Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) in the Long Term Care Setting

Part 1: The Basics

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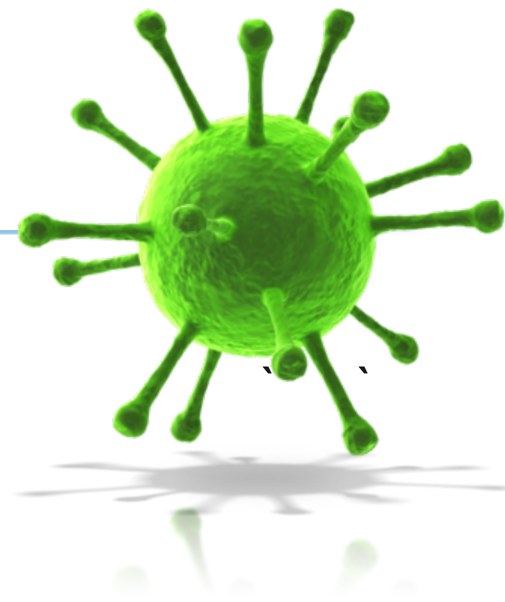
Overview - Part 1: The Basics



- HIV vs. AIDS
- CD4 counts (brief overview)
- Concepts important in HIV and Aging
- Long term care (LTC) specific concerns
  - Social considerations and creating an environment conducive to care
    - Resident rights and privacy
    - Stigma
  - Regulations and ethical considerations
  - Comorbid conditions
  - Occupational post-exposure protocols
  - Vaccinations

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HIV - Human Immunodeficiency Virus

- Infects human white blood cells (CD4 cells) and attacks the immune system
- Retrovirus: an encapsulated RNA virus
  - Enzyme allows it to insert itself into the DNA of human host cells
  - No cure and it cannot be removed from the body
  - Even when virus is undetectable in blood, it is replicating in sanctuary sites
    - lymphatic system, brain
- Now thought of as a chronic infection
- HIV infection eventually progresses to AIDS

*CD4 count: lab measuring number of CD4 white blood cells (CD4 cells) in a blood sample; baseline CD4 count of a healthy adult: 500 cells/mm^3 to 1,200 cells/mm^3

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AIDS - Acquired Immune Deficiency Syndrome

- Sometimes called advanced HIV infection
- Syndrome that occurs when the immune system fails and cannot fight off infections and disease
- Diagnoses may be based on the CD4 count (less than 200 cells/mm^3)*
- Can also be diagnosed based on the presence of one or more opportunistic infections
- People with AIDS require medical treatment to prevent death

*CD4 count: lab measuring number of CD4 white blood cells (CD4 cells) in a blood sample; baseline CD4 count of a healthy adult: 500 cells/mm^3 to 1,200 cells/mm^3

