21. HIV INFECTION AND AIDS

INTRODUCTION

Acquired immunodeficiency syndrome (AIDS) is a severe, life-threatening disease representing the late stage of infection with the human immunodeficiency virus (HIV). HIV infection can result in progressive damage to the immune system, leading to opportunistic infections, cancers, and other diseases that characterize clinical AIDS. HIV transmission in women occurs mainly through heterosexual contact or by using contaminated needles and syringes for injecting drugs. The presence of an ulcerative sexually transmitted disease like chancroid facilitates HIV transmission during intercourse. HIV-infected pregnant women can pass the virus to their infants during pregnancy or birth and during breastfeeding.

Except for transient flu-like symptoms that occur weeks or months after infection occurs, people with HIV can be free of symptoms for many months or years. Certain nonspecific symptoms (swollen glands, loss of appetite, fever, fatigue, diarrhea and weight loss) mark the onset of clinical illness and are called "symptomatic HIV infection." In HIV-infected people, more than a dozen specific opportunistic infections, such as *Pneumocystis carinii* pneumonia, and several cancers, including Kaposi's sarcoma, invasive cervical cancer, and non-Hodgkin lymphoma, constitute the case definition of AIDS (Chin, 2000). The original, 1982 case definition of AIDS was expanded twice, in 1987 and 1993, to encompass additional indicator diseases and conditions.

In the absence of treatment, more than 90 percent of HIV-infected persons ultimately develop AIDS, and of these, 80 to 90 percent die within 3 to 5 years of diagnosis (Chin, 2000). HIV infection is listed as the cause of death for AIDS and HIV- or AIDS-related diseases, whereas the incidence of HIV infection and AIDS are reported separately. Clinically-defined AIDS has been reported in Connecticut since 1981. In 1999, HIV infection also became reportable in the state.
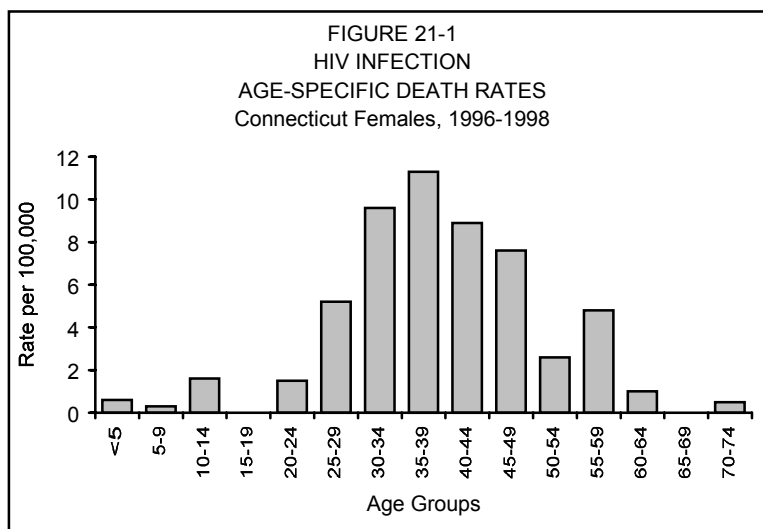
SCOPE OF THE PROBLEM

In 1999, 188 new cases of AIDS (the lowest number since 1992) were reported among Connecticut females, representing an incidence rate (both crude and age-adjusted) of 11 cases per 100,000 population. Cumulatively, through the end of 1999, AIDS was reported in 2,786 Connecticut females, and as of June 30, 2000, 1,610 Connecticut females with AIDS were still alive (Connecticut Department of Public Health, HIV/AIDS Surveillance Program, 2000a, 2000b).

Between 1993 and 1997 there were 1,576 hospitalizations of Connecticut women for HIV/AIDS. The annual, age-adjusted hospitalization rate was 18 per 100,000 women, and the average charge was $18,640 (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001).

Between 1996 and 1998, 204 Connecticut women died of HIV/AIDS, for an annual, age-adjusted death rate of 7 deaths per 100,000 population (Mueller et al., in preparation).

Age

The rates of reported cases of both HIV infection and AIDS are greatest in women 30 to 39 years of age, and in 1999, about 90 percent of reported cases of HIV infection and AIDS in women were between the ages of 20 and 49 (Connecticut Department of Public Health, HIV/AIDS Surveillance Program, 2000b). From 1987 to 1998, HIV infection was one of the top five leading causes of death among Connecticut women 25 to 44 years of age, and from 1992 to 1996 it was the leading cause of death among women 25-34 years of age. Between 1996 and 1998, HIV infection was the fourth-ranked leading cause of premature deaths in Connecticut. The death rate for HIV infection

FIGURE 21-1
HIV INFECTION
AGE-SPECIFIC DEATH RATES
Connecticut Females, 1996-1998

Rate per 100,000 (y-axis)

Age Groups (x-axis: <5, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74)

Source: Mueller et al., in preparation.

also is highest among women in their fourth decade (Fig. 21-1).

Race and Ethnicity

As with sexually transmitted diseases, disproportionate numbers of Connecticut's black and Hispanic females develop AIDS (Table 21-1). Although blacks make up only 10 percent of Connecticut's female population, they accounted for 39 percent of new AIDS cases in 1999. Similarly, although only 8 percent of Connecticut women are Hispanic, Hispanics represented 29 percent of AIDS cases. Relative to the rate for white females, the AIDS rates in 1999 were 12 times greater for blacks and 10 times greater for Hispanics. Since 1998, the proportions of AIDS cases represented by white and Hispanic women have increased, while cases among black women have decreased (Connecticut Department of Public Health, HIV/AIDS Surveillance Program, 2000b).

In Connecticut, hospitalization and death rates for HIV infection are also disproportionately high among minority women. Relative to non-Hispanic white females, the 1993-1997 age-adjusted hospitalization rate for HIV in non-Hispanic black females (98.0) was 18 times greater, and that for Hispanic females (63.2) was 12 times greater than white females (5.4 per 100,000). These differences were statistically significant (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001).

Between 1996 and 1998, the age-adjusted death rate for black females was more than 9 times greater than that for white females, and the rate for Hispanic females was nearly 6 times greater (Table 21-2). HIV infection was the fourteenth-ranked leading cause of death among white females. It was the fourth-ranked among Hispanic females and the fifth-ranked among black females (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001).

TABLE 21-1
AIDS INCIDENCE BY RACE & ETHNICITY
Connecticut Females, 1999

	Population (1999 Est.)[a]	No. Cases	Case Rate[b]	% of Population	% of Cases	Relative Risk[c]
All races	1,689,230	188	11.1	100.0	100.0	
White	1,479,617	58	3.9	87.6	30.9	1.0
Black	161,977	73	45.1	9.6	38.8	11.6
Native American	4,037			0.2	0.2	2.4
Asian & Pacific Isl.	43,599			2.6	0.2	0.2
Hispanic	142,732	54	37.8	8.4	28.7	9.7

Sources: Connecticut Department of Public Health, HIV/AIDS Surveillance Program, 2000d;
Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001.
Notes: [a] Population estimates from U.S. Census Bureau (2000).
[b] Rate expressed as reported cases per 100,000 females.
[c] Relative risk is estimated as the ratio of the minority group rate to the white group rate.
Percent of cumulative cases 1981-1999 were used to calculate relative risk for Native American and Asian or Pacific Islander, due to 3 or fewer cases in 1999

TABLE 21-2
HIV INFECTION DEATHS BY RACE AND ETHNICITY
Connecticut Females, 1989-1991 and 1996-1998

	1989-1991		1996-1998	
Race/Ethnicity	Number of Deaths	Age Adjusted Death Rate (per 100,000)	Number of Deaths	Age Adjusted Death Rate (per 100,000)
All races	192	3.6	204	3.9
White	86	1.8	102	2.3
Black	103	21.7[‡]	101	21.1[‡]
Hispanic/Latina	32	9.4[‡]	51	13.4[‡]

Source: Mueller et al., in preparation.
‡ Rate significantly different from that of whites (p< .05).
Notes: U.S. Census Bureau population estimates used for rate calculations. Rates adjusted to the 2000 U.S. standard million population.

Geographic Region

Table 21-3 shows AIDS rates in females in the United States and Northeastern states from July 1999 through June 2000. Connecticut's rate was above the national average. Connecticut's rate was the third highest among the eight Northeastern states.

TABLE 21-3
AIDS INCIDENCE RATES
United States and Northeastern States
Females, July 1999 through June 2000

State	Incidence per 100,000
United States	9.0
Connecticut	17.0
Maine	2.0
Massachusetts	14.5
New Hampshire	1.0
New Jersey	18.7
New York	27.8
Rhode Island	6.3
Vermont	0.8

Source: Centers for Disease Control, 2000.

TRENDS OVER TIME

The Centers for Disease Control and Prevention estimates that two-thirds of people living with HIV have been confidentially tested and know their status, and that HIV reporting is likely to become increasingly representative of trends in infections (Centers for Disease Control and Prevention, 2001). Annual HIV incidence has been roughly constant since 1992 in most US populations with time trend data (Karon et al., 2001).

AIDS rates reflect both the acquisition of HIV and progression of HIV. Highly active anti-viral therapy became available in the mid-1990's and had a dramatic impact on delaying the progression of HIV to AIDS (see the treatment section below). The AIDS case definition was expanded in 1993, causing a large increase in reported AIDS in the first quarter of 1993. Nationally, AIDS incidence in men began to decrease beginning in 1994, while it continued to increase in women through 1996. AIDS incidence began to drop earlier among whites than blacks, and dropped among men who have had sex with men, but continued to rise among intravenous drug users, and AIDS acquired through heterosexual transmission. For each of the groups: white, black, and Hispanic women, the annual number of AIDS cases acquired heterosexually surpassed the number acquired through intravenous drug use in the early 1990's (Centers for Disease Control and Prevention, 2001). There were only very slight declines in AIDS in 1998 and 1999. The epidemic increasingly affects women, blacks, Hispanics, persons infected through heterosexual contacts, intravenous drug users, and the poor. Between 1990 and 1999, there was a four-fold increase in the number of Americans living with AIDS (Karon et al., 2001).

The numbers and rates of new AIDS cases in Connecticut women reported each year decreased between 1997 and 1999. However, for 2000, 225 AIDS cases in females were reported, which were 40 cases more than 1999. The proportion of cases represented by women rose from 14 percent in 1985 to 31 percent in 1999 (Connecticut Department of Public Health, HIV/AIDS Surveillance Program, 2000a).

HIV hospitalizations among Connecticut women more than tripled from 1994 to 1995, peaked in 1996, and then fell by more than one-third in 1997. This is similar to the patterns seen for AIDS incidence and mortality.

The first known deaths to Connecticut women from HIV infection occurred in 1987. From 1987 through 1998, HIV has claimed the lives of 945 women, or 36 percent of those reported with the disease (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001). The death rate for HIV infection peaked in 1995 and dropped by 68 percent (which was statistically significant) through 1998 (Figure 21-2), with the decline largely attributed to more effective antiviral therapy (Chin, 2000). Between 1995 and 1998, the death rates declined among white, black, and Hispanic females.

FIGURE 21-2
HIV INFECTION DEATH RATES
BY RACE AND ETHNICITY
Connecticut Females, 1989-1998
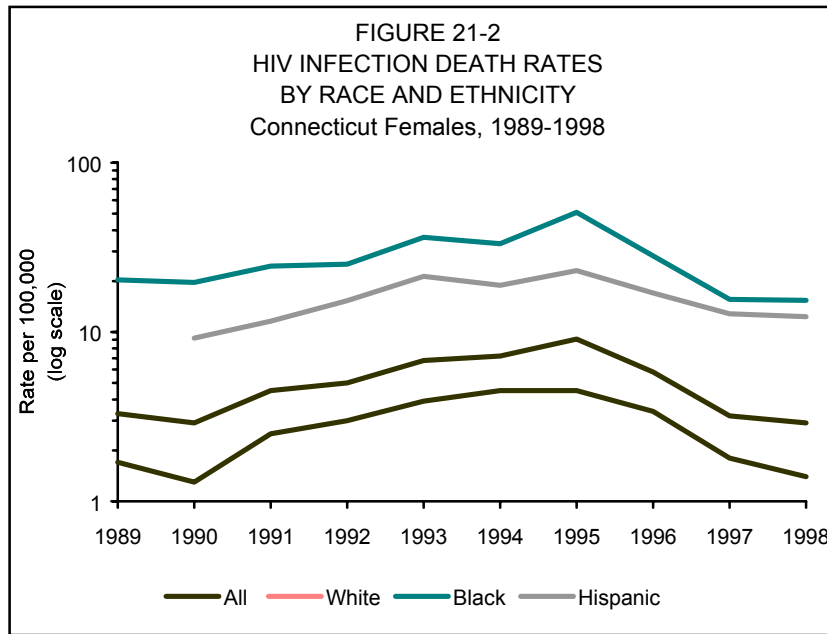
Source: Mueller et al., in preparation.
Rates are age-adjusted, except that crude rates were used for Hispanic females in 1990, 1991, and 1998
 due to small numbers.

RISK FACTORS

HIV is spread mainly through sexual contact and sharing contaminated needles and syringes. It also can be acquired via transfusions of infected blood or blood components, and transplants of infected organs or tissues. Since the mid-1980's the United States has taken vigorous measures to safeguard the blood supply from HIV. The infants of pregnant women with HIV can become infected before, during, or shortly after birth. The epidemic spread of HIV in the black and Hispanic communities is fueled by drug use, including sex with an infected drug user and sex for money (Centers for Disease Control and Prevention, 2001).

Although HIV has been found in the saliva, tears, urine, and bronchial secretions of infected persons, transmission by contact with these substances has never been documented (Centers for Disease Control and Prevention, 1999a).

The most important risk factors for HIV infection among women are injecting-drug use and heterosexual sex with multiple partners and without condoms. The presence of a sexually transmitted disease facilitates the spread of the virus.

Injecting Drug Use

An IDU transmission was the most common route of HIV infection in white women, while heterosexual transmission was the most common route in Hispanic women (Fig. 21-3). Between 1997 and 1999 the AIDS incidence through IDU fell, with a 73 percent decrease among black women, 66 percent among Latinas, and 43 percent among whites (Connecticut Department of Public Health, HIV/AIDS Surveillance Program, 2000c).

FIGURE 21-3
AIDS TRANSMISSION ROUTES
BY RACE AND ETHNICITY
Connecticut Females, 1997-1999
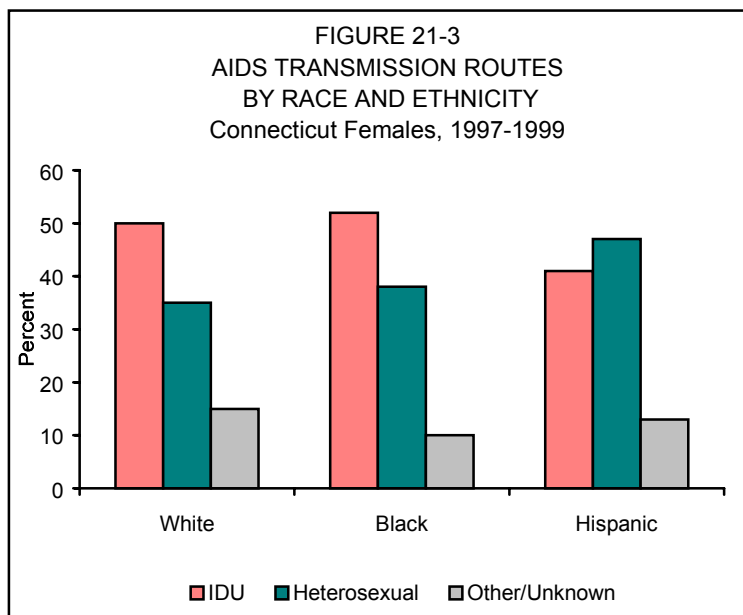
Source: Connecticut Department of Public Health, HIV/AIDS Surveillance Program, 2000b.

