Neither I nor my immediate family have any financial interests that would create a conflict of interest or restrict my independent judgment with regard to the contents of this course.

Course objectives are for participants to have an improved awareness and understanding of the following:

- Basic medical and epidemiologic information about HIV and the diseases and conditions it may cause
- Methods of transmission and presentation of HIV and current recognized methods of medical treatment
- Management of HIV in the healthcare workplace; OSHA Bloodborne Pathogens standards

Course Objectives, continued

- Legal issues surrounding HIV infection
- Appropriate attitudes and behaviors toward those persons infected with HIV
- Comprehensive human services available to assist those with HIV infection:
  - Services available through Kentucky’s Ryan White and state funded services programs
  - Community-based organizations

America has gone quiet on HIV/AIDS

Kaiser Family Foundation survey

<table>
<thead>
<tr>
<th>Year</th>
<th>AIDS</th>
<th>HIV</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>3%</td>
<td>10%</td>
<td>3%</td>
<td>16%</td>
</tr>
<tr>
<td>2009</td>
<td>5%</td>
<td>3%</td>
<td>2%</td>
<td>10%</td>
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Trend in Share Naming HIV/AIDS as Most Urgent Health Problem Facing the Nation

Basic medical and epidemiological information about HIV and the diseases it can cause

HIV is a retrovirus
- T-lymphocyte is primary target for HIV
  - Affinity of the virus for the CD-4 surface marker
- The CD-4 / T-lymphocyte coordinates a number of important immunologic functions
  - Loss of these functions results in progressive impairment of the cellular immune response

Origin of HIV
- Type of chimpanzee in West Africa is believed to be source of HIV infection in humans
- Most likely infected humans by killing and eating the chimpanzees

45 years HIV Epidemic in U.S.
- Incubation of HIV to AIDS is 8-10 years
- HIV epidemic began in early 1970’s

34 years since AIDS epidemic began in U.S.
- 1981 AIDS identified after a number of MSM began having a syndrome of:
  - Severe immune suppression
  - A rare cancer
  - Wasting
It took years to understand how HIV was transmitted between humans and how to prevent transmission.

1985 HIV tests developed
- Elisa / EIA
- Western Blot

2014: Worldwide 36.9 (34.3 – 41.4) million living with HIV/AIDS
- 20 million newly infected (UNAIDS)
- 5,500 new infections / day
- 1.8 million adults (0.8 adult prevalence)
- 220,000 children under 18

Early 1980’s in the U.S.
- As many as 150,000 people became infected with HIV each year

2014 Worldwide AIDS Deaths
- 1.2 million (1.0 – 1.5 million)
  - Adults 1.0 million (890,000 – 1.3 million)
  - Children under 15 – 150,000 (140,000 0 170,000)
- 25,000,000 have died of AIDS since 1981

2014 – In U.S., 1.2 million living with HIV/AIDS according to CDC
- 1 in 8 of HIV infected are unaware of their infection
- More than 600,000 AIDS deaths in the U.S. since 1981
  - 156,0000 unaware they are HIV positive
  - 50,000 new infections per year
- Estimated 14,000 die annually
**HIV Prevalence & Incidence by Region**

- **Sub-Saharan African** – 4.7% adult prevalence
  - 24.7 million
  - 71% of people living with HIV worldwide
  - Only 13% of world’s population

- **South Africa** has highest number of people living with HIV, with 6.2 million
  - Swaziland had highest prevalence rate in the world. (27.4%)

- **Latin America**
  - 0.4% Prevalence
  - 5% of HIV worldwide
  - Brazil – 730,000 living with HIV

- **Caribbean**
  - 1.1% Prevalence
  - 250,000 living with HIV
  - Less than 1% of HIV worldwide
  - Bahamas highest prevalence rate, 3.2%

- **Eastern Europe and Central Asia** – 0.6 Prevalence
  - 1.1 million
  - 3% of HIV worldwide
  - Primarily driven by injecting drugs
  - Russian Federation and Ukraine account for 85% of HIV in region

- **Asia and Pacific** – 0.2% Prevalence
  - 4.8 million
  - 14% of HIV worldwide
  - Mostly China and India
**HIV Prevalence & Incidence by Region**

- Western and Central Europe and North America – 0.3% Prevalence
  - 2.3 million
  - 7% of HIV worldwide

