Chemotherapy Protocol

Haematopoietic Stem Cell Transplant (Autograft)

CYCLOPHOSPHAMIDE PRIMING (1500mg/m^2)

Regimen

- Haematopoietic Stem Cell Transplant (HSCT)- Cyclophosphamide Priming (1500mg/m^2)

Indication

- Mobilisation of peripheral blood stem cells for future stem cell rescue following high dose chemotherapy.

Toxicity

Drug	Adverse Effect
Cyclophosphamide	Dysuria, haemorrhagic cystitis, taste disturbances, alopecia

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

Patients undergoing this treatment carry a risk of transfusion-associated graft versus host disease (TA-GVHD). Where blood products are required these patients must receive only irradiated blood products for the two weeks prior to the administration of cyclophosphamide and for 12 months afterwards. Local blood transfusion departments must be notified as soon as a diagnosis is made and the patient must be issued with an alert card to carry with them at all times.

Monitoring

Drugs

- FBC, LFTs and U&Es prior to day one of treatment
- EDTA or calculated creatinine clearance prior to day one of treatment
- Urine dip test for protein every 60 minutes until the end of the cyclophosphamide infusion

Dose Modifications

No dose modifications are applicable to this regimen for haematological parameters

Only patients with a creatinine clearance of more than 40ml/min should be considered for this regimen.

Regimen

One Cycle

Drug	Dose	Days	Administration
Mesna	300mg/m^2	1	Intravenous bolus in 100ml sodium chloride 0.9% over 15 minutes to start at the same time as the cyclophosphamide infusion
Cyclophosphamide	1500mg/m^2	1	Intravenous infusion in 1000ml sodium chloride 0.9% over 120 minutes
Mesna	600mg/m^2	1	Oral for two doses taken at 0 and 4 hours after the end of the cyclophosphamide infusion

Dose Information

- Cyclophosphamide will be dose banded according to the national dose bands (20mg/ml)
- Mesna (intravenous) will be dose banded according to the national dose bands (national dose banding table-mesna)
- Mesna (oral) will be rounded to the nearest 400mg (up if halfway)

Administration Information

Extravasation

- Cyclophosphamide - neutral
- Mesna - neutral

Additional Therapy

- Antiemetics

  15-30 minutes prior to chemotherapy

  - dexamethasone 8mg oral or equivalent intravenous bolus dose
  - ondansetron 8mg oral or intravenous bolus

  As take home medication

  - metoclopramide 10mg three times a day when required oral
  - ondansetron 8mg twice a day oral for three days oral

- Cyclophosphamide pre hydration

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

- Growth factors should be prescribed to start on day two and continued until harvest is complete or abandoned (supply 8-10 days initially depending on local policy). For example;

    - filgrastim or bioequivalent 5microgram/kg – 10microgram/kg once a day subcutaneous (in lymphoma the dose is 10microgram/kg) rounded to the nearest 300microgram (30 million units) or 480microgram (48 million units) vial. Check dose required with the consultant.
    - lenograstim or bioequivalent 5microgram/kg – 10microgram/kg once a day subcutaneous rounded to the nearest 105microgram (13.4 million unit) vial or 263 microgram (33.6 million unit). Check the required dose with the consultant.

- Anti-infective prophylaxis for 11 days only with;

    - aciclovir 400mg twice a day oral
    - ciprofloxacin 250mg twice a day oral
    - fluconazole 100mg once a day oral

- Mouthwashes according to local or national policy on the treatment of mucositis

- Gastric protection with a proton pump inhibitor or a H_2 antagonist may be considered in patients considered at high risk of GI ulceration or bleed.

Additional Information

- Patients should be advised to drink two to three litres of fluid per day on the day of chemotherapy and the day after.

