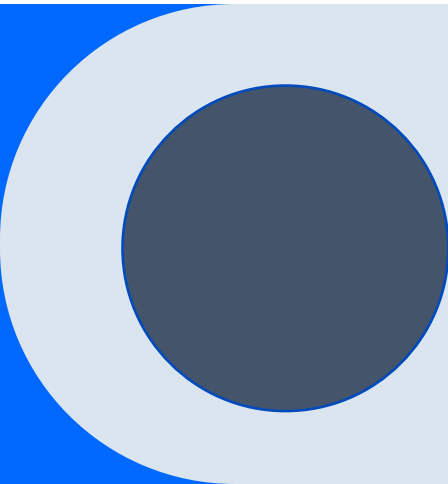





Blinatumomab Preparation



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Pharmacist Team Lead of Chemo Satellite
IWK Pharmacy
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Disclosures

NONE

Process we follow at IWK:

- Receive notification that blinatumomab will be starting (preferably well in advance...this is very much a team effort)
- Determine number of vials needed per cycle based on recent BSA and calculation of dose
- Apply to Victory program for compassionate supply (they will supply 50% of required # of vials)...when approved, this is shipped directly to us from Amgen
- Order remaining # of vials needed from regular supplier
- Receive physician's order for blinatumomab
- Prepare saline bags (pumped on TPN pump)
- Populate calendar
- Enter in Meditech
- Prepare doses twice weekly



BLINATUMOMAB Treatment Calendar

Non-Study Patients

Patient: _____ K# _____ Treatment Arm: _____ Cycle: _____

Month _____ 20____

Treatment Day 1 = _____ → Prepare & Dispense a _____ h bag *and*

Treatment Day 1 → prepare a _____ h bag and store in fridge for Tues _____ *or* Fri _____

Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
Date:		Date:		Date:	*dispense 72h bag <input type="checkbox"/> _____ *prepare 96h bag <input type="checkbox"/> _____	Date:		Date:		Date:	* dispense 96h bag <input type="checkbox"/> _____ * prepare 72h bag <input type="checkbox"/> _____	Date:	
Date:		Date:		Date:	*dispense 72h bag <input type="checkbox"/> _____ *prepare 96h bag <input type="checkbox"/> _____	Date:		Date:		Date:	* dispense 96h bag <input type="checkbox"/> _____ * prepare 72h bag <input type="checkbox"/> _____	Date:	
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Date:		Date:		Date:	*dispense 72h bag <input type="checkbox"/> _____ *prepare 96h bag <input type="checkbox"/> _____	Date:		Date:		Date:	* dispense 96h bag <input type="checkbox"/> _____ * prepare 72h bag <input type="checkbox"/> _____	Date:	

*Day 29 = _____

- See detailed Dispensing Summary in 'Blinatumomab Non-Study Binder'
- Fill in dates once patient starts treatment
- Tick off boxes when 'dispense' and 'prepare' have been completed AND initial when complete. **NOTE: prepare doses in afternoon**
- Prepared doses must be stored in **CHEMO ROOM fridge** (BUD: 10 days) until dispensed (this fridge is alarmed and monitored). These can be used as 'backup' bag if needed before dispense date
- IF unexpected infusion bag changes are required during treatment, then record additional preparation/dispensing under appropriate dates or on reverse of the patient specific calendar
- File completed infusion calendars in Blinatumomab Non-Study Binder

IWK Process

- Blinatumomab start days are Tuesdays or Fridays
- Patients are admitted to start each cycle and monitored x 72 hours for 1st cycle and 48 hours for 2nd cycle
- Tuesday start days:
 - Prepare and deliver a 72-hour bag to the inpatient unit
 - Prepare a 96-hour bag and store in chemo fridge in pharmacy satellite
- Friday start days:
 - Prepare and deliver a 96-hour bag to the inpatient unit
 - Prepare a 72-hour bag and store in chemo fridge in pharmacy satellite
- Final dispense day:
 - Dispense final bag and make backup bag (can make smallest bag possible to avoid excessive waste as this bag will likely be discarded)



IWK Process

- Start day...two bags are prepared:
 - Tuesday start -> prepare and deliver 72-hour bag AND prepare 96-hour bag to be stored in pharmacy. Use the 'spare' bag in the event a bag change is needed prior to the regular bag change day. If not needed, deliver to unit on next bag change day and prepare next bag to be stored in the pharmacy.
 - Friday start -> prepare and deliver a 96-hour bag AND prepare a 72-hour bag to be stored in pharmacy.
 - Each following Tuesday and Friday for remainder of cycle: prepare a 96-hour bag on Tuesdays and a 72-hour bag on Fridays to be stored in pharmacy fridge until next bag-change day