**HIV Diagnosis 2008 in US by age**

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
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<tbody>
<tr>
<td>Under 13</td>
<td>182</td>
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<tr>
<td>13-14</td>
<td>31</td>
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<tr>
<td>15-19</td>
<td>1870</td>
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<td>20-24</td>
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<td>1883</td>
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<tr>
<td>60-64</td>
<td>955</td>
</tr>
<tr>
<td>65+</td>
<td>716</td>
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</table>

**HIV/AIDS in the U.S.**

- Generally concentrated in urban areas
- Highest numbers in South and Northeast

**Find MAP of US!**

**Figure 1: Estimated New HIV Infections in the United States, 2010, for the Most Affected Subpopulations**

- MSM of all races and ethnicities remain the population most affected by HIV
  - MSM – 4% of adult population in the U.S.
    - 8% of new HIV infection among males
    - 63% of all new infections
  - White MSM account for largest new HIV infection (11,200 in 2010)
    - Followed by Black MSM (10,600 in 2010)
Blacks / African Americans
- Continue to bear most severe burden of HIV
  - 12% of population
  - 41% of HIV positive
  - More than 280,000 have died since beginning of epidemic

Hispanics / Latinos
- Also disproportionately affected by HIV
- 16% of population account for 21% of new HIV infections
- More than 100,000 AIDS deaths

HIV obviously on increase in U.S.
- In 1993, U.S. had 40,000 new infections
- 2005 – 45,000 new infections per year and rising
- 2010 – 56,300 becoming infected each in U.S. per CDC
- 2014 – 50,000 new HIV infections

Vermont Health Department
- HIV surveillance
  - Implemented March 2000 after legislation passed in 1999
  - Non-name-based
    - Uses codes and identifiers
  - Names are not reported to the Department of Health

Vermont Surveillance
- Working toward a change to name-based HIV reporting
- Name based AIDS reporting has been in place in Vermont for 20 years

Vermont Surveillance
- HIV anonymous HIV testing in Vermont
  - Anonymous testing program
  - Vermont AIDS Hotline 1-800-882-AIDS
Vermont – 2013 State Health Profile

- 455 people living with HIV/AIDS
- 2011 – 12 adults and adolescents were diagnosed with HIV
- 2012 – 4 AIDS death
- Vermont ranked 50th among 50 states in number of HIV diagnoses in 2011

HIV Classification system for Adolescents and Adults – Revised 1993

- Three CD4+T-Lymphocyte categories
- Three clinical categories

Three CD4+T-Lymphocyte categories

- Category 1: Greater than or equal to 500 cells/µl
- Category 2: 200 – 499 cells/µl
- Category 3: Less than 200 cells/µl

Three Clinical Categories

- Category A
- Category B
- Category C

Category A

- Acute (primary) HIV infection with accompanying illness or history of acute HIV infection
- Asymptomatic HIV infection
- Persistent generalized lymphadenopathy

TRANSMISSION CATEGORY

<table>
<thead>
<tr>
<th>Category</th>
<th>MSM(2)</th>
<th>IDU(3)</th>
<th>MSM/IDU</th>
<th>Heterosexual</th>
<th>Perinatal</th>
<th>Other/U ndetermined(4)</th>
<th>TOTAL</th>
</tr>
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<td>687</td>
<td>305</td>
<td>787</td>
<td>29</td>
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<td>Percentages</td>
<td>54%</td>
<td>13%</td>
<td>6%</td>
<td>15%</td>
<td>1%</td>
<td>11%</td>
<td>100%</td>
</tr>
</tbody>
</table>

(1) Percentages may not always total 100% due to rounding
(2) MSM – Men Having Sex With Men
(3) IDU – Injection Drug Use
(4) Includes hemophilia, blood transfusion, and risk not reported or not identified.
**Category B**

- Symptomatic conditions in an HIV-infected individual not included among conditions considered AIDS defining conditions, but are related to defect in cell-mediated immunity, including but not limited to:
  - Oropharyngeal candidiasis
  - Vulvovaginal candidiasis
  - Cervical dysplasia
  - Hairy leukoplakia
  - Herpes zoster
  - ITP
  - Peripheral neuropathy
  - Listeriosis

**Category C AIDS Defining Conditions**

- Once a category “C” condition has occurred, the person will remain in Category C