The exact number of Connecticut women who use injecting drugs is not known, but estimates have been made using admissions to substance abuse treatment programs. In the most recent 12 months for which data are available (June, 1999 through May, 2000), 25 percent of the adult females admitted to such programs—more than 4,800 women or 0.4 percent Connecticut's adult female population—said they were current intravenous drug users (Connecticut Department of Mental Health and Addiction Services, 2000). Adolescents may represent an even larger risk group. In 1999, 1.6 percent of surveyed Connecticut high school girls said they had injected illegal drugs one or more times in their lives (Kann et al., 2000).

Heterosexual Sex

The percentage of AIDS cases associated with heterosexual sex has been increasing and is consistently higher for Hispanic females than for white or black females. Between 1997 and 1999, a significantly higher percentage of Hispanic females (47 percent) who developed AIDS had a heterosexual sex risk, compared to 38 percent of blacks and 35 percent of whites (Connecticut Department of Public Health, HIV/AIDS Surveillance Program, 2000b; Connecticut

Department of Public Health, Division of Policy, Planning, and Analysis, 2001).

In 1998, 8 percent of sexually active Connecticut women 18 to 64 years of age said they had more than one sex partner in the prior year (Connecticut Department of Public Health, AIDS Counseling and Testing Program, 2000). Of these, three out of four said they don't always use condoms, and one in three said they never use condoms. Women with multiple sex partners were almost twice as likely as those with only one sex partner to use condoms all the time (27 percent and 15 percent, respectively).

With regard to condoms usage, similar behavior was reported among Connecticut high school students (Kann et al., 2000). Even though more than nine out of ten girls in grades 9-12 said they were taught about HIV in school, 40 percent reported they had sexual intercourse at least once, 10 percent said they had four or more sex partners in their lifetime, and 30 percent were currently sexually active. Only half said they used a condom during their last sexual intercourse.

PREVENTION AND RISK REDUCTION

The only effective way to prevent HIV infection is to avoid exposure to the virus. Exposure to HIV can be avoided or reduced by abstaining from injecting-drug use or using only sterile drug paraphernalia, abstaining from sex or practicing low risk or non-risky sexual behaviors (using condoms consistently and correctly, having sex only with an uninfected partner, etc.).

The effectiveness of condoms in preventing heterosexual transmission of HIV has been estimated at 87 percent, which is comparable to or slightly lower than its effectiveness at preventing pregnancy (Davis and Weller, 1999). The spermicide nonoxynol-9 appears, from an observational study, to be at least as effective as condoms in reducing heterosexual transmission of HIV, but it may not be possible to conduct randomized clinical trials (Wittkowski et al., 2001). Studies suggest that condom use in at-risk heterosexuals increased in the 1990's (Catania et al., 2001), but that as many as one in three HIV-positive people continue to have unprotected sex after learning that they are infected (Kalichman et al., 2001).

Medical treatment after exposure to HIV is considered relatively ineffective for preventing infection, compared to preventing exposure altogether. An exception is the use of anti-retroviral medications to prevent transmission of HIV from infected mothers to their infants before and after delivery (Centers for Disease Control and Prevention, 1998).

The Connecticut Department of Public Health, AIDS Prevention and Treatment Services program, coordinates counseling and testing services, risk reduction education, outreach to drug users, needle exchange, referral to drug treatment and care, case management, social marketing, and public information campaigns.

The needle exchange program is established in Hartford, Bridgeport, New Haven, Danbury, and Stamford. The program, which also offers education and testing for tuberculosis and hepatitis, and referrals for STD testing and substance abuse treatment, enrolled 1,872 clients between July 1999 and June 2000.

The ATHENA Project at the Yale School of Nursing has begun an effort ("HIV University") to teach HIV positive women about treatment, life skills, peer education, and support groups.

TESTING AND TREATMENT

HIV Testing

Antibodies to HIV usually develop within one to three months after infection. In Connecticut, blood tests for HIV can done by a woman's own doctor, at a reproductive health clinic, or at 25 publicly funded counseling and testing sites. Strict confidentiality is maintained, and some sites offer anonymous testing. In 1999 a law was passed by the state legislature to promote counseling and testing for pregnant women; the law also addresses the testing of newborns when their mothers have not been tested.

In 2000, 7,361 HIV tests were performed for Connecticut women, of which 9 percent were anonymous, and 90 percent were confidential. About 1 percent of tests was positive. Ninety-six percent of positive tests were followed by counseling sessions, as were 83 percent of negative test results.

Treatment

Effective combination therapy using three or more drugs, known as highly active anti-retroviral therapy or HAART, became available routinely in the U.S. in the mid-1990's, and new treatment regimens are still being developed. Specific treatments also are available for pneumonia and other opportunistic infections associated with HIV. Additionally, pregnant women can be treated with AZT and other drugs to prevent *in utero* and perinatal HIV transmission to their children (Chin, 2000).

Barriers to treatment for women include lack of knowledge about AIDS in women by health providers, family responsibilities, and the fear and burden of disclosure (Zorilla and Santiago, 1999).

Although access to care improved among HIV-infected persons in the U.S. in recent years,

154

women were among those groups with less desirable patterns of care. Relative to men, women were significantly more likely to use hospital emergency rooms and to be hospitalized. They also were significantly less likely to take prophylactic drugs to prevent *Pneumocystis carinii* pneumonia or to receive therapy using protease inhibitors and non-nucleoside reverse transcriptase inhibitors. Persons without insurance and those on Medicaid also were significantly less likely to receive anti-retroviral therapy (Shapiro et al., 1999).

More than half of Connecticut women reported with AIDS through 1999 were injection drug users (Connecticut Department of Public Health, HIV/AIDS Surveillance Program. 2000b). According to one report, while most infected IDUs receive care for HIV, less than half receive highly active antiretroviral therapy (Rogers, 2000). Barriers to HIV care among IDUs include: difficulty finding a health care provider, poverty, homelessness, and incarceration; negative experiences with providers (care refused because of drug use); equating treatment with the disease (having a constant reminder of illness); and concern about treatment drug and street drug interactions.

Treatment for AIDS is recommended to begin before a person's CD4 count falls below a certain threshold. CD4 cells are an important part of the immune system, and people with AIDS have fewer CD4 cells than do healthy people. At the same CD4 count, women have a lower viral load than men—sometimes half as great. Women also have a higher risk of becoming ill at the same CD4 count. These findings have two important implications. First, women may systematically be excluded from clinical trials in which enrollment criteria are based on viral load. Second, it may be important for women to start treatment earlier than men (National Institute of Allergy and Infectious Disease, 2000).

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22. PNEUMONIA AND INFLUENZA

INTRODUCTION

Pneumonia and influenza are highly contagious respiratory infections. Influenza is caused by constantly evolving influenza viruses, whereas pneumonia may be caused by a host of microorganisms, including bacteria (notably *Streptococcus pneumoniae*, which causes pneumococcal pneumonia), viruses, mycoplasma, protozoa, and chlamydia. Although influenza usually does not cause pneumonia, pneumonia is a frequent complication of influenza, and most influenza fatalities result from secondary bacterial pneumonia (Kilbourne, 1994). The role of seasonal influenza epidemics in increasing flu and pneumonia deaths among the elderly is the reason why disease monitoring systems typically track influenza and pneumonia deaths together, instead of separately.

SCOPE OF THE PROBLEM

Between 1996 and 1998, pneumonia and influenza (P & I) caused 1,988 deaths among Connecticut women, resulting in an age-adjusted death rate of 27 deaths per 100,000 population (Table 22-1). About 98 percent of these deaths were attributed to pneumonia (Connecticut Department of Public Health, 2001b). It was the fifth leading cause of death among women of all ages and the eleventh leading cause of premature deaths (Mueller et al., in preparation).

Pneumonia is a leading cause of hospitalization among Connecticut women. Between 1993 and 1997, there were about 6,000 hospital admissions of Connecticut women each year for pneumonia and influenza, resulting in an age-adjusted hospitalization rate (AAHR) of 283 hospitalizations per 100,000 women. About 98 percent of hospitalizations were also attributed to pneumonia (Connecticut Department of Public Health, 2001a). In 1997, P&I resulted in total hospital charges of $79.5 million dollars (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001a). Pneumococcal pneumonia may account for up to 55 percent of all cases of adult pneumonia that require hospitalization (Heffelfinger et al., 2000).

TABLE 22-1
PNEUMONIA AND INFLUENZA DEATHS
BY RACE AND ETHNICITY
Connecticut Females, 1989-1991 and 1996-1998

Race/Ethnicity	1989-1991		1996-1998	
	Number of Deaths	Age Adjusted Death Rate (per 100,000)	Number of Deaths	Age Adjusted Death Rate (per 100,000)
All races	1,884	29.6	1,988	26.6*
White	1,808	29.5	1,892	26.4*
African American/Black	59	22.7	91	30.9
Asian/Pacific Islander	4	†	4	†
Native American	1	†	1	†
Hispanic/Latina	20	19.1‡	32	18.4‡

Source: Mueller et al., in preparation.
* Change in rates from 1989-91 to 1996-98 period is statistically significant (p< .05).
† Statistics not calculated for fewer than 15 events.
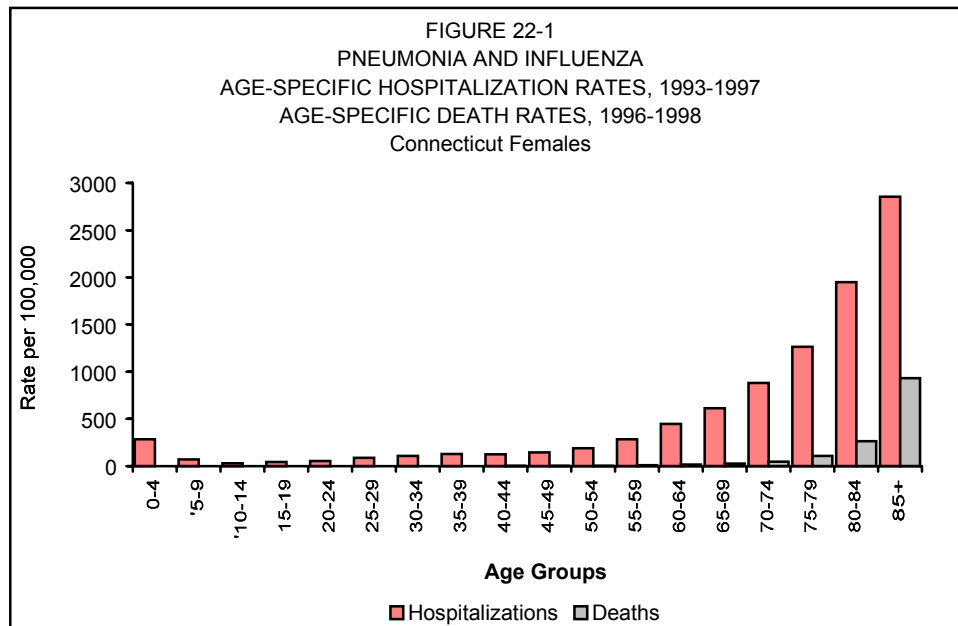‡ Rate significantly different from that of whites (p< .05)
Notes: U.S. Census Bureau population estimates used for rate calculations. Rates adjusted to the 2000 U.S. standard million population.

Age

Both hospitalizations and deaths due to pneumonia and influenza increase with age (Fig. 22-1). Women 65 years of age and older, who represent less than 17 percent of Connecticut's female population, accounted for 95 percent of P & I deaths between 1996 and 1998, and 65 percent of pneumonia hospitalizations between 1993 and 1997.

TRENDS OVER TIME

Age-adjusted death rates for pneumonia and influenza among Connecticut women fell an average of 1.5 percent per year from 1989 to 1998. This change resulted from a decrease in the death rate for P & I among white females. Both the annual and overall changes were statistically significant (Mueller et al., in preparation).

FIGURE 22-1
PNEUMONIA AND INFLUENZA
AGE-SPECIFIC HOSPITALIZATION RATES, 1993-1997
AGE-SPECIFIC DEATH RATES, 1996-1998
Connecticut Females

Source: Mueller et al., in preparation; Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001.

Race and Ethnicity

Between 1989 and 1998, the death rate for Hispanic females was significantly lower than that for white females (Table 22-1), whereas for the period 1993 to 1997, hospitalization rates for Hispanic females and for non-Hispanic black females were significantly higher relative to the rate for non-Hispanic white females (403, 436, and 256 per 100,000 females, respectively) (Mueller et al., in preparation; Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001a). The reasons for the reversed white to Hispanic relationship for hospitalization and mortality rates due to pneumonia are not clear.

RISK FACTORS AND GROUPS

The influenza virus is spread by air and direct contact, particularly in crowded or enclosed spaces. Pneumonia is spread by direct or indirect contact with respiratory discharges (coughing, sneezing) from infected persons. Those at high risk for pneumonia and influenza and their complications include the elderly, younger persons with underlying chronic medical conditions, and pregnant women (Table 22-2).

TABLE 22-2
GROUPS AT HIGH RISK FOR PNEUMONIA OR INFLUENZA
AND CHRONIC CONDITIONS UNDERLYING PNEUMONIA & INFLUENZA

Influenza High-Risk Groups
◆ All persons over 65 years of age
◆ Residents of chronic care facilities
◆ Persons with chronic underlying conditions (see below)
◆ Children receiving long-term aspirin treatment
◆ Pregnant women beyond the first trimester of pregnancy (during the flu season)
◆ Organ transplant recipients
◆ Healthcare workers (who pose a transmission risk to others, including patients)
Pneumonia High-Risk Groups
◆ Persons over age 65
◆ Persons age 2-64 years with chronic underlying conditions (see below)
◆ Alcoholics
◆ Persons with sickle cell disease
◆ Immunocompromised persons
Chronic Underlying Conditions That Increase Pneumonia & Influenza Risk
◆ Diabetes mellitus
◆ Chronic lung, liver, kidney, and heart diseases
◆ HIV infection
◆ Cancer

Source: National Coalition for Adult Immunization, 1999.

PREVENTION AND TREATMENT

Improved personal hygiene (hand washing, shielding coughs and sneezes) and minimizing contacts with infected individuals are important ways to control the spread of influenza and pneumonia. Vaccines and certain medications are effective at preventing and treating many forms of the diseases.

Vaccines

A single dose of pneumococcal vaccine and a yearly flu shot are recommended for all adults 65 years of age and over, and for certain at-risk groups under age 65 (Table 22-2). Vaccines are especially important in long term care facilities, where infectious diseases can spread rapidly.

Although both vaccines are safe, effective, and free to Medicare beneficiaries, they are still underutilized, especially among the elderly and minorities. In 1999, Connecticut was below the national median for both influenza and pneumococcal vaccination coverage (Centers for Disease Control and Prevention, 2001); more than one-third (34 percent) of non-institutionalized Connecticut women age 65 and over reported they did not get a flu shot during the previous year, and nearly half (48 percent) said they never had a pneumonia vaccination (Centers for Disease Control and Prevention, 2000). Nationally, non-Hispanic whites have the highest vaccination coverage for pneumonia and influenza, whereas non-Hispanic blacks have the lowest coverage (Centers for Disease Control and Prevention, 2001).

