Chemotherapy Protocol

HAEMATOLOGY – HSCT AUTOGRAFT

AMBULATORY MELPHALAN and BORTEZOMIB SC

Multiple Myeloma

This regimen will only be available to prescribe at units which carry out autograft transplantation.

Regimen

HSCT – AmB Melphalan-Bortezomib SC

Indication

- Conditioning for haematopoietic stem cell transplant in patients with multiple myeloma

Toxicity

Drug	Adverse Effect
Melphalan	Nausea, vomiting, diarrhoea, stomatitis, alopecia and myelosuppression
Bortezomib	GI disturbance, peripheral neuropathy, hypotension, dizziness, blurred vision, headache, musculoskeletal pain, pyrexia

The adverse effects listed are not exhaustive. Please refer to the relevant Summary of Product Characteristics for full details.

Monitoring

Drugs

- FBC, LFTs, U&Es, bone profile, CRP, LDH, serum immunoglobulins and electrophoresis and serum free light chains prior to initiating treatment
- GFR measurement done by Nuclear Medicine or creatinine clearance calculation prior to first day of treatment.

Dose Modifications

The dose modifications listed are for liver and renal function. Dose adjustments may be necessary for other co-morbidities as well which will involve discussions with the Transplant Director, Senior Transplant Clinician or patient's consultant.

Haematological

Confirm with transplant consultant before proceeding if there are signs of disease relapse.

Hepatic Impairment

Drug	Bilirubin µmol/L	AST/ALT units/L	Dose (% of original dose)
Bortezomib	1.5xULN or below	N/A	100%
	greater than 1.5xULN	N/A	Consider initiating treatment at 0.7mg/m2

No information is available on melphalan in hepatic impairment. No dose changes recommended.

Renal Impairment

Drug	Creatinine Clearance (ml/min)	Dose (% of original dose)
Melphalan	greater than 50ml/min	200mg/m^2
	30 – 50ml/min	140 mg/m^2
	less than 30 ml/min	Clinical decision, high dose melphalan is not recommended
Bortezomib	greater than 20	100%
	20 and below	Clinical decision

Other

Bortezomib

For patients experiencing NCI-CTC grade 1 neuropathy without loss of function or pain continue with full dose bortezomib.

For NCI-CTC grade 1 with pain or grade 2 neuropathy reduce the dose of bortezomib to 1mg/m^2.

Regimen

Drug	Dose	Days	Administration
Melphalan	200mg/m^2	-1	Intravenous infusion in 500ml sodium chloride 0.9% over 30 minutes
Bortezomib	1.3mg/m^2	-1 and +5	subcutaneous injection over 5 seconds Day -1 to be given 8 hours after melphalan infusion

Dose Information

- The melphalan dose is rounded **down** to the nearest 10mg. The National Dose Banding Team have advised not to use dose banding tables for this product in view of the 90 minute expiry (must be made locally for individual patient), the 50mg vial size and frequent stock shortages.

- Bortezomib will be dose banded in accordance with the national dose banding table (2.5).

Administration Information

- Bortezomib SC on day -1 to be given 8 hours after melphalan infusion.

Extravasation

- Melphalan – neutral
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Additional Therapy

- Antiemetics

  - Aprepitant 125mg once a day prior to melphalan followed by 80mg once a day for two days afterwards, oral.
  -dexamethasone 4mg each morning, on the same days as aprepitant, oral
  -metoclopramide 10mg three times a day oral or intravenous until nausea subsides
  - ondansetron 8mg twice a day oral or intravenous for ten days then review

- Antimicrobials

  Antimicrobials should be prescribed according to the institution guideline and may include:

  - ciprofloxacin 250mg twice daily from day +5 to continue whilst neutropenic.
  - fluconazole 100mg once daily from admission until recovery from neutropenia
  - aciclovir 400mg twice or three times a day from admission to continue after discharge

- Growth factors

  According to local formulary choice. For example:
  - filgrastim or bioequivalent 30million units subcutaneous once a day starting from day +7 to continue until neutrophils are more than 0.5.
  - lenograstim or bioequivalent 33.6million units subcutaneous once a day starting from day +5 to continue until neutrophils are more than 0.5.

