

PHC4 Issue Brief

Osteoporosis Facts and Figures

November 19, 1997

Background Information:

Osteoporosis is a disease characterized by low bone mass and structural deterioration of bone tissue, leading to bone fragility and an increased susceptibility to fractures, particularly of the hip, spine, and wrist. It occurs when the body fails to form enough new bone or when too much of the old bone is reabsorbed by the body, or both.

Osteoporosis is called a "silent disease" because bone loss often occurs without symptoms, causing people to be unaware that they have osteoporosis until their bones are weakened to the point that a sudden strain, bump, or fall causes a fracture or a vertebra to collapse. By the time a fracture occurs, the disease is in its advanced stages and damage is profound.

Hormone deficiency (estrogen in women and androgen in men) is the leading cause of osteoporosis. Women over 60 are the most frequent sufferers due to the loss of ovarian function and hormone production that occurs around the time of menopause. Women can lose up to 20% of their bone mass in the five to seven years following menopause, making them more susceptible to osteoporosis. In addition, two million American men are affected by osteoporosis and one out of eight men age 50 and older will develop fractures.

Researchers have identified the following primary risk factors for osteoporosis: female, thin or small frame, advanced age, family history, abnormal cessation of menstruation, early menopause, low calcium intake, use of certain medications such as corticosteroids and anticonvulsants, low testosterone levels in men, an inactive lifestyle, cigarette smoking, and excessive use of alcohol. Experts agree, however, that risk factors are not perfect predictors of osteoporosis. You may have several risk factors and still have strong bones, or have no risk factors and still develop osteoporosis.

Osteoporosis is a major public health threat for 28 million Americans, 80 percent of whom are women. In the US today, 10 million individuals have osteoporosis and 18 million more have low bone mass, placing them at high risk of developing the disease.

- * One out of every two women and one in eight men will have an osteoporosis-related fracture in their lifetime.
- * By age 75, one third of all men will be affected by osteoporosis.
- * While osteoporosis is often thought of as an older person's disease, it can strike at any age.
- * Osteoporosis is responsible for 1.5 million fractures annually, including: 300,000 hip fractures, 700,000 vertebral (spinal) fractures, 200,000 wrist fractures and more than 300,000 fractures at other sites.
- * The estimated national direct expenditures (hospitals and nursing homes) for osteoporosis and associated fractures is \$14 billion a year, or \$38 million each day.

The occurrence of osteoporosis in both men and women is an important public health issue, and increasingly so as the "Baby Boom" population ages. The U.S. Census Bureau estimates there will be more than 1.5 billion individuals worldwide age 65 years and over by the year 2050. The National Osteoporosis Foundation estimates that within 20 years, more than 41 million Americans will be affected by osteoporosis if current trends are not reversed.

The prevalence of osteoporosis is of real concern as Pennsylvania's population becomes increasingly elderly. The Pennsylvania State Data Center estimates that Pennsylvania's population age 65 and older increased by 4.1% from 1990 to 1994 -- with the largest increase occurring among those age 85 and older (26.3%) -- compared to 1.5% growth rate for the state population as a whole. According to the National Osteoporosis Foundation (NOF), California, New York, Texas, and Pennsylvania top the list of states having the greatest number of women with osteoporosis. There were nearly 418,000 Pennsylvania women with osteoporosis in 1996.

For women with postmenopausal osteoporosis, "crush fractures" may occur during daily activities such as lifting, bending, getting up from a chair, coughing, or even aggressive hugging. Oftentimes, these crush fractures occur in the vertebrae and go undiagnosed, but can cause pain and tenderness in the back and lead to a loss of height and spinal deformities such as stooped posture. The NOF estimates that 40 percent of all women will have at least one spinal fracture by the time they reach age 80.

Hip fracture is the most serious and costly potential result of osteoporosis. Many hip fracture patients experience severe functional impairment following their fracture, and most never recover their pre-fracture level of functioning. Older age, poorer pre-fracture physical and mental condition, operative and post-operative complications, and many other factors predict greater functional impairment following a hip fracture. Researchers have found that hip fracture is more likely to lead to functional impairment than other serious medical conditions, including heart attack, stroke, and cancer. Also, mortality rates have been found to be significantly higher for individuals within one year of a hip fracture than individuals of the same age with no hip fracture.

Although there is no cure for osteoporosis, there are treatments available to help prevent further bone loss and fractures. Osteoporosis can be effectively treated if it is detected before significant bone loss has occurred. Studies have shown that hormone replacement therapy can prevent the loss of bone mass in postmenopausal women; however, additional research has shown a link between estrogen replacement and increased risk of certain types of cancer. In addition, Alendronate, a bisphosphonate, has been approved by the FDA for treatment of postmenopausal osteoporosis, and Calcitonin, a treatment that can be used by women and men, has been shown to slow bone breakdown, and may reduce the pain associated with osteoporotic fractures.

