



The Evaluation of Rasburicase Use in Fraser Health, a Retrospective Review



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Background

- Tumour Lysis Syndrome (TLS) is an oncologic emergency caused by the lysis of tumour cells and release of uric acid, potassium and phosphate.
- TLS is associated with an increased risk of acute kidney injury, cardiac arrhythmias, seizures and mortality.
- Rasburicase, a recombinant urate oxidase, converts uric acid to an inactive and soluble metabolite.
- The manufacturer's dosing for rasburicase is 0.2 mg/kg daily for up to 5 to 7 days.
- At single doses of 3mg, rasburicase has been shown to be effective in reducing serum uric acid levels

Objectives

Primary Objective:

- Describe the prescribing of rasburicase in Fraser Health

Secondary Objectives:

- Report the uric acid lowering effects of rasburicase
- Report the clinical outcomes of patients receiving rasburicase

Methods

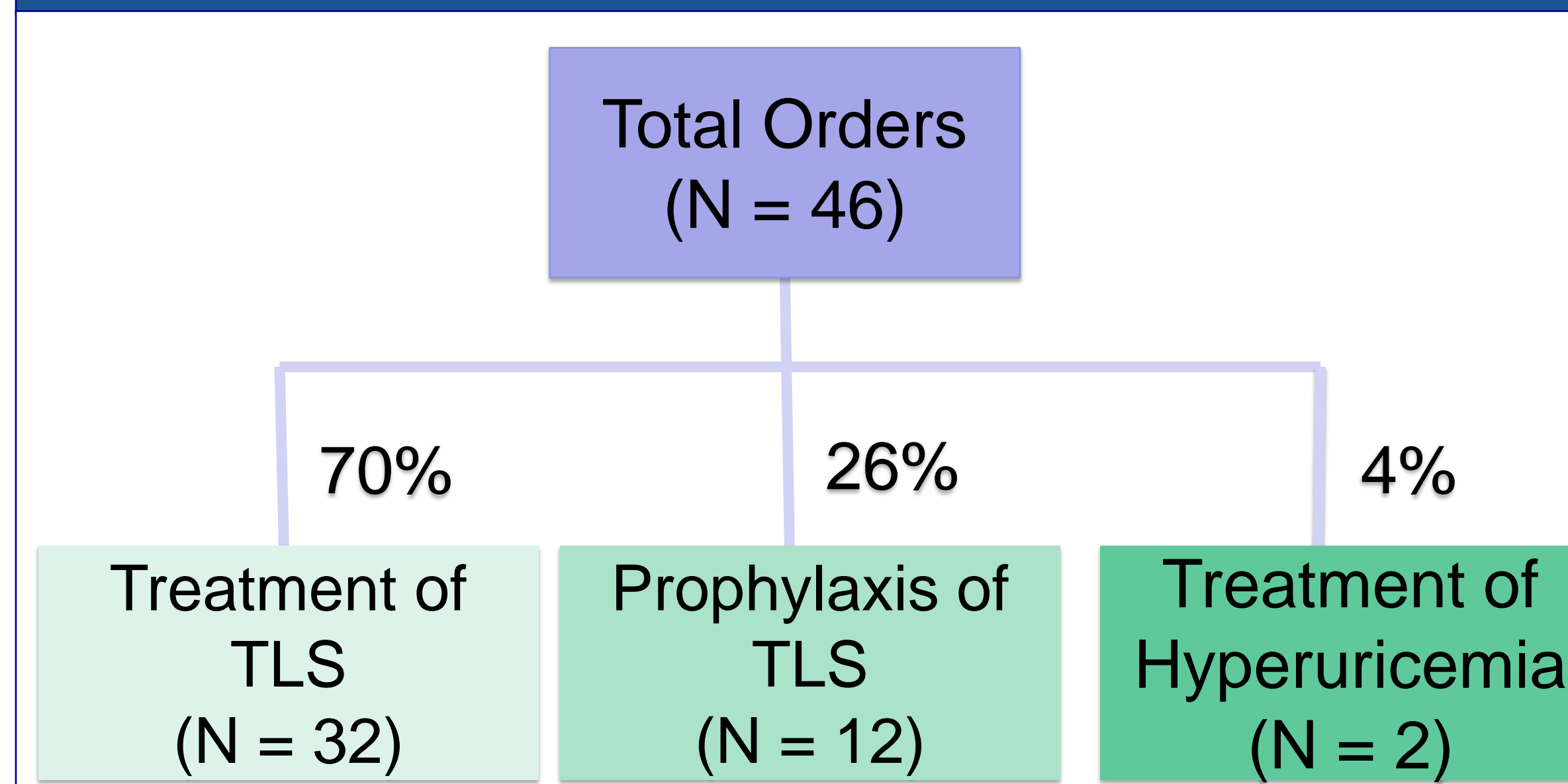
- **Design:** Retrospective chart review
- **Inclusion:**
 - Adult patients (≥ 19 years old)
 - Patients who were prescribed at least 1 dose of rasburicase from June 1, 2010 to Nov 30, 2016