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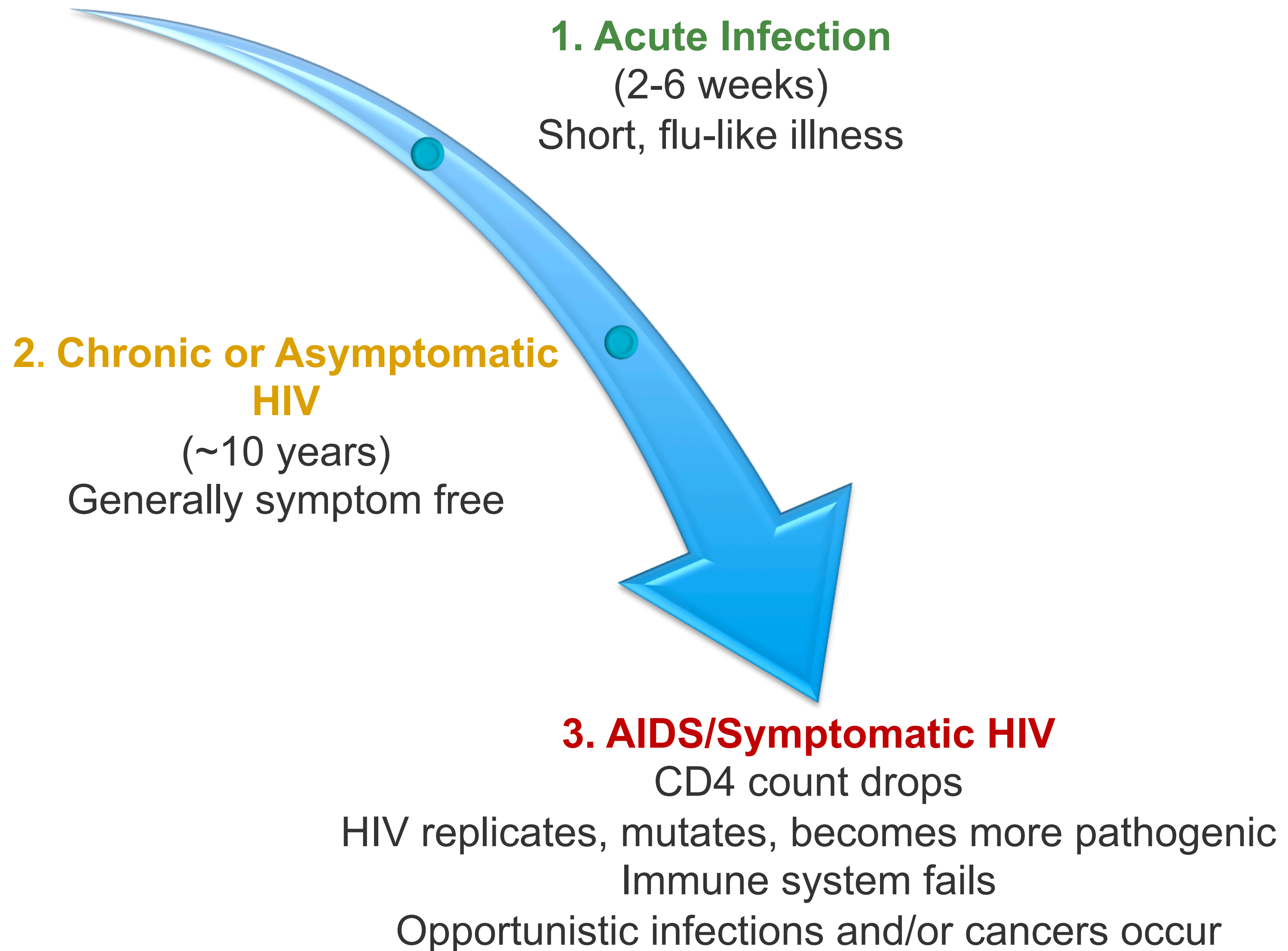
Stages of HIV



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CD4 T-lymphocytes

CD4 cell:

a white blood cell that expresses the CD4 receptor; also called a "T-cell", or "CD4 T-lymphocyte"

- **CD4 count**: lab measuring the number of CD4 cells in a blood sample
  - Indicator of the health of the immune system
  - ↓ CD4 count = ↑ risk of infections
- **Healthy CD4 count** for adults = 500 cells/mm^3 to 1,200 cells/mm^3
- **CD4 count < 200 cells/mm^3** is one of the qualifications for a diagnosis of stage 3 infection (AIDS)

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The HIV Life Cycle

HIV medicines in six drug classes stop HIV at different stages in the HIV life cycle.

1 Binding (also called Attachment): HIV binds (attaches itself) to receptors on the surface of a CD4 cell.

- CCR5 Antagonist

2 Fusion: The HIV envelope and the CD4 cell membrane fuse (join together), which allows HIV to enter the CD4 cell.

- Fusion inhibitors

3 Reverse Transcription: Inside the CD4 cell, HIV releases and uses reverse transcriptase (an HIV enzyme) to convert its genetic material—HIV RNA—into HIV DNA. The conversion of HIV RNA to HIV DNA allows HIV to enter the CD4 cell nucleus and combine with the cell's genetic material—cell DNA.