- Gastric protection with a proton pump inhibitor should be prescribed throughout admission.

- Mouthwashes including:

  - nystatin 1ml four times a day to continue until count recovery
  - sodium chloride 0.9% 10ml four times a day to continue until count recovery.

- Thromboprophylaxis
  -in accordance with individual transplant schedule

- Premedication for stem cell transfusion

  -chlorphenamine 10mg intravenous
  -paracetamol 1000mg oral

- Intravenous hydration before and after melphalan infusion prescribed on inpatient prescribing system or using paper proforma (appendix 1)

The evening before melphalan infusion (to be completed by 0930 on the morning of the infusion)

Sodium chloride 0.9% with potassium chloride 27mmol 1000ml

The day of melphalan infusion

0830hrs Contact Pharmacy on ext 5037 to inform them that the patient is present. Confirm that they have melphalan prescription (on ARIA) □ Request melphalan to be on the ward by 11:30 □
Start fluid balance sheet and start daily weight measurement.

0915hrs Administer anti-emetics and supportive medication as per ARIA prescription.

0930hrs 20mg furosemide intravenous bolus

Warning – Check hydration and fluid balance

1000hrs 1000ml sodium chloride 0.9% intravenous infusion over 90 minutes

1030hrs 20mg furosemide intravenous bolus

Measure urine output since 0900hrs

- If more than 500ml continue with melphalan infusion
- If less than 500ml give second furosemide 20mg intravenous bolus dose and check urine output since 0900hrs again at **1100hrs**:
  - if more than 500ml go ahead with melphalan
  - if less than 500ml contact the prescriber.

1130hrs – give melphalan intravenous infusion over thirty minutes (this product has a short expiry so adhering to set timing is essential)

1200hrs - 1000ml sodium chloride 0.9% intravenous infusion over 120 minutes

Instruct patient to take all supportive medications with reference to antiemetics.

Advise patient to drink 1000 ml of oral fluids over the evening.

Emergency contact details for AOS given to patient.

Patient and carer to return to C7 at 08:30 on day 0

References

1. P-P-54 Wessex Blood and Marrow Transplant – Dose adjustments for stem cell transplant conditioning agents policy. Version 1.0
2. P-P-43 Wessex Blood and Marrow Transplant – WESSEX BLOOD AND MARROW TRANSPLANT – Conditioning schedule for High Dose Melphalan Policy. Version 1.4
3. Dosage Adjustments for Cytotoxics in Hepatic Impairment January 2009 University College London Hospitals
6. Summary of Product Characteristics for Melphalan (Aspen) – last updated 09 Dec 2014
7. Handbook of Systemic Treatments for Cancer 7th Edition 2012 Lilly Oncology
8. National Dose Banding Tables

REGIMEN SUMMARY

Melphalan-Bortezomib SC Ambulatory Care

Other than those listed below, supportive medication for this regimen will not appear in Aria as prescribed agents. The administration instructions for each warning describes the agents which must be prescribed on the in-patient chart or general electronic prescribing system.

Day -1

1. Aprepitant 125mg oral

2. Dexamethasone 4mg oral or intravenous

3. Ondansetron 8mg oral or intravenous

4. Metoclopramide 10mg oral or intravenous

5. Furosemide 20mg injection bolus
   Administration instructions – to be given if required for fluid overload.

6. Warning – Check hydration and fluid balance
   The evening before melphalan infusion (to be completed by 0930 on the morning of the infusion)
   Sodium chloride 0.9% with potassium chloride 27mmol 1000ml
   The day of melphalan infusion

