

Long-term Direct and Indirect Economic Burden Associated with Osteoporotic Fracture in US Postmenopausal Women

Osteoporosis International

Oth Tran, Stuart Silverman, Xiaoqing Xu, Machaon Bonafede, Kathleen M. Fox, Michele McDermott, and Shrvanthi R. Gandra

Corresponding Author: Oth Tran, IBM Watson Health., 75 Binney St, Cambridge, MA 02142, otr@us.ibm.com

Supplementary Table 2: All-cause inpatient, skilled nursing facility (SNF), and outpatient (OP) prescription utilization and costs in years 2 through 5

	Year 2 Post Index		Year 3 Post Index		Year 4 Post Index		Year 5 Post Index	
	Fracture Patients	Controls	Fracture Patients	Controls	Fracture Patients	Controls	Fracture Patients	Controls
Commercial hip fracture cohort	N=3,284	N=3,284	N=2,005	N=2,005	N=1,229	N=1,229	N=754	N=754
Patients with an inpatient admission (N, %)	738 (22.5)	192 (5.8)**	400 (20.0)	133 (6.6)**	238 (19.4)	73 (5.9)**	150 (19.9)	38 (5.0)**
Admissions per patient (Mean, SD)	0.4 (1.1)	0.1 (0.4)**	0.4 (0.9)	0.1 (0.4)**	0.4 (1.0)	0.1 (0.3)**	0.3 (0.7)	0.1 (0.3)**
Hospitalization days (Mean, SD)	1.3 (4.4)	0.2 (1.2)**	1.0 (3.0)	0.2 (1.2)**	1.0 (2.9)	0.3 (1.8)**	1.0 (3.5)	0.2 (0.8)**
Inpatient costs (Mean, SD)	\$15,879 (\$92,120)	\$2,302 (\$15,124)**	\$11,040 (\$37,259)	\$2,440 (\$13,595)**	\$11,771 (\$46,592)	\$2,303 (\$14,416)**	\$8,148 (\$26,444)	\$1,402 (\$7,210)**
Patients with a SNF visit (N, %)	205 (6.2)	13 (0.4)**	104 (5.2)	15 (0.7)**	73 (5.9)	3 (0.2)**	34 (4.5)	3 (0.4)**
SNF costs (Mean, SD)	\$801 (\$4,796)	\$78 (\$2,669)**	\$795 (\$5,267)	\$39 (\$630)**	\$886 (\$5,327)	\$61 (\$1,550)**	\$619 (\$4,322)	\$2 (\$31)**
Patients with an OP prescription (N, %)	3,144 (95.7)	2,903 (88.4)**	1,882 (93.9)	1,780 (88.8)**	1,165 (94.8)	1,089 (88.6)**	710 (94.2)	665 (88.2)**
OP prescription costs (Mean, SD)	\$6,911 (\$16,922)	\$2,313 (\$5,634)**	\$6,634 (\$17,064)	\$2,536 (\$7,782)**	\$6,374 (\$13,768)	\$2,648 (\$7,746)**	\$6,462 (\$14,727)	\$2,452 (\$6,223)**
Commercial vertebral fracture cohort	N=10,398	N=10,398	N=6,431	N=6,431	N=4,019	N=4,019	N=2,402	N=2,402
Patients with an inpatient admission (N, %)	1,442 (13.9)	556 (5.3)**	826 (12.8)	343 (5.3)**	480 (11.9)	206 (5.1)**	289 (12.0)	131 (5.5)**
Admissions per patient (Mean, SD)	0.2 (0.7)	0.1 (0.3)**	0.2 (0.7)	0.1 (0.3)**	0.2 (0.7)	0.1 (0.3)**	0.2 (0.6)	0.1 (0.3)**
Hospitalization days (Mean, SD)	0.6 (2.3)	0.2 (1.2)**	0.5 (2.1)	0.2 (1.4)**	0.5 (1.9)	0.2 (1.0)**	0.7 (2.9)	0.2 (1.2)**
Inpatient costs (Mean, SD)	\$6,859 (\$35,921)	\$2,100 (\$15,141)**	\$6,597 (\$33,574)	\$1,916 (\$12,563)**	\$6,248 (\$48,931)	\$1,946 (\$13,067)**	\$6,500 (\$33,574)	\$1,701 (\$11,029)**
Patients with a SNF visit (N, %)	181 (1.7)	25 (0.2)**	111 (1.7)	25 (0.4)**	79 (2.0)	17 (0.4)**	44 (1.8)	19 (0.8)**
SNF costs (Mean, SD)	\$220 (\$4,028)	\$13 (\$467)**	\$218 (\$3,092)	\$16 (\$413)**	\$187 (\$2,180)	\$17 (\$418)**	\$151 (\$1,712)	\$55 (\$848)**
Patients with an OP prescription (N, %)	9,908 (95.3)	9,228 (88.7)**	6,104 (94.9)	5,744 (89.3)**	3,819 (95.0)	3,589 (89.3)**	2,275 (94.7)	2,145 (89.3)**
OP prescription costs (Mean, SD)	\$5,984 (\$14,729)	\$2,257 (\$5,700)**	\$5,582 (\$13,671)	\$2,443 (\$7,087)**	\$5,335 (\$13,396)	\$2,388 (\$6,400)**	\$5,605 (\$14,376)	\$2,548 (\$8,870)**

