

Administering Blinatumomab Via Continuous Intravenous Infusion in Pediatric Patients-A Single-Institution Retrospective Review

Julia M. Hurley¹, Ryleigh Krueger², Kellie Joyce², James Stanley², Mary Waskerwitz-Freyer², Marielle Klunder², and David J. Hoogstra^{1,2}

1. Michigan State University College of Human Medicine, Grand Rapids, MI
2. Pediatric Hematology/Oncology/BMT Division, Helen DeVos Children's Hospital at Corewell Health, Grand Rapids, MI

Introduction

- B-cell acute lymphoblastic leukemia (B-ALL) is the most common subtype of childhood acute lymphoblastic leukemia¹.
- Blinatumomab, a CD19xCD3 bispecific T-cell engager, has become standard therapy for many pediatric patients with B-ALL².
- Blinatumomab significantly improves disease-free survival in these patients, in combination with chemotherapy³.
- Blinatumomab is administered via a 28-day continuous intravenous (IV) infusion and thus presents logistical challenges for patients, families, and care teams⁴⁻⁵.
- Here we describe the experience of blinatumomab administration in pediatric patients with B-ALL.

Methods

- This retrospective review included all patients with B-ALL treated at Helen DeVos Children's Hospital (HDVCH) with continuous IV blinatumomab between January 1, 2018-December 31, 2024.
- Data was extracted from electronic medical records, de-identified, and managed using a Research Electronic Data Capture (REDCap) database.
- Distance from the patient's home address to the treatment facility was calculated using Google Maps.

Results

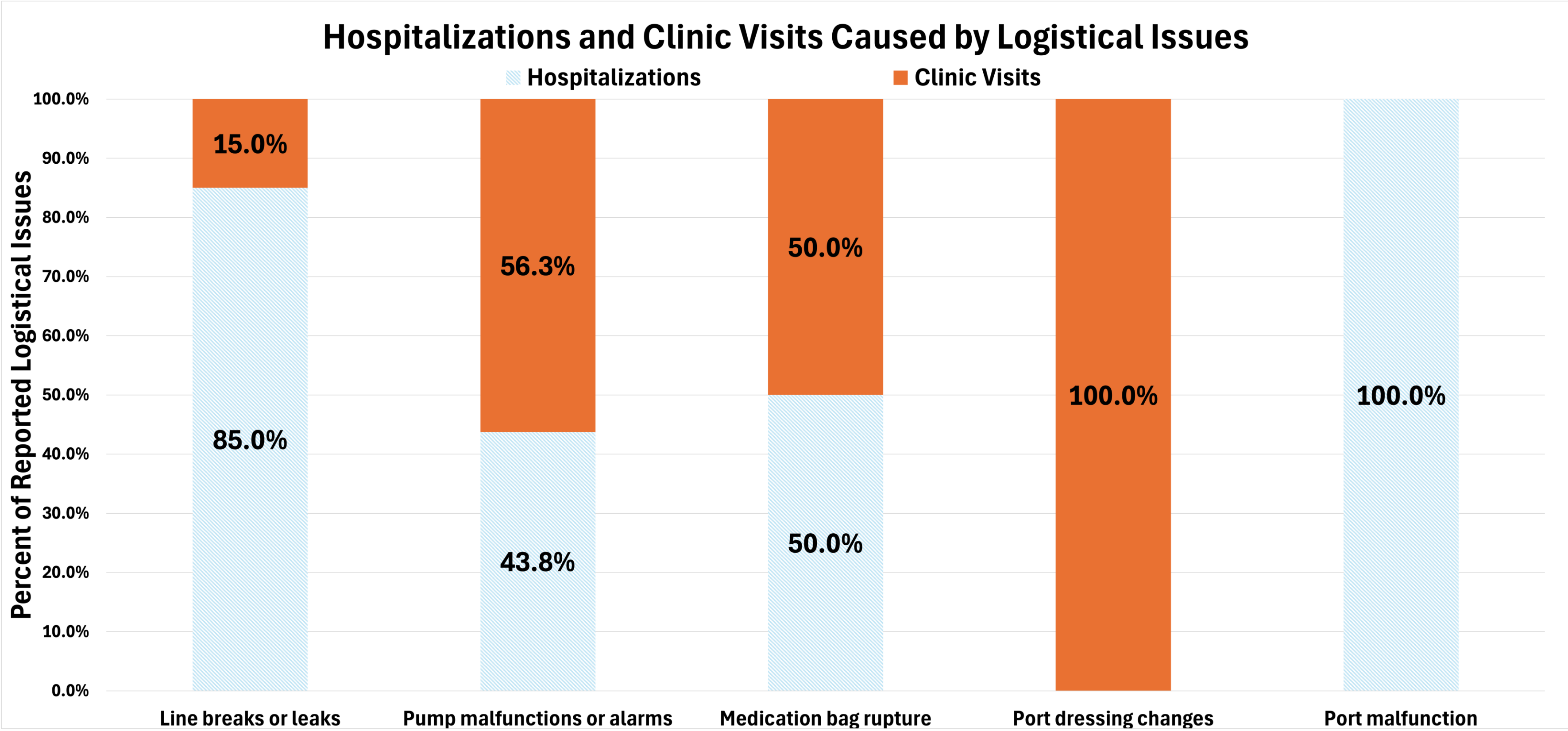
- Thirty-one eligible patients were identified with a median age of 6 years (range, 6 months-20 years).
- The median distance from the patient's home address to HDVCH was 29.8 miles (range, 2-514 miles).
- Three patients (9.7%) discontinued blinatumomab before completion of planned therapy due to logistical problems.
- The mean number of intravenous immunoglobulin (IVIG) treatments was 5.2 (range, 1-19).