- Patients should be advised to contact the acute oncology service or local treatment centre if;

    - there is pain when passing urine, an inability to pass urine or blood in the urine.
    - vomiting occurs within one hour of taking oral mesna

- Filgrastim syringes are available in 30 million unit (300microgram) and 48 million unit (480microgram) sizes

- Lenograstim syringes are available in 13.4 million unit (105microgram) and 33.6 million unit (263microgram) sizes

Coding

- Procurement – X70.5
- Delivery – X72.1

References
1. To LB, Shepperd KM, Haylock DN et al. Single high doses of Cyclophosphamide enable the collection of high numbers of haemopoietic stem cells from peripheral blood. Exp Haematol1990;18:442-7.
2. Deliliers GL, Annaloro C, Marconi M et al. Harvesting of autologous blood stem cells after a mobilising regimen with low dose cyclophosphamide. Leuk Lymphoma 2002; 43 (10): 1957-19

REGIMEN SUMMARY

Cyclophosphamide (1500mg/m^2)

Day 1

1. Warning – Check blood transfusion status
   Administration Instructions
   Patients given this treatment carry a risk of transfusion associated graft versus host disease.
   Where blood products are required these patients must receive ONLY IRRADIATED BLOOD PRODUCTS starting two weeks prior to the cyclophosphamide infusion and for 12 months post treatment. Ensure transfusion departments are notified and the patient has been issued with an alert card to carry with them at all times.

1. Sodium chloride 0.9% 1000ml intravenous infusion over 120 minutes

2. Dexamethasone 8mg oral or equivalent intravenous bolus dose

3. Ondansetron 8mg oral or intravenous bolus

4. Mesna 300mg/m^2 intravenous infusion in 100ml sodium chloride 0.9% over 15 minutes
   Administration Instructions
   The mesna infusion should begin at the same time as the cyclophosphamide infusion

5. Cyclophosphamide 1500mg/m^2 intravenous infusion in 1000ml sodium chloride 0.9% over 120 minutes
   Administration Instructions
   The mesna infusion should begin at the same time as the cyclophosphamide infusion

6. Mesna 600mg/m^2 oral given immediately at the end of the cyclophosphamide infusion
   Administration Instructions
   Administer the mesna tablets immediately as the cyclophosphamide infusion ends. If the patient is vomiting please inform the medical staff and consider administering the mesna intravenously.

Take home medicines

7. Mesna 600mg/m^2 (rounded up to the nearest 400mg) oral for 1 dose taken 4 hours after the end of the cyclophosphamide infusion
   Administration Instructions
   Take four hours after the end of the cyclophosphamide infusion

8. Metoclopramide 10mg three times a day when required oral
   Administration Instructions
   Please supply 28 tablets or an original pack

9. Ondansetron 8mg twice a day oral for 3 days starting on the evening of day one of treatment
   Administration Instructions
   Start on the evening of the day of cyclophosphamide administration

10. Aciclovir 400mg twice a day for 11 days oral

11. Ciprofloxacin 250mg twice a day for 11 days oral

12. Fluconazole 100mg daily for 11 days oral

13. Growth factor once a day starting on day two of the cycle and continued until there is sufficient cell count

Administration Instructions

- filgrastim or bioequivalent 5microgram/kg – 10microgram/kg once a day subcutaneous (in lymphoma the dose is 10microgram/kg) rounded to the nearest 300microgram (30 million units) or 480microgram (48 million units) vial. Check dose required with the consultant.
- lenograstim or bioequivalent 5microgram/kg – 10microgram/kg once a day subcutaneous rounded to the nearest 105microgram (13.4 million unit) vial or 263 microgram (33.6 million unit). Check the required dose with the consultant.

To start on day two of the cycle and continued until there is sufficient cell count. Please supply 8-10 days depending on local policy.

14. 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 11 days

DOCUMENT CONTROL

Version	Date	Amendment	Written By	Approved By
1	July 2018	None	Harriet Launders Pharmacist Dr Deborah Wright Pharmacist	Dr Rob Lown 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;

Hampshire Hospitals NHS Foundation Trust
NHS Isle of Wight
Portsmouth Hospitals NHS Trust
Salisbury Hospitals NHS Foundation Trust
University Hospital Southampton NHS Foundation Trust
Western Sussex Hospitals NHS Foundation Trust

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. These protocols should be used in conjunction with other references such as the Summary of Product Characteristics and relevant published papers.