

Evaluation of Rasburicase Use at Vancouver General Hospital: A Retrospective Review

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BACKGROUND

- Rasburicase is used to prevent and treat acute tumor lysis syndrome (TLS), an onco-metabolic emergency syndrome¹
- In 2007, a use criteria (Figure 1) was implemented by the Leukemia/Bone Marrow Transplant program (L/BMT) at Vancouver General Hospital (VGH)²
- Since 2007, newer TLS guidelines endorsed a proactive prevention approach with TLS treatment^{3,4}
- Rasburicase was added to the provincial hospital formulary in 2010, and resulted in inconsistent prescribing and dispensing by pharmacy
- An understanding of contemporary prescribing patterns is required to implement a standardized evidence-based approach to promote optimal rasburicase use

OBJECTIVES

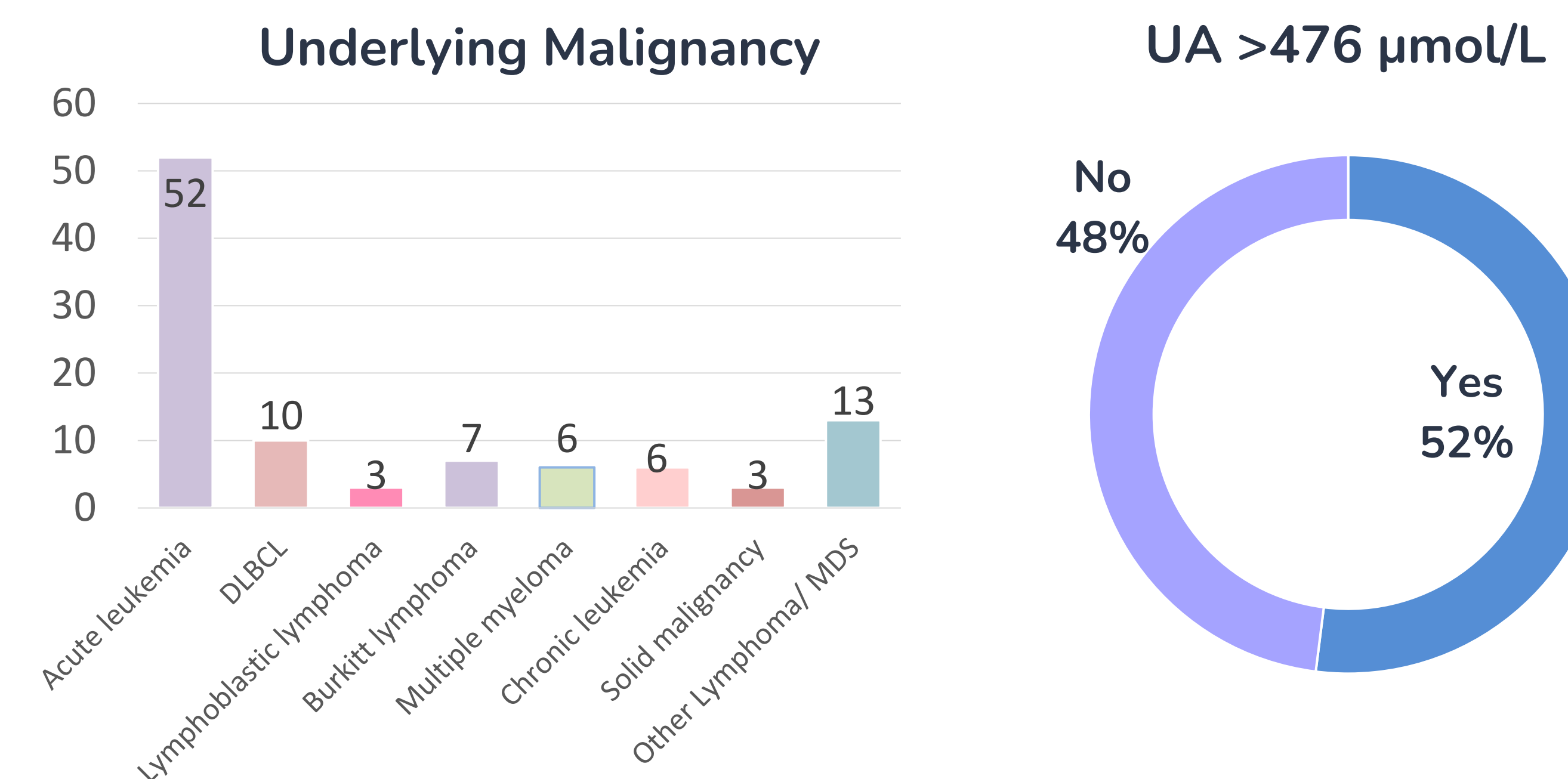
- Primary:
- To determine the adherence of rasburicase utilization in relation to the pre-established use criteria
- Secondary:
- To characterize patient factors associated with non-adherence
 - To describe clinical outcomes of patients who received rasburicase

