**HIV DISEASE**

Fact Sheet for Professionals

Definition

Human immunodeficiency virus (HIV) is a retrovirus that infects and destroys helper T cells (CD4 cells) of the immune system. If untreated, the HIV disease will progress to an advanced stage (acquired immunodeficiency syndrome or “AIDS”)1

HIV Epidemic in the United States

* 1981: First recognized cases of HIV 2
* Currently approximately 1.1 million people living with HIV 2
* 1 out of 5 do not know they are infected because they have not been tested 2
* Approximately 50,000 new infections every year 2
* Increased prevalence rate of new infections in African Americans, with African American females representing the greatest number of new cases 2-4
* Populations at risk also include: IV drug users; men who have sex with men (MSM) 2,4

Transmission and Prevention 5

* Infection transmitted through bodily fluids: semen, vaginal fluid, blood, blood derived fluid, breast milk
* Routes:
  + Sex
  + IV drug use
  + Intrauterine or during birthing process
  + Blood to blood contact
* NOT transmitted through saliva, sweat, or tears
* HIV does not survive long outside of the body and cannot reproduce once outside of the host2,5
* Standard Precautionsshould be taken with patients with HIV disease (as with all patients)

HIV Screening and Testing

* Rapid HIV Antibody Testing
  + Typically involves oral swab or small volume blood sample6
  + Results in approximately 20 minutes 6
  + If positive, needs to be confirmed with Western Blot or Enzyme Immunoassay Test (EIA) 6-9, 11
* Ora-Quick ® 6,10
  + First FDA approved at home test for HIV
  + Utilizes oral swab testing
  + Can be purchased over the counter
* The potential of screening negative for HIV is possible up to 6 months post exposure. It is recommended that testing be completed every 3-6 weeks for 6 months post exposure.

Tracking Disease and Progression

* CD4 Count**:** 12 CD4 count marks the degree of immunocompromise. It measures the number of CD4 cells per µL of blood. In a healthy individual the CD4 count should be between 500-1500cells/µL. A person living with HIV is diagnosed with AIDS if their CD4 count falls below 200cells/µL.
* C4:C8 Ratio:12 This test looks at the CD4/CD8 lymphocyte ratio and is a reflection of immune system health. A normal ratio is between 1 and 4. Less than 1 is indicative of a decline in CD4 cells.
* Viral Load (VL): 12-14 Viral load indicates the number of copies of HIV RNA/µL of plasma. This measurement is an indicator of the magnitude of viral replication. VL in a HIV+ individual who is successfully treated with anti-retroviral drugs should be “undetectable” (<20 copies/mL).

Opportunistic Infections and Co-Morbidities Associated with HIV Disease

* Co-morbidities can be related to the HIV infection itself and/or side effects of anti-retroviral drugs. Opportunistic infections may occur in individuals whose immune systems are compromised by a low CD4 count. 15-18

A partial list of co-morbidities and opportunistic infection includes:

* Integumentary
  + Oral Thrush, Kaposi’s Sarcoma, Oral Hairy Leukoplakia, Herpes Simplex 1 and 2, Molluscom Contagiosum
* Cardiopulmonary
  + Hypercholesteremia, Elevated triglycerides, Pericarditis, Coronary Artery Disease, Endocarditis, Dyslipidemia, Pulmonary HTN
* Gastrointestinal
  + Diarrhea, Dysphagia/Odynophagia, Hepatobiliary disorders, Anorectal Diseases, Abdominal pains
* Neurological
  + Neuropathies, AIDS Dementia Complex, Depression, CNS Lymphomas, Cognitive Motor Impairment
* Musculoskeletal
  + Avascular necrosis of bone, myositis, reactive or inflammatory arthritis, Reiter’s Syndrome, AIDS related muscular wasting, lipodystrophy

Medical Management18

* Goals of Highly Active Antiretroviral Therapy (HAART)
  + Suppress HIV viral load
  + Restore and/or preserve immunologic function
  + Reduce morbidity and mortality
  + Improve quality of life
  + Reduce HIV transmission
* Prescriptionfor an individual patient determined by virologic efficacy, toxicity, pill burden, drug interactions, resistance-testing results, and co-morbidities
* Success directly related to adherence
* Classes of anti-retroviral drugs
  + Entry/Fusion Inhibitors
  + Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI)
  + Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTI)
  + Integrase Inhibitors
  + Protease Inhibitors (PI)
* Indications for Starting HAART
  + AIDS defining illness (Opportunistic Infections, HIV wasting or dementia)
  + CD4 <350 copies/µL (or earlier)
* Recommended HAART Combinations
  + NNRTI + 2 NRTIs
  + Boosted PI + 2 NRTIs
  + Integrase inhibitor + 2 NRTIs
* Partial List of Possible Side Effects
  + Immune reconstitution syndrome
  + GI problems such as nausea
  + Rash
  + Metabolic problems such as lipodystrophy or insulin resistance
  + Peripheral Neuropathy
  + Lactic acidosis
  + Bone problems such as AVN
  + Liver or Kidney problems
  + Cardiac complications
  + Pancreatitis

