HIV & Corrections

Understanding HIV-Related Disease





About this module

This module was developed in 2020 by the North Carolina HIV Training & Education Center (NCHTEC), a partner in the Southeast AIDS Education & Training Center (SE AETC) network.

These resources are intended to complement training materials created for Enhancing Linkages to HIV Primary Care and Services in Jail Settings, a HRSA Special Projects of National Significance (SPNS) initiative that ran from 2007-2012. For more information about that initiative, visit: https://nextlevel.targethiv.org/deii/jails









Authors



Christopher B. Hurt, MD

Associate Professor of Medicine Director, North Carolina HIV Training & Education Center

Institute for Global Health & Infectious Diseases University of North Carolina at Chapel Hill School of Medicine



Divya Ahuja, MD

Associate Professor of Medicine Director, South Carolina HIV/HCV Clinical Training Center

Division of Infectious Diseases University of South Carolina School of Medicine





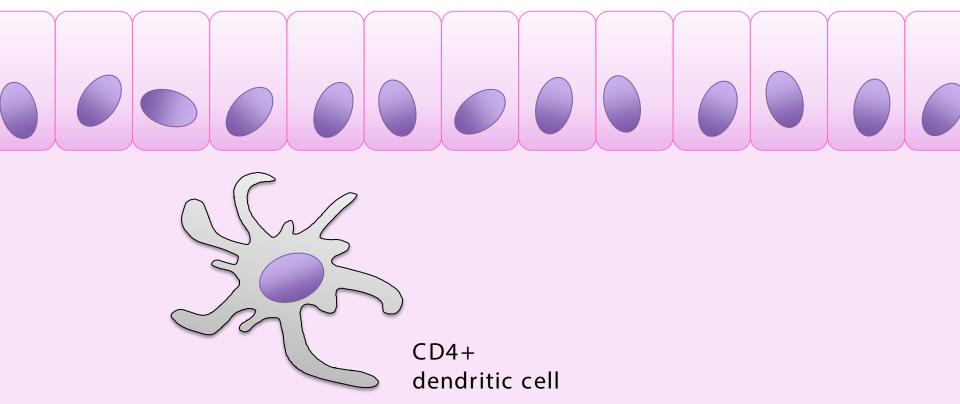
Learning objectives

- Explain how HIV establishes infection in the body, following a sexual exposure.
- Describe what happens to CD4+ T-cells and HIV RNA (viral load) after someone is infected with the virus.
- Outline three opportunistic infections that can affect people with HIV.
- Identify which opportunistic infections are the most common among people with HIV in the US.





