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Guideline for Classification of the Acute Emetogenic Potential of Antineoplastic Medication in Pediatric Cancer Patients

QUICK SUMMARY

POGO Antineoplastic – induced Nausea and Vomiting Guideline Development Panel:

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INTRODUCTION

The purpose of this guideline is to provide physicians, nurses, pharmacists and other health care providers who care for children aged 1 month to 18 years who are receiving antineoplastic medication with an approach to assess the emetogenic potential of antineoplastic regimens. The scope of this guideline is limited to the assessment of antineoplastic therapy emetogenicity in the acute phase (within 24 hours of administration of an antineoplastic agent). Its scope does not include anticipatory, breakthrough or delayed phase antineoplastic-induced nausea and vomiting (AINV), or nausea and vomiting that is related to radiation therapy, disease, co-incident conditions or end-of-life care. In addition, this guideline is most applicable to children who are naïve to antineoplastic therapy and who are about to receive their first course of antineoplastic therapy. In the case of children who have received antineoplastic medication in the past, estimation of the emetogenic potential of the antineoplastic regimen to be given incorporates both the recommendations of this guideline and an assessment of the child's previous experience with AINV.

The methods of guideline adaptation are available in the complete version which is available on the POGO website (www.pogo.ca) or by contacting Carla Bennett, Coordinator of Clinical Programs, Pediatric Oncology Group of Ontario, 480 University Ave, Suite 1014, Toronto, Ontario M5G 2V1; telephone: (416) 592-1232 Ext. 222; E-mail cbennett@pogo.ca.

HEALTH QUESTIONS

The following questions guided the development of this guideline:

1. What risk of acute phase AINV do antineoplastic therapies present to children with cancer?

2. Is the risk of AINV with multi-agent, single day antineoplastic therapy different than that of the most emetogenic antineoplastic given?

3. Is the risk of AINV with multiple day antineoplastic therapy regimens different than that of the most emetogenic antineoplastic therapy given on any individual day?

SUMMARY OF RECOMMENDATIONS

Recommendation: The single antineoplastic agents provided in Table 1 have high, moderate, low or minimal emetogenic potential in children.

Recommendation: With the exceptions noted in Table 2 below, the emetogenicity of multiple agent antineoplastic therapy given to children is classified based on the emetogenic potential of the most highly emetogenic agent in the combination to be given.

Recommendation: The emetogenicity of multiple day antineoplastic therapy is classified in children based on the emetogenic potential of the most highly emetogenic agent on each day of therapy.

Table 1: Classification of the Acute Emetogenic Potential of Antineoplastic Medication in Pediatric Cancer Patients Given as Single Agents

High Level of Emetic Risk (> 90% frequency of emesis in absence of prophylaxis)	
Altretamine	*Dactinomycin
*Carboplatin	Mechlorethamine
Carmustine > 250 mg/m^2	*Methotrexate ≥ 12 g/m^2
*Cisplatin	Procarbazine (oral)
*Cyclophosphamide ≥1 g/m^2	Streptozocin
*Cytarabine 3 g/m^2/dose	*Thiotepa ≥ 300 mg/m^2
Dacarbazine	
Moderate Level of Emetic Risk (30-90% frequency of emesis in absence of prophylaxis)	
Aldesleukin > 12 to 15 million units/m^2	Etoposide (oral)
Amifostine > 300 mg/m^2	Idarubicin
Arsenic trioxide	Ifosfamide
Azacitidine	Imatinib (oral)
Bendamustine	*Intrathecal therapy (methotrexate, hydrocortisone & cytarabine)
Busulfan	Irinotecan
*Carmustine ≤ 250 mg/m^2	Lomustine
*Clofarabine	Melphalan > 50 mg/m^2
*Cyclophosphamide < 1 g/m^2	Methotrexate ≥ 250 mg to < 12 g/m^2
Cyclophosphamide (oral)	Oxaliplatin > 75 mg/m^2
Cytarabine > 200 mg to < 3 g/m^2	Temozolomide (oral)
*Daunorubicin	Vinorelbine (oral)
*Doxorubicin	
Epirubicin	
Low Level of Emetic Risk (10-<30% frequency of emesis in absence of prophylaxis)	
Amifostine ≤ 300 mg/m^2	Ixabepilone
Amsacrine	Methotrexate > 50 mg/m^2 to < 250 mg/m^2
Bexarotene	Mitomycin
*Busulfan (oral)	Mitoxantrone
Capecitabine	Nilotinib
Cytarabine ≤ 200 mg/m^2	Paclitaxel
Docetaxel	Paclitaxel-albumin
Doxorubicin (liposomal)	Pemetrexed
Etoposide	Teniposide
Fludarabine (oral)	Thiotepa < 300 mg/m^2
5-Fluorouracil	Topotecan
Gemcitabine	Vorinostat

* Pediatric evidence available
Note: All agents given intravenously (IV) unless stated otherwise.

Table 1: Classification of the Acute Emetogenic Potential of Antineoplastic Medication in Pediatric Cancer Patients Given as Single Agents (continued)

Minimal (<10% frequency of emesis in absence of prophylaxis)	
Alemtuzumab	Lenalidomide
Alpha interferon	Melphalan (oral low-dose)
Asparaginase (IM or IV)	Mercaptopurine (oral)
Bevacizumab	Methotrexate ≤ 50 mg/m^2
Bleomycin	Nelarabine
Bortezomib	Panitumumab
Cetuximab	Pentostatin
Chlorambucil (oral)	Rituximab
Cladribine (2-chlorodeoxyadenosine)	Sorafenib
Decitabine	Sunitinib
Denileukin diftitox	Temsirolimus
Dasatinib	Thalidomide
Dexrazoxane	Thioguanine (oral)
Erlotinib	Trastuzumab
Fludarabine	Valrubicin
Gefitinib	Vinblastine
Gemtuzumab ozogamicin	Vincristine
Hydroxyurea (oral)	Vindesine
Lapatinib	Vinorelbine

* Pediatric evidence available
Note: All agents given intravenously (IV) unless stated otherwise.

Table 2: Classification of the Acute Emetogenic Potential of Specific Antineoplastic Medication in Pediatric Cancer Patients Given in Combination

High Level of Emetic Risk (> 90% frequency of emesis in absence of prophylaxis)
Cyclophosphamide + anthracycline
*Cyclophosphamide + doxorubicin
*Cyclophosphamide + epirubicin
*Cyclophosphamide + etoposide
*Cytarabine 150-200 mg/m^2 + daunorubicin
*Cytarabine 300 mg/m^2 + etoposide
*Cytarabine 300 mg/m^2 + teniposide
*Doxorubicin + ifosfamide
Doxorubicin + methotrexate 5 g/m^2
*Etoposide + ifosfamide

* Pediatric evidence available
Note: All agents given intravenously (IV) unless stated otherwise.

IMPLEMENTATION CONSIDERATIONS

Users of this guideline are encouraged to incorporate the recommendations of the guideline into:

- antineoplastic treatment protocols and road maps
- institutional guidelines for selection of antiemetic agents for the prevention of acute antineoplastic-induced nausea and vomiting
- pre-printed or electronic (e.g. CPOE) order sets that include antineoplastic agents

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OVERVIEW OF MATERIAL

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