

Facts about... HIV-related co-morbidities and social factors

Background: People with HIV infection are at high risk for a wide range of illnesses. Among the most severe illnesses are AIDS-defining opportunistic illnesses (OIs). HIV/AIDS-related illnesses and co-morbidities have a significant impact on clinical presentation, quality of life, and medical care, as well as mortality for patients with HIV. Some of the diseases and conditions serve as markers of on-going risks (sexually transmitted infections, substance use) and impact HIV treatment and health services use (homelessness, mental illness, substance use). The co-morbidity and OI information below was derived from four sources: the Adult/Adolescent Spectrum of HIV-related Diseases (ASD, 1989-2004), the Care and Prevention survey (CAP, 2006), the Medical Monitoring Project (MMP, 2005, 2007, 2008) data, and the HIV/AIDS Reporting System (HARS, 1982-present).

ASD was a dynamic prospective longitudinal medical-record review cohort project. A total of 4,799 people were followed in ASD for an average of 3.5 years each. The report includes ASD data from 2000 through 2004 with an average 1,128 individuals followed annually. **MMP** is an interview and medical record abstraction project that seeks to learn more about people living with HIV/AIDS and in care in Washington state. The project has collected medical record data on a total of 476 people. At this time, only the medical record data for the 95 participants who participated in 2005 are available for analysis. We conducted **CAP** during an MMP hiatus year and combined elements of MMP (chart review and interview) and ASD (CAP used the same chart review form as ASD), enrolling 315 HIV-infected individuals. We used core surveillance data from the **HIV/AIDS registry** to monitor homelessness, as the registry collected homeless status for all reported HIV cases using a consistent data collection methodology from 2000-2008. Other trend data may differ due to different project protocols and enrollment methods, as well as real time-related trends.

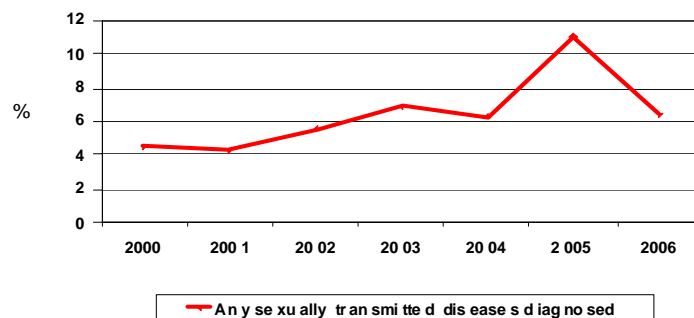
Sexually transmitted infections (Figure 1):

Sexually transmitted infections (STIs) are important markers of on-going risk-taking among HIV-infected people, with rates from 6-11% overall. In addition, most STIs greatly increases the risk of HIV transmission. Figure 1 displays overall STI rates in ASD, MMP, and CAP.

- The overall rate of diagnosis of any STI in the ASD cohort was 6% per year. Gonorrhea rates averaged 2% per year, syphilis 1% per year, Chlamydia 1% per year, pelvic inflammatory disease (in women) 3% per year, and non-gonococcal urethritis (in men) 2% per year.
- The overall prevalence of any STI in MMP was 11% among the 95 participants for whom medical record information is available. In MMP, the overall prevalence of syphilis was 2%, Chlamydia 2%, and gonorrhea 3%.
- The overall prevalence of any STI in CAP was 6%, including 4% with syphilis, 4% with Chlamydia and 3% with gonorrhea.

Fig 1. Prevalence of sexually transmitted infections in HIV infected King County residents

including syphilis, gonorrhea, chlamydia, pelvic inflammatory disease (women), and non-gonococcal urethritis (men)



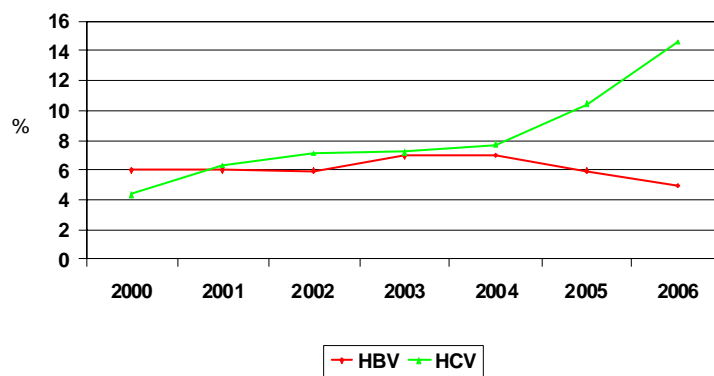
2000-2004: Adult/adolescent spectrum of HIV-related Diseases (mean N = 1,128)
2005: Medical Monitoring project (N = 95)
2006: Care and Prevention (N = 315)

