

Hemorrhage

Risk

Oncology patients are at risk because of:

- Thrombocytopenia due to disease causing bone marrow infiltration and treatment causing bone marrow suppression
- Coagulopathy due to medications particularly l'asparaginase, liver disease and leukemia, particularly APL

Prevention

- Thrombocytopenia - transfuse to maintain a platelet count over $10 \times 10^9 /L$
- Coagulopathy - replace as necessary with fresh frozen plasma (10 ml/kg) and specific coagulation factors

Treatment of Hemorrhage

- Depends on the site and the cause
- Check platelet count and coagulation profile correct with:
 - ~ Platelet transfusion and replacement of fresh frozen plasma and specific coagulation proteins
 - ~ Red cell transfusion or normal saline or other volume expanders, as necessary

Specific site management

GI tract: peptic ulcer	~ treat conservatively with ranitidine and antacids, if possible ~ surgery may be necessary for severe bleeding	
Lower GI bleeding	~ if secondary to infection, treat with antibiotics ~ surgery only if bleeding uncontrolled	
CNS bleeding	~ may require surgery	
Nose bleeding	~ nasal pressure for 10-20 minutes ~ may need nasal pack and local cocaine	
Hemorrhagic cystitis (post cyclophosphamide or ifosfamide)	~ refer to Pediatric Oncologist ~ check coagulation profile and platelets ~ transfer to BCCH	
Menstrual bleeding	~ <u>Prevention</u> : Teenage girls often given continuous oral contraceptive eg ovral to prevent menorrhagia associated with treatment related thrombocytopenia ~ severe bleeding, consult gynaecologist; consider IV Premarin	
Disseminated Intravascular Coagulation	~ this is due to uncontrolled activation of intravascular coagulation and fibrinolysis ~ this may occur in severe illness, e.g. sepsis or leukemia, particularly acute promyelocytic leukemia.	
	Signs & Symptoms	~ bruising, bleeding and shock
	Investigations	~ CBC, platelet count, PT, PTT, fibrin split products or D-Dimers, Fibrinogen
	Treatment	1. Treat the underlying disease as a priority 2. Replace platelets, fresh frozen plasma and cryoprecipitate 3. Red cell transfusion 4. Low dose heparin infusion may be needed for acute promyelocytic leukemia (APL)