Limitations

- Retrospective design
- Small number of orders
- Multiple confounding factors make it difficult to make comparisons between different doses
- Unclear if serum uric acid levels were properly collected

Results

Flow Diagram for Rasburicase Orders



Initial Orders – N (%):

- Single Doses: 30 (65%)
- Daily Doses: 16 (35%)

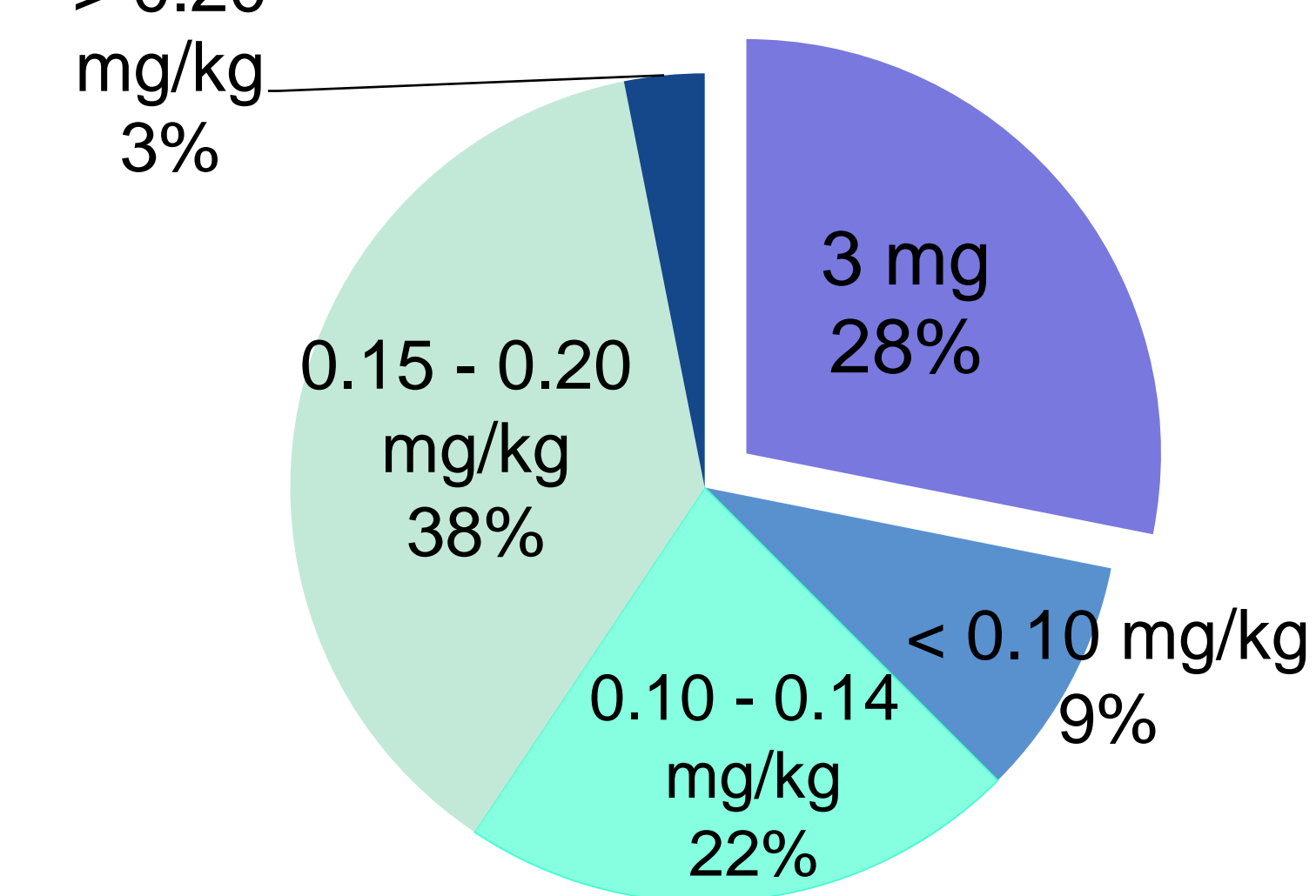
Outcome data available for 28 orders for treatment of TLS and 11 orders for prophylaxis of TLS