- Non-nucleoside reverse transcriptase inhibitors (NNRTIs)
- Nucleoside reverse transcriptase inhibitors (NRTIs)

4 Integration: Inside the CD4 cell nucleus, HIV releases integrase (an HIV enzyme). HIV uses integrase to insert (integrate) its viral DNA into the DNA of the CD4 cell.

- Integrase inhibitors

5 Replication: Once integrated into the CD4 cell DNA, HIV begins to use the machinery of the CD4 cell to make long chains of HIV proteins. The protein chains are the building blocks for more HIV.

6 Assembly: New HIV proteins and HIV RNA move to he surface of the cell and assemble into immature (noninfectious) HIV.

7 Budding: Newly formed immature (noninfectious) HIV pushes itself out of the host CD4 cell. The new HIV releases protease (an HIV enzyme). Protease acts to break up the long protein chains that form the immature virus. The smaller HIV proteins combine to form mature (infectious) HIV.

- Protease inhibitors (PIs)

CD4 receptors

CD4 cell membrane

HIV RNA

Reverse transcriptase

HIV DNA

Membrane of CD4 cell nucleus

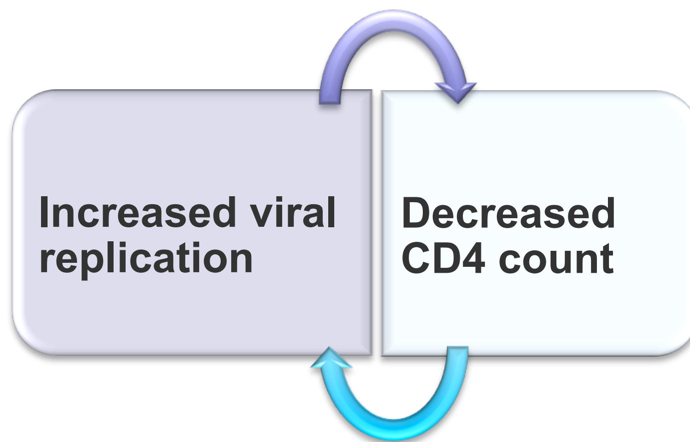
Integrase

HIV DNA

CD4 cell DNA

Protease

https://aidsinfo.nih.gov/education-materials/fact-sheets/19/73/the-hiv-life-cycle



Aging HIV Population

- In the United States, approximately 30% of people currently living with HIV/AIDS are age 50 years or older
- Trends suggest that the proportion of older persons living with HIV will increase steadily
- We will see more adults 60 to 80 years of age with HIV, this is a population that is very understudied with regard to:
  - Clinical trials
  - Pharmacokinetics studies
    - absorption, distribution, metabolism, excretion of drugs

DHHS Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents https://aidsinfo.nih.gov/guidelines

