

Timetable for Pulmonary Pathogen Risk in the Immunocompromised Patient

Immunodeficiency	Timing	Predominant Infectious Pathogens
Neutropenia Hematologic Malignancy Chemotherapy/Radiation		Bacteria – P. aeruginosa, E. coli, Klebsiella, S. aureus Fungi – Aspergillus, Cryptococcus, endemic mycoses Viral - HSV
Asplenia: Functional (hemoglobinopathy) or Surgical		Encapsulated bacteria – S. pneumoniae, N. meningitides, H. influenzae
Hematopoietic Stem Cell Transplant	Pre-engraftment (1 st month)	Bacteria – P. aeruginosa, E. coli, Klebsiella, S. aureus HSV, Candida, PCP
	Early post-engraftment (up to 3 months)	Bacterial, Aspergillus, CMV, HHV-6, Adenovirus, Legionella
	Late post-engraftment (over 3 months)	Encapsulated bacteria esp. S. pneumoniae, Nocardia, VZV, CMV, Aspergillus
Solid Organ Transplant	1 st month post-transplant	Nosocomial bacteria – Aerobic gram negatives, S. aureus, Legionella
	2 nd -6 th month post-transplant	Opportunists Viral – CMV, Influenza, RSV, VZV, adenovirus Nocardia, M. tuberculosis PCP, Aspergillus, Cryptococcus, endemic mycoses, Strongyloides
	>6 months post-transplant	Community-acquired bacterial & viral – influenza, parainfluenza, adenovirus, RSV M. tuberculosis, NTM, Rhodococcus equi PTLD Endemic mycoses Nocardia CMV, Aspergillus with treatment of rejection episodes
HIV/AIDS, CD4 > 200		S. pneumo, Legionella, Salmonella, M. tuberculosis
HIV/AIDS, CD4 < 200		PCP, Cryptococcus, endemic mycoses, CMV, Nocardia, M. tuberculosis
HTLV-1 Infection		Strongyloidiasis

TNF inhibitor treatment etanercept (Enbrel), Infliximab (Remicade), adalimumab (Humira)		Mycobacteria – tuberculosis & NTM, Aspergillus, endemic mycoses, PCP
Corticosteroid therapy		PCP, Aspergillus, endemic mycoses, Nocardia
Immunomodulators leflunomide (Arava), anakinra (Kineret)		Bacterial infections

Adapted from: Belleza WG, Browne B. Pulmonary considerations in the immunocompromised patient. *Emerg Med Clin N Am* 2003;21:499-531.

Abbreviations: PCP = *PneumoCystis jiroveci* Pneumonia, CMV = Cytomegalovirus, Endemic mycoses include *Coccidioides immitis*, *Histoplasma capsulatum*, *Blastomyces dermatitidis*, HHV-6 = Human Herpes Virus-6, RSV = respiratory syncytial virus, VZV = varicella zoster virus, NTM = nontuberculous mycobacteria, PTLD = post-transplantation lymphoproliferative disease