possible paper topic could be the effect of a plant-based ketogenic diet on delaying cyst growth in polycystic kidney disease. The length of the paper is 8-10 pages (normal space) with 10-20 references. Students will present the paper the last day of the class and each presentation is to be a maximum of 20 minutes in length.

Accommodation of Disabilities: Tufts University is committed to providing equal access and support to all students through the provision of reasonable accommodations so that each student may access their curricula and achieve their personal and academic potential. If you have a disability that requires reasonable accommodations please contact the Friedman School Assistant Dean of Student Affairs at 617-636-6719 to make arrangements for determination of appropriate accommodations. Please be aware that accommodations cannot be enacted retroactively, making timeliness a critical aspect for their provision.

Tufts Zoom: Friedman’s on-campus courses may be offered by Tufts Zoom on days when the Boston campus is closed due to weather or a temporary cancellation issue. Students should expect to be notified by email in the event that class is cancelled and will be provided with the Zoom link for students to use for any remote class sessions. Also, any relevant course slides or materials will be made available on Canvas. The Zoom will be recorded and posted on Canvas when completed. If an on-campus Examination/Presentation was scheduled on a day when the Boston campus is closed due to weather or a temporary cancellation issue, the exam/presentation will be rescheduled for an alternate on-campus class session date.

Diversity Statement: We believe that the diversity of student experiences and perspectives is essential to the deepening of knowledge in this course. We consider it part of our responsibility as instructors to address the learning needs of all of the students in this course. We will present materials that are respectful of diversity: race, color, ethnicity, gender, age, disability, religious beliefs, political preference, sexual orientation, gender identity, socioeconomic status, citizenship, language, or national origin among other personal characteristics.

Course Topics and Assignment Schedule at a Glance
<table>
<thead>
<tr>
<th>DATE OF CLASS</th>
<th>COURSE TOPIC</th>
<th>LECTURER</th>
<th>CLASS DISCUSSION MODERATOR</th>
<th>ASSIGNMENTS DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 8, 2021</td>
<td>Instruction and overview: normal and pathophysiology of kidney. Medication and kidney disease Nutrition Assessment of kidney disease</td>
<td>Caroline Hsu Haewook Han</td>
<td>Haewook Han</td>
<td>Homework to prepare lecture and discussion</td>
</tr>
<tr>
<td>September 15</td>
<td>Chronic Kidney Disease (CKD) Causes, diagnosis, progression Nutrition Management: KDOQI Case discussion</td>
<td>Taimur Dad Haewook Han</td>
<td>Haewook Han</td>
<td>Submit homework to prepare lecture and case discussion</td>
</tr>
<tr>
<td>September 22</td>
<td>End Stage Kidney Disease (ESKD) Medical, dialysis options Nutritional management (Zoom) Hemodialysis Peritoneal dialysis Cases</td>
<td>Wenday McCullum Beth Morlang (HD) Judith Kirk (PD)</td>
<td>Haewook Han</td>
<td>Submit homework to prepare lecture and case discussion</td>
</tr>
<tr>
<td>September 29</td>
<td>Kidney Transplant Medical management, complications Nutritional management Acute and chronic management Cases</td>
<td>Nitender Goyal Judith Kirk</td>
<td>Haewook Han</td>
<td>Submit homework to prepare lecture and case discussion Student presentation topic DUE</td>
</tr>
<tr>
<td>October 6</td>
<td>Acute Kidney Injury (AKI) Medical management Nutritional management Temporary dialysis/nutrition support Cases</td>
<td>Seth Wright Grace Phelan</td>
<td>Haewook Han</td>
<td>Submit homework to prepare lecture and case discussion</td>
</tr>
<tr>
<td>October 13</td>
<td>Nutritional management of Pediatric kidney disease; Various diet (Ketogenic and vegetarian diets) and</td>
<td>Christine Benedetti Swarfford Haewook Han</td>
<td>Haewook Han</td>
<td>Submit homework to prepare lecture and case discussion</td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Presenters</td>
<td>Other Details</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------</td>
<td>---------------------</td>
<td>---------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>October 20</td>
<td>Kidney Stones (Nephrolithiasis) Medical management Nutritional management Cases</td>
<td>Samer Nasser Haewook Han</td>
<td>Submit homework to prepare lecture and case discussion</td>
<td></td>
</tr>
<tr>
<td>October 27</td>
<td>Student presentations</td>
<td></td>
<td>Maximum 20 minutes per student Paper submission</td>
<td></td>
</tr>
</tbody>
</table>