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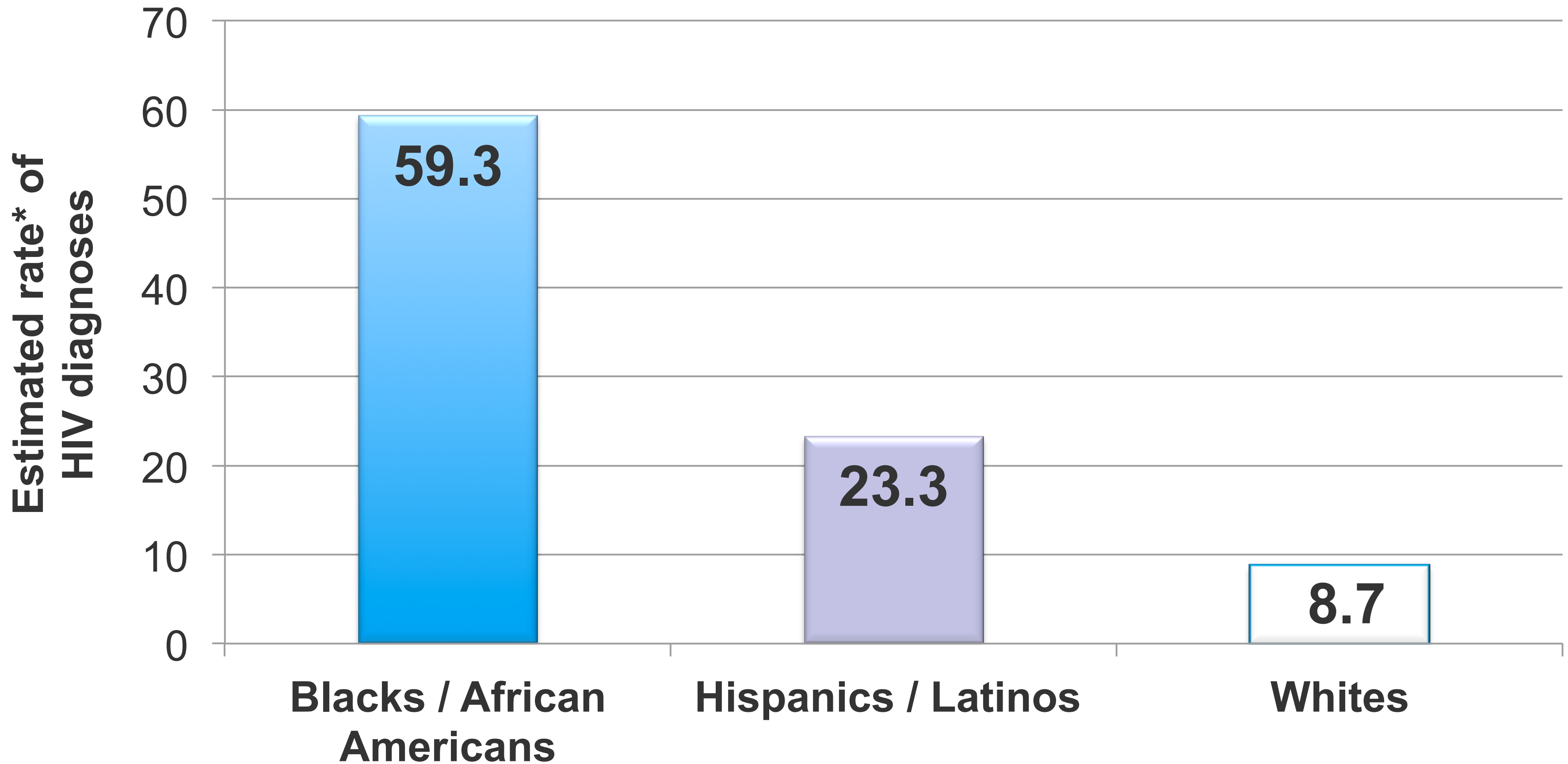
Aging HIV Population



*Per 100,000
Centers for Disease Control HIV Website http://www.cdc.gov/hiv

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Aging HIV Population

People are living longer with HIV infection:

- Chronic condition
- Increase in older people with HIV/AIDS and the need to care for them in LTC facilities

Goals for care in HIV positive elderly in LTC:

- Maintain highest level of functioning possible
- Provide individualized care in the least restrictive way possible, to increase quality of life
- Prevent opportunistic infections
- Limit toxicities and intolerabilities from HIV medications
- Avoid clinically significant drug-drug interactions
- Maintain a high CD4 count and low viral load to delay disease progression and improve overall outcomes

Aging HIV Population

Reduced mucosal and immunologic defenses

HIV disease may affect the biology of aging

May see signs of clinical syndromes associated with advanced age in younger persons

"Elderly" may mean a chronological age of 40, or 50-55, rather than 65

Older people and health care providers may mistake HIV symptoms for normal aging and don't consider HIV as a cause

HIV testing may not be performed

Diagnosed with HIV infection late in the course of the disease

Late start to treatment:

Potentially sustain more damage to the immune system prior to therapy initiation

Centers for Disease Control HIV Website http://www.cdc.gov/hiv

DHHS Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents https://aidsinfo.nih.gov/guidelines

Aging HIV Population

Doctors may be less likely to ask their older patients about these issues

Less likely to discuss sexual habits or drug use with doctors

Stigma of HIV Infection

- A concern for older Americans
- May already be isolated due to illness or loss of family and friends

- Stigma of HIV negatively affects:
  - Quality of life
  - Self-image
  - Behaviors
  - May prevent people from seeking HIV treatment and/or disclosing their HIV status

Centers for Disease Control HIV Website http://www.cdc.gov/hiv

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Aging HIV Population – Sexual Risk Factors

Many older Americans are sexually active, even in the LTC setting, including those who have HIV, and may:

- Lack knowledge about preventing transmission
- Have multiple partners
- Be less educated about HIV than younger people - less likely to protect themselves
- No longer worry about pregnancy, and may be less likely to use a condom
- Have age-related thinning and dryness of vaginal tissue that increases risk for HIV infection

Centers for Disease Control HIV Website http://www.cdc.gov/hiv

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Aging HIV Population – Sexual Risk Factors and Stigma

- In 2010, 44% of new HIV infections in people 55 and older were gay, bisexual, or other men who have sex with men (MSM).
- Among MSM 55 years or older:
  - 67% were White
  - 16% were Hispanic/Latino
  - 15% were Black/African American

Cultural competence and patient-centered care are essential to effective medical treatment

Centers for Disease Control HIV Website http://www.cdc.gov/hiv
*American Geriatrics Society Care of Lesbian, Gay, Bisexual, and Transgender Older Adults Position Statement. J Am Geriatr Soc. 2015; 1-4.

Aging HIV Population – Stigma of HIV

Fears about living in LTC

- Discrimination/lack of acceptance of sexual orientation by other residents or staff
- Having to be "in the closet"
  - only 22% feel they can be open about sexual orientation or gender identity in a nursing home or other LTC facility*
- Being thought of as unclean
- Being treated without privacy or dignity
- Shame about past behaviors or lifestyle
  - drug abuse, incarceration
- *Will the nursing staff know enough about HIV to care for them?*

Centers for Disease Control HIV Website http://www.cdc.gov/hiv
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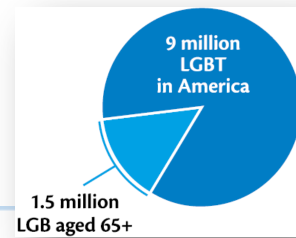
American Geriatrics Society:
Care of Lesbian, Gay, Bisexual, and Transgender (LGBT) Older Adults Position Statement



Healthcare organizations and professionals should ensure that care for older LGBT persons includes:

- Creation of a culture of respect and an environment free of discrimination for LGBT older persons in supportive living situations (e.g., assisted living facilities and nursing homes)
- **Training** for all types of healthcare workers, including physicians, nurses, and nursing assistants
  - http://glma.org/_data/n_0001/resources/live/GLMA%20guidelines%202006%20FINAL.pdf
  - http://www.trans-health.org/sites/www.trans-health.org/files/10_Tips_for_Providers.pdf
  - http://www.jointcommission.org/assets/1/18/LGBTFieldGuide.pdf

*American Geriatrics Society Care of Lesbian, Gay, Bisexual, and Transgender Older Adults Position Statement. J Am Geriatr Soc. 2015; 1-4.

