London Health Sciences Centre

Algorithm for White Cell Growth Factor (G-CSF) Support

Step 1. Evaluate patient for risk of febrile neutropenia (FN) prior to each cycle[4,5]

Review:
- chemotherapy regimen[1,4,5]
- patient risk factors[1,4,5]
- treatment intent (curative vs. palliative)[1,4,5]

Step 3. Prophylaxis for Febrile Neutropenia

*Dose Dense Chemotherapy[1,4,5] → • G-CSF primary prophylaxis recommended[1,4]

Aggressive histology NHL, >65yrs, curative intent[1,5] → • G-CSF primary prophylaxis recommended[1,4]

*Standard Dose Chemo High Risk FN (>20%)[1,4,5] → • G-CSF primary prophylaxis recommended[1,4]

*Standard Dose Chemo Intermed. Risk FN (10-20%)[1,4] → • Consider G-CSF, particularly if curative or (neo)adjuvant intent and assess patient risk factors[1,4] (**See Step 2**)

*Standard Dose Chemo Low Risk FN (<10%)[4,5] → • G-CSF not routinely recommended[1,4]
• Only consider if patient at significant risk for serious consequences of febrile neutropenia, including death[4]

Previous Episode of
•Febrile Neutropenia[1,4]
OR
•Neutropenia causing dose delay or reduction[1,4]
→ • G-CSF secondary prophylaxis recommended if curative intent[1,4]

Step 2. Assess Patient Risk Factors[1,4,5]

In addition to the chemo regimen, these factors may increase the risk of FN[1,4,5]

- age > 65 years[1,4,5]
- poor PS (ECOG >2)[1,4,5]
- poor nutritional status[1,4,5]
- bone marrow involvement[1,4,5]
- advanced disease[1,5]
- other serious co-morbidities[1,4,5] (i.e. diabetes, CVD, COPD, etc.)
- extensive prior treatment[1,4]
- number of myelosuppressive agents used (>2)[4]
- presence of open wounds or active infections[1,4,5]
- concomitant medications[4]
- female gender[5]
- Hb<120 g/L[5]

G-CSF DOSING

Filgrastim (Neupogen) 5mcg/kg/day daily SC[2,4]
(rounded to nearest vial size: 300mcg or 480mcg)[2,4]
- Start **24-72 hrs** after chemo & treat through post-nadir ANC recovery[1,4]
- Not to be given the same day as chemo[2]

OR

Pegfilgrastim (Neulasta) 6mg once/cycle SC[3,4]
(not routinely used in regimens < 2 weeks apart)
- Start **24 hrs** after chemo[1,3]
- Not to be given the same day as chemo[3]

***See reverse for FN rates of most common chemotherapy regimens**

- *The list is not comprehensive. There are other agents/regimens that have a high risk for the development of neutropenic complications.*
- *The exact risk includes agent, dose and the treatment setting (ie. treatment naïve vs. heavily pretreated patients).*
- *The chemotherapy regimen is only one component of the risk assessment. Patient risk factors should be evaluated as well.*[1,4,5]

EXAMPLES OF CHEMOTHERAPY REGIMENS WITH A HIGH RISK OF FEBRILE NEUTROPENIA (>20%)[4]

Bladder
- TC (paclitaxel, cisplatin)
- MVAC (methotrexate, vinblastine, doxorubicin, cisplatin)

Breast Cancer
- Dose Dense AC-T* (doxorubicin, cyclophosphamide, paclitaxel)
- AT (doxorubicin, paclitaxel)
- TAC (docetaxel, doxorubicin, cyclophosphamide)

Cervix
- TC (paclitaxel, cisplatin)

Gastric/Head & Neck
- DCF (docetaxel, cisplatin, fluorouracil)

Non Small Cell Lung Cancer
- DP (docetaxel, carboplatin)

Non-Hodgkin's Lymphoma
- CHOP 14
- DHAP
- ESHAP

Ovarian Cancer
- Topotecan
- Paclitaxel
- Docetaxel

Testicular Cancer
- VIP (vinblastine, ifosfamide, cisplatin)

***In general, dose dense regimens require growth factor support for chemotherapy administration**[1,4,5]

EXAMPLES OF CHEMOTHERAPY REGIMENS WITH AN INTERMEDIATE RISK OF FEBRILE NEUTROPENIA (10-20%)[4]

Breast
- FEC-D (fluorouracil, epirubicin, cyclophosphamide, docetaxel)
- FEC 100 (fluorouracil, epirubicin, cyclophosphamide)
- Docetaxel
- AC (doxorubicin, cyclophosphamide)
- Gemcitabine, carboplatin

Colon Cancer
- FOLFOX (fluorouracil, leucovorin, oxaliplatin)

Non-Hodgkin's Lymphoma
- CHOP-R

Non Small Cell Lung Cancer
- Cisplatin, paclitaxel
- Cisplatin, docetaxel
- Docetaxel, gemcitabine
- Vinorelbine, cisplatin

Small Cell Lung Cancer
- Cisplatin, topotecan
- Etoposide, carboplatin

References

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2. Neupogen Canadian product monograph, 2007
3. Neulasta Canadian product monograph, 2007
4. NCCN Myeloid Growth Factor Practice Guidelines in Oncology, v1 2008; http://www.nccn.org/professionals/physician_gls/PDF/myeloid_growth.pdf
5. Kouroukis CT, Chia S, Verma S, Robson D *et al*. Canadian Supportive Care Recommendations for the management of neutropenia in patients with cancer. *Current Oncology* 2008; vol 15; no 1:9-23

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