   0830hrs Contact Pharmacy on ext 5037 to inform them that the patient is present.
   Confirm that they have melphalan prescription (on ARIA) □ Request melphalan to be on the ward by 11:30 □
   Start fluid balance sheet and start daily weight measurement
   0915hrs Administer anti-emetics and supportive medication as per ARIA prescription
   0930hrs 20mg furosemide intravenous bolus
   1000hrs 1000ml sodium chloride 0.9% intravenous infusion over 90 minutes
   1030hrs 20mg furosemide intravenous bolus
   Measure urine output since 0900hrs
   If more than 500ml continue with melphalan infusion
   If less than 500ml give second furosemide 20mg intravenous bolus dose and check urine output since 0900hrs again at **1100hrs**:
   if more than 500ml go ahead with melphalan
   if less than 500ml contact the prescriber.
   1130hrs – give melphalan intravenous infusion over thirty minutes (this product has a short expiry so adhering to set timing is essential)
   1200hrs - 1000ml sodium chloride 0.9% intravenous infusion over 120 minutes

7. Time– Administer melphalan at 1130hrs

8. Melphalan 200mg mg/m^2 intravenous infusion in 500ml sodium chloride 0.9% over 30 minutes
   Administration Instructions - see separate hydration prescription chart for the post hydration.

9. Bortezomib 1.3mg/m^2 subcutaneous injection over 5 seconds
   Administration instructions - To be given at 8 hours after melphalan infusion.

Day 0

10. Chlorphenamine 10mg Intravenous bolus
    Administration instructions – to be given pre stem cell infusion

11. Paracetamol 1000mg Tablet Oral
    Administration instructions – to be given pre stem cell infusion

12. Stem Cell Return – see separate chart

Day +5

13. Bortezomib 1.3mg/m^2 subcutaneous injection over 5 seconds

Take home medicines.

14. Aprepitant 80mg once a day oral for 2 days starting the day after melphalan

15. Dexamethasone 4mg once a day oral for 2 days starting the day after melphalan

16. Ondansetron 8mg twice a day for 5 days starting the evening of melphalan administration

17. Metoclopramide 10mg three times a day oral
    Administration instructions – take regularly for 5 days then when required. Please supply 28 tablets or an original pack as appropriate

18. Levomepromazine 6.25mg four times a day oral
    Administration instructions – to be taken on advice from medical team for nausea or vomiting. Please supply 3 days.

19. Aciclovir 400mg three times a day oral
    Administration Instructions Please supply 28 days or an original pack if appropriate.

20. Ciprofloxacin 250mg twice a day starting on day 5 (6 days after melphalan administration)
    Administration Instructions Please supply 14 days with no stop date

21. Fluconazole 100mg oral once a day
    Administration instructions – please supply 14 days with no stop date

22. Nystatin 1ml four times a day oral
    Administration instructions – please supply 1 x OP

23. Gastric Protection
    Administration Instructions The choice of gastric protection is dependent on local formulary choice and may include;
    - esomeprazole 20mg once a day oral
    - omeprazole 20mg once a day oral
    - lansoprazole 15mg once a day oral
    - pantoprazole 20mg once a day oral
    - rabeprazole 20mg once a day oral
    - cimetidine 400mg twice a day oral
    - famotidine 20mg once a day oral
    - nizatidine 150mg twice a day oral
    - ranitidine 150mg twice a day oral

    Please supply 28 days or the nearest original pack size.

24. Sodium Chloride 0.9% oral rinse 10mL four times a day
    Administration instructions – pharmacy please supply 50 x 10mL pods

DOCUMENT CONTROL

Version	Date	Amendment	Written By	Approved By
1.0	September 2023	None	Eleanor Taylor Cancer Services Pharmacist	Matthew Jenner Consultant Haematologist

This chemotherapy protocol has been developed as part of the chemotherapy electronic prescribing project. This was and remains a collaborative project that originated from the former CSCCN. These documents have been approved on behalf of the following Trusts;

University Hospital Southampton NHS Foundation Trust – Wessex Blood and Marrow Transplant

All actions have been taken to ensure these protocols are correct. However, no responsibility can be taken for errors that occur as a result of following these guidelines.

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