According to a survey of Medicare beneficiaries, the main reasons for not receiving a flu shot were a lack of knowledge that it was needed, not thinking of or missing it, and the misconceptions that it could cause or not prevent the flu. The main reasons for not receiving pneumococcal vaccination were lack of knowledge that it was needed and lack of recommendations from physicians (Drociuk, 1999). In older populations, all of these reasons could be eliminated by stronger educational efforts on the part of health care providers, especially physicians.

Medications

Two medications, amantadine hydrochloride and rimantadine hydrochloride, are used to prevent and treat of certain types of influenza. They are recommended mainly for high-risk individuals who were not vaccinated or when a supplement to vaccine is desirable for maximum protection.

Antibiotics like penicillin and erythromycin are effective for treating pneumococcal pneumonia and pneumonia caused by other bacteria and microorganisms. The emergence of antibiotic-resistant bacteria presents a growing challenge, however, to the medical and public health communities and highlights the importance of wider deployment of existing vaccines.

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23. SUICIDE

Suicide is the taking of one's own life and attempted suicide is an unsuccessful attempt to take one's own life through intentional harm. The number of suicides may reflect only 5 percent of suicide attempts (Centers for Disease Control and Prevention, 2000). This bears particular importance for female suicide prevention because individuals who complete suicide are most likely to be male, but those who survive a suicide attempt are most likely to be female (Moscicki, 1994).

PREVALENCE

Between 1996 and 1998, suicide was the 7th leading cause of premature death for all Connecticut women with a total of 188 suicides (age-adjusted rate of 3.6 per 100,000). Connecticut's suicide rate is below the national rate (4.3 per 100,000) (Mueller et al., in preparation; U.S. Department of Health and Human Services, 2000). Female suicide rates have remained stable over the past decade with no significant variations between 1989 and 1998 (Mueller et al, in preparation).

Similar to national trends, female suicides in Connecticut represent only 3 percent of suicide attempts that require hospitalization. Between 1993 and 1997, there were nearly 6,000 hospitalizations (age-adjusted rate of 73 per 100,000) for self-inflicted injury by Connecticut females (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001). The number of suicide attempts may be underestimated by hospitalization data because some suicide attempts require medical attention provided in clinics or doctor's offices. These encounter data are not collected by any single agency. Other suicide attempts are not reported to any health professional and, therefore, not measurable.

Among the northeastern states, Connecticut ranks 4th in female suicides behind New Hampshire, Vermont, and Maine. Connecticut is also ranked 4th in female self-inflicted injury hospitalizations behind New Hampshire, Maine, and Massachusetts (Table 23-1).

Connecticut females most often attempt and commit suicide by poisoning. In 1997, one-third of all suicides and 85 percent of all self-inflicted injury hospitalizations were caused by drug or gas poisoning (Mueller et al., in preparation; Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001). Not surprisingly, more lethal methods, such as hanging or firearms, represent a greater proportion of female suicides (29 and 14 percent, respectively) than hospitalizations (< 1 percent and 0, respectively).

TABLE 23-1
SUICIDE DEATHS AND SELF-INFLICTED INJURY HOSPITALIZATIONS
Northeastern States, Females Aged 10 and Older, 1992-1996

State	1992-1996 Death Rate per 100,000	Rank	1996 Hospitalization Rate per 100,000	Rank
Connecticut	4.2	4	85.1	4
Maine	4.8	3	93.7	2
Massachusetts	4.0	5	89.9	3
New Hampshire	5.3	1	97.7	1
New Jersey	3.6	7	80.3	6
New York	3.8	6	59.5	8
Rhode Island	3.8	6	80.6	5
Vermont	5.0	2	77.0	7

Source: Education Development Center, Inc. 2000.

Age

Female suicide and self-inflicted injury hospitalization rates are highest among adolescents. Suicide was the second leading cause of death for Connecticut females between 15 and 24 years of age, exceeding cancer and homicide deaths. Similar to national proportions, nearly one in three female high school students in Connecticut have considered suicide, one out of five have been serious enough to create a plan to carry it out, and one in ten have attempted suicide (Table 23-2).

Self-inflicted injury hospitalization rates were two-thirds higher for female adolescents aged 15 to 19 years than the rates of women between 20 and 34 years (Fig. 23-1). After age 19, self-inflicted injury hospitalization rates drop steadily with age.

TABLE 23-2
SUICIDE ATTEMPTS
U.S. and Connecticut Females, Grades 9-12, 1997

Suicidal Behaviors	U.S. %	CT %	CT # (estimated)
Seriously considered suicide	27	28	27,000
Made a suicide plan	20	20	20,000
Attempted suicide	12	13	12,000
Suicide attempt required medical attention	3	4	4,000

Source: Centers for Disease Control and Prevention, 1998.
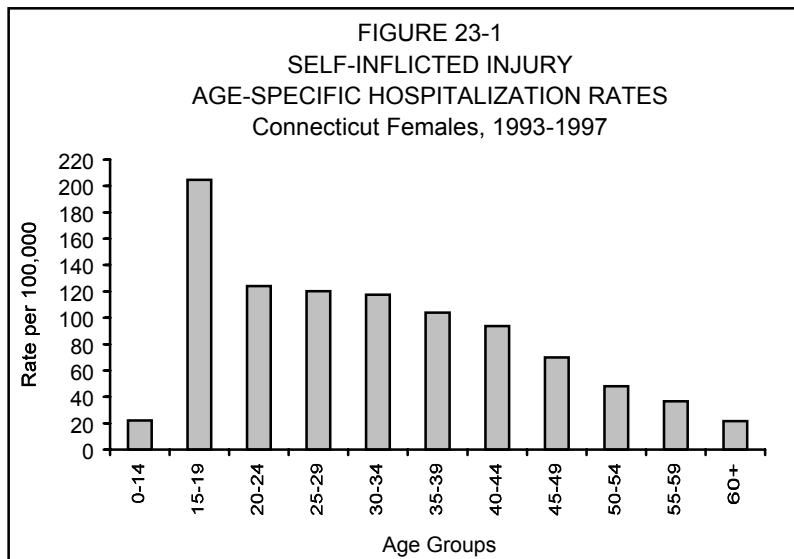
FIGURE 23-1
SELF-INFLICTED INJURY
AGE-SPECIFIC HOSPITALIZATION RATES
Connecticut Females, 1993-1997

Source: Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001.

Race and Ethnicity

Suicide deaths and hospitalization rates for white and black women have not changed significantly over the past decade. There were insufficient numbers of suicide deaths among Hispanic, Asian and Pacific Islander, and Native American women during this period to calculate reliable mortality rates. Over 90 percent of the female suicides in Connecticut were among white women (Mueller et al., in preparation).

However, there are reported ethnic disparities in self-inflicted injury hospitalizations. From 1993 to 1997 in Connecticut, Hispanic females had a significantly higher hospitalization rate than white women (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001) (Table 23-3). Nationally, twice as many Hispanic female adolescents (21 percent) attempted suicide than black or white female adolescents (11 percent, and 10 percent, respectively) and twice as many Hispanic women (11 percent) reported being depressed than did black and white women (nearly 6 percent and 5 percent, respectively) (Rouse, 1995). Research has not identified the cause of these disparities but it has been suggested that there are added stresses, such as single parenting, poverty, and the lack of health insurance that place many Hispanic women at risk for mental health problems (Office of Research on Women's Health, 1998).

RISK FACTORS

The most significant risk factors for suicide include a prior suicide attempt and mental disorders, particularly mood disorders such as depression and bipolar disorder, in combination with alcohol or substance abuse (Regier et al., 1990; U.S. Department of Health and Human Services, 1999). Research indicates that at least 90 percent of all people who kill themselves have a mental or substance abuse disorder (Regier, et al., 1993) and over 90 percent of children and adolescents who commit suicide have a mental disorder before their death (Shaffer & Craft, 1999). Depression is the most significant risk factor among adolescent females and is suggested to increase the risk of suicide twelve-fold, whereas a previous suicide attempt may triple the risk. (Shaffer et al., 1996). Major depressive disorders associated with suicide risk are shown to continue from adolescence into adulthood (Weissman et al., 1999).

Other risk factors for suicide include access to alcohol, illicit drugs, and firearms; and stressful life events, such as getting into trouble at school, an estranged relationship, or a fight among friends (U.S. Department of Health and Human Services, 1999). Exposure to suicide in the family, among friends, and even of a real or

TABLE 23-3
SELF-INFLICTED INJURY HOSPITALIZATIONS
BY RACE AND ETHNICITY
Connecticut Females, 1993-1997

Race/Ethnicity	Number of Hospitalizations	Age Adjusted Rate per 100,000
All races	5,981	73.7
White, non-Hispanic	4,664	71.6
Black, non-Hispanic	515	65.1
Asian/Pacific Islander, non-Hispanic	32	16.8[‡]
Native American, non-Hispanic	5	[†]
Hispanic	654	97.9[‡]

Source: Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001.
[†] Statistics not calculated for fewer than 25 events.
‡ Rate significantly different from that of whites (p< .05)
Notes: U.S. Census Bureau population estimates used for rate calculations. Rates adjusted to the 2000 U.S. standard million population.

fictional celebrity can contribute to suicidal thoughts or behavior (Gould & Shaffer, 1986). Research also links sexual orientation and depression with suicidal tendencies (Garofolo et al., 1999).

a medical emergency and requires appropriate treatment from mental health and medical professionals. The community of medical professionals (e.g., internists, pediatricians, nurse practitioners) are often the only source of health

TABLE 23-4
SUICIDE RISK FACTORS

◆ Previous suicide attempt	◆ Mental disorders, such as depression and bipolar disorder
◆ Adverse life events	◆ Co-occurring mental illness and alcohol or substance abuse
◆ Impulsive or aggressive tendencies	
◆ Access to lethal methods, especially firearms	◆ Family history of mental illness or substance abuse
◆ Family history of suicide	◆ Exposure to the suicidal behavior of others, including family, peers, or in the news or fiction stories
◆ Hopelessness	
◆ Physical illness	◆ Family violence, including physical or sexual abuse
◆ Feelings of isolation	◆ Unwillingness to seek help due to stigma attached to mental and substance abuse disorders or suicidal thoughts
◆ Cultural and religious beliefs	
◆ Barriers to accessing mental health treatment	

Source: U.S. Department of Health and Human Services, 1999

ECONOMIC BURDEN

Attempted and completed suicides in Connecticut were estimated to cost over $8 million in medical expenses and over $216 million in lost wages during 1996 (Education Development Center, 2000). However, these figures are substantially underestimated. Hospitalization charges for self-inflicted injury at acute care facilities alone totaled over $8 million in 1997 for Connecticut females, an average of $7,000 per hospitalization (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001). This does not include inpatient or outpatient care at psychiatric institutions.

PREVENTION AND TREATMENT

Suicide prevention strategies should be comprehensive and include a focus on increasing the recognition and appropriate response to suicide risk factors. The Surgeon General recommends broadening the public's awareness of suicide and enhancing public health and clinical services (U.S. Department of Health and Human Services, 1999). Every suicide attempt is

services for many adolescents and adults, including mental health services. Nationally, 27 percent of young people aged 9 to 17 years with a psychological condition receive treatment in the medical services sector (Howard et al., 1996), and 20 percent use mental health services in their schools (Reiger et al., 1990).

It is important to recognize that screening within the medical, mental health, and school community (e.g., school nurses, youth program staff, teachers, counselors) can be effective for early detection and referral to appropriate treatment of depression and suicidal behavior.

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INTRODUCTION

Violence is a physical or sexual act carried out with the intention or perceived intention of causing physical pain or injury to another person. The U.S. Department of Health and Human Services includes psychological and emotional abuse as a form of violence when there has been prior physical or sexual violence (Centers for Disease Control and Prevention, 1999).

There are three forms of violence that predominantly victimize women: sexual assault, family violence, and intimate partner violence (IPV). Family violence and IPV are defined by the relationship of the victim to the perpetrator, whereas sexual assault is defined according to the type of violence.

Sexual assault, including rape, is the use of physical force to attempt or compel a person to engage in a sexual act against their will. Victims include persons without the ability to communicate unwillingness to engage in the act because of age, illness, disability, the influence of alcohol or other drugs, or intimidation (Petersen, 1998). The rate of female rape and sexual assault was 7.5 times greater than the rate for males (Rennison, 2000).

Family violence includes the physical or sexual assault or abuse of children, partners, siblings, or parents living together in a household. Over 75 percent of victims of family violence are female (Connecticut Department of Public Safety, 1998).

Physical, sexual, and psychological violence against women is perpetrated most often by an intimate partner, but includes assault by a relative, acquaintance, or stranger. Two out of every five women in the United States have experienced violence once in their lifetime (Tjaden & Thoennes, 1998; The Commonwealth Fund, 1999) and two-thirds (68 percent) knew their offender as a partner, friend, or relative (Rennison, 2000). Approximately one in five

female students reported being physically or sexually abused by a dating partner (Silverman et al., 2001). Nationally, there are an estimated 1.5 million women who are physically or sexually assaulted by a current or former intimate partner every year (Centers for Disease Control and Prevention, 2000).

SCOPE OF THE PROBLEM

The full extent of violence against women is difficult to assess due to inconsistent reporting methods and the limited number of data sources. There are different measures of violence against women, ranging from an assessment of self-reported prevalence to a review of police reports and arrests. These methods are further complicated when the research considers the relationship between the victim and the assailant or the type of violence inflicted. Secondly, there are gaps in the surveillance of injury and trauma services provided by private practitioners and emergency departments, where over 80 percent of medical care is provided to victims of violence (Tjaden and Thoennes, 2000). Lastly, most existing data sources used to determine the prevalence of violence against women rely on the victims' willingness to disclose their victimization. This willingness is often justifiably limited due to the fear of reprisal, of not being believed, or of being blamed for instigating the act (Hadley, 1996). Despite these limitations, the data presented below establish violence against women as a significant public health problem in Connecticut.

Self-reported

In Connecticut in 1995, an estimated 1,500 per 100,000 (20,000) women reported that they were victims of physical violence from a current or former spouse, boyfriend, or girlfriend during the past year (Adams, 1998) (Table 24-1).

Crisis Services

Nearly 40,000 women and children requested the services of 18 domestic violence shelter programs in Connecticut from July 1, 1998 to June 30, 1999 (Table 24-1). Approximately 2,500 of them required the use of an emergency shelter because they were in serious physical danger and had no other safe haven (Connecticut Coalition Against Domestic Violence, 1999). During that same time period, nearly 3,000 women reported a sexual assault to a crisis service. Two-thirds of these women were between the ages of 18 and 44 years and 86 percent knew their assailant. Only 20 percent of the sexual assault victims that contacted a crisis service reported the assault to the police or received medical assistance (Connecticut Sexual Assault Crisis Services, 1999).

Criminal Offenses

Eighty percent of the victims of family violence offenses that involved police intervention during the past decade were women. Over two-thirds of all family violence victims were intimate partners of the offenders (Connecticut Department of Public Safety, 1988-1999).

Rape is the crime least often reported to law enforcement, often due to fear of retribution and shame of discussing the incident (Rennison, 2000). Marital rape is often overlooked since women are more reluctant to reveal rape by their spouses, even more so than to disclose physical abuse (Geffner and Pagelow, 1990). The number of attempted and completed rapes of females reported in Connecticut has decreased during the past decade from 842 in 1988 to 727 in 1998 but the rate remained stable at 60 per 100,000 women aged 16 years and older (Connecticut Department of Public Safety, 1988-1998). These rates do not reflect the number of sexual assaults other than rape or statutory rape of females under 16 years of age.