**AIDS Defining Conditions**

- Candidiasis of:
  - Bronchi
  - Trachea
  - Lungs
  - Esophageal candidiasis
  - Cervical cancer (invasive)

**AIDS Defining Conditions, continued**

- Coccidioidomycosis
  - Disseminated
  - Extrapulmonary
- Cryptococcosis, extrapulmonary
- Cryptosporidiosis, chronic intestinal (>1 month)
- Cytomegalovirus disease (other than liver, spleen, or nodes)

**AIDS Defining Conditions, continued**

- Cytomegalovirus retinitis (with loss of vision)
- Encephalopathy, HIV related
- Herpes simplex
  - Chronic ulcer(s) (>1 month)
  - Bronchitis
  - Pneumonitis
  - Esophagitis
- Histoplasmosis, disseminated or extrapulmonary
AIDS Defining Conditions, continued
- Isosporiasis, chronic intestinal (>1 month)
- Kaposi’s sarcoma
- Lymphoma, Burkitt’s
- Lymphoma, immunoblastic
- Lymphoma, primary, of brain

AIDS Defining Conditions, continued
- Mycobacterium avium complex or M. Kansasii, disseminated or extrapulmonary
- Mycobacterium tuberculosis, any site
- Mycobacterium, other species or unidentified

AIDS Defining Conditions, continued
- Pneumocystis jiroveci (carinii) pneumonia
- Pneumonia, recurrent
- Progressive multi-focal leukoencephalopathy
- Salmonella septicemia, recurrent
- Toxoplasmosis of brain
- Wasting syndrome due to HIV

3 Stages of HIV Infection
- Stage 1: Acute Retroviral Infection
- Stage 2: Asymptomatic Infection
- Stage 3: AIDS

Stage 1 – Acute Infection
- 50% of those infected will have mono-like infection and seek medical attention
- High viral load – higher than any other time in infection

Stage 1 – Acute Infection
- If a young person presents with mono-like infection and tests negative for mono, healthcare professional should perform HIV test
Stage 2 – Asymptomatic Infection
- May last 10 – 15 years
- May have mild symptoms like lymphadenopathy
- Often unaware they are HIV positive
- Can still transmit the virus

Stage 3 - AIDS
- Have AIDS defining condition
- Have fewer than 200 CD-4 cells/μl

Current Medical Treatment for HIV Infection

AIDS cases and deaths began to fall dramatically in 1996 with the development of:
- New drugs
- HAART therapy

Antiretroviral Therapy
- Most HIV positive will eventually need therapy
- Long Term Non-Progressive Group
  - Rare group that exhibit no immune suppression
  - Their bodies are able to handle HIV infection

Antiretroviral Therapy
- Early anti-retroviral therapy is controversial
  - May inhibit the body’s ability to mount its own immune response
- Once therapy begins, the patient must understand it will be ongoing the rest of their lives
- Must be compliant with medications or may have a harmful long-term effect
Antiretroviral Therapy
- CD-4 less than 200/µl with or without symptoms
  - Always start antiretroviral therapy
- 200 – 350 CD-4 cells/µl
  - Gray area ~ science is still being worked out

Life Cycle of HIV & Target of Drugs on HIV

HIV attaches to CD-4 cell (T-Lymphocyte Helper Cell)
- Virus must attach to two proteins on outside of CD-4 cell
  - CD-4 Receptor
  - Chemokine Co-Receptor (Glycoprotein 120)

Organization of the HIV-1 Virion

Virus must fuse with CD-4 membrane for the viral components to enter the host cell
- All components of the virus come apart once the virus enters the cell
  - Viral RNA – single stranded
  - 3 viral proteins
    • Reverse Transcriptase
    • Integrase
    • Protease

Reverse Transcriptase transcribes single stranded viral RNA into single stranded DNA
- Single stranded DNA = “Provirus”
Proviruses can migrate and enter the cell nucleus, allowing Integrase to insert viral DNA into host DNA. This can make the host cell a factory for new viral components.

Viral proteins come off the ribosomal mechanism and are dumped into the cytoplasm as one big molecule.

Protease separates viral components from the large protein molecule. Viral components then migrate to the cell surface and bud off as new virus.

Antiretrovirals act at key steps in the virus life cycle, particularly at the viral proteins.