Graphic: http://www.lgbtagingcenter.org/resources/pdfs/ResearchBrief_LGBT_Elders_508web.pdf

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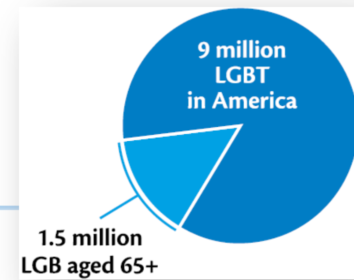

Healthcare organizations and professionals should ensure that care for older LGBT persons includes:

- Consideration of the role of partners or other chosen family in healthcare decision-making and caregiving
- Consideration of the resident's right to choose a healthcare proxy who may be a partner or friend
- Recognition of the preferred name and gender identity of transgender individuals, regardless of legal or biological gender status

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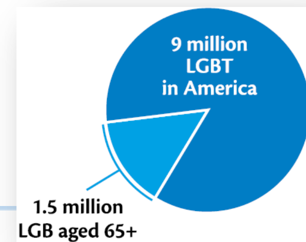

Healthcare organizations and professionals should ensure that care for older LGBT persons includes:

- Taking a medical and social history that is inclusive of the LGBT experience
  - Taking a sexual history and discussing sexuality in a nondiscriminatory manner
  - Should not assume heterosexuality when asking about sexual behavior or relationship status (clinician questions and written forms)

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American Geriatrics Society:

Care of Lesbian, Gay, Bisexual, and Transgender (LGBT) Older Adults Position Statement

Essential that healthcare organizations explicitly include the following in their organizational policies:

Sexual orientation should be included in the **patient nondiscrimination policy**

Gender identity and gender expression should be included in the **patient nondiscrimination policy**

Visitation policy should grant equal access for same-sex and transgender couples

Should allow equal access to support persons the patient designates who may not be legal family members

Visitation policy for children should grant equal access for same-sex and transgender parents

http://geriatricscareonline.org/ProductStore/clinical-guidelines-recommendations/

*American Geriatrics Society Care of Lesbian, Gay, Bisexual, and Transgender Older Adults Position Statement. J Am Geriatr Soc. 2015; 1-4.

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Long Term Care Specific Concerns: Privacy and Education

- HIV/AIDS patients have the right to privacy and dignity
- Staff has the right to be safe
- Facility should provide education and protocols for privacy and safety for resident *and* staff, including:
  - Counseling and behavioral interventions for residents to reduce secondary transmission
  - Competency assessments and ongoing education for staff (e.g., standard precautions)

https://www.aids.gov/hiv-aids-basics/prevention/reduce-your-risk/post-exposure-prophylaxis/

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Long Term Care Specific Concerns: Education and Safety