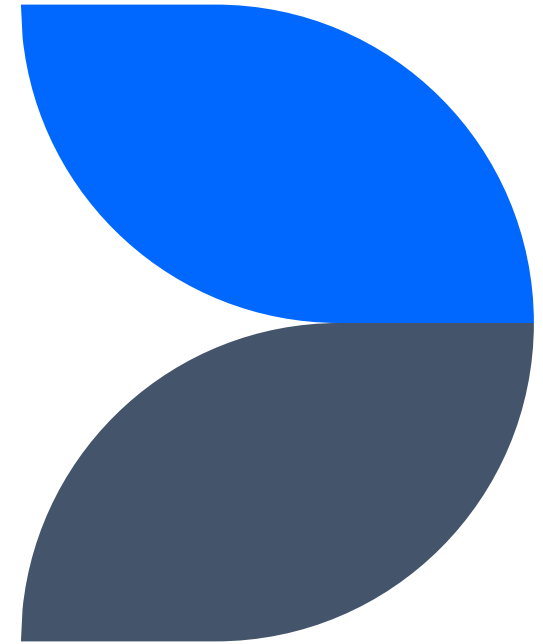
We keep a backup bag prepared for after-hours issues. Our chemotherapy satellite refrigerator is monitored centrally and alarmed. If the bag is needed after-hours, an on-call PPA/technician would be called in to deliver the backup bag to the unit.



B-Cell ALL Standard of Care

Dosing of Blinatumomab

- Daily dose = 15 micrograms/m²/day
- Maximum daily dose = 28 micrograms (patients ≥ 1.86 m² would be at max dose)
- Infused continuously for 28 days
- Rate = 5 mL/hour using a CADD Solis VIP pump



Example of calculation sheet adapted from COG protocols (AALL1331 & 1731)



Blinatumomab Infusion Worksheet

72-hour supply

Patient Name: _____ K# _____ BSA: _____ m²

NON-STUDY: * Use Commercial Supply (Blinxto®) (in chemo fridge) *****

Pharmacist Calculations:

Worksheet prepared by: _____ Date: _____

Dose = blinatumomab **15 micrograms/m²/day** as continuous IV infusion for 28 days. IV rate is always 5 mL/h.

Volume calculations for **72-hour** supply (including 30 mL overfill for priming volume):

➤ Blinatumomab Volume Calculation:

15 micrograms/m²/day = _____ mcg x 3 days = _____ micrograms

÷ 360 mL (72h infusion volume) = _____ mcg/mL

x 31.2 [this is 390 mL (total vol) ÷ 12.5 micrograms/mL (drug concentration after reconstitution)]

➤ = _____ mL (Volume of blinatumomab in each 390 mL bag (includes 30 mL overfill))

➤ NaCl 0.9% Volume Calculation:

Final volume (390 mL) – volume of stabilizer (7.8 mL) – volume of blinatumomab

➤ = _____ mL (Volume of 0.9% NaCl IV infusion bag (pumped by Sterile Room in non-PVC bag))

➤ Stabilizer Volume Calculation:

➤ 0.02 x total volume to be prepared (390 mL) = **7.8 mL**

Final Volume Table:

Final volume	0.9% NaCl bag volume	Stabilizer volume	Blinatumomab volume	Volume to be infused ^a	Overfill volume
390 mL	_____ mL	7.8 mL	_____ mL	360 mL	30 mL

a. Rate is always 5 mL/h.