**Currently 6 Classes of Drugs for HIV Infection**
- Nucleoside Reverse Transcriptase Inhibitors
- Non-Nucleoside Reverse Transcriptase Inhibitors
- Protease Inhibitors
- Fusion Inhibitors
- Integrase Inhibitors
- CCR5 – Cytokine – Co-Receptor Inhibitor

**First Medications were aimed at Reverse Transcriptase**
- Nucleoside Reverse Transcriptase Inhibitors (Combivir®, Emtriva®, Epzicom™, Retovir®, Trizivir®, Tenvada®, Videx®, Virase®, Zerit®, Ziagen®)
- Non-Nucleoside Reverse Transcriptase Inhibitors (Intensense®, Rescriptor®, Sustiva®, Viramune®, & combo drug Atripla®)
  - Had limited success due to:
    - Rapid mutation
    - Viral resistance
**Protease Inhibitors**

Marked new era of therapy
- Aptivus®, Crixivan®, Invirase®, Lexiva®, Norvir®, Prezista™, Reyataz®, Viracept®

**HAART – Highly Active Antiretroviral Therapy**
- Potential combination of 3 or more anti-HIV drugs
- Classic HAART Protocol
  - 2 NRTI and one NNRTI, or
  - 2 NRTI and one Protease Inhibitor, or
  - 3 NRTI

**New HAART is more tolerable**
- Patients can take for years
- More specific and more effective
- Three of the six drug classes are not used in primary protocol but are generally used as “Salvage Drugs”
  - that is for those who are resistant to other therapy and are out of options

**Fusion Inhibitors**
- Fuzeon®
  - Difficult to use
  - Inject twice daily
  - Painful

**The two newest classes of drugs**
- Integrase Inhibitors
  - Isentress®
- CCRS – Cytokine Co-Receptor Inhibitors
  - Selzentry®
- Also used as “salvage drugs”
**HAART**
- Standard protocols are attempted first, then go to alternative therapy
- Go to alternative drugs when patient cannot tolerate the regimen or a resistant virus mutation occurs
- Now more complicated because of new drugs available
- “Protocols are evolving”

**HIV Vaccines under Development**
- Preventive
- Therapeutic

**Tests used when following HAART Patients**
- CBC with differential
- Standard chemistry
- Liver enzyme
- Pancreatic enzymes
- Lipids
- Screen for other infectious diseases
- Viral load
- HIV resistance test

**With HAART**
- HIV no longer a death sentence

**Once diagnosed with HIV**
- “Viral load test” once a month
- Viral resistance fades over time
- Viral resistance test early on to help gauge when to start HAART

- 16 – 24 weeks from beginning of HAART the viral load should drop to undetectable if patient is compliant
  - Follow monthly until viral load is “0”
  - Then every three months
If patient takes HAART they should drop viral load by a “log” a month
- e.g. start with 100,000 viral load
- 1 month 10,000
- 2 month 1,000
- 3 month “0”

Do “Resistance test” when viral load increases or does not decrease
- Virus mutates readily and then that will be the prominent virus in the patient

Never interrupt HAART if possible
- Off and on treatment is bad for successful management of patients
- Compliance is important
  - Change therapy, but do not stop therapy

Long term side-effects of HAART are metabolic effects
- Diabetes
- Increased Cholesterol levels
- Increased Triglycerides levels

Oral Manifestations of HIV/AIDS
- May be first sign of HIV infection
  - May lead to testing and diagnosis
  - Oral conditions develop as immunosuppression progresses
    - Indicators of change in immune status
    - Require definitive management
- Oral manifestations of HIV infection
  - Certain conditions associated with risk of AIDS
  - May be first AIDS defining condition
Overall average prevalence: 30 - 50%
- In late stage AIDS – upwards of 90%

Oral manifestations of HIV infection occur in 30 – 80% of affected population
Incidences of AIDS

- Increasing risk behaviors among groups that had previously shown marked decline in previous years → despite recognition that risk behaviors related to spread of disease
- Obvious continued need to recognize HIV infections and manage complications:
  - Recognition of oral manifestation of HIV

Oral Lesions of HIV/AIDS

- Broad Categories:
  - Fungal
  - Bacterial
  - Viral
  - Neoplastic
  - Other
**Fungal Lesions in HIV/AIDS**