Hepatitis prevalence and incidence (Figure 2): Hepatitis B (HBV) and hepatitis C (HCV) are two viral infections of the liver. When chronic, they greatly increase the risk of severe liver disease, including cirrhosis and liver cancer. About 5-10% of people infected with HBV as an adult, and about 80-85% of persons infected with HCV become chronically-infected carriers. Current recommendations are that all persons diagnosed with HIV should be screened for HCV. Although hepatitis probably does not worsen the course of HIV infection, HIV infection accelerates HBV and HCV progression to cirrhosis and liver cancer. Furthermore, hepatitis (or its outcomes, such as cirrhosis) may limit HIV treatment options. In addition, when viral hepatitis newly develops in a person infected with HIV, it suggests that the person may be engaging in unsafe sexual or needle-sharing behaviors.

- In ASD, 41% and 42% of 2,499 people followed since 1998 were screened for hepatitis B and C respectively. Overall, 9% of HIV-infected people screened for HBV had chronic HBV infection and 19% screened for HCV had chronic HCV infection. Figure 2 shows hepatitis prevalence over time among all persons followed in ASD regardless of screening status, and is weighted by race/ethnicity, sex, and HIV exposure mode.

- The prevalence of hepatitis B did not vary substantially by mode of HIV exposure among those screened; about 10% of both men who have sex with men [MSM] and injection drug users [IDU] were infected. The prevalence of HCV was highest among MSM/IDU (67%) followed by heterosexual IDU (37%) and non-injecting MSM (8%). People followed in ASD may have been diagnosed with hepatitis at non-ASD sites, so these proportions may be considered minimums.

Fig 2. Prevalence of chronic viral hepatitis in King County residents with HIV



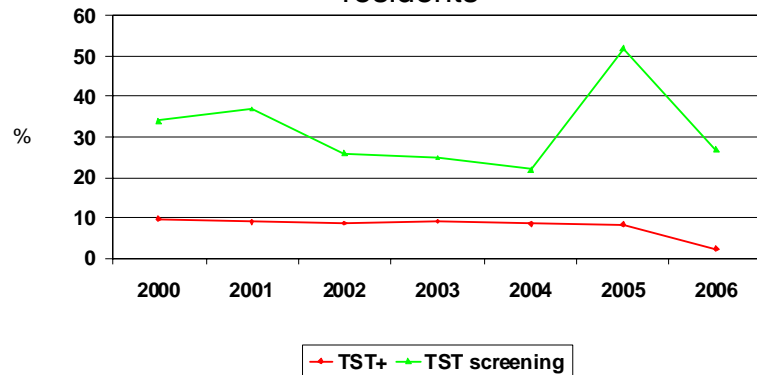
2000-2004: Adult/adolescent Spectrum of HIV-related Diseases (mean N = 1,128)
 2005: MMP (N=95 for HCV; rolling average used for HBV)
 2006: Care and Prevention (N=315)

- In a later study, MMP, 84% of participants were screened for hepatitis B and 76% were screened were for hepatitis C. Hepatitis B infection status was not well documented in MMP and 10% of those screened had documented HCV.
- About 5% of CAP participants had been diagnosed with chronic HBV and 15% with chronic HCV after weighting by race/ethnicity, sex, and HIV exposure mode. More IDU may have been enrolled in CAP relative to MMP and ASD.

Latent tuberculosis (TB) infection (Figure 3): TB is a greater threat to a person infected with HIV relative to an uninfected person because HIV increases the risk of disease acquisition and progression to active TB. HIV care guidelines state that all persons with HIV should be screened for latent TB infection.

Figure 3 shows the trend in initial presentation with latent TB infection including trends in screening and trends in diagnoses of latent TB infection (+TST).

Fig 3. Prevalence of TB infection (e.g. TST+ or PPD+, not disease) in HIV infected King County residents



2000-2004: Adult/adolescent Spectrum of HIV-related Diseases (mean N = 1,128)
 2005: Medical Monitoring project (N = 95)
 2006: Care and Prevention (N=315)

- 54% of the ASD cohort had tuberculin skin test (TST or PPD) results documented in their medical records; of these, 13% were documented to be TST positive, generally suggesting latent infection with *M. tuberculosis*. Of those documented as TST positive, 53% received prophylactic isoniazid (INH) to decrease their risk of developing active tuberculosis.
- In MMP, 51% had a tuberculin skin test result documented in their medical records.
- In CAP, only 27% had a tuberculin skin test documented in their medical records.