Double check of blinatumomab volume and dose calculations:

Blinatumomab **15 micrograms/m²** x _____ m² of patient = _____ (A) micrograms blinatumomab/day

Volume of blinatumomab added x 12.5 micrograms/mL = _____ (B) micrograms blinatumomab added

B ÷ 390 mL (final volume) = _____ (C) micrograms/mL

C x 5 mL/h (infusion rate) x 72h (infusion time) = _____ (D) micrograms blinatumomab in 72h

D ÷ 3 (days supplied) = _____ (E) micrograms blinatumomab/day

D ÷ 360 mL (volume infused) x 390 mL (final volume) = _____ (F) micrograms blinatumomab added

Double Check → A = E

Double Check → B = F

Blinatumomab Calculation Spreadsheet

Patient Name:	IWK Test	K#:	999999	BSA (m ²):	0.61
Prepared by:	Tracy			Date:	11-Sep-2024
Pharmacist Calculations:					
Dose of blinatumomab:	15	micrograms/m ² /day		User Entered	
Daily dose:	9.2	micrograms/day		Calculation	
Supply:	72	hours		Do Not Change	
Infusion volume:	360	mL			
Volume of blinatumomab in each bag (includes 30mL overfill):				2.38	mL
Volume of 0.9% NaCl IV infusion bag:				379.82	mL
Final Volume Table (all in mL):					
Final Volume	0.9% NaCl bag vol.	Stabilizer vol.	Blinatumomab vol.	Vol. to be infused*	Overfill Vol.
390	379.82	7.8	2.38	360	30
*Rate is always 5mL/h					

Blinatumomab bags:

- Each bag is prepared to the same concentration, so rate never changes (5 mL/hour)
- Total volume of each sized bag is always the same:

Duration of bag	Total volume
24-hour	150 mL
48-hour	270 mL
72-hour	390 mL
96-hour	510 mL

- Each bag is prepared with 30 mL of overfill to allow priming of IV tubing and ensures full dose is received
- Steps:
 - spike saline bag using Phaseal Optima Adapter
 - Remove air from bag
 - Add required amount of IV solution stabilizer to bag (discard any remaining in vial), gently mix to coat bag
 - Reconstitute each blinatumomab vial with 3 mL SWI, swirl gently
 - Add required volume of blinatumomab to bag, mix gently

Stability of Prepared Bags of Blinatumomab

- Per COG protocols (for study patients):
 - 8 days refrigerated
 - 4 days at room temperature
- Per product monograph (Blincyto®):
 - 10 days refrigerated
 - 4 days at room temperature
- Before dispensing, we store prepared bags in a temperature-monitored and alarmed refrigerator in our chemotherapy satellite, giving the commercial supply a 10-day beyond-use-date.

Preparation Notes

- Blincyto® monograph describes preparation differently than the COG protocols...we follow COG protocol method (otherwise, concentrations and infusion rates would not be consistent)
- compatible with polyolefin, PVC (non-DEHP), or ethyl vinyl acetate (EVA) infusion bag (we use Baxter Exactamix EVA bags)
- incompatible with DEHP-containing bags and IV tubing due to the potential for particle formation, leading to a cloudy solution
- Preparation must be done in an ISO Class 5 laminar flow hood or better
- Drug package contains one vial of blinatumomab powder and one vial of IV solution stabilizer (~\$3000/vial)



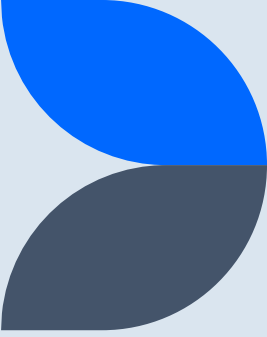
Preparation Notes

- Blinatumomab is reconstituted with sterile water for injection and NOT the IV solution stabilizer. Direct the SWI along the walls of the drug vial and not directly on the powder. Gently swirl to avoid excess foaming; do not shake. The resulting concentration per vial is 12.5 micrograms/mL (3.08 mL).
- IV Solution Stabilizer is used to coat the saline bag prior to addition of reconstituted blinatumomab to prevent adhesion of drug to intravenous bags and intravenous tubing. Largest sized bag (96-hour) only requires one vial of stabilizer (10.2mL) but may require multiple drug vials depending on dose.
- REMOVE AIR from the intravenous bag as bag will be carried in a backpack (we remove before adding anything to the bag)
- Only prime IV line with drug solution and not with the 0.9% sodium chloride
- The only CSTD we use is the bag spike Adapter



In closing...

- Blinatumomab takes much planning and organization
- Patients will be starting all cycles as inpatients at IWK so calculations will be provided to home hospitals
- First bag change will be done at IWK to avoid wasting the backup bag
- Discharge will need to be carefully coordinated with home hospitals
- We are still sorting details with the Victory program regarding shipment of compassionate supply (can shipment be divided between two centers?)
- Blinatumomab is still a work in progress with our recent increased use...striving to optimize efficiency and always open to suggestions for improving any part of this process 😊



Thank you 😊

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