

TABLE 103e-4 CYTOTOXIC CHEMOTHERAPY AGENTS

Drug	Toxicity	Interactions, Issues
Direct DNA-Interacting Agents		
Alkylator		
Cyclophosphamide	Marrow (relative platelet sparing) Cystitis Common alkylator ^a Cardiac (high dose)	Liver metabolism required to activate to phosphoramidate mustard + acrolein Mesna protects against "high-dose" bladder damage
Mechlorethamine	Marrow Vesicant Nausea	Topical use in cutaneous lymphoma
Chlorambucil	Marrow Common alkylator ^a	
Melphalan	Marrow (delayed nadir) GI (high dose)	Decreased renal function delays clearance
Carmustine (BCNU)	Marrow (delayed nadir) GI, liver (high dose) Renal	
Lomustine (CCNU)	Marrow (delayed nadir)	
Ifosfamide	Myelosuppressive Bladder Neurologic Metabolic acidosis	Analogue of cyclophosphamide Must use mesna Greater activity vs testicular neoplasms and sarcomas
Procarbazine	Marrow Nausea Neurologic Common alkylator ^a	Liver and tissue metabolism required Disulfiram-like effect with ethanol Acts as MAOI HBP after tyrosinase-rich foods
Dacarbazine (DTIC)	Marrow Nausea Flulike	Metabolic activation
Temozolomide	Nausea/vomiting Headache/fatigue Constipation	Infrequent myelosuppression
Altretamine (formerly hexamethyl-melamine)	Nausea Neurologic (mood swing) Neuropathy Marrow (less)	Liver activation Barbiturates enhance/cimetidine diminishes
Cisplatin	Nausea Neuropathy Auditory Marrow platelets > WBCs Renal Mg ²⁺ , Ca ²⁺	Maintain high urine flow; osmotic diuresis, monitor intake/output K ⁺ , Mg ²⁺ Emetogenic—prophylaxis needed Full dose if CrCl >60 mL/min and tolerate fluid push
Carboplatin	Marrow platelets > WBCs Nausea Renal (high dose)	Reduce dose according to CrCl: to AUC of 5–7 mg/mL per min [AUC = dose/(CrCl + 25)]
Oxaliplatin	Nausea Anemia	Acute reversible neurotoxicity; chronic sensory neurotoxicity cumulative with dose; reversible laryngopharyngeal spasm
Antitumor Antibiotics and Topoisomerase Poisons		
Bleomycin	Pulmonary Skin effects Raynaud's Hypersensitivity	Inactivate by bleomycin hydrolase (decreased in lung/skin) O ₂ enhances pulmonary toxicity Cisplatin-induced decrease in CrCl may increase skin/lung toxicity Reduce dose if CrCl <60 mL/min
Dactinomycin	Marrow Nausea Mucositis Vesicant Alopecia	Radiation recall

(Continued)