The Pennsylvania Health Care Cost Containment Council staff conducted a review of 1995 inpatient hospitalizations to compare Pennsylvanians' osteoporosis utilization patterns with national trends. The information on the following pages presents a summary of these findings.

Pennsylvania Health Care Cost Containment Council Analysis:

1995 Inpatient data from the Pennsylvania Health Care Cost Containment Council show that there were 17,827 hospitalizations for individuals having osteoporosis, with charges totaling more than \$213 million. The average charge was about \$12,000. Nearly half of these patients were 80 years of age or older, and another 33% were between 70 and 79 years of age. Nearly 90% of the osteoporosis hospitalizations were women.

Of the osteoporosis cases, 7,338 were admitted with fractures, with charges totaling more than \$90 million. There were 1,552 hip fractures, 4,308 spinal fractures, 334 arm/wrist fractures, 489 leg/foot fractures, and 655 other fractures. Among these hospitalizations, 318 cases (4%) had multiple fractures.

The data notes below should be kept in mind when examining the tables and figures on the pages that follow.

Data Notes:

- (1) These figures were generated from the Pennsylvania Health Care Cost Containment Council's inpatient data for calendar year 1995. All osteoporotic admissions were considered regardless of principal diagnosis and/or principal procedure. The data reflect care received in the following facility types: acute care, rehabilitation, and psychiatric.
- (2) The charges are *unadjusted mean averages*. These charges are associated with the *entire* hospitalization not just treatment associated with osteoporosis and/or fractures, and they are *hospital* charges only (they do not include physician fees, outpatient fees, etc.). Understanding this limitation is especially important for osteoporosis patients because these individuals often have additional health conditions that would increase the charge/length of stay for the total hospitalization. Further, while charges are a standard way of reporting data, they do not reflect the actual *cost* of the treatment nor do they reflect the *payment* that the hospital may have actually received.
- (3) Cases were identified using ICD.9.CM codes (International Classification of Diseases, Ninth Revision, Clinical Modification). Definitions follow:
 - *Osteoporosis codes (no fractures): 733.00-733.09*
 - *Fracture codes examined in conjunction with osteoporosis codes:*
 - Hip fracture codes: 733.14, 820.0 – 820.9*
 - Spinal fracture codes: 733.13, 805.0 - 806.9*
 - Leg/foot fracture codes: 733.15, 733.16, 821.0 – 829.1*
 - Arm/wrist fracture codes: 733.11, 733.12, 810.0 – 819.1*
 - Other fracture codes (including pelvic fractures): 733.10, 733.19, 807.0 – 809.1*
- (4) These counts reflect *hospitalizations*, not persons. For example, patients admitted to a hospital on two separate occasions in 1995 were counted twice in these data. Also, patients who underwent acute care treatment in one hospital and were transferred for physical rehabilitation to a separate hospital were counted twice in these data.

Figure 1: Osteoporosis Hospitalizations Including Fracture Site Cases, Length of Stay, and Hospital Charges

Fracture Site:	Cases		Total Days	Ave Stay	Total Charges	Ave Charge
	Number	Percent				
Hip	1,552	8.7%	15,617	10.1	\$24,884,000	\$16,034
Spine	4,308	24.2%	37,097	8.6	\$48,957,500	\$11,367
Leg/Foot	489	2.7%	4,415	9.0	\$6,506,200	\$13,387
Arm/Wrist	334	1.9%	2,385	7.1	\$3,350,500	\$10,032
Other Site	655	3.7%	5,462	8.3	\$6,699,900	\$10,292
No Fractures	10,489	58.8%	81,799	7.8	\$122,843,300	\$11,719
All Cases	17,827	100.0%	146,775	8.2	\$213,241,500	\$11,972

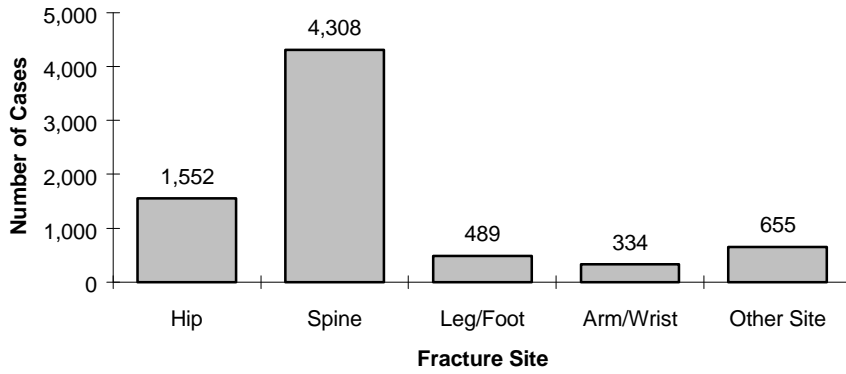
Figure 2: Osteoporosis Hospitalizations by Facility Type Cases, Length of Stay, and Hospital Charges