Detailed Description of Course Topics, Assignment Schedule, and the Learning Goals for Each Class Session:

**Date of the class:** September 8  
**Course Topic:** Overview: normal kidney function and pathophysiology of kidney disease, medications and kidney disease, nutrition Assessment  
**Learning Goal**  
Understand overall kidney functions and disease state  
Understand nutritional assessment of the kidney disease  
**Normal and pathophysiology of kidney**  
- Describe normal function of kidney and estimate the glomerular filtration rate (EGFR) with using various formulae  
- Recognize various types of kidney diseases and causes of each  

**Medication in Kidney Disease and Nutrition Assessment**  
- Identify the most recent medications of hypertension, and diabetes and effects on kidney disease.  
- Describe various nutritional assessment tools to use kidney disease: anthropometric measures including body mass index, dietary recall/record to analyze dietary intake  
- Recognize biochemical indices and identify abnormal values.  
- Establish nutritional interventions after using various tools to assess nutritional status  

**Required Reading and Assignments**  
- "Nutrition in Kidney Disease" 3rd edition  
  [https://tuftsprimo.hosted.exlibrisgroup.com/permalink/f/14dinuo/01TUN_ALMA51299776050003851](https://tuftsprimo.hosted.exlibrisgroup.com/permalink/f/14dinuo/01TUN_ALMA51299776050003851)  

Assignment Due: September 8 at 3PM

Date of the Class: September 15
Course Topic: Chronic Kidney Disease
Learning Goal
Understand the different stage of kidney disease and nutrition assessment for medical nutrition therapy of kidney disease
Objectives
Causes, diagnosis and progression of CKD
• Describe different causes of CKD including diabetes, hypertension, and other causes
• Identify different tools used to diagnose stages of CKD and prevention

Nutrition Management of CKD
• Identify the nutritional risk of CKD
• Understand new KDOQI nutrition guidelines
• Discuss appropriate nutrition recommendation in various stages of CKD and existing other medical conditions.
• Establish different meal patterns for CKD patients based on individual needs

Require Reading and Assignments

Assignment Due: September 15 at 3PM

Date of the Class: September 22
Course Topic: End Stage Kidney Disease (ESKD)
Learning Goal
Understand the end stage of kidney disease. Learn about medical and nutritional treatment
Objectives
Medical and dialysis options
• Describe various types of renal replacement therapies
• State pros and cons of each dialysis option
• Explain how to monitor adequacy of dialysis
Nutritional management of ESKD

- **Hemodialysis**
  - Specify standard medical nutrition therapy (MNT) for ESKD
  - Describe the nutritional goals for conventional, nocturnal and short daily hemodialysis
  - Perform nutrition assessment using subjective global and other standard measure of nutrition parameter.

- **Peritoneal dialysis**
  - Explain how nutritional assessment is different from hemodialysis and standard measure of nutritional status.

**Require Reading and Assignments**

- NKF Primer on Kidney Diseases, 7th edition. Chapter 51: Development and Progression of Chapter 52: Staging and management of CKD  Chapter 57: Hemodialysis and hemofiltration, Chapter 58: Peritoneal dialysis
  
  https://tufts-primo.hosted.exlibrisgroup.com/permalink/f/18fc9o8/01TUN_ALMA51161889260003851


- Parel, C and Burrowes, J Peritoneal Dialysis, Burrowes JD, Kovesdy CP and Byham-Gray LD eds. Nutrition in Kidney Disease 3rd ed. Chapter 16 Peritoneal Dialysis
  
  https://tuftsprimo.hosted.exlibrisgroup.com/permalink/f/14dinuo/01TUN_ALMA51299776050003851


**Assignment Due:** September 22 at 3PM

**Date of the Class:** September 29

**Course Topic:** Kidney Transplant

**Learning Goal**

Learn about acute and chronic medical and nutritional management for kidney transplant recipients.