- Candidiasis
- Histoplasmosis
- Geotrichosis
- Aspergillosis

**Candidiasis has many appearances**

- Pseudomembranous
- Erythematous / Atrophic
- Hyperplastic
- Angular chelitis

**Most AIDS Patients**

Suffer with Oral Candidiasis

**Pseudomembranous Candidiasis**

- Creamy white or yellowish plaques
- On red or normal colored mucosa
- Plaques easily removed
- Reveals a bleeding surface
- Affects palatal, buccal and labial mucosa and dorsum of tongue
Erythematous Atrophic Candidiasis

- Thumb print of HIV infection
- Fiery red to pink spot
- Common on palate and dorsum of tongue
- May be spotty area on buccal mucosa
- Characteristic feature of HIV easily overlooked

Hyperplastic Candidiasis

- White plaques cannot be removed by scraping
- Favorite location is buccal mucosa

Angular Chelitis

- Fissures radiating from angles of mouth
- May be associated with white spots
- May be due to Staphylococcus aureus as well as Candida albicans

Those at Risk for Candida albicans

- Denture wearers
- Antibiotics
- Steroids
- Diabetes
- Leukemia
- HIV/AIDS
**Diagnosis of Candida albicans**

- Culture
- Gram stain
- KOH prep
- Easy if you have microscope
- Biopsy – PAS stain

**Treatment for Oral Candidiasis**

- **Topical**
- **Systemic**
- **Perioral Topical**

**Topical Antifungals**

- Chlortrimazole Troche (Mycelcex) 10 mg one five times per day
- Nystatin Oral Suspension/Pastilles 400,000 – 600,000 units four times per day

**Systemic Antifungals**

- Ketoconazole (Nizoral) 200 mg one to two tablets per day
- Diflucan (Fluconazole) 200 mg first day, then 100 mg per day for 2 weeks
  - Better absorption
  - Drug interaction
  - Liver function concerns
**Topcial / Perioral Antifungals**

- For Angular Chelitis
  - Mycolog
triamcinolone and nystatin
  - Clotrimazole
  - Ketoconozole cream

**Bacterial Lesions in HIV/AIDS**

- Linear Gingival Erythema
- Necrotizing Ulcerative Periodontitis
- Acute Necrotizing Ulcerative Gingivitis
- Necrotizing Stomatitis
- Mycobacterium Avium Intracellulare
- Klebsiella Pneumoniae + E. Cloace
- Submandibular Cellulitis

**Linear Gingival Erythema**

- Red line at free gingival margin
- Punctate erythema of alveolar gingiva
- May have spontaneous bleeding or bleeding on brushing
- Occurs in patients with good OH
Necrotizing Ulcerative Periodontitis (NUP)
- Formerly HIV-associated periodontitis
- May or may not be preceded by linear gingival erythema
- Severe, progressive loss of periodontal attachment
- Rapid destruction of supporting bone
- Severe pain
- May have features of ANUG

Acute Necrotizing Ulcerative Gingivitis (ANUG)
- Pain and characteristic halitosis
- Gingiva fiery red and swollen
- Margin of gingiva and interdental papillae are seat of yellow-grayish necrosis
- Bleeds readily
- Anterior gingiva most commonly affected

Therapy for LGE, NUP & NUG
- Careful dental prophylaxis
- Irrigation with 10% povidone iodine (betadine)
- BID 0.12% chlorhexidine gluconate oral rinse
- Consider metronidazole
Necrotizing Stomatitis
- Extensive soft tissue and alveolar bone
- Occurs rapidly
- Bone sequestration
- May be progression of ANUG or NUP
- May not be painful initially

Treatment for Necrotizing Stomatitis
- Surgical debridement and betadine irrigation
- Protect lesion with mouthguard
- Metronidazole 250 mg: 2 STAT, then 1 QID x 5 days
- BID 0.12% chlorhexidine gluconate oral rinse

Viral Lesions in HIV/AIDS
- Herpes Simplex (HSV)
- Herpes Zoster (HZV)
- Human Papilloma Viruses
- Epstein Barr

Herpes Simplex (HSV) and Zoster (HZV)
- HSV-1 above diaphragm, HSV-2 below
- Variable latency periods
- Treatment Issues
  - Acyclovir – when, how long
Varicella Zoster
Viral Infections
- Involve branches of Trigeminal Nerve
- Intra and Extra Oral Lesions
- Intense Pain
- Common in immune suppressed
- Early sign of HIV
  - 3% of HIV develop AIDS within 2 years
  - And 46% within 4 years of Zoster