Table 1: Baseline Patient Demographics

Characteristics	Treatment of TLS (N = 32)	Prophylaxis of TLS (N = 12)
Male, n (%)	23 (72%)	10 (83%)
Age, y (mean \pm SD)	67.94 \pm 10.76	60.27 \pm 10.11
Weight, kg (mean \pm SD)	77.49 \pm 19.27	76.59 \pm 14.16
Malignancies, n (%)		
Large B cell lymphoma	9 (28%)	8 (67%)
Mantle cell lymphoma	5 (16%)	0 (0%)
Acute myeloid leukemia	3 (9%)	0 (0%)
Burkitt lymphoma	1 (3%)	0 (0%)
Others	14 (44%)	4 (33%)
Baseline laboratory values, n (%)		
Uric acid ≥ 476 $\mu\text{mol/L}$	31 (97%)	8 (67%)
Potassium ≥ 6.0 mmol/L	12 (38%)	4 (33%)
Phosphorus ≥ 1.45 mmol/L	24 (75%)	3 (25%)
LDH $> 2 \times$ ULN	17 (53%)	11 (92%)

Doses of Rasburicase

Treatment of TLS



Prophylaxis of TLS

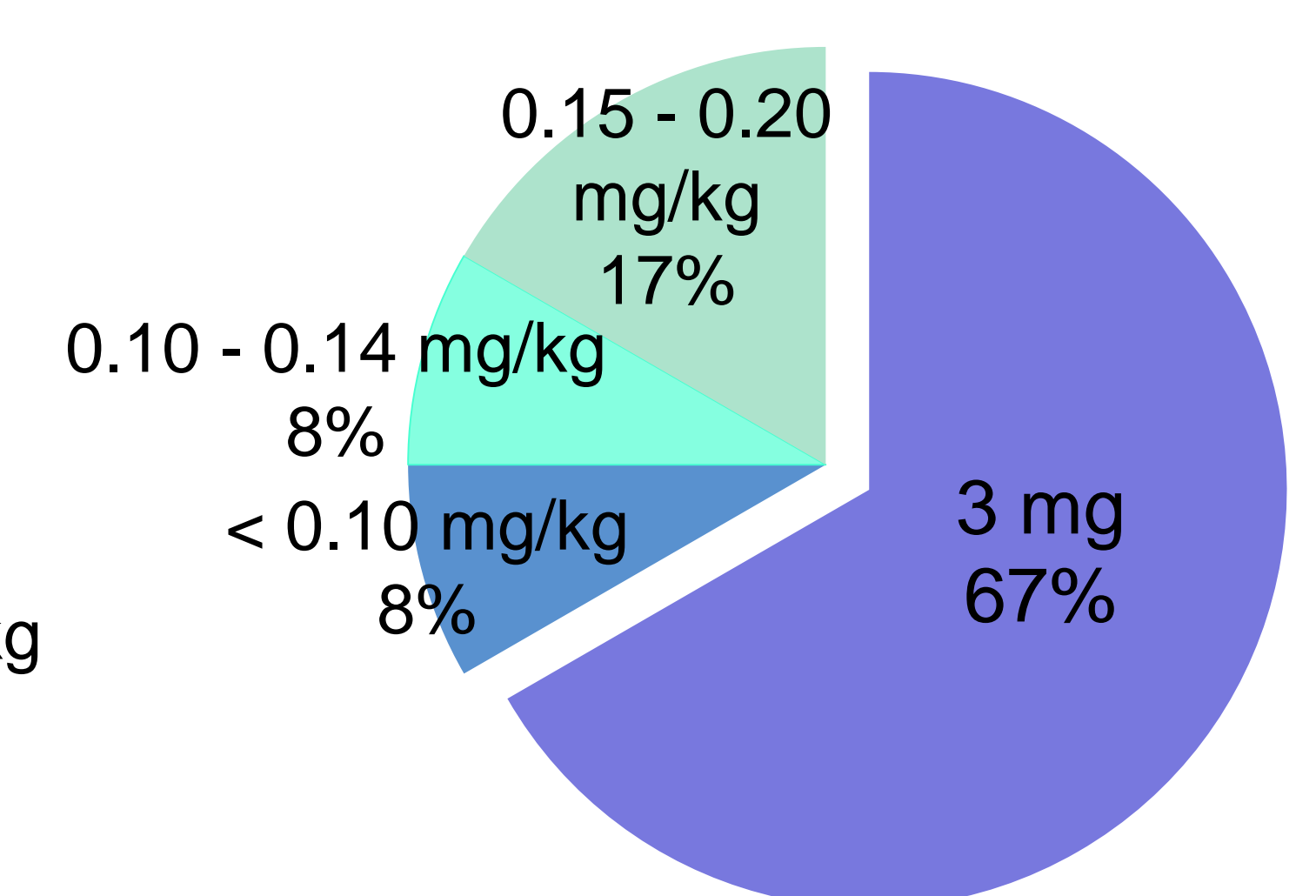


Table 2: Secondary Outcomes for Treatment of Tumour Lysis Syndrome

Dose	N	Mean baseline uric acid ($\mu\text{mol/L}$)	URIC ACID < 476 $\mu\text{mol/L}$			> 1 dose	Dialysis	Death
			≤ 24 hrs	> 24 hrs	No recovery			
3 mg (mean: 0.04 mg/kg)	9	795	3 (33%)	5 (55%)	0 (0%)	4 (44%)	3 (33%)	3 (33%)