	Year 2 Post Index		Year 3 Post Index		Year 4 Post Index		Year 5 Post Index	
	Fracture Patients	Controls	Fracture Patients	Controls	Fracture Patients	Controls	Fracture Patients	Controls
Commercial NHNV fracture cohort	N=46,028	N=46,028	N=29,963	N=29,963	N=19,444	N=19,444	N=12,334	N=12,334
Patients with an inpatient admission (N, %)	3,623 (7.9)	2,461 (5.3)**	2,253 (7.5)	1,556 (5.2)**	1,453 (7.5)	1,058 (5.4)**	905 (7.3)	634 (5.1)**
Admissions per patient (Mean, SD)	0.1 (0.5)	0.1 (0.3)**	0.1 (0.5)	0.1 (0.3)**	0.1 (0.5)	0.1 (0.3)**	0.1 (0.4)	0.1 (0.3)**
Hospitalization days (Mean, SD)	0.3 (1.7)	0.2 (1.3)**	0.3 (1.8)	0.2 (1.4)**	0.3 (1.7)	0.2 (1.2)**	0.3 (1.8)	0.2 (1.1)**
Inpatient costs (Mean, SD)	\$3,218 (\$20,111)	\$1,928 (\$14,189)**	\$3,150 (\$19,975)	\$1,934 (\$13,072)**	\$2,830 (\$17,429)	\$2,100 (\$16,599)**	\$3,038 (\$21,071)	\$1,845 (\$14,021)**
Patients with a SNF visit (N, %)	398 (0.9)	198 (0.4)**	256 (0.9)	151 (0.5)**	159 (0.8)	97 (0.5)**	100 (0.8)	53 (0.4)**
SNF costs (Mean, SD)	\$90 (\$1,705)	\$28 (\$808)**	\$87 (\$1,781)	\$34 (\$929)**	\$80 (\$1,523)	\$38 (\$1,000)**	\$96 (\$1,996)	\$23 (\$841)**
Patients with an OP prescription (N, %)	42,274 (91.8)	40,592 (88.2)**	27,557 (92.0)	26,490 (88.4)**	17,914 (92.1)	17,283 (88.9)**	11,382 (92.3)	10,973 (89.0)**
OP prescription costs (Mean, SD)	\$3,339 (\$13,618)	\$2,292 (\$6,408)**	\$3,485 (\$21,798)	\$2,374 (\$6,725)**	\$3,440 (\$10,078)	\$2,519 (\$7,992)**	\$3,427 (\$10,364)	\$2,482 (\$7,262)**
Medicare hip fracture cohort	N=30,973	N=30,973	N=21,556	N=21,556	N=14,225	N=14,225	N=8,897	N=8,897
Patients with an inpatient admission (N, %)	9,967 (32.2)	6,024 (19.4)**	7,083 (32.9)	4,106 (19.0)**	4,537 (31.9)	2,678 (18.8)**	2,865 (32.2)	1,693 (19.0)**
Admissions per patient (Mean, SD)	0.4 (0.7)	0.2 (0.6)**	0.4 (0.7)	0.2 (0.5)**	0.4 (0.7)	0.2 (0.6)**	0.4 (0.7)	0.2 (0.5)**
Hospitalization days (Mean, SD)	1.6 (4.0)	0.9 (2.8)**	1.6 (3.5)	0.9 (3.7)**	1.6 (3.4)	0.9 (2.9)**	1.6 (3.2)	0.9 (2.6)**
