

# B

## APPENDIX

### AGENTS IMPLICATED IN DRUG-INDUCED THROMBOEMBOLIC DISEASES

Drug	Incidence	Level of Evidence <sup>a</sup>
<b>Hemostatic Agents</b>		
Aminocaproic acid	NK	C
Aprotinin	1%	B
Cyanoacrylate	NK	C
Desmopressin	NK	C
Eptifibatide	NK	C
Protamine sulfate	NK	B
Activated prothrombin complex concentrate	NK	B
3-factor prothrombin complex concentrate	0.7%	B
4-factor prothrombin complex concentrate	1.8%	B
Recombinant factor VIIa	7–9.4%	A
Tranexamic acid	NK	C
<b>Anticoagulants</b>		
Heparin	1–5% develop HIT, 25–50% of those develop HITT	B <sup>a</sup>
Low-molecular-weight heparin	2.2%	B <sup>a</sup>
Pentosan	NK	B
Streptokinase	NK	C
Urokinase	NK	C
Warfarin (coumarin derivatives)	NK	B

(continued)

Drug	Incidence	Level of Evidence <sup>a</sup>
<b>Hematopoietic Agents</b>		
Darbepoetin	3.3–8%	A
Erythropoietin	3.3–26.7%	A
G-CSF	NK	B
GM-CSF	NK	B
<b>Estrogen-Containing Agents</b>		
Diethylstilbestrol	6.8–7%	A
Oral contraceptives	6 times the risk of nonusers; 1–2/10,000 woman-year	A
Hormone replacement	0.2–5.9/100 woman-year	A
<b>Antiandrogens</b>		
Cyproterone	5.23 increased odds	B
Flutamide	5%	B <sup>a</sup>
Goserelin	1–5%	B
Leuprolide	16.7%	A
<b>Selective Estrogen-Receptor Modulators</b>		
Raloxifene	9.5/100 woman-year	A
Tamoxifene	3.6–12/100 woman-year	A
Toremifene	1.5%	B
<b>Aromatase Inhibitors</b>		
Anastrozole	1–2.2%	A
Letrozole	NK	C
<b>Androgenic Agents</b>		
Danazol	NK	C
Nandrolone	NK	C
Megestrol	4.9%	B <sup>a</sup>
<b>Follicle-Stimulating Hormone</b>		
Follitropin alfa	NK	C
<b>Antineoplastic Agents</b>		
Aldisleukin	<1%	B
Asparaginase	11–36.7%	A
Basiliximab	3–10%	B

(continued)

<b>Drug</b>	<b>Incidence</b>	<b>Level of Evidence<sup>a</sup></b>
Bevacizumab	4.4–5%	A
Bleomycin	NK	B
Carboplatin	NK	B
Cisplatin	0.67%	B
Dacarbazine	NK	C
Denileukin <sup>1</sup>	11%	B <sup>a</sup>
Docetaxel	8.8%	A
Estramustine	0 ≥20%	A
Etoposide	NK	A
Fluorouracil	NK	B
Gemcitabine		
Imatinib	NK	B
Irinotecan	12.5%	B
Lenalidomide	8%	A
Paclitaxel	NK	B
Ponatinib	NK	A
Ranibizumab	NK	B
Rituximab	NK	B
Sorafenib	NK	B
Thalidomide	3.4–26%	A
<b>Immunologic Agents</b>		
Cyclosporine	NK	B
Dexamethasone	NK	A
Foscarnet	NK	C
Infliximab	NK	B
Immunoglobins	3–3.8%	A
Interferon gamma	NK	B
Interferon alfa-2a	NK	B
Interferon alfa-2b	NK	C
Interferon beta	NK	C

(continued)

<b>Drug</b>	<b>Incidence</b>	<b>Level of Evidence<sup>a</sup></b>
Interleukin-3	NK	C
Methylprednisolone	NK	B
Muromonab	<1%	B <sup>a</sup>
Prednisone	NK	A
Sirolimus	NK	B
Tacrolimus	NK	B
<b>Antipsychotic Agents</b>		
Chlorpromazine	NK	B
Clozapine	1.35%	B
Olanzapine	1.17%	B
Quetiapine	1.35%	B
Risperidone	1.25%	B
Thioridazine	NK	B
<b>Other Psychotropic Agents</b>		
Clomipramine	NK	C
Escitalopram	NK	C
Lithium	NK	C
<b>Contrast Agents</b>		
Iohexol	22.2%	B
Iomeprol	0.8–4.2%	B <sup>a</sup>
Iopamidol	9–22.2%	B <sup>a</sup>
Iothalamate	8–28.6%	B
Ioxaglate	2.7–4.8%	B <sup>a</sup>
<b>Miscellaneous</b>		
Acetohydroxamic acid	NK	B
Botulinin toxin	NK	C
Bromocriptine	NK	C
Calcium gluconate	NK	C
Cocaine	NK	C
Dihydroergotamine	NK	C

(continued)

Drug	Incidence	Level of Evidence <sup>a</sup>
Ecstasy (3,4-Methylenedioxy-methamphetamine; MDMA)	NK	C
Ergotamine	NK	C
Metolazone	NK	C
Papaverine	NK	B
Procainamide	NK	C
Sildenafil	NK	C
Topiramate	6.1%	A
Tretinoin	NK	B

<sup>a</sup>Definitions for Levels of Evidence: Level A—evidence from one or more randomized, controlled clinical trials; Level B—evidence from nonrandomized clinical trials, prospective observational studies, cohort studies, retrospective studies, case-control studies, meta-analyses, and/or postmarketing surveillance studies; and Level C—evidence from one or more published case reports or case series.

G-CSF: granulocyte colony-stimulating factor, GM-CSF: granulocyte/macrophage colony-stimulating factor, HIT: heparin-induced thrombocytopenia, HITT: heparin-induced thrombocytopenia and thrombosis, NK: not known

Source: Garwood CL. Thromboembolic diseases. In: Tisdale JE and Miller DA, eds. *Drug-Induced Diseases: Prevention, Detection, and Management*. 3rd ed. Bethesda, MD: American Society of Health-System Pharmacists; 2018:1064–1066.