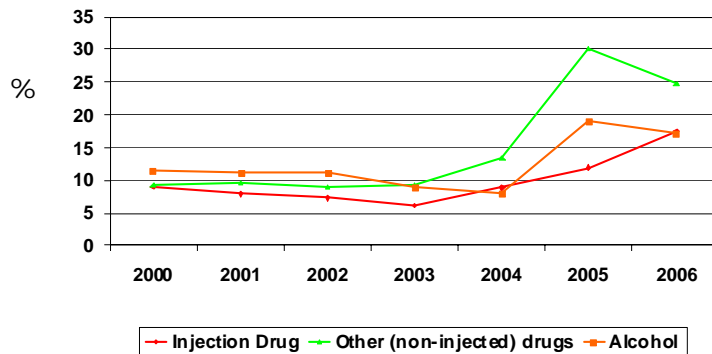
Mental illness: Mental illness can impair an HIV-infected person's ability to receive HIV prevention and treatment services.

- Schizophrenia and other psychoses are present in about 6-8% of the ASD cohort each year since 2000. In comparison, about 1% of the general population are diagnosed with schizophrenia.
- Bi-polar disorder was diagnosed in 6% of the ASD cohort. Bi-polar type 1 disorder occurs among 0.4% to 1.6% of the general population.
- Depression is the most commonly diagnosed mental illness, with 50-55% of ASD patients having ever had a depression diagnosis and about 20-30% of ASD patients currently treated for or diagnosed with depression each year. At any given time, 3-6% of Americans suffer from clinical depression, but this increases to 20-25% for people who have a chronic medical condition.
- Overall, 72% of the MMP participants had ever been diagnosed with some type of problem with mental illness: nearly two-thirds (63%) had depression, 7% a history of bipolar disorder, 6% psychosis, and 28% anxiety.

Substance use (Figure 4): Similar to people who have mental illness and HIV, individuals who have substance use problems may have difficulties accessing HIV prevention and treatment services or following recommendations.

- Injection drug use was present in about 6-9% of the ASD cohort each year (2000-2004).
- Alcohol problems (which may be documented as current alcoholism, or a history of alcoholism with current treatment) was present in 8-11% of the ASD cohort each year (2000-2004).

Fig 4. Prevalence of alcohol, injection drug use (IDU) and non-injected/other drug use in HIV infected King County residents



2000-2004: Adult/adolescent Spectrum of HIV-related Diseases (mean N = 1,128)
 2005: Medical Monitoring project (Average N = 95)
 2006: Care and Prevention (N=315)

- Other drug use was diagnosed in 9-13% of the ASD cohort each year, 2000 through 2004.
- About 32% of enrollees in ASD have tobacco use mentioned in their medical records, including smoking cigarettes or cigars, or using chewing tobacco. A gradual decline was documented in tobacco use, from a high of 38% in 1995 to 32% in 2003.
- 56% of the CAP and 44% of MMP participants self-reported being current smokers. (CAP participants were more heavily recruited from publicly funded medical facilities relative to MMP and ASD thus more likely to be of lower socio-economic status and more likely to smoke and have substance use issues.
- 12% of MMP participants had injection drug use documented in their medical record.
- 19% of MMP participants had documented problems with alcohol in their medical records.
- 30% of MMP participants had use of non-injection drugs documented in their medical records.

Persons with disabilities:

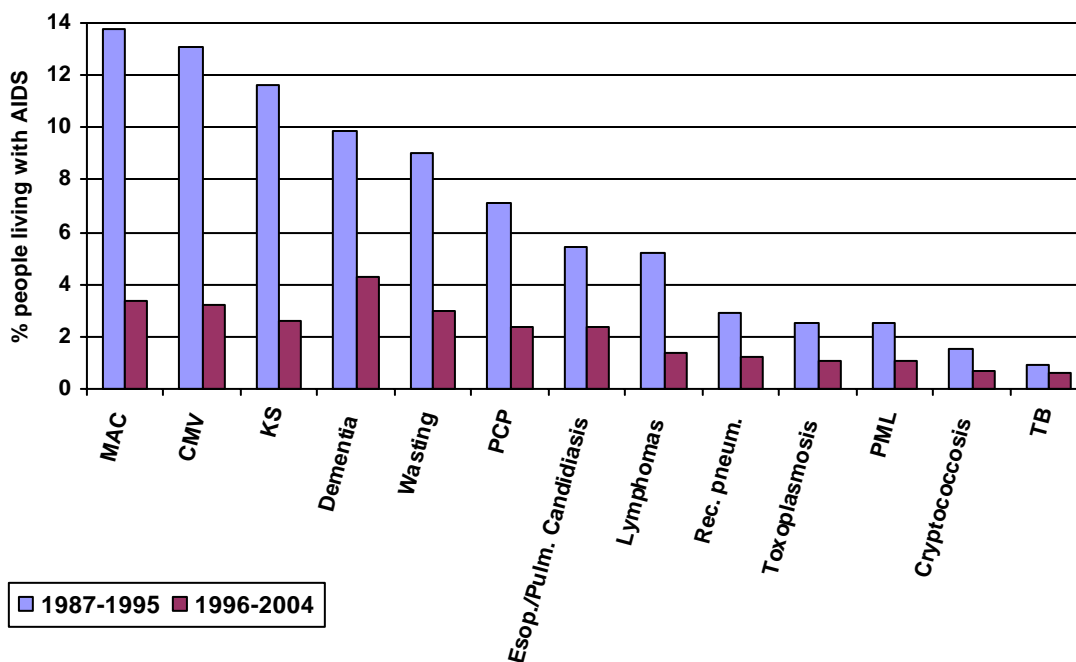
- *Hearing disabilities:* 2.4% of the ASD cohort was diagnosed with a hearing disability, including complete and partial deafness. No noticeable trends in prevalence were noted over the 14 years of the study. Five percent of the 246 MMP participants who completed the local section of the MMP interview in 2007 and 2008 reported problems with hearing loss. Seven percent of the CAP participants reported problems with hearing loss.
- *Visual disabilities:* Over the course of ASD, 9.5% of the cohort has had a diagnosis of visual impairment, including complete and partial blindness. Visual impairment increased in the early 1990's and reached a plateau of 14% 1993 through 1996. Probably due to HAART-associated decreases in cytomegalovirus (CMV) retinitis, visual impairment diagnoses have been cut by more than half and were found in 6% of the cohort in 2003. Ten percent of the 246 MMP participants who completed the local section of the survey in 2007 and 2008 reported problems with low vision. Ten percent of the CAP participants reported problems with vision.
- *Impaired mobility:* About 1% of 1,000 HIV-infected persons followed by ASD were diagnosed with mobility impairments, including paraplegia, semiplegia, and/or other types of paralyzes. Eighteen percent of the 246 MMP participants who completed the local section of the survey in 2007 and 2008 reported problems with impaired mobility. Ten percent of the CAP participants reported problems with impaired mobility.

Homelessness: Homeless individuals are more likely to be impacted by mental illness and substance use than individuals who are not homeless. Homelessness, with or without these co-morbid conditions, makes health care access and medication adherence challenging. The HIV/AIDS registry tracks individuals who are homeless as of the time of their HIV diagnosis. Much of these data are collected by chart review, so we speculate that this status may be under-reported. About one percent of people newly diagnosed with HIV are homeless (by provider report or medical record review) at the time of their diagnosis. No consistent upward or downward trend was observed in the proportion of people who are homeless between 2000 and 2008.

Opportunistic illnesses (OIs): People with HIV infection are at high risk for a wide range of illnesses due to behavioral risk factors and HIV itself. Among the most severe illnesses are the 26 AIDS-defining opportunistic illnesses (OIs) that occur as a result of HIV disease progression, and generally occur only after substantial damage to the immune system. OIs have markedly declined (locally and nationally) in incidence since the availability of highly effective antiretroviral therapy (HAART). Although HAART (highly active antiretroviral treatment) use has drastically reduced the incidence of OIs, these still occur, especially among individuals with late HIV diagnoses (e.g. diagnosed with HIV and AIDS concurrently).

In Figure 5, pre-HAART and post-HAART prevalence of the most common AIDS-defining OIs are displayed as percent of PLWA (people living with AIDS).

Figure 5: Opportunistic illness in pre-HAART and post-HAART eras from the Seattle Adult/Adolescent Spectrum of HIV-related Disease Project



- 1,820 persons living with AIDS were observed in ASD pre-HAART, and 1,254 (69%) had one or more OI diagnosed in this period.
- 1,515 were observed post-HAART; 556 (37%) were diagnosed with one or more OI. People in ASD were followed an average of 3.4 years. Most OIs occurred at rates between 1 and 2 per 100 HIV-infected individuals.
- In MMP, 68 (72%) of the 95 people living with HIV interviewed in 2005 were diagnosed with AIDS. Of these, 27 (40%) had one or more OI in the HAART era (1996-2005).