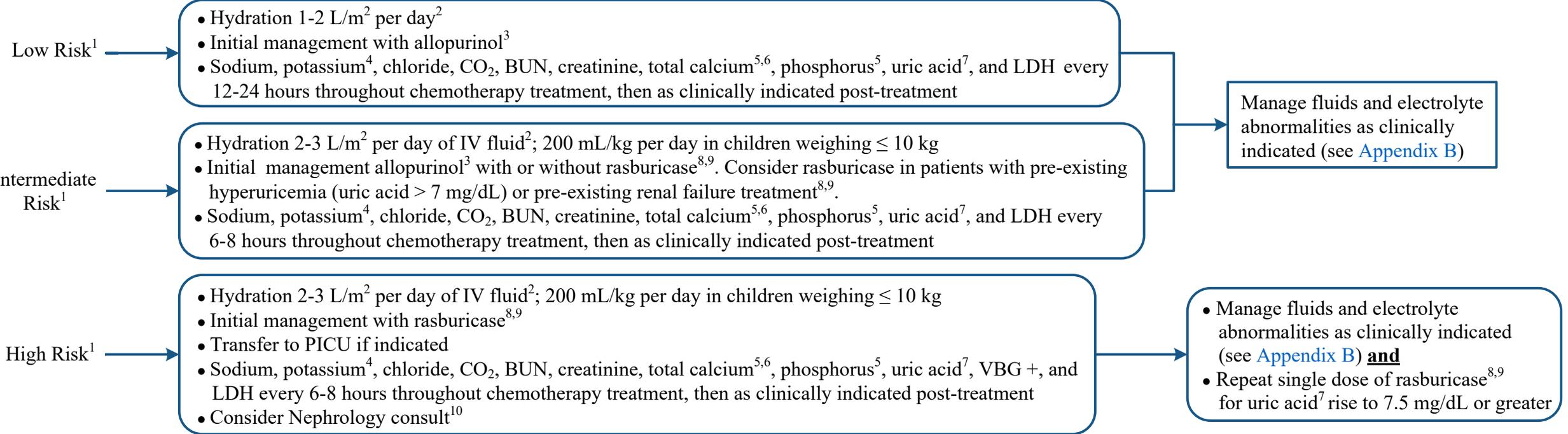


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PATIENT PRESENTATION

TREATMENT

MONITORING/FOLLOW UP



VBG = venous blood gas

Note: These patients should NOT be on electrolyte replacement protocols. Use of sodium bicarbonate for alkalinization of urine is currently not recommended for prevention and treatment of Tumor Lysis Syndrome (TLS).

¹ See Appendix A for stratification based on risk factors

² Adequate hydration should be based on clinical judgment and monitoring including urine output. Goal urine output is 4-6 mL/kg/hour if weight ≤ 10 kg and 1-3 mL/kg/hour if weight > 10 kg.

³ Allopurinol dose needs to be adjusted in renal failure. Maximum daily dose of allopurinol is 800 mg/day. Dose adjustments may be necessary if allopurinol is used with other drugs (e.g., 6-mercaptopurine, azathioprine, cyclophosphamide, thiazide and loop diuretics, and warfarin) – Refer to MD Anderson Cancer Center Pharmacy Formulary for a complete list of interactions. Allopurinol should be initiated 24-48 hours prior to chemotherapy when possible.

⁴ If potassium > 6 mmol/L, consider verifying results with STAT VBG+ and obtain EKG

⁵ If calcium-phosphorus product is ≥ 50 mg²/dL², ensure hydration is maintained. Consider consulting Nephrology service, especially if the calcium-phosphorus product continues to rise above 60 mg²/dL².

⁶ If total calcium < 7 mg/dL, check ionized calcium

⁷ Blood specimens for uric acid levels should be kept on ice after collection and prior to testing and processed immediately

⁸ Rasburicase must be given 4 hours prior to chemotherapy. Rasburicase is given as a single dose of 0.1-0.2 mg/kg. The maximum dose is 6 mg and should be repeated, only if necessary, based on laboratory values and clinical situation.

⁹ Rasburicase is contraindicated in glucose-6 phosphate dehydrogenase deficient patients, known hypersensitivity reactions, hemolytic anemia or methemoglobinemia. Allopurinol should be substituted in these patients.