Table 1. Characteristics of 31 patients who received 59 cycles of blinatumomab.

Patient Demographic	n (%)
Age at time of initial blinatumomab treatment	
< 1	1 (3.2)
1-9	20 (64.5)
10-17	8 (25.8)
≥ 18	2 (6.5)
Distance from home address to treatment facility (miles)	
≤ 10	3 (9.7)
10-30	13 (41.9)
31-60	8 (25.8)
61-100	3 (9.7)
> 100	4 (13)
Ethnicity	
Non-Hispanic	29 (93.5)
Hispanic	2 (6.5)
Insurance status	
Private	18 (58.1)
Medicaid	10 (32.3)
Undetermined	3 (9.7)
Received blinatumomab on COG study or off study	
COG Study	15 (48.4)
Commercial	16 (51.6)
Central line	
Single lumen port	47 (79.7)
Double lumen port	7 (11.9)
PICC	3 (5.1)
Broviac	2 (3.4)
PIV access required	
Yes	22 (71.0)
No	9 (29.0)
Required IVIG post blinatumomab	
Yes	26 (83.9)
No	5 (16.1)
Required readmission or clinic visit for toxicity issue	
Yes	0 (0)
No	31 (100)
Required readmission or clinic visit for logistical issue	
Yes	16 (51.6)
No	15 (48.4)

Abbreviations: COG, Children's Oncology Group; PICC, peripherally inserted central catheter; PIV, peripheral intravenous; IVIG, intravenous immunoglobulin.

Figure 1. Hospitalizations and clinic visits caused by logistical issues related to blinatumomab administration.



Conclusions

- While safe, well-tolerated, and highly effective therapy for children with B-ALL, continuous IV blinatumomab requires numerous unplanned hospitalizations and clinic visits due to logistical complications.
- Blinatumomab therapy frequently necessitates months of IVIG treatment.
- These results support further investigations into alternative methods of blinatumomab delivery and the impact of blinatumomab on immune function in pediatric patients with B-ALL.

References

1. Hunger SP, Mullighan CG. Acute Lymphoblastic Leukemia in Children. *N Engl J Med*. 2015;373(16):1541-1552. doi:10.1056/NEJMra1400972

2. Zupanec S, Beauchemin M, Rau RE. Navigating B-ALL in the Era of Blinatumomab. *Am Soc Clin Oncol Educ Book*. 2025;45(3):e472778. doi:10.1200/EDBK-25-472778

3. Gupta S, Rau RE, Kairalla JA, et al. Blinatumomab in Standard-Risk B-Cell Acute Lymphoblastic Leukemia in Children. *N Engl J Med*. 2025;392(9):875-891. doi:10.1056/NEJMoa2411680

4. Withycombe JS, Kubaney HR, Okada M, et al. Delivery of Care for Pediatric Patients Receiving Blinatumomab: A Children's Oncology Group Study. *Cancer Nurs*. 2024;47(6):451-459. doi:10.1097/NCC.0000000000001309

5. Montgomery KE, Zupanec S, Yun C, et al. A Quality Approach to Blinatumomab Delivery in Pediatric Oncology: A Children's Oncology Group Study. *J Pediatr Hematol Oncol Nurs*. 2024;41(5):324-335. doi:10.1177/27527530241267303