Implications for the Physical Therapist in Working with Individuals Living with HIV Disease 15-20

* Systems Review:A comprehensive systems review should be completed for each patient. Patients may present with multi-system involvement.
* History: Questions should focus on common HIV related symptoms consistent with infection or drug side effects including, but not limited to: 15,16
  + Fever and night sweats
  + Weight loss
  + Respiratory symptoms
  + Diarrhea/Urinary symptoms
  + Visual changes
  + Skin rashes/lesions
  + Changes in neurological function/mental status
  + Pain
* Examination: Identify impairments in body function and structure, activity, limitations and participation restrictions related to chronic HIV disease, side effects of HAART, co-morbidities, or opportunistic infections.
* Interventionsdirected toward impairments and functional limitations may include:
  + Patient education
  + Manual therapy
  + Exercise
  + Pain management techniques
  + Neuromuscular re-education
  + Balance training
  + Adaptation/Return to work strategies
    - Wellness

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| **IMPLICATIONS FOR PHYSICAL THERAPY BY STAGE OF HIV DISEASE** 15,20 | |
| STAGE 1  ASYMPTOMATIC HIV DISEASE | * No limitations on maximum graded exercise testing * Metabolic parameters are within normal limits for most individuals * Exercise should consist of resistance, cardiovascular, flexibility, balance, and mind-body training |
| STAGE 2 SYMPTOMATIC HIV DISEASE | * Obtain medical clearance before beginning an exercise program * May see reduced exercise capacity, VO2 max, and O2 pulse max; may see elevated heart rate reserve and breathing reserve * Various symptoms or emerging co-morbidities may influence course of therapy * Exercise (aerobic, PREs) is indicated UNLESS contraindicated due to a particular comorbidity or complication |
| STAGE 3 ADVANCED  HIV DISEASE/AIDS | * Reduced exercise capacity, vital capacity, VO2 max, and O2 pulse max; elevated heart rate and breathing reserve * Increased risk for neurological, cardiopulmonary and musculoskeletal injury or immunologic comprise * Careful monitoring of patient due to co-morbidities and/or opportunistic infections * Exercise on a symptom limited basis with emphasis on function and ADLs * Focus of care is on enhancing quality of life, optimizing function, and pain control * Protect immunosuppressed patients from community pathogens (colds, flu, etc.) |

Role of the Clinician in Education 15, 20-22

* Optimizing Patient Adherence to Antiretroviral Therapy
  + Promote healthy choices conducive to adherence such as exercise, stress management, and smoking cessation
  + Promote adherence: “*I see you are taking your antiretroviral medication regularly; are you having any issues?”*
  + Provide positive feedback on evidence of adherence: *“I see your viral load is undetectable that is terrific! Keep up the good work!”*
* Continuum of Care
  + Multiple courses of rehabilitation may be indicated because of possible episodic disability associated with HIV disease
  + Community outreach programs can help with stress management and life skills
  + Educate patients on the benefits and importance of referrals to other health care providers:
    - Nutritionists
    - Psychologists
    - Addiction Counselors
    - Spiritual Counselors
    - Counseling/Support Groups
* Help Minimize Stigma
  + Discuss HIV disease openly (while maintaining patient privacy), as you would any disease process
  + Avoid Judgments

Resources

* HIV FACT SHEET for Patients and Consumers: What to Expect With Physical Therapy - [http://www.oncologypt.org/pdfs/fact- sheets/fact%20sheet\_HIV%20SIG\_HIV%20and%20PT%20What%20to%20Expect\_consumer%20v.pdf](http://www.oncologypt.org/pdfs/fact-%20sheets/fact%20sheet_HIV%20SIG_HIV%20and%20PT%20What%20to%20Expect_consumer%20v.pdf)
* APTA HIV Disease Special Interest Group - <http://www.oncologypt.org/special-interest-groups/hiv-aids-oncology-sig/index.cfm>
* HIV/AIDS Resources for Healthcare Professionals - <http://www.thebodypro.com/>
* Center for Disease Control and Prevention HIV/AIDS website - [http://www.cdc.gov/hiv/](http://www.cdc.gov/hiv/%20)
* HIV Prevention: <http://aidsinfo.nih.gov/education-materials/fact-sheets/20/48/the-basics-of-hiv-prevention>
* Global Outreach - [http://www.unaids.org/en/](http://www.unaids.org/en/%20)

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