**Objectives**

**Medical Management and complication:**

- Recognize different type of transplant: pre-emptive, living donor, cadaveric donor
- Understand Pre-transplant work-up
- Identify different immunosuppressive medications and side effects
- Outline complications including acute/ chronic rejection

**Nutritional Management**

- Explain pre-transplant nutritional education
- Describe dietary recommendation for acute and chronic post-transplant phase
- Name side effects of various medication and nutritional management
- State how to maintain transplanted kidney health long term.

**Require Reading and Assignments**

Assignment Due  September 29 at 3PM

**Date of the Class:**  October 6  
**Course Topic:**  Acute Kidney Injury  
**Learning Goal**  
Understand the cause and medical management of acute kidney injury (AKI).  
Understand the nutritional support for acute kidney injury.  
**Objectives**  
**Medical Management of AKI**  
- Understand the metabolic changes in AKI  
- Compare the types of renal replacement therapies in AKI vs. ESKD  
- Recognize the consequences of AKI and medical management  

**Nutritional Management of AKI**  
- Evaluate nutritional assessment and nutrition requirement for patients with AKI in hospital  
- Assess the necessity of nutrition support for AKI  
- Provide appropriate nutrition recommendation at the discharge  

**Require Reading and Assignments**  
- NKF Primer on Kidney Diseases, 7th edition, Chapter 34 Management of Acute Kidney Injury  
  https://tuftsprimo.hosted.exlibrisgroup.com/permalink/f/18fc9o8/01TUN_ALMA51161889260003851  
  https://tuftsprimo.hosted.exlibrisgroup.com/permalink/f/14dinuo/01TUN_ALMA51299776050003851  

Assignment Due  October 6 at 3PM

**Date of the Class:**  October 13  
**Course Topic:**  Nutritional Management of Pediatric Kidney Disease, Various diets (Ketogenic, vegetarian diet) and Kidney Disease (CKD and polycystic Kidney disease)  
**Learning Goal**  
Understand specific nutritional treatment for pediatric kidney disease  
Learn various diet recommendations for kidney disease, safety and problems.  
**Objectives**  
**Pediatric Kidney Disease and Nutritional Management:**  
- Understand different causes of pediatric kidney disease  
- Describe impact of nutrition on overall growth of pediatric kidney patients
• Identify differences of medical and nutritional treatment of pediatric patients than adult patients.

Various Diets and Kidney Disease:
• Describe Ketogenic diet, modified Ketogenic diet and vegetarian diet
• Explain how these diets affect various stages of CKD
• Identify the effect of various diets on polycystic kidney disease.

Require Reading and Assignments
https://tuftspromo.hosted.exlibrisgroup.com/permalink/f/14dinuo/01TUN_ALMA51299776050003851
https://tuftspromo.hosted.exlibrisgroup.com/permalink/f/14dinuo/01TUN_ALMA51299776050003851

Assignment Due: October 13 at 3PM

Date of the Class: October 20

Course Topic: Kidney Stones

Learning Goals
Understand causes of kidney stones and learn medical and nutritional treatment of kidney stones.

Objectives
Medical Management of Kidney Stones
• Describe various types of kidney stones
• Identify different risk factors for kidney stone
• Understand stone removal procedures and medical treatment
• Assess the urine and blood tests for recurrent stone risk evaluation

Nutritional Management of Kidney Stones
• Recognize dietary risk factors and effects on various type of stones.
• Specify nutritional intervention to lower risk of recurrence in various types stones

Require Reading and Assignments
https://tuftspromo.hosted.exlibrisgroup.com/permalink/f/14dinuo/01TUN_ALMA51299776050003851

Assignment Due October 20 at 3PM
Date of the Class:  October 27
Course Topic:  Student Presentations
Learning Goals
Student will provide the topic on nutrition and other kidney related disease which are not covered at the class. Each student can provide maximum of a 20 min presentation
Assignment Due:  Written paper of presentation topic October 27