

EMETOGENIC POTENTIAL OF ANTINEOPLASTIC AGENTS

INTRAVENOUS/INJECTABLE AGENTS

HIGH RISK (>90% frequency)[†]

AC combination: any regimen containing anthracycline + cyclophosphamide
 Carboplatin AUC ≥4
 Carmustine (**BiCNU**) >250mg/m²
 Cisplatin
 Cyclophosphamide >1,500mg/m²

Dacarbazine
 Doxorubicin ≥60mg/m²
 Epirubicin (**Ellence**) >90mg/m²
 Ifosfamide (**Ifex**) ≥2g/m² per dose
 Mechlorethamine (**Mustargen**)
 Streptozocin (**Zanosar**)

MODERATE RISK (>30–90% frequency)[†]

Aldesleukin (**Proleukin**) >12–15 million IU/m²
 Amifostine (**Ethylol**) >300mg/m²
 Arsenic trioxide (**Trisenox**)
 Azacitidine (**Vidaza**)
 Bendamustine (**Treanda**)
 Busulfan (**Busulfex**)
 Carboplatin AUC <4*
 Carmustine (**BiCNU**) ≤250mg/m²*
 Clofarabine (**Clolar**)
 Cyclophosphamide ≤1,500mg/m²
 Cytarabine >200mg/m²
 Dactinomycin (**Cosmegen**)*
 Daunorubicin (**Cerubidine**)*

Dual-drug liposomal cytarabine + daunorubicin (**Vyxeos**)
 Dinutuximab (**Unituxin**)
 Doxorubicin <60mg/m²*
 Epirubicin (**Ellence**) ≤90mg/m²*
 Idarubicin (**Idamycin PFS**)
 Ifosfamide (**Ifex**) <2g/m² per dose*
 Interferon alfa (**Intron A**) ≥10 million IU/m²
 Irinotecan (**Camptosar**)*
 Melphalan (**Alkeran, Evomela**)
 Methotrexate ≥250 mg/m²*
 Oxaliplatin (**Eloxatin**)*
 Temozolomide (**Temodar**)
 Trabectedin (**Yondelis**)*

LOW RISK (10–30% frequency)[†]

Ado-trastuzumab emtansine (**Kadcyla**)
 Aldesleukin (**Proleukin**) ≤12 million IU/m²
 Amifostine (**Ethylol**) ≤300mg/m²
 Atezolizumab (**Tecentriq**)
 Belinostat (**Beleodaq**)
 Blinatumomab (**Blincyto**)
 Brentuximab vedotin (**Adcetris**)
 Cabazitaxel (**Jevtana**)
 Carfilzomib (**Kyprolis**)
 Cytarabine (low dose) 100–200mg/m²
 Docetaxel (**Taxotere**)
 Doxorubicin liposomal (**Doxil**)
 Eribulin (**Halaven**)
 Etoposide (**Etopophos**)
 Floxuridine
 Fluorouracil (**5-FU**)
 Gemcitabine (**Gemzar**)
 Interferon alfa (**Intron A**) >5–<10 million IU/m²

Irinotecan liposomal (**Onivyde**)
 Ixabepilone (**Ixempra**)
 Methotrexate >50mg/m²–<250mg/m²
 Mitomycin
 Mitoxantrone
 Necitumumab (**Portrazza**)
 Olaratumab (**Lartruvo**)
 Omacetaxine (**Synribo**)
 Paclitaxel (**Taxol**)
 Paclitaxel-albumin (**Abraxane**)
 Pemetrexed (**Alimta**)
 Pentostatin
 Pralatrexate (**Folotyn**)
 Romidepsin (**Istodax**)
 Talimogene laherparepvec (**Imlygic**)
 Thiotepa (**Tepadina**)
 Topotecan (**Hycamtin**)
 Ziv-aflibercept (**Zaltrap**)

MINIMAL RISK (<10% frequency)[†]

Alemtuzumab (**Campath**)
 Avelumab (**Bavencio**)
 Asparaginase (**Erwinaze**)
 Bevacizumab (**Avastin**)
 Bleomycin
 Bortezomib (**Velcade**)
 Cetuximab (**Erbitux**)
 Cladribine
 Cytarabine <100mg/m²
 Daratumumab (**Darzalex**)
 Decitabine (**Dacogen**)
 Denileukin diftiox (**Ontak**)
 Dexrazoxane (**Totect, Zinecard**)
 Durvalumab (**Imfinzi**)
 Elotuzumab (**Empliciti**)
 Fludarabine
 Interferon alfa (**Intron A**) ≤5 million IU/m²
 Ipilimumab (**Yervoy**)
 Methotrexate ≤50mg/m²
 Nelarabine (**Arranon**)

