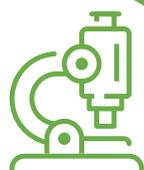


TUMOR LYSIS SYNDROME is when large numbers of rapidly dividing cells are killed and release their contents into the bloodstream.



### CAUSES/ PATHOPHYSIOLOGY

- Lysis of large numbers of cancer cells, releasing nucleic acids, intracellular proteins, and electrolytes
- Nucleic acids are converted to uric acid by the liver and excreted by the kidneys. If the kidneys cannot process all the uric acid, hyperuricemia can occur, which can decrease renal function.
- Phosphorus released and binds with calcium, leading to hyperphosphatemia, hypocalcemia, and kidney damage.
- Potassium is released, resulting in hyperkalemia.

### BEST TREATMENT

- The best treatment is prevention!
- Hydration with NS or D5W to keep urine output greater than 150–200 ml per hour. Support with loop diuretics.
- Allopurinol (PO) or rasburicase (IV) to lower uric acid concentration. Begin allopurinol 1–2 days before treatment.
- Electrolyte management
- Hemodialysis for acute renal failure
- Monitoring for fluid overload
- Alkalinization of urine with sodium bicarbonate to achieve pH of 7–7.5 if severe hyperuricemia and rasburicase is not available



### RISK FACTORS

- High tumor burden or bulky tumors
- Cancers highly sensitive to treatment, such as leukemias, high-grade lymphomas, and some solid tumors
- Poor renal function



### SIGNS & SYMPTOMS

- Elevated uric acid, phosphorus, potassium, blood urea nitrogen, and/or creatinine
- Decreased calcium
- Symptoms related to electrolyte abnormalities and renal dysfunction
  - Renal: oliguria, anuria, urine crystals, flank pain
  - Cardiac: ECG changes, dysrhythmias, sudden death
  - Gastrointestinal: nausea, vomiting, diarrhea, anorexia
  - Neuromuscular: cramps, tetany, confusion



### ADDITIONAL RESOURCES

- Gobel, B.H. (2018). Tumor lysis syndrome. In M. Kaplan (Ed.), *Understanding and managing oncologic emergencies: A resource for nurses* (3rd ed., pp. 615–645). Oncology Nursing Society.
- Gupta, A., & Moore, J.A. (2018). Tumor lysis syndrome. *JAMA Oncology*, 4(6), 895. <https://doi.org/10.1001/jamaoncol.2018.0613>
- Vioral, A. (2018). Tumor lysis syndrome. In C.H. Yarbro, D. Wujcik, & B.H. Gobel (Eds.), *Cancer nursing: Principles and practice* (8th ed., pp. 1207–1224). Jones and Bartlett Learning.