

Chapter 1: Onco-Nephrology: Growth of the Kidney–Cancer Connection

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The question has been asked of many of us interested in the kidney–cancer connection; Why onco-nephrology? Nephrologists have traditionally treated cancer patients with various forms of kidney disease. However, although typical AKI and electrolyte/acid–base disturbances can be handled by the practicing clinical nephrologist, increasingly it has become clear that many of the issues are more complex and highly specialized. For example, many nephrologists were not trained in the era of bone marrow/hematopoietic stem cell transplant, which has a number of unusual and complicated forms of kidney injury. In addition, the number of anticancer drugs with various types of nephrotoxicity has increased dramatically, and their entry into clinical practice continues at a fast pace. These and other issues have led to a burgeoning interest in a more specific focus of nephrologists on the patient with cancer.

Recognizing this changing landscape, nephrologists at various large cancer centers began a discussion about the need to address this rapidly growing area of nephrology. In 2009/2010, Abdulla Salahudeen recruited leaders from these cancer centers and asked the American Society of Nephrology (ASN) to sponsor a “forum” where this emerging area of nephrology could be discussed. In 2012, the ASN had its first official meeting of what was later named the “Onco-Nephrology Forum.” Dr. Salahudeen chaired the group, pushed forward the kidney–cancer agenda with the forum members, and put the fledgling area of onco-nephrology on the nephrology map. The description of the Onco-Nephrology Forum on the ASN website is noted below:

“Why onco-nephrology? While all nephrologists address nephrology problems in cancer patients, many of these problems are increasingly complex. To provide the best nephrology care for cancer patients, we must understand rapidly changing protocols and therapies.”

Emerging kidney toxicities associated with drugs targeting VEGF and TKIs and other signaling pathways, tumor lysis syndrome, cytotoxic chemotherapy-induced kidney toxicities, kidney problems in myeloma, tumor or treatment-related microangiopathies and glomerulonephritis, stem cell transplant–associated acute and chronic kidney injuries, obstructive uropathies, severe fluid and electrolytes abnormalities, and dosing and timing of chemotherapy in CKD and ESRD patients; these and other complex problems, and their increasing frequency and severity, provide a unique and unprecedented opportunity for nephrologists to improve treatment for cancer patients worldwide.

Onco-nephrologists help cancer care teams prevent kidney problems or resolve them as they arise and improve patient outcomes. Research in cancer nephrology is already improving kidney care in cancer patients. A more focused approach to cancer nephrology may also help address challenges like renal cell carcinoma in ESRD.

The American Society of Nephrology believes onco-nephrology represents an emerging frontier in the fight against kidney disease.”

The ASN Onco-Nephrology Forum has worked hard to spread the word and “metastasize” into multiple journal, meetings, and conferences. One very helpful contribution to this endeavor included the appearance of publications on the onco-nephrology topic in several high-level journals visible to many nephrologists. Entire issues dedicated to

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Onco-Nephrology

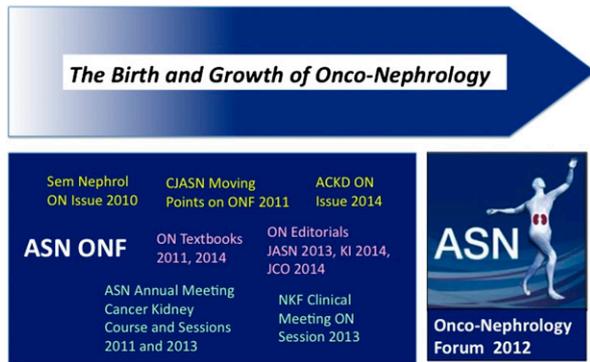


Figure 1. Timeline of the birth and growth of onco-nephrology. Formation of the ASN Onco-Nephrology Forum, numerous conference publications, and dedicated journal publications characterize and highlight the process. ASN, American Society of Nephrology; ONF, Onco-Nephrology Forum; NKF, National Kidney Foundation; JCO, Journal of Clinical Oncology; ON, Onco-Nephrology; ACKD, Advances in Chronic Kidney Disease; CJASN, Clinical Journal of the American Society of Nephrology; KI, Kidney International; JASN, Journal of the American Society of Nephrology; Sem Nephrol, Seminar in Nephrology.