Hospitalizations

In 1997, over 22,000 Connecticut women 18 years and older were hospitalized for all injuries, 152 were identified as victims of assault, 32 were victims of abuse, and 6 were rape victims. Twenty of the 32 victims of abuse were assaulted by their current or former intimate partner (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001).

TABLE 24-1
SUMMARY MEASURES OF VIOLENCE AGAINST WOMEN
Connecticut Females, Selected Years and Age Groups

Violence Measure	Number	Rate/100,000 females[a]
Family violence victims receiving shelter services, all ages, 1999	38,617 [b]	2,290
Self-reported domestic violence victims, aged 18+ years, 1995	20,000 [c]	1,540
Family violence victims involving police intervention, all ages, 1999	12,906 [d]	780
Rape victims receiving crisis services, all ages, 1999	2,921 [e]	170
Rape victims involving police intervention, aged 16+ years, 1998	727 [d]	60
Assault hospitalizations, all ages, 1997	189 [f]	10

[a] Rates calculated using U.S. Census Bureau population estimates.
[b] Connecticut Coalition Against Domestic Violence, 1999.
[c] Adams, 1998.
[d] Connecticut Department of Public Safety, 1998.
[e] Connecticut Sexual Assault Crisis Services, Inc., 1999.
[f] Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001.

Homicides

One in three female homicides in the U.S. and Connecticut were the result of intimate partner violence (Saltzman, et al., 1999; Fox and Zawitz, 2000; Connecticut Department of Public Safety, 1999). From 1996 to 1998, homicide was the fifteenth leading cause of death and the ninth leading cause of premature death for all women in Connecticut. There was no significant change in homicide rates over the past decade (Table 24-2).

Younger women are at greater risk of violent death. Homicide was the third leading cause of death for women aged 15-24 years of age and the leading cause of death for black women in that age group. From 1996 to 1998, the rate of homicide deaths among black females was significantly higher than the rate for white females. There were insufficient numbers of homicide deaths among Hispanic, Asian and Pacific Islander, and Native American women in Connecticut during this period to calculate reliable rates (Table 24-2).

HEALTH CONSEQUENCES

Women who suffer from physical and sexual violence are more likely to report general health problems, exhibit depressive symptoms, or have a mental health diagnosis. Women who experience ongoing abuse may not be able to make appropriate choices to reduce their health risks or obtain complete, effective care for other conditions (Cohen et al., 2000). Violence is associated with unintended pregnancy, gynecological diagnosis, abortion, and sexually transmitted disease, including HIV (Campbell et al., 2000; United National Children's Fund, 2000).

Fatal outcomes from violence include homicide, suicide, maternal mortality, and AIDS-related deaths. Nonfatal outcomes include head and facial fractures, burns, broken bones, internal bleeding, neurological damage, and permanent physical disability. Mental health consequences of violence include post-traumatic stress disorder, eating disorders, alcohol or substance abuse, and major depression (Centers for Disease Prevention and Control, 1998; United National Children's Fund, 2000). Of the 20 female Connecticut residents hospitalized for abuse in 1997, 12 were admitted for broken bones or facial contusions, and 11 were diagnosed with alcohol or drug dependence (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001).

TABLE 24-2
HOMICIDE AND LEGAL INTERVENTION DEATHS
BY RACE AND ETHNICITY
Connecticut Females, 1989-1991 and 1996-1998

Race/Ethnicity	1989-1991		1996-1998	
	Number of Deaths	Age Adjusted Death Rate (per 100,000)	Number of Deaths	Age Adjusted Death Rate (per 100,000)
All races	127	2.4	106	2.1
White	89	1.9	61	1.4
African American/Black	35	6.9	42	8.3[‡]
Asian/Pacific Islander	1	[†]	1	[†]
Native American	0	[†]	2	[†]
Hispanic/Latina	13	[†]	9	[†]

Source: Mueller et al., in preparation.
† Statistics not calculated for fewer than 15 events.
‡ Rate significantly different from that of whites (p< .05)
Notes: U.S. Census Bureau population estimates used for rate calculations. Rates adjusted to the 2000 U.S. standard million population.

RISK FACTORS

Violence touches women from all races, religions, socioeconomic backgrounds, and lifestyles living in cities, suburbs, and rural areas. However, some women are at greater risk than others for sexual assault, family violence, and intimate partner violence.

History of Abuse

Women with a childhood history of abuse are at greater risk of experiencing violence later in life (Ammerman and Hersen, 1990; Cohen et al., 2000). Nearly two-thirds of women reporting childhood abuse experienced family violence as an adult, compared with only one-quarter of women without a history of childhood abuse (The Commonwealth Fund, 1999).

The history of abuse is also a significant risk factor for the offender. Violence is most common in adults who, as children or adolescents, witnessed or were victims of family violence (Hotaling and Sugarman, 1986; Tjaden and Thoennes, 2000). Connecticut police report that children were present or participated in 45 percent of the family violence incidents during the past decade (Connecticut Department of Public Safety, 1989-1999).

Income

Women living on low incomes or experiencing economic stress present a higher risk for violence. Nearly one-half of women with incomes of $16,000 or less reported at least once incident of family violence or abuse in their lifetime, but only one-third with incomes of more than $50,000 (Rennison, 2000). More than half (52 percent) of women who said they have "a lot of trouble" paying for food, phone, gas and electricity reported being victims of domestic abuse (The Commonwealth Fund, 1999).

Urban Residence

Connecticut's rates of family violence and rape were 80 percent higher in cities with populations greater than 65,000 persons[1] than the statewide rates (518 vs. 930 per 100,000, respectively). Similarly, the rate of rape offenses in urban areas was higher (79 per 100,000 women) than the statewide rate of 44 rape offenses per 100,000 women (Connecticut Department of Public Safety, 1998). Urban populations represent 25 percent of the state's total population but over 40 percent of all reported family violence and rape offenses in Connecticut. The higher rates of violence against women in urban areas may be attributable to many factors, including the concentration of persons in poverty and the proximity of neighbors and witnesses who call the police when violence erupts (Miles-Doan and Kelly, 1997).

ECONOMIC BURDEN

The economic burden of violence against women includes the cost of medical and psychological treatment, police services, criminal justice (prison, prosecution), emergency shelters, social services, and productivity loss for working women, their families, and the offenders. Annual medical costs and lost productivity resulting from violence against women are estimated at $5 to $10 billion per year (U.S. Bureau of National Affairs, 1990; Meyer, 1992; Laurence and Spalter-Roth, 1996). Applying national per capita estimates ($19-38) to Connecticut's 1998 population estimates, $62-124 million was spent in Connecticut for medical costs and lost productivity resulting from violence against women.

PREVENTION AND TREATMENT

Current prevention strategies focus on the medical and criminal justice communities' assessment and intervention for both offenders and victims. Screening for offenders requires the recognition of violence risk factors such as: alcohol and drug abuse, mental illness, social isolation, lack of close family ties, low self-

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[1] Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury.

esteem, lack of financial resources, and aggressive or hostile behavior (Heise and Gottemoeller, 1999). Interventions include anger management counseling and violence prevention programs. Connecticut courts try to deter domestic violence with 6-month restraining orders to legally keep offenders away from victims when physical pain or injury is threatened or present in a household. However, restraining orders do not always prevent a recurrence of domestic violence. For example, Connecticut police reported a prior court order existed in 17 percent of the 18,948 domestic violence incidents in 1999 (Connecticut Department of Public Safety, 1999).

Female victims of intimate partner violence use a disproportionate share of health care services, including more visits to emergency departments, primary care facilities, and mental health agencies than nonabused women (Coker et al., 2000). Therefore, the opportunity exists for assessment and early intervention by the medical community for victims of violence to decrease the risk of further injuries and death. Connecticut law allows the Department of Social Services to administer shelter services and temporary family assistance for victims of domestic violence (C.G.S. 17b-112 and 17b-850).

Confidential 24-hour hotlines provide domestic violence and sexual assault victims with crisis information services, information about laws, protections, counseling support, and referrals to community services. There are 2 statewide 24-hour hotlines for violence against women sponsored by the Connecticut Coalition Against Domestic Violence (CCADV) and the Connecticut Sexual Assault Crisis Service (CONNSACS). CCADV received over 23,000 hotline calls in fiscal year 1999 while CONNSACS received over 14,000 calls during the same time period. This averages out to nearly 100 telephone calls a day seeking crisis services for domestic violence or sexual assault.

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25. FALLS AND FALL-RELATED INJURIES

INTRODUCTION

Falls, related injuries, and their complications are a serious public health concern among older women. It is estimated that every year about 30 percent of people over age 65 experience a fall (Tinetti, et al., 1989; Sattin, 1992) and that 20 percent to 30 percent of these individuals (28,000 to 42,000 women and men in Connecticut) sustain injuries that reduce their independence and mobility and increase their risk for premature death (Alexander, et al., 1992). Hip fractures, the most serious fall-related injury, can drastically reduce a person's quality of life by imposing functional limitations that lead to gradual physical deterioration. Over 90 percent of hip fractures are the direct result of a fall (Grisso et al., 1991; Stevens and Olson, 2000). Because the Connecticut population is aging, the number of hip fractures is likely to increase substantially in the next two decades.

SCOPE OF THE PROBLEM

Deaths

Between 1989 and 1998, 888 Connecticut females died of fall or fall-related injuries. Ninety percent of these deaths occurred among women aged 65 and over. Falls and fall-related injuries were the second-ranked cause of unintentional injury death among all Connecticut women during this period and they were the leading cause of unintentional injury death among women 70 and over. Fall and fall-related death rates increase sharply with age with the highest death rates occurring among women aged 85 and older (Mueller et al, in preparation).

The vast majority of female deaths due to falls and fall-related injuries occur among white women (Table 25-1). Between 1989 and 1998, 98 percent of all such deaths occurred among white women. There were too few deaths among black, Hispanic, Asian and Pacific Islander, and Native American women during this period to calculate reliable rates. Death rates due to falls and fall-related injuries among Connecticut females remained about the same between 1989 and 1998.

TABLE 25-1
FALL AND FALL-RELATED INJURY DEATHS BY RACE AND ETHNICITY
Connecticut Females, 1989-1991 and 1996-1998

Race/Ethnicity	1989-1991		1996-1998	
	Number of Deaths	Age Adjusted Death Rate (per 100,000)	Number of Deaths	Age Adjusted Death Rate (per 100,000)
All races	282	4.4	293	4.0
White	275	4.5	287	4.1
African American/Black	5	†	3	†
Asian/Pacific Islander	0	†	1	†
Native American	0	†	2	†
Hispanic/Latina	4	†	3	†

Source: Mueller et al, in preparation.
† Statistics not calculated for fewer than 15 events.
Notes: U.S. Census Bureau population estimates used for rate calculations. Rates adjusted to the 2000 U.S. standard million population.

During the 1996 to 1998 period, Connecticut rates were not significantly different from U.S. rates (Mueller et al, in preparation). Connecticut data are consistent with 1996 national figures showing that white women were twice as likely as black women aged 65 and older to die of fall-related deaths (Centers for Disease Control and Prevention, 1999).

Hospitalizations

The most common fall-related injuries among older Americans are fractures of the hip, spine, upper arm, forearm, and bones of the pelvis, hand, and ankle. Of these, hip fractures are the most serious injury. Fifty percent of all Americans hospitalized for hip fractures do not regain their previous level of functioning (Stevens et al., 1999; Stevens and Olson, 2000). Between 1993 and 1997, there were more than 33,000 hospitalizations for fall and fall-related injuries among Connecticut females. About 78 percent of these hospitalizations occurred among women aged 65 and over. The vast majority of fall and fall-related hospitalizations were among white women. The age-adjusted hospitalization rate of white women was about four times higher than that of Asian and Pacific Islanders, more than twice that of Latinas, and 1.5 times higher than that of black women. There were too few fall and fall-related hospitalizations among Native American women to calculate reliable rates (Table 25-2). The median charge for all fall and fall-related injury hospitalizations was about $10,700 in 1997 (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001). Connecticut data are consistent with 1996 national figures indicating that white women aged 65 and over were significantly more likely than black women to be hospitalized for hip fractures (Centers for Disease Control and Prevention, 1999).

RISK FACTORS

Several physiological, behavioral, and environmental factors increase the risk for falls and related injuries. The risk of falling increases with age with the highest fall and fall-related mortality rate occurring in the oldest age group (85 and older). Health conditions that limit the performance of routine daily activities such as dressing or bathing, muscle weakness or problems with balance, vision problems, and osteoporosis, a condition that increases bone fragility, are highly associated with increased risk for falls (Table 25-3). Also, the presence of underlying chronic diseases such as cerebrovascular, cardiovascular, and neurologic disorders may increase the number of falls among older persons (Sattin, 1992). Behavioral factors include the use of multiple medications or

TABLE 25-2
FALL AND FALL-RELATED INJURY HOSPITALIZATIONS
BY RACE AND ETHNICITY
Connecticut Females, 1993-97

Race/Ethnicity	Number	Age Adjusted Rate (per 100,000)
All races	33,196	311.6
White	30,917	316.4
African American/Black	1,158	208.9[‡]
Asian/Pacific Islander	57	78.7[‡]
Native American	7	[†]
Hispanic/Latina	610	152.4[‡]

Source: Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001.
† Statistics not calculated for fewer than 25 events.
‡ Rate significantly different from that of whites (p< .05).
Notes: U.S. Census Bureau population estimates used for rate calculations. Rates adjusted to the 2000 U.S. standard million population.

psychoactive medications, sedentary lifestyle, and a history of falls. Environmental factors include home hazards like floor clutter, slippery surfaces, and poor lighting (Stevens and Olson, 2000; Centers for Disease Control and Prevention, 2000). The risk of falling has been shown to increase with the number of risk factors present (Tinetti, et al., 1988; Nevitt et al., 1989); therefore, programs that target several of these modifiable risk factors offer promise in reducing fall incidence.

White and Asian females are considered

(Tinetti et al., 1994). These include regular exercise to improve strength, balance, mobility, and flexibility (Judge et al., 1993; Lord et al., 1993; Lord et al., 1996). Tai Chi is a commonly used exercise in intervention studies. Other strategies include review and adjustment of medications by a health care professional to minimize side effects such as dizziness, drowsiness, or disorientation; and education about fall prevention through written materials and home visits and assessments (Stevens and Olson, 2000). Early detection and treatment of

TABLE 25-3
RISK FACTORS FOR FALLS AND FALL-RELATED INJURY AMONG OLDER ADULTS

• Increasing age	• Low body mass index
• Muscle weakness	• Use of psychoactive medications(tranquilizers or antidepressants)
• Lack of physical activity	• Some combinations of medications
• Difficulties in gait and balance	• A history of falls
• Visual impairment	• Home environmental hazards (e.g. poor lighting, loose rugs, and
• Osteoporosis	unstable furniture)

Source: Stevens and Olson, 2000.

high risk groups for osteoporosis (U.S. Department of Health and Human Services, 2001). White females are a high risk group for fall-related hospitalizations and deaths (Centers for Disease Control and Prevention, 1999). State and national data indicate that white women incur significantly more fall-related hospitalizations and deaths than do black women. Researchers have suggested that greater bone mass among black compared to white females may partially explain their lower prevalence of fall-related injuries (Snelling et al., 2001). Such hypotheses are not well supported by research evidence, however (Kessinich, 2000). Racial and ethnic differences in bone health and osteoporosis prevalence have not been well studied and the National Institutes of Health has identified this as an important area for further investigation (U.S. Department of Health and Human Services, 2001).