< 0.10 mg/kg (excl. 3mg)	2	1064	1 (50%)	0 (0%)	1 (50%)	0 (0%)	1 (50%)	1 (50%)
0.10 - 0.14 mg/kg	5	939	4 (80%)	1 (20%)	0 (0%)	1 (20%)	0 (0%)	1 (20%)
0.15 - 0.20 mg/kg	11	964	9 (81%)	2 (19%)	0 (0%)	1 (10%)	5 (46%)	6 (54%)
> 0.20 mg/kg	1	771	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)

Table 3: Clinical Outcomes for Prophylaxis of Tumour Lysis Syndrome

Dose	N	IV Hydration	> 1 dose	TLS	Death
3 mg (mean: 0.04mg/kg)	8	6 (75%)	3 (38%)	0 (0%)	3 (38%)
< 0.10 mg/kg (excl. 3mg)	1	1 (100%)	0 (0%)	0 (0%)	0 (0%)
0.10 - 0.14 mg/kg	1	1 (100%)	0 (0%)	0 (0%)	0 (0%)
0.15 - 0.20 mg/kg	1	1 (100%)	0 (0%)	0 (0%)	0 (0%)

Conclusions

- The doses being prescribed in Fraser Health are largely inconsistent.
- Regardless of the dose used for treatment of TLS, 93% of patients had uric acids reduced to less than 476 $\mu\text{mol/L}$.
- There were no adverse drug reactions reported with rasburicase.
- Larger studies would be required to fully evaluate the efficacy and safety of the different doses of rasburicase.