Occupational Safety
and Health Administration
www.osha.gov 1-800-321-6742

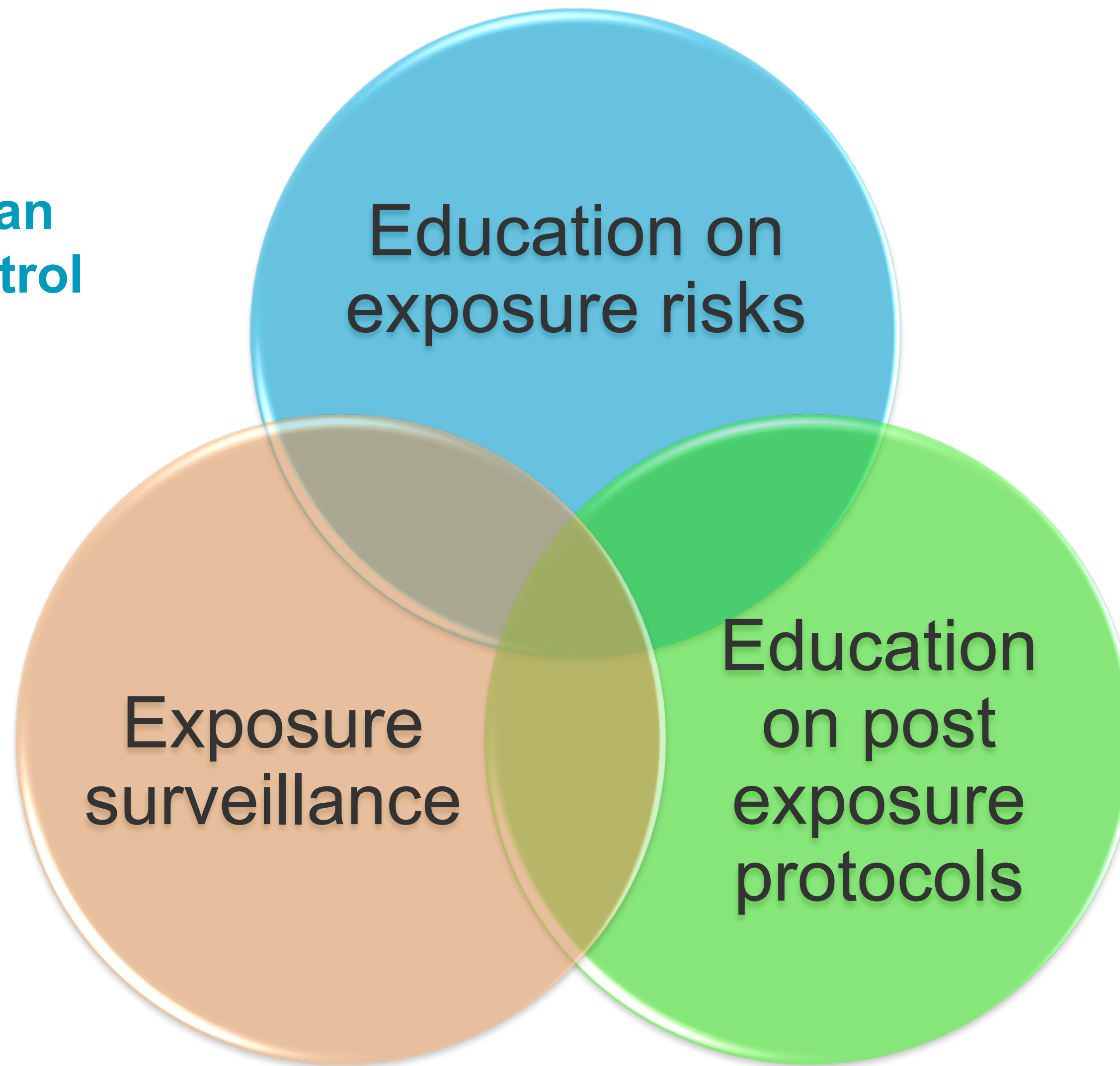
- OSHA's Bloodborne Pathogens standard (29 CFR 1910.1030) requires employers to make immediate confidential medical evaluation and follow-up available for workers who have an exposure incident, such as a needlestick.

- **Exposure incident** is a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials (OPIM), as defined in the standard that results from the performance of a worker's duties.

https://www.osha.gov/OshDoc/data_BloodborneFacts/bbfact04.pdf

Long Term Care Specific Concerns: Infection Control Programs

Every facility should have an infection control program that includes:



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Long Term Care Specific Concerns: Post-exposure Prophylaxis (PEP)

Includes staff awareness of **post-exposure prophylaxis (PEP) protocols**:

- Who to alert (e.g., medical director)
- Medical evaluation of the exposure to determine if PEP is required
- Initiate HIV prophylaxis as soon as possible, but within 1st 72 hours with appropriate anti-retroviral therapy
  - typically: 2-3 medications for 28 days
- Baseline HIV testing, repeat at 4-6 weeks, 3 months, and 6 months post-exposure

https://www.aids.gov/hiv-aids-basics/prevention/reduce-your-risk/post-exposure-prophylaxis/

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Post-Exposure Prophylaxis (PEP)

Evaluation for PEP is performed after:	
	Getting cut or stuck with a needle that was used to draw blood from a person who may have HIV infection
	Getting blood or other body fluids likely to transmit HIV in eyes or mouth (e.g., semen, vaginal or rectal secretions, breast milk)
	Getting blood or other body fluids on skin when it is chapped, scraped, or affected by certain rashes

https://www.aids.gov/hiv-aids-basics/prevention/reduce-your-risk/post-exposure-prophylaxis/

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Post-Exposure Prophylaxis (PEP)