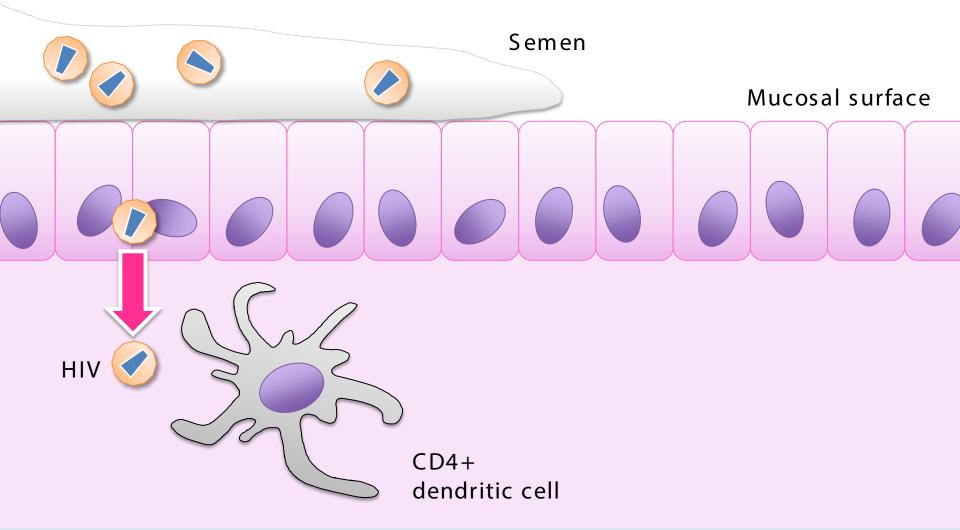
Mucosal surface





https://www.cdc.gov/hiv/basics/transmission.html

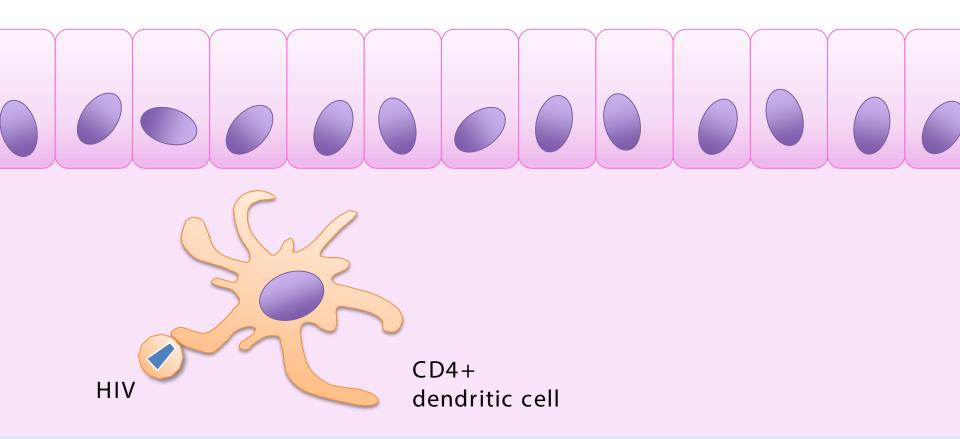






https://www.cdc.gov/hiv/basics/transmission.html

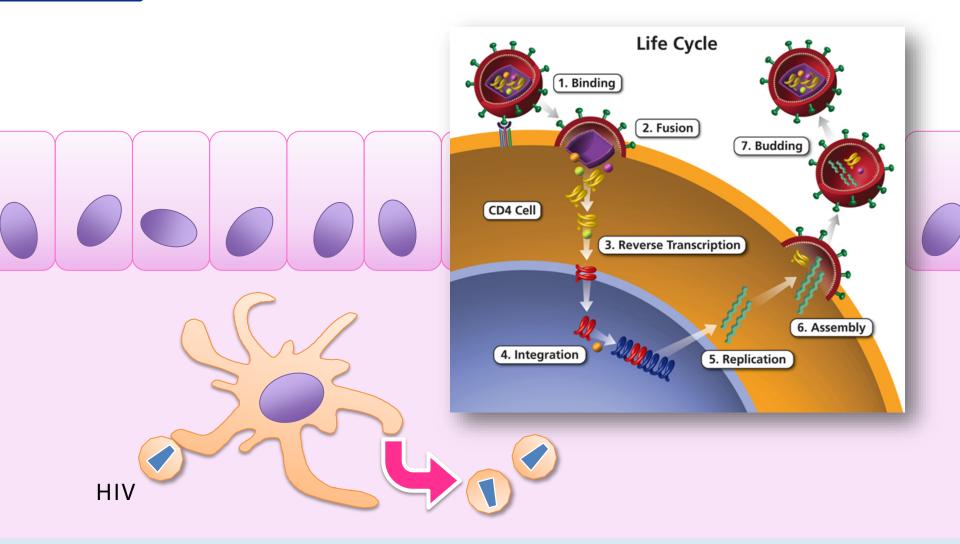






https://www.cdc.gov/hiv/basics/transmission.html





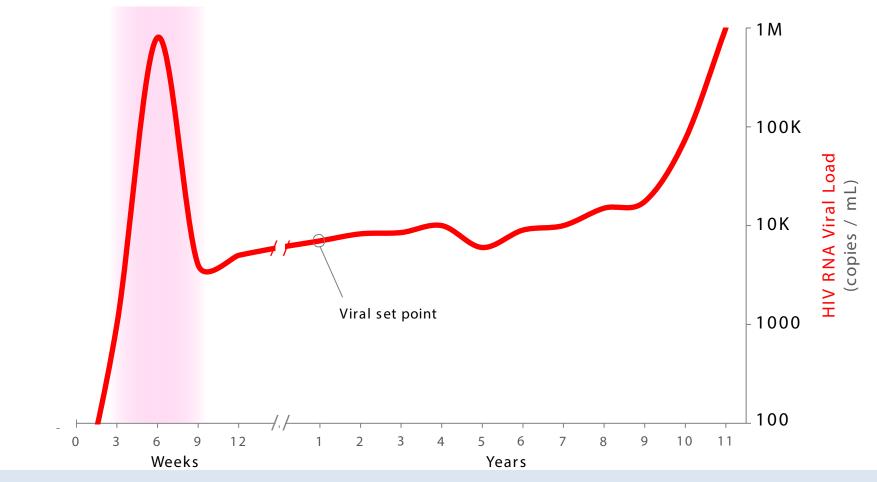


