

Diagnosis and Management of Infections in Hospitalized Immunocompromised Patients



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KEYWORDS

- Hematopoietic stem cell transplantation • Solid-organ transplantation
- Opportunistic infection • Pneumonia • Central nervous system infection
- Intra-abdominal infection

HOSPITAL MEDICINE CLINICS CHECKLIST

1. Immunocompromising conditions cause variable defects in the host immune system and often lead to increased susceptibility to infection.
2. Hematopoietic stem cell transplantation (HSCT) and solid-organ transplantation (SOT) are common immunocompromising conditions encountered in the hospital setting.
3. Time elapsed since HSCT or SOT is important in helping to develop a differential diagnosis in patients with suspected infection, because risks of particular infections have higher likelihoods at different times after transplant.
4. Transplant recipients may not show typical symptoms of infection because of immunosuppression.
5. Evaluation of suspected infection should include a thorough history of travel, potential sick contacts, animal exposures, and activities that might predispose to infection.
6. Central nervous system (CNS) infection should be evaluated with neuroimaging and lumbar puncture, with close attention for extra-CNS signs and symptoms of infection, which may tailor evaluation and expedite diagnosis.

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7. Respiratory infections without a definitive diagnosis on noninvasive testing or with lack of response to empirical therapy often require bronchoscopy and bronchoalveolar lavage for diagnosis.
8. Endoscopy is often helpful in differentiating infection from noninfectious causes of diarrheal illness.
9. Infectious disease consultation should be obtained early in cases of moderate or severe infection or if a definitive diagnosis is unknown.

DEFINITIONS*What is the definition of an immune-compromising condition?*

Immune-compromising conditions attenuate the host immune system to various degrees, potentially leading to an increased susceptibility to infection and other diseases. Immune-compromising conditions may be genetic or acquired, or they may be iatrogenic as a result of medical therapies used to intentionally suppress the immune system. **Box 1** lists some common immune-compromising conditions in adults.

This article is an organ-system based review of the diagnosis and management of some of the more commonly encountered and clinically relevant infections in hematopoietic stem cell transplantation (HSCT) and solid-organ transplantation (SOT) recipients, populations that are at high risk for both community-acquired and opportunistic infections.

Box 1**Immune-compromising conditions in adults^a**

	Incidence in the United States (If Applicable)
Primary immunodeficiency ^a	
Common variable immunodeficiency	1/25,000
Chronic granulomatous disease	1/200,000
Complement deficiency	Variable; depending on component
Acquired immunodeficiency	
Human immunodeficiency virus (HIV)	~50,000 new diagnoses/y (>1.1 million infected)
Splenectomy	
Iatrogenic immunodeficiency	
Immunobiological therapy ^b	
Chemotherapy	
Glucocorticoid therapy	
Transplantation	
Solid-organ transplantation	>28,000 transplants performed yearly
Hematopoietic stem cell transplantation	>17,000 transplants performed yearly

^a List is not exhaustive.

^b Tumor necrosis factor α inhibitors, interleukin 1 inhibitors, interleukin-6 inhibitor, T-cell costimulation blocker, B-cell depletion.

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