Facility Type:	Cases		Total Days	Ave Stay	Total Charges	Ave Charge
	Number	Percent				
General Acute Care	16,815	94.3%	128,101	7.6	\$195,162,200	\$11,608
Medical / Surgical Unit	16,126	90.4%	119,229	7.4	\$185,200,700	\$11,486
Rehabilitation Unit	689	3.9%	8,872	12.9	\$9,961,500	\$14,458
Rehabilitation Facility	944	5.3%	16,597	17.6	\$16,465,500	\$17,686
Other*	68	0.4%	2,077	30.5	\$1,613,800	\$23,070
All Facilities	17,827	100.0%	146,775	8.2	\$213,241,500	\$11,972

Source: PHC4, 1995 Inpatient Database

*Note: Other includes psychiatric, drug and alcohol, and state-owned psychiatric facilities.

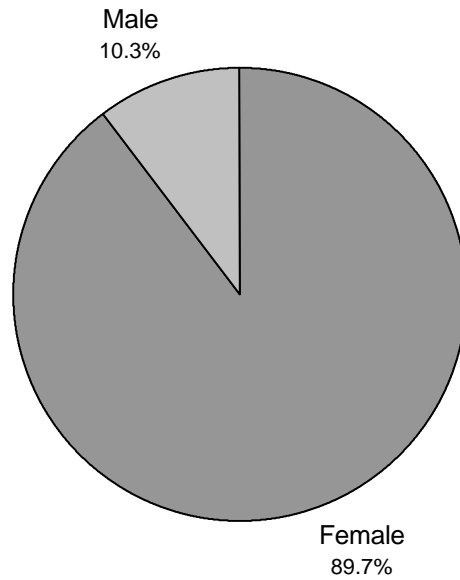
Figure 3: Osteoporotic Fractures by Site



<u>Fracture Site:</u>	<u>Cases</u>	
	<u>Number</u>	<u>Percent</u>
Hip	1,552	21.1%
Spine	4,308	58.7%
Leg/Foot	489	6.7%
Arm/Wrist	334	4.6%
Other	655	8.9%
All Fractures:	7,338	100.0%

Source: PHC4, 1995 Inpatient Database

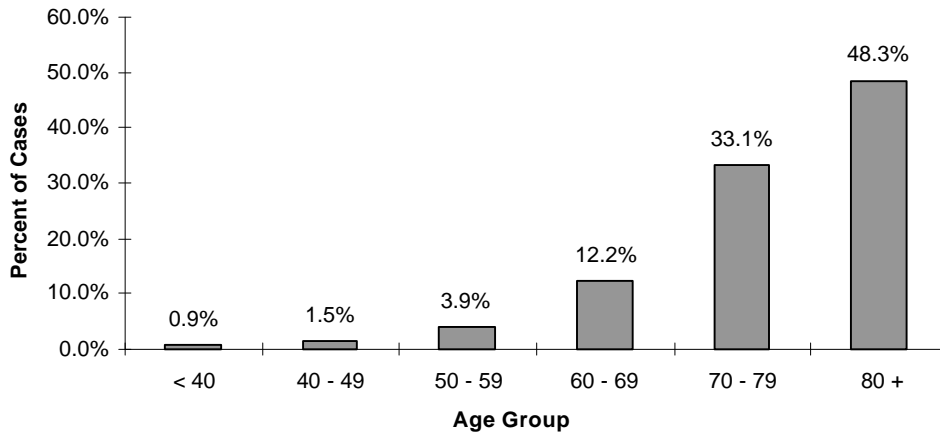
Figure 4: Osteoporosis Hospitalizations by Sex



<u>Patient Sex:</u>	<u>Cases</u>	
	<u>Number</u>	<u>Percent</u>
Female	15,983	89.7%
Male	1,844	10.3%
All Cases	17,827	100.0%

