

# A need for experts in pediatric onco-nephrology

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The need for pediatric nephrologists to develop a special expertise in the onco-nephrology field is increasingly important as childhood cancer rates have been on the rise and new therapy protocols are advancing,

according to a *Pediatric Nephrology* article published by Le Bonheur Nephrologist Arwa Nada, MD. Nada also serves as a consulting nephrologist at St. Jude Children's Research Hospital. The first of a two-part educational summary, Nada provides an overview of how pediatric cancer and its therapies can impact kidney function and the increasing need for involvement of pediatric nephrologists as an integral part of the care team for children with cancer.

"Children diagnosed with malignancy can experience unique and complicated forms of [kidney](#) injury at any stage of [therapy](#) and afterwards," said Nada. "Therefore, the pediatric [nephrologist](#) has become an increasingly important member of the care team to mitigate and manage the different forms of acute kidney involvement or injury during [pediatric cancer](#) treatment."

Cancer and [kidney disease](#) have numerous interconnections. Historically, pediatric nephrologists have treated the kidney complications occurring during cancer therapy, such as acute kidney injury (AKI), fluid and electrolyte disturbances, tumor lysis syndrome (TLS), hypertension and chronic kidney disease. However, advances in treatments in the field of pediatric cancer, specifically the introduction of CD19-targeted chimeric antigen receptor T cell (CAR-T) therapy, now require more specialized knowledge and expertise in the field.

The review explores 11 unique consult scenarios in the field of pediatric onco-nephrology to highlight the role of the pediatric nephrologist during the pediatric cancer therapy:

1. "I have a child with a kidney tumor." Pediatric nephrologists monitor children for hypertension, AKI, medication side effects and mitigate [risk factors](#) for chronic kidney disease (CKD).
2. "I have a child with rising creatine." AKI is common during cancer

treatment and close monitoring of [kidney function](#) is vital for proper dosing of medications.

3. "I have a child receiving potentially nephrotoxic medications." The risk of AKI can be mitigated with drug-specific preventative measures for both chemotherapeutic and adjuvant medications.

4. "I think my patient has TLS." TLS is an oncologic emergency. Severe outcomes can be prevented and [early intervention](#) begun by evaluating patients for predictors of TLS.

5. "I'm sending my patient to get CT with intravenous contrast. What is the risk?" Contrast-induced nephropathy is an acute kidney dysfunction after exposure to intravascular contrast media. The best strategy to decrease this risk is considering alternative imaging techniques. Additional measures are available that can decrease the risk of contrast-associated kidney injury if absolutely indicated.

6. "My patient with refractory leukemia is receiving CAR-T therapy." CAR-T therapy is associated with high rates of AKI due to cytokine release syndrome (CRS) after CAR-T cell infusion. CRS treatment includes supportive and anti-cytokine therapies.

7. "My patient is getting a stem cell transplant." The occurrence of kidney disease in the setting of bone marrow (BM) and hematopoietic stem cell transplant (HSCT) is well described. Kidney involvement associated with HSCT can be divided into early, intermediate and late according to the time of occurrence.

8. "My patient has developed thrombotic microangiopathy (TMA)." TMA in cancer patients can develop directly from certain malignancies but more often can result from HSCT and in the setting of other cancer related interventions/treatments. Early diagnosis of TMA is critical and

patients on medications associated with TMA should be closely monitored.

9. "I need help with electrolyte and acid base management." Electrolyte and acid-base disturbances are common in cancer patients, either due to the malignancy itself or as a result of therapy.

10. "I am seeing a child with proteinuria." Glomerular diseases can be associated with solid and hematological malignances, chemotherapeutic agents and following stem cell transplant.

11. "I have a child with a kidney infection." Children with cancer are high risk for developing bacterial, viral and fungal infections—each with its unique risk factors.

Nada shows that kidney involvement in pediatric cancer is not uncommon and can be encountered in a myriad of ways. It is crucial for pediatric nephrologists to be involved in the care of children with cancer from time of diagnosis to help prevent kidney complications and improve outcomes, she said.

"We do have preventive measures that can help decrease the risk of AKI and other kidney complications in this population," said Nada. "Due to the improved survival of children with cancer and long-term effects of interventions on kidney function, the role of the pediatric nephrologist is now expanded to include management of kidney health in pediatric [cancer](#) survivors."

**More information:** Arwa Nada et al, Pediatric onco-nephrology: time to spread the word, *Pediatric Nephrology* (2020). [DOI: 10.1007/s00467-020-04800-3](#)

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