https://www.cdc.gov/hiv/basics/transmission.html https://aidsinfo.nih.gov/understanding-hiv-aids/glossary/1596/life-cycle



What happens after HIV disseminates?

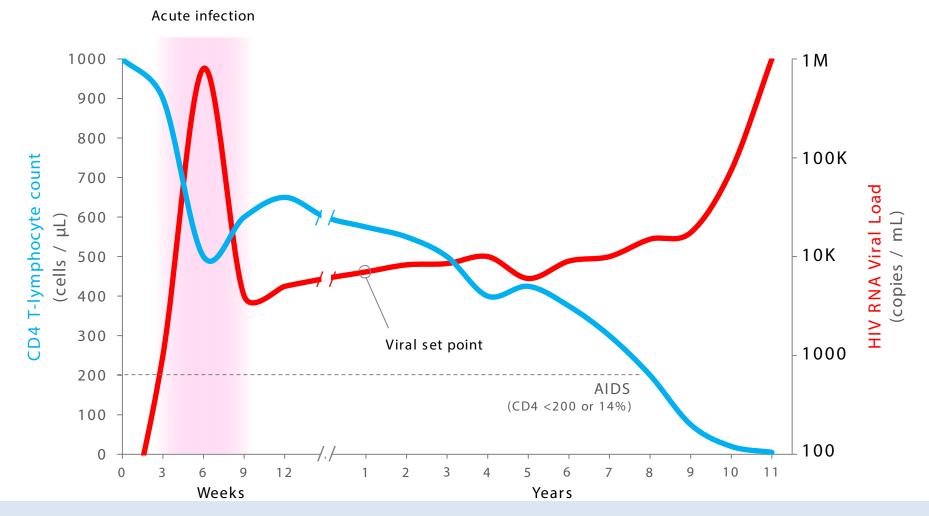
Acute infection





Adapted from: Fauci AS, et al. Ann Int Med 1996;124:654-63

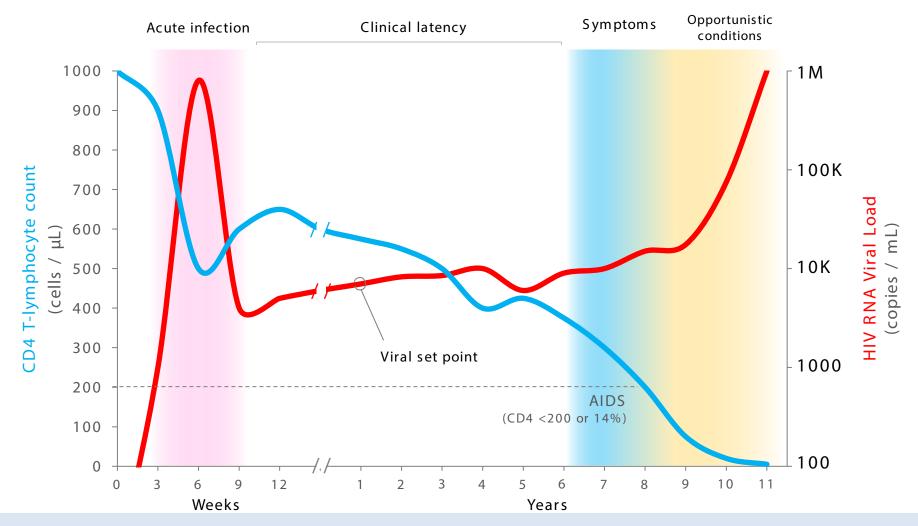
What happens after HIV disseminates?





