**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”).

**HIV Epidemic in the United States**

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

**Transmission and Prevention**

- 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 host
- Standard Precautions should 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 sample
  - Results in approximately 20 minutes
  - If positive, needs to be confirmed with Western Blot or Enzyme Immunoassay Test (EIA)
- Ora-Quick®
  - 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**: 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.
- **CD4:CD8 Ratio**: 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)**: 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.

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 Management

- 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
- Prescription for 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

- 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.
- Interventions directed 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

### IMPLICATIONS FOR PHYSICAL THERAPY BY STAGE OF HIV DISEASE 15,20

<table>
<thead>
<tr>
<th>STAGE 1</th>
<th>ASYMPTOMATIC HIV DISEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No limitations on maximum graded exercise testing</td>
</tr>
<tr>
<td></td>
<td>Metabolic parameters are within normal limits for most individuals</td>
</tr>
<tr>
<td></td>
<td>Exercise should consist of resistance, cardiovascular, flexibility, balance, and mind-body training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAGE 2</th>
<th>SYMPTOMATIC HIV DISEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Obtain medical clearance before beginning an exercise program</td>
</tr>
<tr>
<td></td>
<td>May see reduced exercise capacity, VO2 max, and O2 pulse max; may see elevated heart rate reserve and breathing reserve</td>
</tr>
<tr>
<td></td>
<td>Various symptoms or emerging co-morbidities may influence course of therapy</td>
</tr>
<tr>
<td></td>
<td>Exercise (aerobic, PREs) is indicated UNLESS contraindicated due to a particular comorbidity or complication</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAGE 3</th>
<th>ADVANCED HIV DISEASE/AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reduced exercise capacity, vital capacity, VO2 max, and O2 pulse max; elevated heart rate and breathing rate</td>
</tr>
<tr>
<td></td>
<td>Increased risk for neurological, cardiopulmonary and musculoskeletal injury or immunologic comprise</td>
</tr>
<tr>
<td></td>
<td>Careful monitoring of patient due to co-morbidities and/or opportunistic infections</td>
</tr>
<tr>
<td></td>
<td>Exercise on a symptom limited basis with emphasis on function and ADLs</td>
</tr>
<tr>
<td></td>
<td>Focus of care is on enhancing quality of life, optimizing function, and pain control</td>
</tr>
<tr>
<td></td>
<td>Protect immunosuppressed patients from community pathogens (colds, flu, etc.)</td>
</tr>
</tbody>
</table>
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

- APTA Oncology HIV Disease Special Interest Group - http://www.oncologypt.org/special-interest-groups/hiv-aids-oncology-sig/index.cfm

References


Created by: J Watson, DM Kietrys and ML Galantino, 2014.

Disclaimer: This ‘HIV Disease Fact Sheet for Cancer Survivors’ is a public service from APTA Oncology. It is not intended to be a comprehensive overview of this subject.