onco-nephrology appeared in *Seminars in Nephrology* and *Advances in Chronic Kidney Disease*, while a series of articles on this subject was published in the *Clinical Journal of the American Society of Nephrology* **Moving Points in Nephrology** feature. In 2011, the ASN had its first Kidney Week Early Program dedicated to onco-nephrology. This Early Program continues on an every other year schedule. Many of the Kidney Week Clinical Nephrology Conferences included sessions covering various onco-nephrology topics. The National Kidney Foundation Annual Spring Meeting similarly dedicated a session to onco-nephrology (Figure 1). In addition, editorials describing the importance of onco-nephrology, some suggesting the need for a “new subspecialty” appeared in the *Journal of the American Society of Nephrology*, *Kidney International*, and the *Journal of Clinical Oncology*, authored by members of the ASN Onco-Nephrology Forum.

With these important accomplishments, the Onco-Nephrology Forum with Mark Perazella as the new Onco-

Table 1. Onco-Nephrology Curriculum committee members

Mark A. Perazella (ONF Chair, Lead Editor)
Mitchell H. Rosner (Lead Editor)
Kevin W. Finkel (Section Editor)
Ilya Glezerman (Section Editor)
Susie L. Hu (Section Editor)
Kenar D. Jhaveri (Section Editor)
Amit Lahoti (Section Editor)
Anushree C. Shirali (Section Editor)
Ala Abudayyeh
Joseph R. Angelo
Joseph V. Bonventre
Anthony Chang
Eric P. Cohen
Farhad R. Danesh
Mona D. Doshi
Amaka Edeani
Carlos Flombaum
Sangeeta R. Hingorani
Benjamin Humphreys
Divya Monga
Abdulla K. Salahudeen

Nephrology Forum Chair continued to forge ahead and felt the time was ripe for the creation of an Onco-Nephrology Curriculum. After creation of an outline of topics and discussion by the advisory group (Table 1), the core curriculum was submitted to the ASN Education Committee for review. The curriculum was subsequently approved and the Onco-Nephrology Forum group, under the direction of the curriculum committee co-chairs (Perazella and Rosner), put together the ultimate plan for creation of the curriculum document. The lead editors, section editors, and chapter authors (Tables 1 and 2) were identified and the writing began. The chapters are truly an example of outstanding contributions by experts in the subfield of onco-nephrology. All of the authors are to be congratulated on their fine work and keeping to the originally planned timeline for completion. The product of this work will appear on the ASN’s website and will be available to the ASN membership, the nephrology training programs, and all other interested health care providers. We are confident that this curriculum will strengthen the teaching of onco-nephrology and further expand all practitioners’ knowledge of the subject. We hope the readers enjoy the document.

Table 2. Onco-Nephrology Curriculum chapters and authors

1) Onco-Nephrology: Growth of the Kidney-Cancer Connection	Mark Perazella, Mitchell Rosner
2) Why do we need an Onco-Nephrology Curriculum?	Mark Perazella, Mitchell Rosner
3) AKI associated with Malignancies	Amit Lahoti, Benjamin Humphreys
4) Tumor Lysis Syndrome	Amaka Edeani, Anushree Shirali
5) Electrolyte and Acid-Base Disorders and Cancer	Anushree Shirali
6) Glomerular Disease and Cancer	Divya Monga, Kenar Jhaveri
7) Hematologic Diseases and Kidney Disease	Ala Abudayyeh, Kevin Finkel
8) Clinical tests for Monoclonal Proteins	Nelson Leung
9) Hematopoietic Stem Cell Transplant-related Kidney Disease	Sangeeta Hingorani, Joseph Angelo
10) Radiation-associated Kidney Injury	Amaka Edeani, Eric Cohen
11) Chemotherapy and Kidney injury	Ilya Glezerman, Edgar Jaimes
12) Pharmacokinetics of Chemotherapeutic Agents in Kidney Disease	Sheron Latcha
13) CKD as a Complication of Cancer	Maurizio Gallieni, Camillo Porta, and Laura Cosmai
14) Hereditary Renal Cancer Syndromes	Katherine Nathanson
15) Work-up and Management of Small Renal Masses	Susie Hu, Anthony Chang
16) Cancer in Solid Organ Transplantation	Mona Doshi
17) Cancer Screening in ESRD	Jean Holley
18) Ethics of RRT, Initiation and Withdrawal, in Cancer Patients	Michael Germain
19) Palliative Care in Patients with Kidney Disease and Cancer	Alvin Moss