Source: PHC4, 1995 Inpatient Database

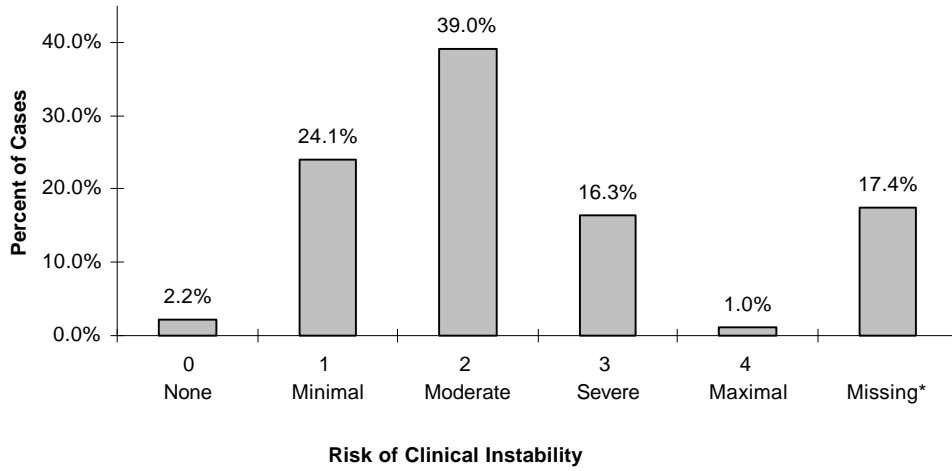
Figure 5: Osteoporosis Hospitalizations by Age Group



<u>Age Group:</u>	<u>Cases</u>	
	<u>Number</u>	<u>Percent</u>
Less than 40 years.....	154	0.9%
40 - 49 years.....	273	1.5%
50 - 59 years.....	699	3.9%
60 - 69 years.....	2,183	12.2%
70 - 79 years.....	5,903	33.1%
80 + years.....	8,615	48.3%
All Cases	17,827	100.0%

Source: PHC4, 1995 Inpatient Database

Figure 6: Severity of Illness of Osteoporosis Cases

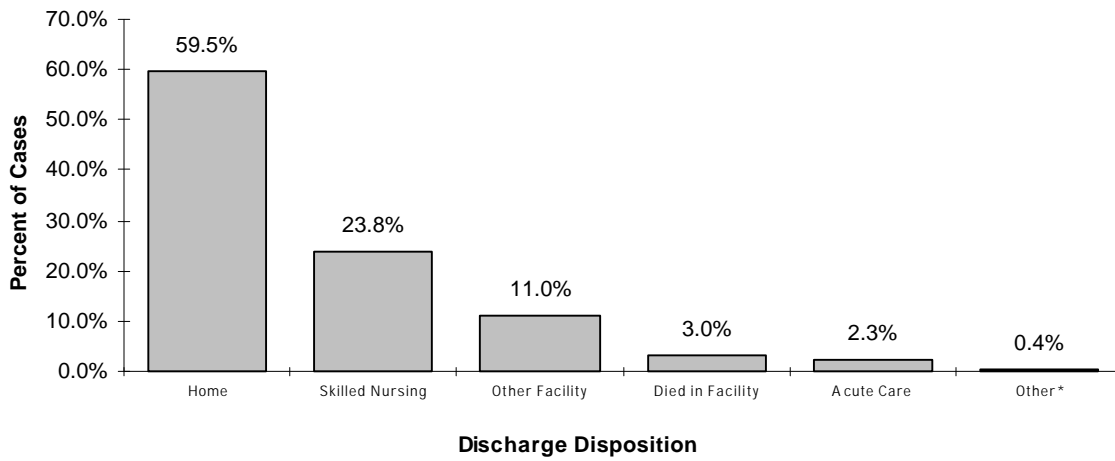


<u>Severity:</u>	<u>Cases</u>	
	<u>Number</u>	<u>Percent</u>
0 (No Risk)	393	2.2%
1 (Minimal Risk)	4,291	24.1%
2 (Moderate Risk)	6,959	39.0%
3 (Severe Risk)	2,905	16.3%
4 (Maximal Risk)	181	1.0%
Missing / NA	3,098	17.4%
All Cases	17,827	100.0%

Source: PHC4, 1995 Inpatient Database

*Notes: 3,098 "Missing" cases also include non-acute care hospital admissions. Atlas™ Severity of Illness System was used to classify clinical instability in acute care hospitalizations.

Figure 7: Discharge Disposition of Osteoporosis Hospitalizations



<u>Discharge Disposition:</u>	Cases	
	<u>Number</u>	<u>Percent</u>
Home	10,602	59.5%
Skilled Nursing.....	4,251	23.8%
Other Facility (e.g., physical rehab or psychiatric).....	1,963	11.0%
Died in Facility	529	3.0%
Acute Care	408	2.3%
Other*	74	0.4%
All Cases	17,827	100.0%

Source: PHC4, 1995 Inpatient Database

*Note: Other includes unknown/missing cases, and those discharged against medical advice.

Pennsylvania Health Care Cost Containment Council

PHC4 Issue Brief

Osteoporosis Facts and Figures

November 19, 1997

Prepared by Staff Members:

Marc Volavka

Jayne Jones

Lynne Edris

Vikki Cook

Flossie Wolf

Yanfen Pei

Reporting Number: 97-11/02-03