PREVENTION AND TREATMENT

Combinations of strategies have been shown to reduce the risk of falling among older women

common vision conditions such as cataracts and glaucoma might reduce falls. Prevention and appropriate treatment of chronic illnesses such as cardiovascular disease could decrease the number of falls and related injuries (Sattin, 1992).

Sixty percent of fatal falls among older Americans occur in the home (Sorock, 1988), so identification of household hazards is particularly important. Modifications such as increasing lighting, installing rails on both sides of stairs, installing grab bars, removing tripping hazards such as loose rugs, objects on floors, and unstable furniture, and correcting uneven or slippery floors are particularly important (Stevens and Olson, 2000). Basic clinical screening tests can accurately identify seniors who are at high risk for falls (Centers for Disease Control and Prevention, 2000). Other promising prevention strategies include identifying footwear that promotes stability and balance, developing more effective home lighting systems, and designing undergarments with absorbent hip pads (Stevens and Olson, 2000).

Such multifactorial approaches have been shown to be cost-effective (Rizzo et al. 1996).

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Connecticut Women's Health was developed to provide baseline data and a context for assessing the overall health and well being of Connecticut women at the beginning of this new millennium. It is hoped that health professionals, policymakers, academics, and advocates will be able to build upon this foundation to improve the health of all women in Connecticut in the coming years. *Connecticut Women's Health* examines more than 24 selected health conditions important to women across their life span and establishes, wherever possible, the status of women with respect to these conditions. It describes the social context of women's health in the United States, profiles the demographics of Connecticut's women, and discusses the threats to health posed by access barriers to health care services for women.

Although the health of Connecticut women compares well to the health of women nationally, some feel that the health of women everywhere in the United States could be significantly improved (National Women's Law Center et al., 2000). The findings from *Connecticut Women's Health* do not contradict that opinion, underlining the fact that women have a long way to go to achieve the definition of health articulated by the World Health Organization, "a state of complete well being, physical, social, and mental, and not merely the absence of disease or infirmity" (World Health Organization, as quoted in Committee for the Study of the Future of Public Health, 1988, pg. 39).

But where should Connecticut begin? With so many issues of concern to women, political leaders, scientists, practitioners, and advocates can debate endlessly which issues should have priority. However, one thing is certain. An ongoing discourse about the condition and progress of women's health is needed, and it should be led by the women of Connecticut, because their health and well-being depend on the outcome.

Since more than 1.7 million residents are directly affected, there is no shortage of opinion about what should be done to improve women's health in Connecticut. To move the discussion forward, consider some of this report's notable findings:

♦ From the perspective of mortality, the leading causes of death for women in Connecticut are cardiovascular disease and cancer, led by lung and breast cancer (age-adjusted mortality rates of 286, 41, and 30 deaths per 100,000 women, respectively; Mueller et al., in preparation). These diseases share a number of modifiable risk factors in common: smoking, diet, overweight, and physical inactivity. Although the Behavioral Risk Factor Surveillance System provides much information on these conditions and risk factors, greater investment in this important public health tool would improve our knowledge of these and other health conditions by allowing more precise estimates of risk for local communities and small population groups.

♦ From the perspective of sheer magnitude, i.e., the number of people affected, violence against women is a serious health threat. Estimates are that 40 percent of all women, or 640,000 Connecticut residents, are touched by violence at some point in their lives. This statistic includes only female victims of violence, and would be greater if all those persons significantly involved in the violence were also counted, for example, the perpetrators, family members, co-workers, friends, and neighbors. Estimates of the social and economic costs are proportionally high. This problem is widely believed to be underreported and underestimated. In counterpoint to the issue's magnitude, the data sources that are used to track violence against women are fragmented, and

Connecticut currently has no organized or integrated surveillance system.

♦ Once again, from the perspective of magnitude, one woman in five over the age of 50 has clinically defined osteoporosis, and one in two over 50 will sustain an osteoporosis-related fracture in her lifetime. Osteoporosis is a condition that progresses steadily after menopause, and leads to significant mortality as a consequence of hip fracture, a common complication, and to permanent disability. As with violence, Connecticut has very little precise, population-based data on the prevalence of the condition, and no organized or integrated surveillance system.

♦ Disparities in health status, the utilization and outcomes of medical treatments, health insurance status, and access to health services have been widely documented between white Americans and Americans of color in the public health literature. Connecticut is not an exception to these findings, with significant health disparities across several indicators of mortality, chronic diseases, infectious and sexually-transmitted diseases, pregnancy and birth outcomes, and hospitalizations (Hynes et al., 1999). This report documents similar patterns among Connecticut women. For all 13 health conditions presented in this report where reliable, comparative statistics could be calculated, there were significant differences between the age-adjusted death rates of whites and at least one racial-ethnic group (Mueller et al., in preparation). Furthermore, for all 20 health conditions presented in this report where reliable, comparative statistics could be calculated, there were significant differences between the age-adjusted hospitalization rates of whites and at least one racial-ethnic group (Connecticut Department of Public Health, Division of Policy, Planning, and Analysis, 2001). The magnitude and pervasiveness of the health disparities based on race and ethnicity affect every woman in the state, even though the causes of these disparities

are not clear. For black women, these disparities translate into 5 lost years of life (in 1998, life expectancy for white women at birth was 79.9 years, for black women, 74.7 years; Kramarow et al., 1999).

♦ The relationship between our social environment and health has been a core theme of public health for more than a century. The influence of gender, income, education, occupation, family structure, and other factors on health is well documented. But in this country, the dominant biomedical model of health views these social factors as contextual aspects of society, which, although affecting health, are not subject to intervention through the traditional tools of medicine. As a result, the social determinants of health are not viewed as characteristics that we, as a society, can decide to change for the benefit of all (Ruzek, 1993). As a result of the gender inequities in our society, women earn less, have less education, and hold lower status occupations than men. This affects women's access to safer and more sanitary housing, better nutrition, healthier foods, safer working conditions, better employee benefits, and better access to health care. Because of society's traditional gender roles, women are more likely to care for children, elders, and other family members, and this affects their health negatively. Women are more likely to be single heads of household, a family structure that has increased in proportion from one in ten to one in five families since 1970. Sixty percent of these families contain young children. Households headed by single females are twice as likely to be living in poverty as households headed by single men, and five times as likely as families headed by two parents (U.S. Bureau of the Census, 1995). Although many epidemiological studies have demonstrated the importance of these social determinants on health, few states have incorporated social indicators into their primary surveillance systems so that their effect on the health of the population can be routinely monitored and studied.

How will these priorities, and others, be addressed? First, through enhanced surveillance and research to improve our current epidemiological knowledge of the social, behavioral, and biological factors which underlie these conditions. Second, through the development of public policies which support and strengthen the social and biological foundations for good health. And third, through the implementation of programs and activities which address the specific needs of individuals and communities throughout the state.

Research and Surveillance

Historically, women's health research focused on reproductive functions, and drew conclusions about non-reproductive conditions largely from studies based on men. But with the lengthening of women's life expectancy and the advent of the modern women's health movement in the 1960's, researchers and academicians have developed a greater interest in and knowledge about women's experience of health and disease across the life span. The scope and volume of research focused on women have increased considerably during the last decade as the federal government reorganized its health administration and funding priorities. Progress remains to be made, however, to improve our understanding of the relationships between health and the biological and social determinants of health: age, sex, genetics, family history, race, gender, ethnicity, culture, socioeconomic status, education, and occupation (Office of Disease Prevention and Health Promotion, 1997; Weisman, 1997).

The Connecticut Department of Public Health recognizes the need for additional research into women's health, and particularly for expanded disease surveillance. Efforts are currently underway to expand the surveillance of multicultural health; the social determinants of health; the incidence of certain chronic diseases and their risk factors; and health services. In this report discussions of certain health conditions, for example osteoporosis, violence, and autoimmune diseases, were limited because of a paucity of state-specific data. Some conditions, for example eating disorders and carpal tunnel

syndrome, were not discussed. Mental health, especially depression, and substance use, including alcohol use, are important health issues for women, but statewide, population-based data are limited.

Public Policy Development

Over the last decade, the federal Department of Health and Human Services (DHHS) recognized women's health as a unique and important domain for research and programmatic activity. This is reflected in the formation of three distinct administrative units. DHHS established the Office on Women's Health, which addresses gender inequities in research, the provision of health care services, and health education. The National Institutes of Health created the Office of Research on Women's Health, which promotes biomedical and behavioral research to improve women's health. And the Food and Drug Administration established the Office of Women's Health, which provides information specifically directed to women on nutrition and cosmetics. In addition, the importance of women's health is reflected in the goals of *Healthy People 2010*, the federal government's statement of its national health goals for the next decade. These goals are to eliminate health disparities related to gender, race, ethnicity, education, income, and sexual orientation (U.S. Department of Health and Human Services, 2000).

The Connecticut Department of Public Health has identified women's health as a statewide priority for policy and program development. In April 2000, the Department commenced this policy direction by hosting its first Women's Health Summit to encourage public and private health professionals to discuss women's health issues. In August 2000, the Division of Policy, Planning, and Analysis began to develop *Connecticut Women's Health* to provide a foundation for the discussion of women's health issues. And recently, the Department launched its Woman to Woman initiative, which promotes health and disease prevention among the state's less advantaged women.

Program Implementation and Population Needs

Changing policy priorities and epidemiological knowledge related to women's health has direct implications for public health programs. Traditionally, public health programs for women focused on reproductive and maternal functions. But as women's life spans increased and attitudes toward health changed, chronic and other health conditions took on an added importance.

To address these issues, the Department of Public Health's Breast and Cervical Cancer Early Detection Program is providing underserved Connecticut women with screening and diagnostic services for breast and cervical cancer. Recently, the Department formed the Connecticut Cancer Consortium, a partnership with the Yale Cancer Center, the University of Connecticut Health Center, and the Connecticut State Medical Society. The Consortium is developing a statewide cancer control plan designed to reduce the burden of lung, breast, and colorectal cancer through primary and secondary prevention, including surveillance, screening, and public and professional education. The Department's Women and Health program provides cardiovascular risk assessment, screening, and intervention to women between the ages of 50 and 64 who are below 200 percent of the federal poverty line, have no health insurance, or whose health insurance does not cover screening. One goal of the program is to provide women a low-cost intervention which they can follow if they are at risk, in contrast to the typical, high-cost pharmacological intervention.

The control of infectious diseases, particularly STDs and HIV/AIDS, has been a health priority for women for some time. The Department's AIDS Prevention and Treatment Services program coordinates counseling and testing services, risk reduction education, outreach to drug users, needle exchange, referral to drug treatment and care, case management, social marketing, and public information campaigns. The STD Control Program conducts urine-based STD testing through schools, correctional facilities, and Planned Parenthood clinics, and provides counseling, treatment, and public education.

To address violence against women, the Department supports both community programs targeted to battered women for early medical treatment and referral to support services, and the training of health care professionals to identify, treat, and help plan for the safety of battered women.

Finally, the Department's maternal and child health programs continue to provide an array of reproductive- and family-related programs designed to address women's needs. For example, family planning programs designed for low-income, uninsured, underinsured, minority, or adolescent women address pregnancy prevention, responsible parenthood, and safe sex practices. Access to early prenatal care is encouraged through free pregnancy testing, options counseling, and assistance in referrals for care where appropriate. The Maternal PKU program, in collaboration the Department and the University of Connecticut Health Center and Yale University School of Medicine, provides genetic and nutritional counseling and high-risk pregnancy care. The Pregnancy Exposure Information Service at the University of Connecticut Health Center is funded by the Department and provides information concerning the potential teratogenic effects of prescription drugs, maternal illness, infections, and occupational exposures. The Comadrona program is supported by the Department to facilitate access to comprehensive and continuous prenatal and pediatric services for low-income families of Hispanic origin. The Department, in collaboration with the University of Connecticut Health Center, directs the Pregnancy-Related Mortality Surveillance Program, which is designed to identify preventable causes of pregnancy-related mortality and facilitate educational programs to prevent such deaths. Finally, the Department administers WIC, the supplemental food program for women, infants, and children sponsored by the U.S. Department of Agriculture.

As the discussion of women's health in Connecticut moves forward, the Department of Public Health encourages health care providers, policy makers, and consumers to consider policy, program, and research initiatives that will improve the health status of all Connecticut's women.

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APPENDIX A TECHNICAL NOTES

Age-adjusted rates are used to compare relative risk across groups and over time. They represent weighted statistical averages of the age-specific rates, in which the weights represent the fixed population proportions by age. The age-adjusted rates in this report were computed by the direct method using the 1940 and 2000 U.S. standard populations. The total of expected deaths or hospitalizations divided by the total of the standard population and multiplied by 100,000 yields the age-adjusted rate per 100,000. The 1940 and 2000 U.S. standard million population distributions are shown below:

Age group	1940	2000
0-4	80,057	69,136
5-9	81,151	72,533
10-14	89,209	73,032
15-19	93,665	72,169
20-24	88,002	66,478
25-29	84,280	64,530
30-34	77,787	71,044
35-39	72,501	80,762
40-44	66,744	81,851
45-49	62,696	72,118
50-54	55,116	62,716
55-59	44,559	48,454
60-64	36,129	38,793
65-69	28,519	34,264
70-74	19,519	31,773
75-79	11,423	27,000
80-84	5,878	17,842
85+	2,765	15,508
Total	1,000,000	1,000,000

Age-specific rates can reveal age-related differences that are hidden in overall age-adjusted rates. For this report, the age-specific rate was calculated based on the number of deaths among individuals within a specific age group and calendar year, divided by the mid-year population of all residents in that same age group and then multiplied by 100,000.

Age standardization is a technique that allows for the comparison of rates in two or more populations. The National Center for Health Statistics (NCHS) has used the 1940 standard million population in reporting national mortality statistics for over 50 years. Implementation of the year 2000 population will be implemented with deaths occurring in 1999. Age-adjustment based on the year 2000 standard results in age-adjusted death rates that are larger than those based on the 1940 standard. The new standard will affect trends in age-adjusted death rates for certain causes of death and will decrease race and ethnicity differentials in age-adjusted death rates.

Age-standardized incidence rates are used to express the number of new cancers of a specific site/type occurring in a specified population during a year, expressed as the number of cancers per 100,000 population. These rates refer to the numbers of cancers, not to the numbers of people with cancers. All incidence rates are adjusted to the 1970 U.S. standard population. Rates are for invasive cancers only, unless otherwise specified.

Body Mass Index (BMI) is a measure of obesity. BMI = weight in kilograms divided by the square of height in meters.

Cause-of-death or -hospitalization classification: Mortality and morbidity statistics were compiled in accordance with the World Health Organization (WHO) regulations, which specify that mortality and morbidity data be classified by the current manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death. The *Ninth Revision of the International Classification of Diseases* (ICD-9) identifies the classification used to code and classify mortality data from death certificates. The *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) is used to code and classify morbidity data from inpatient records. Tabulations of cause-of-death and hospitalization statistics in this report are based solely on the underlying cause of death or the principal diagnosis, respectively, unless otherwise stated. The "underlying" cause is the disease or injury that initiated the series of events leading directly to death or hospitalization, or the circumstances of the event that resulted in the injury.