METHODS

- Retrospective chart review
- Sample size: 100 patient charts (convenience sampling)
- Inclusion criteria:
 - Patients 17 years of age or older
 - Received one or more doses of rasburicase at VGH from June 1, 2018 to November 30, 2020
- Exclusion criteria:
 - Patients who received one or more doses of rasburicase within the prior 7 days from another hospital
- Outcomes:
 - Proportion of rasburicase orders adherent to:
 - Established use criteria, 2) Prevention as per guidelines^{3,4} 3) Treatment of TLS¹ or 4) No criteria met
 - Chemotherapy started within 72 hours of rasburicase
 - Prescribing service
 - Dose used in mg and use of repeat doses
 - Clinical outcomes: ICU admission, renal replacement therapy, seizure, arrhythmia, and mortality
- Analysis:
 - Descriptive statistics
 - Statistical analysis using Chi-squared, where appropriate to compare patient factors

RESULTS

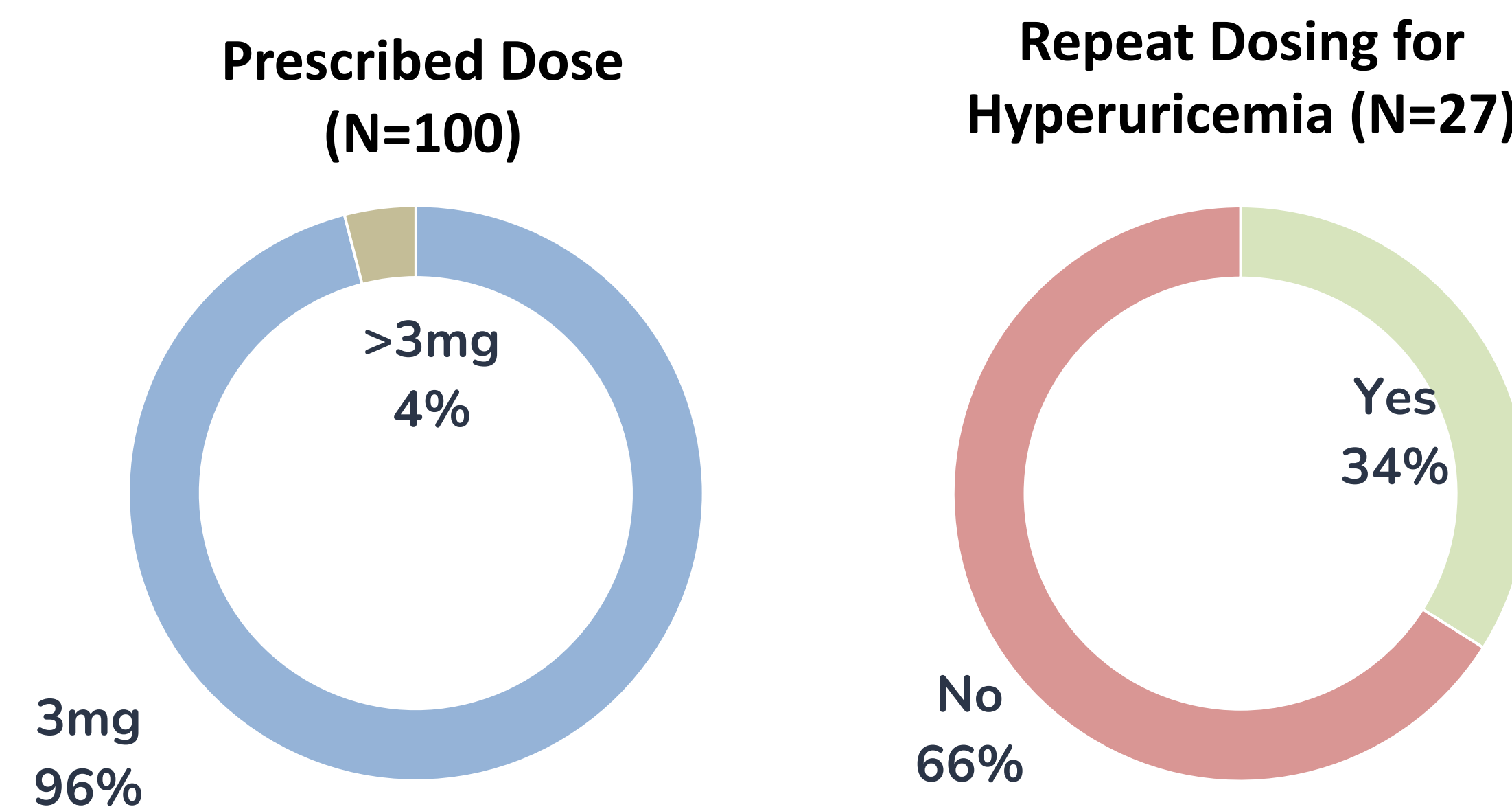
BASELINE CHARACTERISTICS (N=100)