Herpetic stomatitis/labialis
- Protracted healing
- More severe and extensive lesions
- Prevalence of 10% in HIV patients

Therapy for Herpes and Varicella viruses
- Acyclovir (Zovirax)
  - P.O., Topical, I.V.
    - P.O.
      - 200mg – 800mg five times per day
    - Topical Ointment or Cream
      - Apply q 4 H to affected area
    - I.V.
      - 5 – 10 mg/kg TID X 7 days
- Valtrex
  - 1,000 mg BID for 10 days
**Human Papilloma Virus**

- Numerous viruses
- Associated with papillomas, verrucae, condylomata, and focal epithelial hyperplasia
- Associated with oral cancer

**Oral Warts / Human Papilloma Viruses**

- Associated with Cancer

**Warts may be:**

- Intra-oral and/or on lips
- Same warts seen in ano/genital region
Diagnosis by clinical appearance
Treatment - excision

Removed Surgically

- Best with CO₂ Laser
  - Usually return

Hairy Leukoplakia

- White patch
- Usually lateral border of tongue
- Often bilateral
- Irregular surface with projections
Hairy Leukoplakia

- May have fine corrugations
- May be smooth and flat
- May be mild to severe
- Common in late stage HIV and AIDS
- Reliable indicator of HIV
- Predictor of declining immune system
- In all risk groups for HIV including children
**Management of Hairy Leukoplakia**
- Not routinely treated
  - In severe cases
    - Oral acyclovir (Zovirax)
      - 200 – 800 mg 5/day

**Neoplasms associated with HIV/AIDS**
- Kaposi’s sarcoma
- Non-Hodgkin lymphoma
- Squamous cell carcinoma

**Kaposi’s Sarcoma**
- Most common neoplasm in HIV/AIDS
- Male to female ratio 20:1
- Occurs in all risk groups
- More frequent in whites
- More frequent in homosexuals

**Kaposi’s Sarcoma**
- May not be a malignancy
- Could be growth regulatory defect with proliferated endothelial cells

**Kaposi’s Oral Lesions**
- Bluish, blackish, or reddish macules
- Flat in early stages
- Becomes darker, elevated, lobulated and ulcerated
- Non-tender before ulcerated
- Most common on palate
Kaposi’s

- Differential
  - Bruise
  - Hemangioma
- Doesn’t blanch with pressure
- If biopsy – possible bleeding if hemangioma
- Radiation given slowly
- Chemotherapy
- Alpha-interferon
- Conventional and laser surgery

Other Oral Manifestations in the HIV/AIDS Population

- Enlarged salivary glands
- Xerostomia
- Recurrent apthous
- Gingival bleeding secondary to immune thrombocytopenia purpura (ITP)
Recurrent Apthous Ulceration
- Increased frequency in HIV
- Cases generally more severe and last longer
- Treat with topical steroids
- Systemic steroids rarely indicated

Management of Oral Apthous
- Decadron Elixir
- Lidex Gel
- Diprolene Gel
- Temovate
- Apthasol
- Thalidomide

Immune Thrombocytopenic Purpura
- May cause spontaneous bleeding
- Generally see blood-filled purpuric lesions or larger ecchymosis
Non-HIV-Associated Dental Disease
- Gingivitis / Periodontitis / Dental Abscesses
  - Common dental diseases
  - Compromise oral health / function / esthetics
  - Compromise general health
- Constant immune system pressure
- Increases risk of opportunistic oral infections
- Increased risk for HIV disease progression

Testing for HIV
- Antibody to HIV does not form until second to fourth week of infection
- For Acute Retroviral Infection, should test for virus with PCR-RNA
- Look for viral load of greater than 100,000

Testing for HIV
- After Acute Retroviral Infection, test for antibody
  - Standard serology is Elisa/EIA
  - Confirmed with Western blot
Testing for HIV

- Symptoms as CD-4 level drops below 400
  - Skin eruptions like folliculitis and psoriasis
  - Candida infection of oral cavity or vagina

Testing for HIV

- Healthcare providers should be thinking of testing for HIV when they see non-descript symptoms occur, such as chronic fatigue

Testing for HIV

- Testing assays are getting more sensitive
  - Finger stick and oral swab tests are getting up to 99% sensitivity and 99% specificity
  - Results within 20 minutes
  - Must confirm with Western Blot