Nivolumab (**Opdivo**)
 Obinutuzumab (**Gazyva**)
 Ofatumumab (**Arzerra**)
 Panitumumab (**Vectibix**)
 Pegaspargase (**Oncaspar**)
 Peginterferon (**Sylatron**)
 Pembrolizumab (**Keytruda**)
 Pertuzumab (**Perjeta**)
 Ramucirumab (**Cyramza**)
 Rituximab (**Rituxan**)
 Rituximab + hyaluronidase (**Rituxan Hycela**)
 Siltuximab (**Sylvant**)
 Temsirolimus (**Torisel**)
 Trastuzumab (**Herceptin**)
 Valrubicin (**Valstar**)
 Vinblastine
 Vincristine
 Vincristine liposomal (**Marqibo**)
 Vinorelbine (**Navelbine**)

(continued)

EMETOGENIC POTENTIAL OF ANTINEOPLASTIC AGENTS

ORAL AGENTS

MODERATE TO HIGH RISK ($\geq 30\%$ frequency)[†]

Altretamine (Hexalen)	Midostaurin (Rydapt)
Busulfan (Myleran) $\geq 4\text{mg/day}$	Mitotane (Lysodren)
Ceritinib (Zykadia)	Niraparib (Zejula)
Crizotinib (Xalkori)	Olaparib (Lynparza)
Cyclophosphamide $\geq 100\text{mg/m}^2/\text{day}$	Panobinostat (Farydak)
Enasidenib (Idhifa)	Procarbazine (Matulane)
Estramustine (Emcyt)	Rucaparib (Rubraca)
Etoposide	Temozolomide (Temodar) $>75\text{mg/m}^2/\text{day}$
Lenvatinib (Lenvima)	Trifluridine/tipiracil (Lonsurf)
Lomustine single day (Gleostine)	

MINIMAL TO LOW RISK ($<30\%$ frequency)[†]

Abemaciclib (Verzenio)	Mercaptopurine (Purinethol)
Afatinib (Gilotrif)	Methotrexate
Alectinib (Alecensa)	Neratinib (Nerlynx)
Axitinib (Inlyta)	Nilotinib (Tasigna)
Bexarotene (Targretin)	Osimertinib (Tagrisso)
Brigatinib (Alunbrig)	Palbociclib (Ibrance)
Bosutinib (Bosulif)	Pazopanib (Votrient)
Busulfan (Myleran) $<4\text{mg/day}$	Pomalidomide (Pomalyst)
Cabozantinib (Cabometyx , Cometriq)	Ponatinib (Iclusig)
Capecitabine (Xeloda)	Regorafenib (Stivarga)
Chlorambucil (Leukeran)	Ribociclib (Kisqali)
Cobimetinib (Cotellic)	Ruxolitinib (Jakafi)
Cyclophosphamide $<100\text{mg/m}^2/\text{day}$	Sonidegib (Odomzo)
Dasatinib (Sprycel)	Sorafenib (Nexavar)
Dabrafenib (Tafinlar)	Sunitinib (Sutent)
Erlotinib (Tarceva)	Temozolomide (Temodar) $\leq 75\text{mg/m}^2/\text{day}$
Everolimus (Afinitor)	Thalidomide (Thalomid)
Gefitinib (Iressa)	Thioguanine
Hydroxyurea (Hydrea)	Topotecan (Hycamtin)
Ibrutinib (Imbruvica)	Trametinib (Mekinist)
Idelalisib (Zydelig)	Tretinoin
Imatinib (Gleevec)	Vandetanib (Caprelsa)
Ixazomib (Ninlaro)	Vemurafenib (Zelboraf)
Lapatinib (Tykerb)	Venetoclax (Venclexta)
Lenalidomide (Revlimid)	Vismodegib (Erivedge)
Melphalan (Alkeran)	Vorinostat (Zolinza)

NOTES

[†] Frequency of emesis in the absence of effective antiemetic prophylaxis.

* May be highly emetogenic in certain patients.

REFERENCES

National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Antiemesis. Version 1.2018 – March 14, 2018. https://www.nccn.org/professionals/physician_gls/pdf/antiemesis.pdf. Accessed March 27, 2018. (Rev. 4/2018)