Disease	ICD-9 Mortality	ICD-9-CM Morbidity
Birth-related		V30-V39, DRGs 370-384
Cardiovascular	390-459	390-459
Coronary heart disease	402, 410-414, 429.2	402, 410-414
Cerebrovascular	430-438	430-438
Lung cancer	162.2-.9	162, 197.0, 197.3
Female breast cancer	174	174, 198.81
Colorectal cancer	153.0-154.3, 154.8, 159.0	153-154, 197.5
Cervical cancer	180	180
Ovarian cancer	183	183, 198.6
Endometrial cancer	182	182
Asthma	493	493
Chronic obstructive pulmonary disease	490-496	490-496
Diabetes mellitus	250	250
Osteoporosis		733.0, 733.1
Osteoarthritis		715
Auto-immune diseases		
Fibromyalgia		729.1
Graves disease		648.8
Hashimoto's thyroiditis		245.2
Multiple sclerosis		340
Rheumatoid arthritis		714.0
Scleroderma		710.1
Sjogren's syndrome		710.2
Systemic lupus		710.0
Auto-immune not otherwise specified		279.4
Sexually transmitted diseases		090-099
Pelvic inflammatory disease		614.0-614.5, 614.7-614.9, 615.0, 615.1, 615.9, 098.10, 098.16, 098.17, 098.30, 098.36-098.37, 098.39, 098.86
HIV infection	042-044	042, V08 (1995 and forward) 042-044, 279.19, 795.8 (Prior to 1995)
Pneumonia & influenza	480-487	480-487
Suicide & self-inflicted injury	E950-E959	E950-E959
Sexual assault		E960.1, V71.5
Abuse		
Child		995.5
Adult		995.8
By intimate partner		E967.3
Falls & fall-related injuries	E880-E888	E880-E888

Cause-of-death rankings are based on the National Center for Health Statistics List of 72 Selected Causes of Death, HIV infection, and Alzheimer's disease (National Center for Health Statistics, 1999). Ranks are based on the total number of deaths occurring during a specific time period. This report ranks number of deaths by age group, and race and ethnicity for the period 1996-98.

Hispanic origin refers to people whose origins are from Spain, the Spanish-speaking countries of Central America, South America, and the Caribbean, or persons of Hispanic origin identifying themselves as Spanish, Spanish-American, Hispanic, Hispano, or Latino. The death certificate has a separate line item for Hispanic ethnicity. Individuals identifying themselves as "Hispanic" can be of any race, and are also counted in the race breakdown as either "white," "black," "Asian or Pacific Islander," "American Indian," or other.

Hospitalization or *discharge* refers to any patient discharged from a non-federal, short-stay, acute care general hospital in Connecticut as recorded in the state's hospital discharge abstract and billing data base. A person may have multiple hospitalizations and thus may be counted more than once.

Population bases for computing rates are taken from the U.S. Census Bureau *Estimates of the population of states by age, sex, race, and Hispanic origin*. These data are estimates of the population of Connecticut by 5-year age groups (age 0 to 4, 5 to 9,…85 and over), sex (male, female), modified race (white; black; Native American including Alaska Natives; Asian and Pacific Islander) and Hispanic origin (Hispanic, non-Hispanic) for each year, July 1, 1989 through July 1, 1998. Population estimates for 1989 are taken from the series *1981 to 1989*; estimates for 1990 through 1997 are taken from the series *1990 to 1997* released on September 4, 1998; and estimates for 1998 are taken from the series *1990 to 1998* released on September 15, 1999.

Population rates in this report are on an annual basis and are per 100,000 estimated population in a specified group.

Premature mortality refers to deaths that occur before 65 or 75 years of age. (See *Years of Potential Life Lost*).

Race refers to a population of individuals who identify themselves from a common history, nationality, or geographical place. When responses in the 'race' line item on vital records are associated with the definition of Hispanic origin, they are re-coded to 'white race,' as described in the National Center for Health Statistics instruction manuals for coding vital records. Individuals identifying themselves as either 'white,' black,' Asian, American Indian or 'other' race can be of any ethnic group.) In mortality data in this report, 'Hispanic' may include women who are also included under either 'black' and 'white.' Hospitalization and incidence data classify white, black, and Hispanic women into mutually exclusive categories, with Hispanic ethnicity having priority.

Random variation: the mortality data in this report represent all Connecticut female resident deaths and are, therefore, not subject to sampling error. Mortality data, however, may be affected by random variation. When the number of events is often considered to be small (less than 100) and the probability of such an event is small, random variation may be relatively large, and thus considerable caution must be used in interpreting the data.

Relative survival rate: Relative survival rates for cancer are calculated using a method that adjusts observed survival for expected mortality. The 5-year relative survival rate represents the likelihood that a patient will not die from causes related specifically to cancer for 5 years after diagnosis. It always exceeds the observed survival rate for the same group of patients.

SEER is the Surveillance, Epidemiology, and End Results Program based within the Cancer Surveillance Research Program at the National Cancer Institute. Comparisons to "national" cancer incidence and survival rates in the Women's Health Report refer to the 9 SEER population-based registries, comprising 9% of the US population, which include Connecticut, and which have provided high quality and comparable data since 1973. SEER cancer incidence rates and national cancer mortality rates are age-adjusted to the 1970 US population, as are all Connecticut rates when reported by SEER or the Connecticut Tumor Registry.

Statistical significance levels are routinely used in research to screen findings and minimize the attention we might otherwise focus on spurious results that are due to chance alone. The statistical significance levels reported in this document all use a cutoff point of $p < .05$ to identify pairwise comparisons of rates that are deemed "significant." The "$p < .05$" criterion will reduce the number of chance differences that we label as "significant" to no more than 5 out of every 100 comparisons. In a study such as this one many statistical tests are performed. The overall chance of reporting spurious findings increases in proportion to the number of tests made. This problem is often referred to as the problem of "multiple inferences" or "multiple comparisons." Even if we treat our analysis of each disease or condition as a separate investigation, multiple statistical comparisons are found within each report section.

A standard response to this problem is to make the test criterion for a single test more stringent, so that the overall p-value for all tests still remains at the p< .05 level. There are both advantages and disadvantages to this remedy and the discussion of these issues is complicated (Thomas, 1985) and well beyond the scope of the report. We have chosen to report all comparisons as "significant" if they reach the p< .05 threshold. In adopting this threshold we are attempting to preserve a level of simplicity in our presentation of results that is appropriate for a general non-technical audience. For those readers interested in more detailed significance test results, they will be provided upon request.

In the process of deciding how to present significance test results in this report, we made the following observations with respect to the mortality data. (These points should also apply to other data sources.)
- In many cases the significant differences reported already satisfy a more stringent test criterion than p< .05.
- Some comparisons between race/ethnicity subgroups in 1996-1998 were significant at p< .05 but not lower (i.e. not p< .01). However these differences followed the same pattern in earlier years (e.g. 1989-1991), so if data from more than three years had been combined these significance levels would satisfy a more stringent test criterion than p< .05.
- Some comparisons between 1989-1991 and 1996-1998 were significant at p< .05 but not lower (i.e. not p< .01). In each case, the use of a more sophisticated method to estimate the annual percent change in the risk of dying (based on logistic regression models) resulted in lower significance levels.

Years of potential life lost (YPLL) represents the number of years of potential life lost by each death before a predetermined end point (e.g., 75 years of age). Whereas adjusted death rates are heavily influenced by the large number of deaths among the elderly, the YPLL measure provides a picture of premature mortality by weighting deaths that occur at younger ages more heavily than those occurring at older ages. It thereby emphasizes different causes of death. Age-adjusted YPLLs are calculated using the methodology of Romeder and McWhinnie (1977).

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APPENDIX B. SOCIODEMOGRAPHIC PROFILE

SUMMARY OF SOCIODEMOGRAPHIC DATA
Connecticut Females, 1980-2000

Connecticut Females, (unless otherwise noted)	1980 [a]	1990 [a]	1998 [e]	1999 [e]	2000 [a]
Population					
Male & Female	3,107,576	3,287,116	3,274,069	3,282,031	3,405,565
Female	1,609,571	1,694,276	1,685,462	1,689,230	1,756,246
Age					
0-14	316,138	308,856	324,910	340,475	346,237
15-24	279,193	223,678	187,421	188,820	197,804
25-44	440,921	553,915	527,778	511,194	524,747
45-64	352,306	339,341	366,830	370,217	407,277
65-74	124,709	144,640	130,715	128,626	127,563
75+	96,275	124,823	147,808	149,898	152,618
Race					
White/Caucasian	1,454,045	1,474,842	1,480,247	1,479,617	
Black/African American	114,489	143,664	159,551	161,977	
Asian & Pacific Islander	10,801	24,325	41,685	43,599	
Native American	2,441	3,718	3,979	4,037	
Hispanic Origin					
Hispanic	64,698	103,781	137,210	142,732	
Non-Hispanic	1,544,844	1,591,472	1,548,272	1,546,498	
Education (25 yrs+)					
High School graduates	708,933	916,222	--	--	
College graduates (4-yr)	161,877	275,564	--	--	
Marital Status					
Married	684,052	715,165			
Marriage Rate (per 1,000)	16.8	15.8	13.9 [d]		
Divorce Rate (per 1,000)	8.7	7.1	6.6 [d]		
Family Structure					
Female head, no husband present (FHNHP)	115,018	136,381	--	--	157,411
White	87,730	95,786	--	--	
Black	21,482	28,886	--	--	
Hispanic	9,722	18,312	--	--	
FHNHP w/ children <18yrs	66,331	71,720	--	--	91,114
White	44,408	43,216	--	--	
Black	16,935	19,167	--	--	
Hispanic	8,385	14,783	--	--	
FHNHP w/ children <6 yrs	22,111	28,168	--	--	
White	11,879	14,418	--	--	
Black	7,627	9,171	--	--	
Hispanic	4,598	7,403	--	--	

Connecticut Females	1980 [a]	1990 [a]	1998	1999	2000
Labor Force (15 yrs +)					
In civilian labor force	677,689	832,431	836,000 [c]	810,000 [f]	
Employed	645,792	793,450	800,000 [c]	787,000 [f]	
Median Income [b]					
Females 15+ w/ income	$5,892	$14,028	--	--	
White	$5,879	$14,308	--	--	
Black	$5,997	$13,698	--	--	
Asian & PI	$6,204	$11,072	--	--	
Native American	$4,764	$13,068	--	--	
Hispanic	--	$9,649	--	--	
Female-headed family	$11,624	$25,739	--	--	
Working Mothers					
Females 16+	1,265,121	1,367,775	--	--	
w/ children <6 yrs	160,432	193,621	--	--	
in labor force	65,531	114,818	--	--	
w/ children 6-17 yrs	248,177	201,090	--	--	
in labor force	165,479	158,338	--	--	

-- Data not available

 Data not available at time of publication.

Sources:

[a] U.S. Census Bureau, 1970, 1980, 1990, and 2000 Census of Population.

[b] Census data reflect prior year's income and poverty levels. For example, 1990 data reflects 1989 income.

[c] U.S. Census Bureau, Statistical Abstract of the United States: 1999.

[d] Connecticut Department of Public Health, Office of Policy, Planning, and Evaluation, vital statistics.

[e] U.S. Census Bureau, Population Estimates by Age, Race, and Ethnicity, 1998 and 1999.

[f] U.S. Census Bureau, Statistical Abstract of the United States: 2000.

POPULATION ESTIMATES
Connecticut Females, 1990-1999

Age (yrs)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
0-14	309,734	315,801	319,391	324,089	326,309	327,177	326,326	325,052	332,229	340,475
15-24	226,515	216,722	207,880	201,435	195,926	191,039	187,223	186,512	187,299	188,820
25-44	553,683	555,665	546,811	541,872	538,759	536,596	536,200	532,651	522,219	511,194
45-64	336,030	334,814	339,799	342,442	345,271	348,169	352,961	359,320	364,011	370,217
65-74	144,202	143,701	142,761	142,021	140,576	138,881	136,690	133,614	131,250	128,626
75-84	90,483	92,491	94,844	96,738	98,363	99,696	101,273	102,756	103,655	104,611
85+	34,536	35,856	36,979	38,177	39,236	40,640	41,983	42,932	44,177	45,287
Total	1,695,000	1,695,000	1,689,000	1,687,000	1,684,000	1,682,000	1,683,000	1,683,000	1,685,000	1,689,000

Source: U.S. Census Bureau. "Estimates of the Female Population of Connecticut" PE-65, 1990-1999.

POPULATION PROJECTIONS BY RACE & ETHNICITY
Connecticut Females, 2000-2025
(Rounded to the nearest thousand)

	2000	2005	2015	2025
Total Population	3,284	3,317	3,506	3,739
Females	1,688	1,702	1,793	1,906
White	1,474	1,464	1,498	1,553
Black	170	183	220	257
American Indian	4	4	5	6
Asian & PI	41	50	70	89
Hispanic	146	169	227	291

Source: U.S. Census Bureau. Projected State Populations by Sex, Race, and Hispanic Origin: 1995-2025. PPL #47, 2000.

POPULATION PROJECTIONS BY AGE GROUPS
Connecticut Females, 2000-2025
(Rounded to the nearest thousand)

	2000	2005	2015	2025
Total Population	3,284	3,317	3,506	3,739
Females	1,688	1,702	1,793	1,906
0-4	104	100	111	120
5-17	281	278	272	298
18-24	136	148	161	156
25-64	895	910	954	966
65+	272	266	295	366

Source: U.S. Census Bureau. Projected State Populations, by Sex, Race, and Hispanic Origin: 1995-2025. PPL #47, 2000.

APPENDIX C. MORTALITY DATA SUMMARY

LEADING CAUSES OF DEATH
Connecticut Females, 1996-1998

Cause of death	Deaths	Rank
Diseases of the heart (390-398,402,404-429)	15,669	1
All cancer (140-208)	10,698	2
Cerebrovascular disease (430-438)	3,654	3
Chronic obstructive pulmonary disease (COPD) (490-496)	2,005	4
Pneumonia & influenza (480-487)	1,988	5
Unintentional injuries (E800-E949)	1,142	6
Diabetes mellitus (250)	1,058	7
Septicemia (038)	638	8
Nephritis, nephrotic syndrome/nephrosis (580-589)	551	9
Alzheimer's disease (331.0)	541	10
Atherosclerosis (440)	351	11
Chronic liver disease and cirrhosis (571)	334	12
HIV infection (042-044)	204	13
Suicide (E950-E959)	188	14
Homicide and legal intervention (E960-E978)	106	15

Source: Mueller, L.M., M.M. Hynes, H. Li, and F. Amadeo. In preparation. *Mortality and Its Risk Factors in Connecticut, 1989-1998*. Hartford, CT: Connecticut Department of Public Health, Division of Policy, Planning, and Analysis.

LEADING CAUSES OF DEATH
BY AGE GROUPS
Connecticut Females, 1996-1998

Cause of death	Age groups						
	0-14	15-24	25-44	45-64	65-74	75-84	85+
Unintentional injuries (E800-E949)	46	87	203	160	126	250	270
All cancer (140-208)	22	15	401	2,341	2,681	3,368	1,870
Diseases of the heart (390-398,402,404-429)	19	14	160	1,006	1,935	4,708	7,827
Homicide and legal intervention (E960-E978)	16	15	45	23	2	4	1
HIV infection (042-044)	8	4	143	48	1	0	0
Pneumonia & influenza (480-487)	5	1	20	80	144	536	1,202
Cerebrovascular disease (430-438)	5	1	46	174	392	1,219	1,817
Septicemia (038)	4	1	16	50	80	220	267
Chronic obstructive pulmonary disease (490-496)	2	3	21	182	462	831	504
Nephritis, nephrotic syndrome/nephrosis (580-589)	2	1	13	49	99	179	208
Suicide (E950-E959)	2	20	81	49	18	13	5
Atherosclerosis (440)	0	0	1	9	26	85	230
Alzheimer's disease (331.0)	0	0	0	7	36	182	316
Chronic liver disease and cirrhosis (571)	0	0	32	99	89	98	16
Diabetes mellitus (250)	0	0	22	176	224	333	303

Source: Mueller, L.M., M.M. Hynes, H. Li, and F. Amadeo. In preparation. *Mortality and Its Risk Factors in Connecticut, 1989-1998*. Hartford, CT: Connecticut Department of Public Health, Division of Policy, Planning, and Analysis.

