Approach to Thrombocytopenia

1. Questions to Ask at the Outset
   a. Isolated thrombocytopenia or other cell lines affected?
      i. Some disorders only affect platelets, while others affect all cell lines
      ii. Work-up is often similar for thrombocytopenia vs. pancytopenia
   b. New finding or old finding (i.e., acute or chronic)?
   c. Clinical status of patient: differential in a ventilated ICU patient generally very different than a patient in primary care clinic

2. Differential Diagnosis: A Mechanistic View
   a. Decreased production
      i. Bone marrow disorders: acute leukemia, MDS, other rare disorders
      ii. Infection: sepsis, HCV, HIV
      iii. Drugs/toxins: alcohol, LONG list of medications
      iv. Vitamin deficiency: B12, folate
   b. Increased consumption
      i. Immune-mediated: ITP, HIT, SLE, anti-phospholipid syndrome, more medications
      ii. Bleeding
      iii. Infection: sepsis, HIV, CMV, EBV
      iv. Thrombotic microangiopathy: TTP, DIC, HELLP
   c. Sequestration
      i. Splenomegaly
   d. Exogenous effects
      i. Platelet clumping--lab phenomenon, repeat blood draw in citrate tube
      ii. Dilutional--following blood-product or fluid resuscitation

3. Work-up for Most Cases
   a. Review medication list and prior blood counts
   b. Basic labs, including CBC with differential and coags (including fibrinogen)
   c. Peripheral blood smear
   d. B12 and folate levels
   e. Viral studies: HCV, HIV; include CMV and/or EBV if clinically suspected
   f. Imaging of spleen (ultrasound is sufficient)
   g. When is a bone marrow exam considered?
      i. If cause uncertain after above tests performed
      ii. If bone marrow disorder suspected or cannot be ruled out
4. **Special Circumstance: HIT**
   
a. Use clinical prediction tool (i.e., 4 T's score) to determine probability

<table>
<thead>
<tr>
<th>The 4 T’s</th>
<th>2 Points</th>
<th>1 Point</th>
<th>0 Points</th>
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<tbody>
<tr>
<td>Thrombocytopenia</td>
<td>50% fall, or platelet nadir 20-100</td>
<td>30-50% fall, or platelet nadir 10-20</td>
<td>&lt;30% fall, or platelet nadir &lt;10</td>
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<td>Timing of fall/event</td>
<td>Onset between 5-10 days after heparin exposure, or &lt;1 day if prior heparin exposure within 100 days</td>
<td>Timing unclear, or onset &gt;10 days after heparin exposure</td>
<td>&lt;5 days after exposure (with no recent exposure)</td>
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<tr>
<td>Thrombosis or other sequelae</td>
<td>New thrombosis; skin necrosis; acute systemic reaction to heparin bolus</td>
<td>Progressive or recurrent thrombosis; erythematous skin lesions; thrombosis suspected but not yet proven</td>
<td>None</td>
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<tr>
<td>Other explanation for thrombocytopenia</td>
<td>No cause evident</td>
<td>Possible cause evident</td>
<td>Definite cause present</td>
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b. If high (6-8 points) or intermediate (4-5 points) probability:
   i. Stop all heparins
   ii. Start alternative anticoagulant (but consider risks/benefits)
   iii. Send HIT ELISA to confirm
   iv. Use serotonin release assay (SRA) to resolve controversy
      1. Intermediate probability with positive ELISA
      2. High probability with negative ELISA
c. If low probability (0-3 points), no action needed
   i. HIT ELISA with ~30% false positive rate
   ii. Positive results for these patients are probably false positives

**Suggested Additional Reading**

3. Many topics on *UpToDate*. 