Adapted from: Fauci AS, et al. Ann Int Med 1996;124:654-63

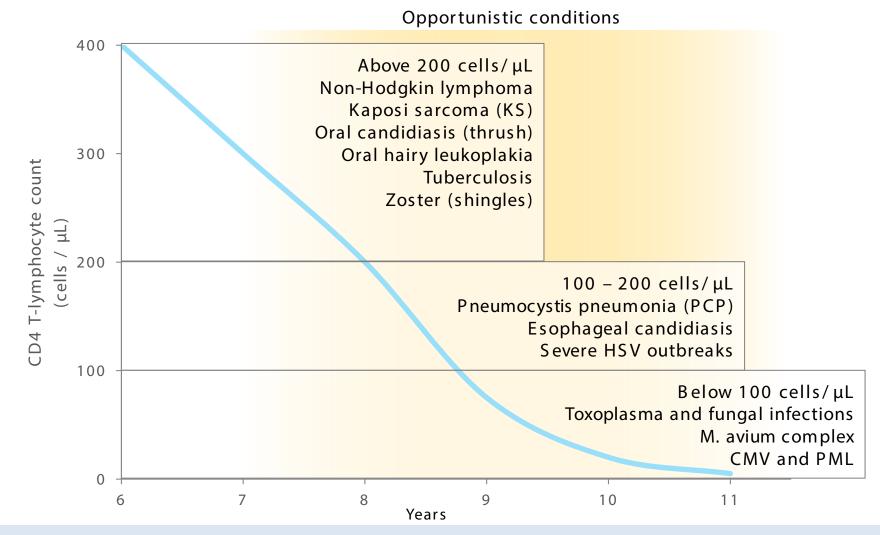
What happens after HIV disseminates?





Adapted from: Fauci AS, et al. Ann Int Med 1996;124:654-63

When do complications develop?





Adapted from: Horsburgh CR Jr. N Engl J Med. 1991 May 9;324(19):1332-8 Corey L, Coombs RW. Clin Infect Dis. 1993 Feb;16 Suppl 1:S2-6



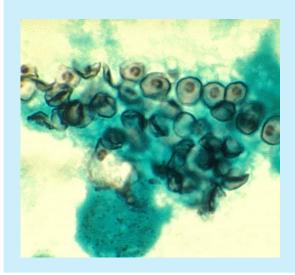
ourneas

What is *Pneumocystis* pneumonia (PCP)?

Caused by

Pneumocystis jirovecii

(a fungus acquired through our lungs, from other people)



Signs & Symptoms

Fevers

Progressively worsening shortness of breath (especially with exertion)

Dry cough

Chest discomfort

Poor oxygenation of the blood

Diagnosis

Chest x-ray

Microscopy of specimens (sputum or bronchoscopy)



Photomicrograph: https://phil.cdc.gov/Details.aspx?pid=554 Chest x-ray: Case courtesy of Dr Andrew Dixon, Radiopaedia.org, rID: 9613 https://aidsinfo.nih.gov/guidelines/html/4/adult-and-adolescent-opportunistic-infection/321/pneumocystis-pneumonia

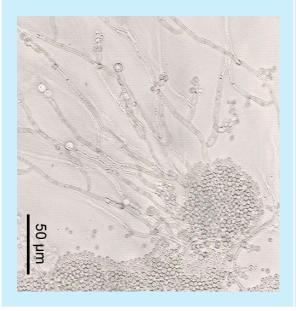


What is esophageal candidiasis?

Caused by

Candida albicans

(a fungus that normally lives in our GI tract)



Signs & Symptoms

Painless, white plaques in mouth or throat

Red patches without white plaques on palate or tongue

Pain with swallowing

"Burning" chest pain (especially behind sternum) Diagnosis History Physical exam Microscopy (if needed)





Photomicrograph: https://upload.wikimedia.org/wikipedia/commons/b/b6/Candida_albicans.jpg Clinical photograph: https://phil.cdc.gov/details.aspx?pid=6053 https://aidsinfo.nih.gov/guidelines/html/4/adult-and-adolescent-opportunistic-infection/331/candidiasis



What is MAC?