LEADING CAUSES OF DEATH
BY RACE AND ETHNICITY
Connecticut Females, 1996-1998

Causes of death	White	Black/ African American	Asian/ PI*	Native American	Hispanic
Diseases of the heart (390-398,402,404-429)	14,764	864	33	4	248
All cancer (140-208)	10,027	614	44	10	181
Cerebrovascular disease (430-438)	3,451	182	17	3	59
Chronic obstructive pulmonary disease (COPD) (490-496)	1,955	50			31
Pneumonia & influenza (480-487)	1,892	91	4	1	32
Unintentional injuries (E800-E949)	1,047	80	8	5	48
Diabetes mellitus (250)	941	115	1	1	33
Septicemia (038)	584	52			18
Alzheimer's disease (331.0)	528	12	1		6
Nephritis, nephrotic syndrome/nephrosis (580-589)	491	57	3		20
Atherosclerosis (440)	339	12			2
Chronic liver disease and cirrhosis (571)	311	22	1		22
Suicide (E950-E959)	173	12	2	1	5
HIV infection (042-044)	102	101			51
Homicide and legal intervention (E960-E978)	61	42	1	2	9

* Asian and Pacific Islander.

Source: Mueller, L.M., M.M. Hynes, H. Li, and F. Amadeo. In preparation. *Mortality and Its Risk Factors in Connecticut, 1989-1998*. Hartford, CT: Connecticut Department of Public Health, Division of Policy, Planning, and Analysis.

AGE-ADJUSTED MORTALITY RATES (AAMR) FOR SELECTED CAUSES
Connecticut Females, 1989 – 1998

CARDIOVASCULAR DISEASE

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	316.1	127.0	147.5
1990	302.1	120.9	143.0
1991	296.3	117.4	139.4
1992	298.5	118.4	136.3
1993	297.4	116.4	137.9
1994	293.3	116.6	134.5
1995	289.6	115.6	133.8
1996	296.6	118.6	131.3
1997	280.9	109.8	128.1
1998	279.6	109.0	125.3

LUNG CANCER*

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	35.8	24.8	25.0
1990	35.4	24.3	25.6
1991	37.8	25.5	25.8
1992	39.1	26.6	26.3
1993	37.8	25.2	26.5
1994	39.2	26.1	26.6
1995	39.1	25.6	26.9
1996	41.2	26.6	26.8
1997	42.4	27.3	27.0
1998	40.0	25.7	27.0

CORONARY HEART DISEASE

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	180.5	71.2	87.0
1990	169.3	66.5	84.1
1991	166.6	64.9	81.6
1992	163.2	63.7	79.1
1993	163.5	62.2	79.2
1994	157.7	61.1	76.6
1995	153.8	60.9	75.2
1996	155.7	61.1	73.3
1997	148.9	58.0	70.0
1998	145.6	56.4	68.0

FEMALE BREAST CANCER*

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	35.5	24.0	23.1
1990	31.8	21.4	23.0
1991	32.6	22.5	22.8
1992	30.9	21.1	21.8
1993	31.2	20.8	21.4
1994	30.9	21.1	21.1
1995	31.9	21.4	21.1
1996	30.9	20.9	20.2
1997	29.6	19.6	19.4
1998	29.7	19.7	18.8

CEREBROVASCULAR DISEASE

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	53.5	20.9	26.1
1990	52.2	19.9	25.5
1991	48.1	18.1	24.6
1992	49.0	18.2	24.1
1993	51.1	19.3	24.4
1994	49.2	18.9	24.5
1995	48.7	18.1	24.7
1996	51.3	19.6	24.6
1997	49.6	18.4	24.1
1998	49.9	18.8	23.6

COLORECTAL CANCER*

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	23.3	12.0	11.7
1990	21.5	11.2	11.4
1991	20.8	11.3	11.3
1992	19.0	9.9	10.9
1993	20.2	10.9	11.1
1994	19.0	9.5	10.7
1995	18.4	9.8	10.6
1996	16.9	8.8	10.3
1997	17.9	9.8	10.1
1998	18.5	9.7	10.0

CERVICAL CANCER

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	2.8	2.0	2.6
1990	2.4	1.7	2.8
1991	3.2	2.4	2.6
1992	2.0	1.5	2.7
1993	1.8	1.3	2.6
1994	2.5	2.1	2.6
1995	2.0	1.5	2.5
1996	3.0	2.2	2.5
1997	1.8	1.5	2.5
1998	1.9	1.4	2.3

CHRONIC OBSTRUCTIVE PULMONARY DISEASE*

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	22.9	12.2	14.8
1990	23.3	12.2	14.6
1991	22.6	11.1	15.4
1992	25.8	12.4	15.4
1993	26.5	12.9	17.2
1994	28.5	14.3	17.0
1995	27.8	13.7	17.1
1996	28.6	14.2	17.6
1997	31.5	15.5	17.8
1998	29.5	14.5	18.1

OVARIAN CANCER

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	9.3	6.5	6.3
1990	8.7	6.0	6.3
1991	9.4	6.3	6.5
1992	9.1	5.8	6.3
1993	10.1	6.4	6.1
1994	9.0	5.7	6.3
1995	9.3	5.9	6.1
1996	7.2	4.5	6.0
1997	8.8	5.7	5.9
1998	9.7	6.3	5.8

ASTHMA

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	1.8	1.2	1.6
1990	1.4	1.0	1.4
1991	1.1	0.6	1.4
1992	1.7	1.1	1.6
1993	1.7	1.2	1.8
1994	1.5	1.1	1.6
1995	2.0	1.6	1.7
1996	1.7	1.3	1.8
1997	2.3	1.4	1.7
1998	1.8	1.2	1.5

ENDOMETRIAL CANCER

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	2.2	1.3	1.2
1990	2.1	1.3	1.2
1991	2.2	1.4	1.2
1992	1.8	1.1	1.3
1993	2.0	1.2	1.3
1994	2.2	1.3	1.2
1995	2.0	1.3	1.1
1996	2.4	1.4	1.1
1997	1.8	1.0	1.2
1998	2.1	1.2	1.2

DIABETES MELLITUS*

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	12.7	6.8	10.9
1990	14.7	7.5	11.0
1991	13.1	6.6	11.0
1992	13.9	7.4	11.2
1993	15.4	8.5	11.6
1994	16.5	8.8	12.1
1995	16.1	8.9	12.5
1996	18.1	10.1	12.6
1997	14.4	7.7	12.3
1998	16.0	8.5	12.3

HIV INFECTION

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	3.3	3.3	1.8
1990	2.9	3.0	2.0
1991	4.5	4.5	2.6
1992	5.0	4.9	3.1
1993	6.8	6.8	3.8
1994	7.2	7.1	4.6
1995	9.1	8.8	5.3
1996	5.8	5.5	4.3
1997	3.2	3.2	2.3
1998	2.9	2.8	2.2

HOMICIDE & LEGAL INTERVENTION

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	2.8	2.9	4.2
1990	2.2	2.2	4.3
1991	2.1	2.3	4.5
1992	2.2	2.2	4.4
1993	3.0	3.3	4.5
1994	2.9	3.2	4.0
1995	1.8	2.2	4.1
1996	2.4	2.4	3.6
1997	1.8	1.8	3.3
1998	2.3	2.6	3.2

PNEUMONIA & INFLUENZA*

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	28.6	9.8	10.9
1990	32.1	10.7	11.1
1991	28.1	8.9	10.5
1992	28.1	9.3	10.0
1993	29.1	10.0	10.8
1994	27.7	9.4	10.6
1995	26.2	9.3	10.6
1996	26.4	9.1	10.5
1997	26.4	9.0	10.6
1998	27.0	9.0	11.0

FALLS & FALL-RELATED INJURY

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	4.0	1.5	1.6
1990	5.2	1.8	1.6
1991	4.1	1.4	1.6
1992	4.3	1.5	1.6
1993	4.1	1.5	1.6
1994	4.4	1.7	1.6
1995	4.7	1.8	1.6
1996	4.5	1.7	1.7
1997	3.0	1.1	1.7
1998	4.5	1.7	1.9

SUICIDE

Year	CT AAMR (2000)	CT AAMR (1940)	US AAMR (1940)
1989	3.4	3.1	4.6
1990	3.4	3.2	4.4
1991	3.6	3.4	4.4
1992	2.9	2.7	4.3
1993	3.7	3.4	4.2
1994	4.1	3.8	4.1
1995	3.7	3.6	4.1
1996	3.3	3.2	4.0
1997	3.8	3.5	4.0
1998	3.7	3.4	4.0

Source: Mueller, L.M., M.M. Hynes, H. Li, and F. Amadeo. In preparation. *Mortality and Its Risk Factors in Connecticut, 1989-1998*. Hartford, CT: Connecticut Department of Public Health, Division of Policy, Planning, and Analysis.

Notes:

* The annual percent change from 1989 to 1998 is significant ($p < .05$).

Rates adjusted to the 2000 and 1940 U.S. standard million population. U.S. Census Bureau population estimates used for rate calculations are presented in Appendix B. See Appendix A for definition of terms used in mortality analyses.

AGE-ADJUSTED MORTALITY RATES (AAMR) FOR SELECTED CAUSES
BY RACE & ETHNICITY
Connecticut Females, 1989-1991 and 1996-1998

CARDIOVASCULAR DISEASE

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	19,155	304.7	20,586	285.7*
White	18,124	299.9	19,401	280.5*
Black & African American	902	351.3‡	1,118	368.4‡
Asian & Pacific Islander	21	111.8‡	54	120.1‡
Native American	19	270.3	8	†
Hispanic	233	185.8‡	319	176.4‡

CORONARY HEART DISEASE

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	10,857	172.1	10,826	150.0*
White	10,318	170.1	10,224	147.5*
Black & African American	454	179.7	575	189.9‡
Asian & Pacific Islander	10	†	22	46.8‡
Native American	13	†	2	†
Hispanic	118	97.6‡	157	88.2‡

CEREBROVASCULAR DISEASE

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	3,219	51.3	3,654	50.3
White	3,060	50.7	3,451	49.5
Black & African American	140	57.4	182	62.1‡
Asian & Pacific Islander	5	†	17	42.2
Native American	3	†	3	†
Hispanic	48	39.0	59	32.9‡

LUNG CANCER

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	2,109	36.4	2,503	41.2*
White	2,004	36.6	2,378	41.8*
Black & African American	88	29.9	119	35.8
Asian & Pacific Islander	2	†	5	†
Native American	1	†	1	†
Hispanic	19	13.4‡	25	13.6‡

FEMALE BREAST CANCER

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	1,885	33.3	1,796	30.0*
White	1,777	33.3	1,653	29.7*
Black & African American	92	30.1	135	39.5‡
Asian & Pacific Islander	1	†	5	†
Native American	1	†	1	†
Hispanic	16	9.3‡	33	13.2‡

COLORECTAL CANCER

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	1,325	21.8	1,169	17.8*
White	1,265	21.9	1,097	17.5*
Black & African American	52	20.0	65	19.9
Asian & Pacific Islander	1	†	7	†
Native American	0	--	0	--
Hispanic	16	13.1‡	15.	7.2‡

CERVICAL CANCER

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	150	2.8	127	2.2
White	126	2.5	101	1.9
Black & African American	22	6.6‡	22	5.8‡
Asian & Pacific Islander	1	†	2	†
Native American	0	--	2	†
Hispanic	7	†	11	†

OVARIAN CANCER

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	526	9.2	522	8.6
White	506	9.4	505	8.9
Black & African American	17	5.9	15	4.6‡
Asian & Pacific Islander	1	†	1	†
Native American	0	--	1	†
Hispanic	9	†	10	†

ENDOMETRIAL CANCER

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	133	2.2	135	2.1
White	127	2.2	126	2.1
Black & African American	6	†	9	†
Asian & Pacific Islander	0	--	0	--
Native American	0	--	0	--
Hispanic	0	--	2	†

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	1,412	23.0	2,005	29.9*
White	1,369	23.3	1,955	30.7*
Black & African American	43	15.3‡	50	15.1‡
Asian & Pacific Islander	0	--	0	--
Native American	0	--	0	--
Hispanic	19	14.7‡	31	16.2‡

ASTHMA

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	85	1.5	114	1.9
White	73	1.3	100	1.8
Black & African American	12	†	14	†
Asian & Pacific Islander	0	--	0	--
Native American	0	--	0	--
Hispanic	7	†	12	†

DIABETES MELLITUS

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	822	13.5	1,058	16.2*
White	735	12.6	941	15.1*
Black & African American	83	30.7‡	115	36.3‡
Asian & Pacific Islander	1	†	1	†
Native American	0	--	1	†
Hispanic	25	20.6	33	17.8

HIV INFECTION

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	192	3.6	204	3.9
White	86	1.8	102	2.3
Black & African American	103	21.7‡	101	21.1‡
Asian & Pacific Islander	0	--	0	--
Native American	0	--	0	--
Hispanic	32	9.4‡	51	13.4‡

PNEUMONIA & INFLUENZA

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	1,884	29.6	1,988	26.6*
White	1,808	29.5	1,892	26.4*
Black & African American	59	22.7	91	30.9
Asian & Pacific Islander	4	†	4	†
Native American	1	†	1	†
Hispanic	20	19.1‡	32	18.4‡

SUICIDE

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	181	3.5	188	3.6
White	165	3.5	173	3.7
Black & African American	10	†	12	†
Asian & Pacific Islander	1	†	2	†
Native American	1	†	1	†
Hispanic	7	†	5	†

HOMICIDE AND LEGAL INTERVENTION

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	127	2.4	106	2.1
White	89	1.9	61	1.4
Black & African American	35	6.9‡	42	8.3‡
Asian & Pacific Islander	1	†	1	†
Native American	0	--	2	†
Hispanic	13	†	9	†

FALLS AND FALL RELATED INJURY

Race/Ethnicity	1989-1991 deaths	1989-1991 AAMR	1996-1998 deaths	1996-1998 AAMR
All Females	282	4.4	293	4.0
White	275	4.5	287	4.1
Black & African American	5	†	3	†
Asian & Pacific Islander	0	--	1	†
Native American	0	--	2	†
Hispanic	4	†	3	†

Notes:

Racial groupings (African American/Black, Asian & Pacific Islander, Native American, and White) include persons of Hispanic ethnicity. Less than 1 percent of the mortality data are missing race or ethnicity identifiers.

* Change in rates from 1989-1991 to 1996-1998 period is statistically significant (p< .05).

† Statistics not calculated for fewer than 15 events.

‡ The AAMR is significantly different from that of whites (p< .05)

Rates are per 100,000 persons based on race and ethnicity specific population estimates, and age-adjusted to the 2000 U.S. standard million population.

See Appendix A for definition of terms used in mortality analyses.