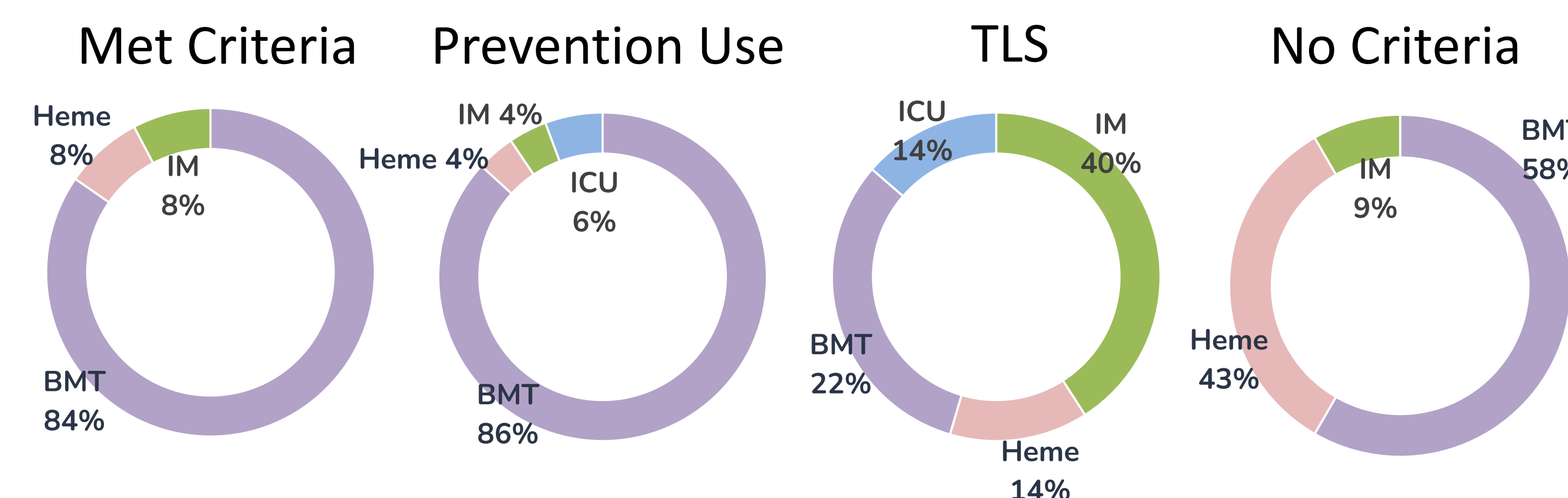
FINDING #1 RASBURICASE USE (N=100)



FINDING #2 RASBURICASE DOSING



FINDING #3 PRESCRIBING SERVICE USAGE



Heme= Hematology, BMT= Leukemia/ Bone Marrow Transplant, IM= Internal Medicine, ICU= Intensive Care Unit
 MC = Met Criteria, P= Preventative Use, TLS= Tumor Lysis Syndrome, NC= No Criteria

RESULTS (continued)

FINDING #4 CLINICAL OUTCOMES

Outcome	MC (n=13)	P (n=53)	TLS (n=22)	NC (n=12)	P
Seizure	0	0	0	1	0.6
Renal replacement therapy	2	3	5	3	0.11
Arrhythmia	2	4	3	3	0.38
ICU admission	5	15	6	8	0.51
Mortality	0	7	8	0	0.06
Chemotherapy start within 72 hr	13	41	12	9	0.02

LIMITATIONS

- Inherent misclassification bias may be present as a result of retrospective design and charts with missing data were excluded
- Convenience sampling may not be representative of the use as a whole and limits interpretation of statistics to each subgroup

CONCLUSIONS

- The majority of the rasburicase used at VGH did not meet pre-established L/BMT use criteria
- Most rasburicase was used for the prevention of TLS
- A single 3mg dose is effective in majority cases as initial therapy and allows for more timely chemotherapy initiation
- An updated use criteria has been proposed to promote optimal drug use and prescribing

FIGURE 1 – RASBURICASE USE CRITERIA

- Hyperuricemia (> 476 μmol/L) **PLUS**
- ONE of the following hematologic malignancies with high tumor burden: **PLUS**
 - Burkitt's lymphoma with LDH > 2 X ULN
 - Lymphoblastic lymphoma with LDH > 2 X ULN
 - Acute T/ B cell lymphoblastic leukemia with WBC > 50,000/mm³
 - Acute leukemia with WBC > 50,000/mm³
- Evidence of tumor lysis which includes ONE or more of the following : **PLUS**
 - Potassium ≥ 6.0 mmol/L
 - Phosphorus ≥ 1.45 mmol/L
 - Calcium ≤ 1.75 mmol/L
 - LDH > 2 X ULN
 - Creatinine clearance < 50 ml/min
- Immediate need for chemotherapy (within 72 hours) **OR**
- Above (1, 2 and 3) **PLUS** hypersensitivity/allergic reaction to allopurinol or unable ingest allopurinol

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