HIV Tests

- Antibody tests
  - Elisa or EIA
  - Western blot
- Viral test
  - RNA tests

Elisa / EIA (Enzyme Immunoassay)

- May use blood, saliva, or urine
  - Rapid test > results in 20 minutes

HIV Tests

- All screening tests require a follow-up confirmation Western blot
For information on HIV testing

- You can talk to your healthcare provider
- Find the location of HIV testing centers nearest you by calling CDC-Info @ 1-800-232-4636, or 1-888-232-6348.
- Both of these sources are confidential

Methods of transmission and prevention of HIV

HIV is a fragile virus that cannot live outside of the body for very long

How HIV is not transmitted:

- Shaking hands
- Hugging or casual kissing
- Toilet seats, doorknobs
- Drinking fountains, dishes, glasses
- Food
- Pets
- Mosquitoes

HIV is transmitted in 3 main ways:

- Having sex (anal, vaginal, or oral) with someone infected with HIV
- Sharing needles and syringes with someone infected with HIV
- Being exposed (fetus or infant) to HIV before, during birth, or through breastfeeding

HIV is primarily found in blood, semen, or vaginal fluid of an infected person
HIV may be transmitted through blood and blood products infected with HIV

- Since 1985 all donated blood in US has been tested
  - Risk low
  - US blood supply among safest in the world

HIV Transmission to Healthcare Workers in the U.S.

According to the CDC:

- From 1981 to 2000
  - 138 possible healthcare workers HIV infected in the workplace
  - 56 confirmed

HIV Sexual Transmission Prevention

- Abstention / Monogamy
- Safer sex
  - Male condoms
    - Latex and polyurethane
  - Female condoms
    - Latex and polyurethane

Using male condoms

- Put the condom on before it touches your partner’s mouth, vagina, or rectum.
- If uncircumcised, push the foreskin back before putting on a condom.
- Squeeze air out of the tip of the condom to leave room for semen. Unroll the rest of the condom down the penis.
- Do not “double bag” (use two condoms). Friction between the condoms increases the chance of breakage.
- After orgasm, hold the base of the condom and pull out before the penis gets soft.
- Be careful not to spill semen onto your partner when you throw the condom away.

HIV Transmission Prevention for Injecting Drug Use

- Do not share needles or syringes
- Proper disinfection of needles and “works” with bleach:
  - Fill the syringe with clean water and shake or tap. Squirt out the water and throw it away. Repeat until you don’t see any blood in the syringe.
  - Completely fill the syringe with fresh, full-strength household bleach. Keep it in the syringe for 30 seconds or more. Squirt it out and throw the bleach away.
  - Fill the syringe with clean water and shake or tap. Squirt out the water and throw it away.

Prevention of Perinatal Transmission

- HAART therapy for pregnant HIV positive women has dropped vertical transmission from 25% to less than 1%
- Key is to test and identify
Management of HIV in the healthcare workplace / OSHA Blood borne Pathogens Standards

Review of Universal Precautions

PPE
- Masks
- Eye protection
- Gloves
- Gowns
- Proper sterilization
- Proper disinfection

Risk of HIV Transmission in Workplace
- Percutaneous exposure 0.3% (3/1,000)
- Mucous membrane exposure 0.09% (9/10,000)

Post Exposure Prophylaxis (PEP)
- Antiretroviral agents from three classes of drugs:
  - Nucleoside reverse transcriptase inhibitors (NRTIs)
  - Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

Factors used in assessing the need and protocol for PEP
- Type of exposure
- Type and amount of fluid/tissue
- Infectious status of source
- Susceptibility of exposed person
- Timing of exposure and availability of treatment
- Pregnancy status of HCP

Follow-up of HCP with occupational exposure to HIV
- Follow-up counseling
- Post exposure testing (EIA)
  - 6 weeks, 12 weeks, and 6 months
- Medical evaluation
**Counseling and Educating HCP with HIV Exposure for Follow-up Period**
- Patient care responsibilities of exposed person do not need to be modified
- Exposed HCP advised to use precautions to prevent secondary transmission
- For those receiving PEP, HCP informed of possible drug toxicities and interactions