APPENDIX D. HOSPITALIZATION DATA SUMMARY

AGE-ADJUSTED HOSPITALIZATION RATES (AAHR) FOR SELECTED CAUSES
Connecticut Females, 1993 – 1997

CARDIOVASCULAR DISEASE

Year	Discharges	AAHR
1993	27,937	1378.1
1994	28,599	1400.6
1995	28,984	1407.9
1996	28,868	1391.0
1997	29,317	1399.2
5-yr	143,705	1395.9

CORONARY HEART DISEASE

Year	Discharges	AAHR
1993	9,826	493.8
1994	10,017	500.4
1995	10,087	501.3
1996	9,945	491.0
1997	9,813	481.3
5-yr	49,688	493.9

CEREBROVASCULAR DISEASE

Year	Discharges	AAHR
1993	4,680	224.0
1994	4,799	228.3
1995	5,142	242.3
1996	5,169	242.0
1997	5,343	247.2
5-yr	25,133	237.2

LUNG CANCER

Year	Discharges	AAHR
1993	828	43.4
1994	833	43.3
1995	852	43.6
1996	893	46.5
1997	979	49.8
5-yr	4,385	45.8

FEMALE BREAST CANCER

Year	Discharges	AAHR
1993	1,862	102.5
1994	1,822	99.8
1995	1,754	95.2
1996	1,647	90.2
1997	1,588	86.0
5-yr	8,673	95.0

COLORECTAL CANCER

Year	Discharges	AAHR
1993	1,002	48.8
1994	1,017	49.3
1995	1,068	51.2
1996	955	45.8
1997	1,100	53.0
5-yr	5,142	50.1

CERVICAL CANCER

Year	Discharges	AAHR
1993	168	9.4
1994	171	9.6
1995	184	9.8
1996	207	11.3
1997	188	10.2
5-yr	918	10.4

OVARIAN CANCER

Year	Discharges	AAHR
1993	295	15.7
1994	311	16.5
1995	289	15.8
1996	324	17.3
1997	321	17.2
5-yr	1,540	17.0

ENDOMETRIAL CANCER

Year	Discharges	AAHR
1993	520	27.6
1994	515	27.0
1995	513	27.7
1996	516	27.2
1997	494	26.0
5-yr	2,558	27.5

COPD

Year	Discharges	AAHR
1993	5,052	276.4
1994	4,967	272.6
1995	5,161	283.1
1996	5,173	284.0
1997	5,110	277.9
5-yr	25,463	279.4

ASTHMA

Year	Discharges	AAHR
1993	2,830	165.5
1994	2,656	156.1
1995	2,710	159.7
1996	2,704	160.9
1997	2,503	148.7
5-yr	13,403	158.6

DIABETES MELLITUS

Year	Discharges	AAHR
1993	1,827	100.5
1994	1,889	103.2
1995	1,935	105.7
1996	1,936	104.5
1997	1,875	101.8
5-yr	9,462	103.7

OSTEOPOROSIS

Year	Discharges	AAHR
1993	640	29.3
1994	620	28.2
1995	547	24.5
1996	516	23.2
1997	504	22.0
5-yr	2,827	25.8

OSTEOARTHRITIS

Year	Discharges	AAHR
1993	2,080	103.9
1994	2,202	110.1
1995	2,353	117.1
1996	2,591	128.8
1997	2,800	140.3
5-yr	12,026	120.5

AUTO-IMMUNE DISEASES

Year	Discharges	AAHR
1993	462	25.6
1994	449	25.3
1995	424	24.1
1996	464	25.9
1997	495	27.7
5-yr	2,294	26.3

SEXUALLY TRANSMITTED DISEASES

Year	Discharges	AAHR
1993	49	2.6
1994	46	2.6
1995	46	2.7
1996	47	2.7
1997	31	1.6
5-yr	219	2.8

HIV INFECTION

Year	Discharges	AAHR
1993	70	3.7
1994	147	8.0
1995	498	27.8
1996	523	29.5
1997	338	19.2
5-yr	1,576	18.0

SELF-INFLICTED INJURY

Year	Discharges	AAHR
1993	1,181	72.1
1994	1,237	76.1
1995	1,169	71.6
1996	1,221	74.7
1997	1,173	71.8
5-yr	5,981	73.7

PELVIC INFLAMMATORY DISEASE

Year	Discharges	AAHR
1993	538	31.5
1994	566	33.9
1995	492	29.1
1996	421	25.4
1997	380	23.1
5-yr	2,397	29.1

PNEUMONIA & INFLUENZA

Year	Discharges	AAHR
1993	5,522	279.1
1994	5,661	283.7
1995	5,949	294.4
1996	5,714	281.0
1997	5,717	276.6
5-yr	28,563	283.6

FALLS & FALL-RELATED INJURY

Year	Discharges	AAHR
1993	5,710	276.1
1994	7,288	350.1
1995	6,755	315.3
1996	6,797	312.1
1997	6,646	300.3
5-yr	33,196	311.6

Source: Connecticut Department of Public Health, Division of Policy, Planning & Analysis. 2001. Unpublished data.

Notes: Rates adjusted to the 2000 U.S. standard million population. U.S. Census Bureau population estimates used for rate calculations are presented in Appendix B. See Appendix A for definition of terms used in hospitalization analyses.

AGE-ADJUSTED HOSPITALIZATION RATES (AAHR) FOR SELECTED CAUSES
BY RACE AND ETHNICITY
Connecticut Females, 1993-1997

CARDIOVASCULAR DISEASE

Race/Ethnicity	Discharges	AAHR
All Females	143,705	1395.9*
White, Non-Hispanic	126,553	1329.3
Black, Non-Hispanic	10,720	2080.0*
Asian/PI, Non-Hispanic	230	316.2*
Native American, Non-H	45	349.8*
Hispanic	4,277	1330.2

CEREBROVASCULAR DISEASE

Race/Ethnicity	Discharges	AAHR
All Females	25,133	237.2*
White, Non-Hispanic	22,314	226.4
Black, Non-Hispanic	1,952	396.1*
Asian/PI, Non-Hispanic	60	90.7*
Native American, Non-H	8	†
Hispanic	501	164.9*

CORONARY HEART DISEASE

Race/Ethnicity	Discharges	AAHR
All Females	49,688	493.9*
White, Non-Hispanic	44,280	478.5
Black, Non-Hispanic	2,881	556.7*
Asian/PI, Non-Hispanic	65	93.6*
Native American, Non-H	12	†
Hispanic	1,633	519.8*

LUNG CANCER

Race/Ethnicity	Discharges	AAHR
All Females	4,385	45.8
White, Non-Hispanic	4,002	46.3
Black, Non-Hispanic	266	49.3
Asian/PI, Non-Hispanic	5	†
Native American, Non-H	0	
Hispanic	63	18.1*

FEMALE BREAST CANCER

Race/Ethnicity	Discharges	AAHR
All Females	8,673	95.0
White, Non-Hispanic	7,834	96.9
Black, Non-Hispanic	515	90.3
Asian/PI, Non-Hispanic	34	30.0*
Native American, Non-H	4	†
Hispanic	158	40.1*

COLORECTAL CANCER

Race/Ethnicity	Discharges	AAHR
All Females	5,142	50.1
White, Non-Hispanic	4,695	49.8
Black, Non-Hispanic	288	56.2
Asian/PI, Non-Hispanic	10	†
Native American, Non-H	1	†
Hispanic	80	26.0*

CERVICAL CANCER

Race/Ethnicity	Discharges	AAHR
All Females	918	10.4*
White, Non-Hispanic	663	8.7
Black, Non-Hispanic	142	23.3*
Asian/PI, Non-Hispanic	12	†
Native American, Non-H	0	
Hispanic	77	18.5*

OVARIAN CANCER

Race/Ethnicity	Discharges	AAHR
All Females	1,540	17.0
White, Non-Hispanic	1,420	17.7
Black, Non-Hispanic	50	8.7*
Asian/PI, Non-Hispanic	5	†
Native American, Non-H	0	†
Hispanic	44	10.7*

ENDOMETRIAL CANCER

Race/Ethnicity	Discharges	AAHR
All Females	2,558	27.5
White, Non-Hispanic	2,360	28.3
Black, Non-Hispanic	115	21.8*
Asian/PI, Non-Hispanic	7	†
Native American, Non-H	0	
Hispanic	33	9.3*

CHRONIC OBSTRUCTIVE PULMONARY DIS.

Race/Ethnicity	Discharges	AAHR
All Females	25,463	279.4*
White, Non-Hispanic	18,486	225.9
Black, Non-Hispanic	3,278	489.1*
Asian/PI, Non-Hispanic	57	40.8*
Native American, Non-H	13	†
Hispanic	3,413	664.7*

ASTHMA

Race/Ethnicity	Discharges	AAHR
All Females	13,403	158.6*
White, Non-Hispanic	7,452	104.4
Black, Non-Hispanic	2,708	380.4*
Asian/PI, Non-Hispanic	48	30.5*
Native American, Non-H	11	†
Hispanic	3,043	546.4*

DIABETES

Race/Ethnicity	Discharges	AAHR
All Females	9,462	103.7*
White, Non-Hispanic	6,723	83.8
Black, Non-Hispanic	1,967	337.3*
Asian/PI, Non-Hispanic	14	†
Native American, Non-H	4	†
Hispanic	646	156.6*

OSTEOPOROSIS

Race/Ethnicity	Discharges	AAHR
All Females	2,827	25.8
White, Non-Hispanic	2,707	26.6
Black, Non-Hispanic	39	8.0*
Asian/PI, Non-Hispanic	4	†
Native American, Non-H	1	†
Hispanic	25	7.5*

OSTEOARTHRITIS

Race/Ethnicity	Discharges	AAHR
All Females	12,026	120.5
White, Non-Hispanic	11,070	121.6
Black, Non-Hispanic	626	123.9
Asian/PI, Non-Hispanic	9	†
Native American, Non-H	7	†
Hispanic	143	45.3*

SEXUALLY TRANSMITTED DISEASES

Race/Ethnicity	Discharges	AAHR
All Females	219	2.8*
White, Non-Hispanic	59	0.9
Black, Non-Hispanic	120	15.8*
Asian/PI, Non-Hispanic	18	†
Native American, Non-H	1	†
Hispanic	35	4.5*

PELVIC INFLAMMATORY DISEASE

Race/Ethnicity	Discharges	AAHR
All Females	2,397	29.1*
White, Non-Hispanic	1,356	20.3
Black, Non-Hispanic	656	83.2*
Asian/PI, Non-Hispanic	18	†
Native American, Non-H	1	†
Hispanic	324	46.5*

HIV

Race/Ethnicity	Discharges	AAHR
All Females	1,576	18.0*
White, Non-Hispanic	390	5.4
Black, Non-Hispanic	757	98.0*
Asian/PI, Non-Hispanic	0	
Native American, Non-H	0	
Hispanic	413	63.2*

PNEUMONIA & INFLUENZA

Race/Ethnicity	Discharges	AAHR
All Females	28,563	283.6*
White, Non-Hispanic	23,698	256.1
Black, Non-Hispanic	2,714	435.6*
Asian/PI, Non-Hispanic	53	63.1*
Native American, Non-H	11	†
Hispanic	1,783	403.3*

SELF-INFLICTED INJURY

Race/Ethnicity	Discharges	AAHR
All Females	5,981	73.7
White, Non-Hispanic	4,664	71.6
Black, Non-Hispanic	515	65.1
Asian/PI, Non-Hispanic	32	16.8*
Native American, Non-H	5	†
Hispanic	654	97.9*

FALLS & FALL-RELATED INJURY

Race/Ethnicity	Discharges	AAHR
All Females	33,196	311.6
White, Non-Hispanic	30,917	316.4
Black, Non-Hispanic	1,158	208.9*
Asian/PI, Non-Hispanic		
Native American, Non-H		
Hispanic	610	152.4*

Notes:

* There is a statistically significant difference from the White, Non-Hispanic AAHR.

† Statistics not calculated for fewer than 25 events.

Rates adjusted to the 2000 U.S. standard million population. U.S. Census Bureau population estimates used for rate calculations are presented in Appendix B. See Appendix A for definition of terms used in hospitalization analyses.

APPENDIX E. SUMMARY OF BEHAVIORAL RISK FACTORS

PREVALENCE OF HEALTH-RELATED RISK FACTORS
Connecticut Females, Age 18+, 1994-2000

Risk Factor	1994	1995	1996	1997	1998	1999	2000
Health status poor or fair	11.4	10.1	11.4	11.0	12.2	11.3	14.2
No health plan/insurance (18-64 yrs)	8.7	6.6	10.9	9.9	9.7	9.7	9.0
No leisure time physical activity[1]	26.4		27.2		29.8		27.7
No regular or sustained physical activity[2]	76.1		79.1		81.0		77.5
Not eating fewer calories and exercising to lose weight	67.1		50.0		48.3		47.1
Not eating fruits and vegetables[3]	61.3		66.7	61.8	67.3		67.5
Overweight[4]	19.2	21.9	21.9	26.0	24.7	27.2	29.4
Ever smoked[5]	44.2	48.2	46.2	49.5	46.3	43.4	45.7
Current smoker[6]	19.1	20.6	20.9	21.9	20.4	20.6	19.4
Current drinker[7]		58.2		55.5		53.2	
Binge drinker[8]		6.6		8.0		6.3	
Chronic drinker[9]		1.8		1.5		0.4	
Never had clinical breast exam & mammogram (40+ yrs)	21.7	20.7	16.5	19.6	20.4	16.7	13.4
No mammogram in 2 yrs (50+ yrs)	33.1	23.5	20.1	22.3	22.0	13.9	15.4
Never had pap smear (w/ intact cervix)	7.9	6.2	6.4	7.8	7.3	5.7	5.9
No pap smear in 3 yrs (w/ intact cervix)	15.1	13.2	10.2	17.0	13.8	11.7	12.0
Blood pressure not checked w/in 2 years		3.2		4.3		2.4	
Told of high blood pressure (of those tested)		19.5		20.7		21.4	
Never had cholesterol screening	27.7	23.5		21.1		18.1	
Cholesterol not checked within 5 years	31.2	27.5		25.8		22.5	
Told of high cholesterol (of those checked)	20.6	18.6		23.7		26.9	
Ever told has diabetes	5.3	4.1	5.5	5.2	3.8	4.7	5.1
Never tested for HIV within 1 year (18-64 yrs)	75.8	65.1	61.9	60.2	58.7	61.7	64.4
Medium or high chance of getting HIV (18-64 yrs)	7.3	5.8	6.2	5.0	6.5	5.9	5.1
No flu shot in past year (65+ yrs)		41.2		34.7		35.3	
Never had pneumonia vaccine (65+ yrs)		61.6		55.1		50.0	
Did not use home blood stool test within 2 yrs (50+ yrs)				67.6		69.2	
Never had a sigmoidoscopy (50+ yrs)				57.4		49.5	

Source: Centers for Disease Control and Prevention. 1994, 1995, 1996, 1997, 1998, 1999, 2000. *Behavioral Risk Factor Surveillance System Connecticut Statewide Survey Data – Weighted.* Atlanta: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Behavioral Surveillance Branch.

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[1] No leisure time physical activity in the previous month.

[2] Physical activity for 30+ minutes a day at least 5 times per week, regardless of intensity.

[3] Do not consume 5 or more servings of fruits and vegetables per day.

[4] Body mass index greater than or equal to 27.3.

[5] Smoked at least 100 cigarettes in their lifetime.

[6] Smoked at least 100 cigarettes in lifetime and currently smoke some or every day.

[7] Had alcoholic beverages during the past month.

[8] Consumed 5 or more drinks on at least 1 occasion in the last month.

[9] Consumed 60+ drinks in the last month.