Caused by	Signs & Symptoms	Diagnosis
Mycobacterium avium	Fever	Physical exam
complex (bacteria acquired through	Night sweats	(Enlarged liver or spleen)
our lungs or GI tract, from the environment)	Weight loss	Abnormal blood tests
the environment)	Fatigue	(alkaline
A Little	Diarrhea	phosphatase)
ACTION OF	Abdominal nain	Cultures
A THAT	Abdominal pain	Imaging findings
61 11 50	Anemia	Microscopy of
		specimens



Photomicrograph of lymph node: https://wellcomecollection.org/works/hwq449nb https://aidsinfo.nih.gov/guidelines/html/4/adult-and-adolescent-opportunistic-infection/ 326/mycobacterium-avium-complex



What is tuberculosis (TB)?

Caused by	Signs & Symptoms	Diagnosis
Mycobacterium	Cough	Microscopy of
tuberculosis	Blood in sputum	specimens
(a bacteria acquired through our lungs, from	Shortness of breath	Lab tests
people with "active"		Imaging findings
pulmonary TB disease)	Fevers	
to all the second	Weight loss	
1	Night sweats	
	Anemia	
1 - 1		A States
		4-



Photomicrograph: https://phil.cdc.gov/details.aspx?pid=5789 PET scan image: Case courtesy of Dr Dalia Ibrahim, Radiopaedia.org, rID: 30824 https://aidsinfo.nih.gov/guidelines/html/4/adult-and-adolescent-opportunistic-infection/325/mycobacterium-tuberculosis



What is cryptococcal meningitis?

Signs & Symptoms	Diagnosis
Fever	Spinal tap
Constant headache (most often without neck stiffness) Loss of energy / feeling unwell Confusion or disorientation	Elevated intracranial pressure (ICP) Analysis of spinal fluid Cultures Lab tests
	Fever Constant headache (most often without neck stiffness) Loss of energy / feeling unwell Confusion or



Photomicrograph: https://phil.cdc.gov/Details.aspx?pid=3771 https://aidsinfo.nih.gov/guidelines/html/4/adult-and-adolescent-opportunistic-infection/333/cryptococcosis



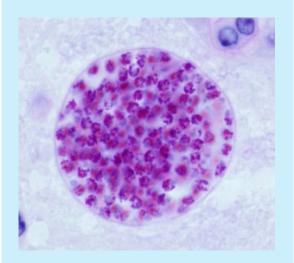
What is toxoplasmosis?

Caused by

Signs & Symptoms

Toxoplasma gondii

(a parasite acquired through our GI tract, from cat feces or certain undercooked meats)



Fever

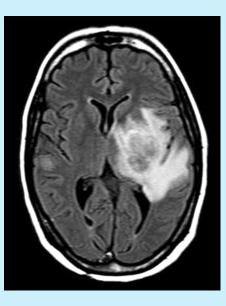
Headache

Confusion

Focal neurologic problems (strokes, seizures, weakness, numbness)

Spinal tap Imaging findings (brain abscess)

Diagnosis



Photomicrograph: https://commons.wikimedia.org/wiki/File:Toxoplasma_gondii_tissue_cyst_in_mouse_brain.jpg Head CT image: Case courtesy of Dr Augusto César Vieira Teixeira, Radiopaedia.org, rID: 23270 https://aidsinfo.nih.gov/guidelines/html/4/adult-and-adolescent-opportunistic-infection/322/toxoplasma-gondii

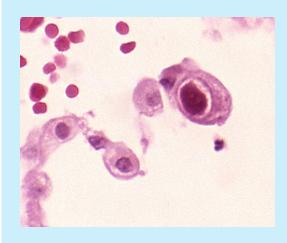


What is CMV retinitis?

Caused by

Cytomegalovirus

(a virus acquired through saliva or body fluids from other people)



Signs & Symptoms

Initially in one eye... (or, less commonly, both)

New "floaters"

Areas of altered or lost vision

Peripheral vision defects

Blindness

Diagnosis

Dilated eye exam

Sampling of fluid from eye

Blood tests





Photomicrograph: https://en.wikipedia.org/wiki/File:Cytomegalovirus_01.jpg Clinical photo: National Eye Institute, National Institutes of Health Ref#: EDA07 (via Wikipedia) https://aidsinfo.nih.gov/guidelines/html/4/adult-and-adolescent-opportunistic-infection/337/cytomegalovirus