The risk of getting HIV infection in these ways is low,

fewer than 1 in 100 for all exposures

PEP is **not** 100% effective

Use condoms with sex partners while taking PEP and do not use injection equipment that has been used by others

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LTC Specific Concerns: Regulatory and Ethical

State regulations specific to care of HIV/AIDS patients or special licensure (know your state regulations)

- Nursing time increased per resident
- Dedicated (specifically assigned), educated, and experienced staff for residents with HIV/AIDS – **continuity of care**
- Substance abuse counseling
- Education (e.g., HIV risk/harm reduction)
- Comprehensive case management, including delivery of services
- Integrated care with access to specialized services
- Access to support from other HIV positive persons and pastoral care

Hospice or Palliative Care

- Educate on the disease and making informed choices
- Medications: to discontinue or to maintain?
  - HIV medications
  - Antibiotics/treatment for opportunistic infections

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Common Comorbid Conditions in HIV positive LTC Residents

Older HIV-infected patients may suffer from aging-related comorbid illnesses that can complicate the management of HIV infection and vice versa

- Cardiovascular disease
- Elevated cholesterol
- Diabetes
- Osteoporosis and fractures
- Chronic pain syndromes (e.g., neuropathic pain)
- Weight loss, cachexia/muscle wasting
- Chronic non-infectious diarrhea (AIDS defining condition)

Common Comorbid Conditions in HIV positive LTC Residents

- Liver disease (e.g., hepatitis B, hepatitis C, cirrhosis, liver failure)
- Renal disease (e.g., chronic kidney disease, HIV associated nephropathy)
- Cancers: Non-AIDS-defining (e.g., lung, liver, and anal cancers)
- Cancers: AIDS-defining (e.g., Non Hodgkin's lymphoma)
- Depression, anxiety, insomnia
- Cognitive impairment (e.g., dementia, HIV associated dementia)

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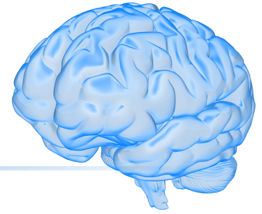
HIV Associated Neural Damage



HIV can persist in the CSF even with an undetectable HIV viral load

HIV-mediated neural damage can result in CNS disturbances:

- Anxiety
- Depression
- Insomnia
- Mania
- Psychosis

HIV-associated neurocognitive disorder (HAND) may develop

HAND has three subgroups of CNS disturbances

- Asymptomatic neurocognitive impairment
- Mild neurocognitive disorder
- HIV Associated Dementia (HAD; can resolve with HIV treatment)

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Vaccinations

CURRENTLY,

THERE IS NO VACCINE

TO PREVENT HIV.

However, other vaccinations are important in HIV management

https://www.aids.gov/hiv-aids-basics/prevention/prevention-research/vaccines/

Vaccinations

Generally, continue with the age-specific immunization schedules that are recommended for all patients in those with HIV

ART, chemoprophylaxis, and vaccination directly prevent morbidity and mortality, they may also contribute to reduced rate of progression of HIV disease

Live attenuated vaccines are typically contraindicated

https://www.aids.gov/hiv-aids-basics/prevention/prevention-research/vaccines/

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Vaccinations with Contraindications

Live Attenuated Influenza Vaccine (LAIV)

Contraindicated in all HIV-positive patients as well as those 65 years or older

Recommended alternatives:

- Standard-dose trivalent inactivated influenza vaccine (TIV)
- High-dose TIV (FLUZONE® High-Dose) intramuscularly (IM) or intradermally (ID) annually

Vaccinations

Recommended to be given to HIV positive individuals

Titers and boosters may be a consideration in some cases secondary to CD4 count at time of vaccination

- Tetanus and Diphtheria Vaccine
- Hepatitis A Vaccine
- Hepatitis B Vaccine
- Pneumococcal Vaccine

References

- Department of Health and Human Services Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents https://aidsinfo.nih.gov/guidelines
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