**Summary of Management of Occupational Blood Exposures**
- Provide immediate care of exposure site
- Determine risk with associated exposure
- Evaluate exposure source
- Give PEP for exposures posing risk of infection transmission
- Perform follow-up testing and provide counseling

**Management of Occupational Exposures**
- See June 29, 2001 MMWR for further details

**Legal Issues Surrounding HIV Infection**
- Consent to test
- Confidentiality issues
- Kentucky HIV/AIDS reporting requirements
- Americans with Disabilities Act

**Consent to test for HIV**
- General consent form for the medical procedures and tests
  - No specific consent form required
- Testing for HIV under general consent must be used only for diagnostic or other purposes directly related to medical treatment
- Otherwise must have a specific informed consent to test

**Consent to test for HIV**
- In an emergency situation where a consent cannot be reasonably attained, no consent in necessary
If HIV test is positive

- No test is considered positive without confirming test
- Must inform patient of positive test
  - Provide information and counseling or refer to appropriate professional or healthcare facility for information and counseling

Confidentiality of Test Results

- Unlawful for test results to disclose the identity of any person upon whom a test is performed
- Except for explicit circumstances listed in KRS 214.625
- Mandatory Kentucky HIV/AIDS reporting requirements
  - See handout

Circumstances for HCP sharing HIV status of patients according to KRS 214.625

- A physician, nurse, or other healthcare personnel who has a legitimate need to know the test result in order to provide for his/her protection and to provide for the patient’s health and welfare

Circumstances for HCP sharing HIV status of patients according to KRS 214.625

- Healthcare providers consulting between themselves or with healthcare facilities to determine diagnosis and treatment

Americans with Disabilities Act (ADA)

- Guarantees equal opportunity for individuals with disabilities in:
  - Public accommodations
  - Employment
  - Transportation
  - State & local government services
  - Telecommunications

Americans with Disabilities Act (ADA)

- Persons with HIV disease, both symptomatic and asymptomatic, have physical impairment that substantially limit one or more major life activity and are, therefore, protected.
**Americans with Disabilities Act (ADA)**

- Employers of 15 or more employees are prohibited from discrimination.
- All public entities, regardless of size, are prohibited from discrimination.

**ADA** prohibits employment discrimination against qualified individuals with disabilities.

- Qualified individual with a disability is:
  - One who meets legitimate skill, experience, education, or other requirements of employment and can perform the “essential functions” with or without reasonable accommodation.

- Employers cannot choose to not hire a qualified person because they fear the worker will become too ill to work in the future.

- Employers cannot decide not to hire qualified people with HIV or AIDS because they are afraid of higher medical insurance costs, workers’ compensation, or absenteeism.

- For more details regarding the ADA and persons with HIV/AIDS see: [http://www.usdoj.gov/crt/ada/pubs/hivqanda.txt](http://www.usdoj.gov/crt/ada/pubs/hivqanda.txt)

**Appropriate Attitudes & Behaviors to those Infected with HIV**
Over a quarter of a century later, there is a lingering stigma associated with HIV

- Stereotyping
- Personal attitudes and prejudices toward certain risk behaviors

Stigmatization leads to Discrimination

- 1994 – 2001 EEOC documented 1.3 claims/day of employment discrimination of PLWH
- 2001 – 2006 Dropped to 1.0 claims/day

*PLWH = Persons Living With HIV

Stigmatization and Discrimination in Healthcare

- 2006 study in Los Angeles County, CA documented those who refused to treat PLWH:
  - 56% of 131 skilled nursing facilities
  - 26% of 98 plastic surgeons
  - 47% of 102 obstetricians

Stigmatization and Discrimination in Healthcare

- HIV stigma is a significant source of psychological damage and depression
- HIV stigma and depression can deter PLWH from seeking medical care and lead to deterioration of health

Healthcare workers must become aware and overcome their prejudices
- How a patient acquires an infection is not what is important
- What is important is how the healthcare worker can help the patient

“Do unto others as you would have them do unto you”

- As Belinda Mason said over 20 years ago, the biggest danger in HIV/AIDS is losing our humanity
Comprehensive human services available to assist those with HIV/AIDS in Vermont

- Early Intervention Program Vermont Medication Assistance Program (VMAP)
- Dental Care Assistance Program (DCAP)
- Insurance Continuing Program (ICP)
- HRSA Part B Support Services
- Other services
- AIDS Hotline 1-800-882-AIDS
- Or 802-863-7245