¹⁰ Patients with established TLS or high risk and/or renal insufficiency should be closely monitored and have access to Nephrology service and PICU in case dialysis is required

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APPENDIX A: Patient Stratification by Risk

DIAGNOSIS/CONDITION	HIGH	INTERMEDIATE	LOW
Lymphoma	Burkitt's lymphoma	Diffuse large B-cell lymphoma	
Acute lymphoid leukemia	White blood count > 100 x 10 ⁹ /L	White blood count between 50-100 x 10 ⁹ /L	White blood count < 50 x 10 ⁹ /L
Acute myeloid leukemia	White blood count > 50 x 10 ⁹ /L monoblastic	White blood count between 10-50 x 10 ⁹ /L	White blood count < 10 x 10 ⁹ /L
Other hematologic malignancies (CML) Solid Tumor		Rapid proliferation with expected rapid response to therapy	Remainder of patients
Baseline uric acid	Uric acid ≥ 7.5 mg/dL	Uric acid < 7.5 mg/dL	
Renal injury (new or pre-existing renal disease)	Dehydration, acidosis, acidic urine		

CML = chronic myelogenous leukemia

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APPENDIX B: Management of Fluid and Electrolyte Abnormalities

Abnormality	Management Recommendations
Acute kidney injury	<ul style="list-style-type: none"> • Normal Saline 20-60 mL/kg IV bolus then titrate to urine output goal • Consider dialysis in oliguric renal failure unresponsive to IV fluids or with congestive heart failure
Hyperkalemia	
Potassium > 4.5 mmol/L	<ul style="list-style-type: none"> • Remove all potassium in IV fluids and discontinue any potassium sparing diuretics • Continuous EKG monitoring • Renal diet
Potassium > 5.5 mmol/L	<p>All of the above, PLUS:</p> <ul style="list-style-type: none"> • Consult PICU and Nephrology • Calcium <ul style="list-style-type: none"> ◦ Calcium chloride 20 mg/kg [maximum dose of 1 gram (13.6 mEq calcium)] IV via central line ◦ Calcium gluconate (if no central access) 100-200 mg/kg/dose [maximum dose 2 grams (9.3 mEq calcium)] IV • Furosemide 0.5-1 mg/kg (maximum single dose of 40 mg) IV <ul style="list-style-type: none"> ◦ Consider lower dosing in furosemide naïve patients • To temporary shift potassium intracellularly: <ul style="list-style-type: none"> ◦ Sodium bicarbonate (if carbon dioxide < 17 mEq/L or pH < 7.35) 1 mg/kg (maximum 50 mEq per dose) IV via central line ◦ Nebulized albuterol 2.5 mg/3 mL nebulization <ul style="list-style-type: none"> - Avoid if tachycardia or in hemodynamically unstable patients ◦ Insulin/glucose 0.1 units/kg regular insulin followed by 1 mL/kg D50W IV via central line <ul style="list-style-type: none"> - If no central access, may use 10 mL/kg of D10W IV - Repeat POC glucose after 15, 30, and 60 minutes • Dialysis for refractory hyperkalemia

Continued on next page

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APPENDIX B: Management of Fluid and Electrolyte Abnormalities - continued

Abnormality	Management Recommendations
Hyperphosphatemia	
Phosphorus > 6.5 mg/dL	<ul style="list-style-type: none"> • Phosphate binders <ul style="list-style-type: none"> ◦ Sevelamer dosing based on BSA <ul style="list-style-type: none"> - BSA ≤ 0.75 m²: 400 mg PO three times a day with meals - BSA between 0.75-1.2 m²: 800 mg PO three times a day with meals - BSA ≥ 1.2 m²: 1,600 mg PO three times a day with meals • Renal diet
Phosphorus > 10 mg/dL or Ca-phosphate product > 70 mg ² /dL ²	<ul style="list-style-type: none"> • Nephrology consult for refractory hyperphosphatemia • Dialysis
Hypocalcemia	
Total calcium < 7 mg/dL or ionized calcium < 0.9 mmol/L	<p>Do NOT treat hypocalcemia if asymptomatic unless the indication for calcium is also hyperkalemia (See Page 3)</p> <ul style="list-style-type: none"> • Only treat if symptomatic: EKG changes (prolonged QTc), tetany or seizure • Calcium chloride 20 mg/kg [maximum dose of 1 gram (13.6 mEq calcium)] IV via central line • Calcium gluconate (if no central access) 100-200 mg/kg/dose [maximum dose of 2 grams (9.3 mEq calcium)] IV
Uremia (renal dysfunction)	
BUN > 30 mg/dL	<ul style="list-style-type: none"> • Strict input/output every 4 hours • Daily weight • Uric acid and phosphate management • Dose adjust medications as indicated • Renal diet • PICU and Nephrology consult • Dialysis if indicated

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SUGGESTED READINGS

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