Inpatient costs (Mean, SD)	\$8,967 (\$27,751)	\$4,339 (\$25,490)**	\$8,798 (\$25,563)	\$4,249 (\$17,964)**	\$8,760 (\$28,190)	\$4,651 (\$30,053)**	\$8,848 (\$28,165)	\$4,488 (\$20,968)**
Patients with a SNF visit (N, %)	8,985 (29.0)	4,481 (14.5)**	6,377 (29.6)	3,160 (14.7)**	4,268 (30.0)	2,031 (14.3)**	2,727 (30.7)	1,245 (14.0)**
SNF costs (Mean, SD)	\$3,827 (\$11,995)	\$1,321 (\$7,114)**	\$3,871 (\$11,842)	\$1,322 (\$6,942)**	\$3,995 (\$12,769)	\$1,308 (\$6,467)**	\$4,431 (\$12,286)	\$1,414 (\$7,054)**
Patients with an OP prescription (N, %)	29,313 (94.6)	27,976 (90.3)**	20,292 (94.1)	19,548 (90.7)**	13,395 (94.2)	13,005 (91.4)**	8,368 (94.1)	8,173 (91.9)**
OP prescription costs (Mean, SD)	\$3,987 (\$6,725)	\$2,814 (\$4,246)**	\$3,875 (\$7,121)	\$2,770 (\$4,611)**	\$3,816 (\$7,941)	\$2,688 (\$4,747)**	\$3,750 (\$7,505)	\$2,561 (\$4,383)**
Medicare vertebral fracture cohort	N=30,102	N=30,102	N=20,719	N=20,719	N=13,756	N=13,756	N=8,562	N=8,562
Patients with an inpatient admission (N, %)	8,616 (28.6)	5,602 (18.6)**	5,858 (28.3)	3,778 (18.2)**	3,880 (28.2)	2,521 (18.3)**	2,512 (29.3)	1,573 (18.4)**
Admissions per patient (Mean, SD)	0.4 (0.7)	0.2 (0.5)**	0.4 (0.7)	0.2 (0.5)**	0.4 (0.7)	0.2 (0.6)**	0.4 (0.7)	0.2 (0.6)**
Hospitalization days (Mean, SD)	1.4 (3.7)	0.9 (2.8)**	1.3 (3.3)	0.8 (2.5)**	1.3 (3.1)	0.8 (2.4)**	1.4 (3.4)	0.8 (2.6)**
Inpatient costs (Mean, SD)	\$7,526 (\$28,074)	\$4,338 (\$19,893)**	\$6,876 (\$21,203)	\$4,337 (\$26,792)**	\$7,259 (\$24,185)	\$4,523 (\$21,713)**	\$7,559 (\$23,963)	\$4,352 (\$17,173)**
Patients with a SNF visit (N, %)	5,346 (17.8)	3,744 (12.4)**	3,828 (18.5)	2,575 (12.4)**	2,703 (19.6)	1,683 (12.2)**	1,746 (20.4)	996 (11.6)**
SNF costs (Mean, SD)	\$2,207 (\$9,048)	\$1,155 (\$6,551)**	\$2,142 (\$8,872)	\$1,186 (\$7,063)**	\$2,405 (\$9,034)	\$1,213 (\$6,137)**	\$2,499 (\$8,892)	\$1,105 (\$5,873)**
Patients with an OP prescription (N, %)	28,978 (96.3)	27,422 (91.1)**	19,858 (95.8)	18,936 (91.4)**	13,172 (95.8)	12,612 (91.7)**	8,198 (95.7)	7,871 (91.9)**

	Year 2 Post Index		Year 3 Post Index		Year 4 Post Index		Year 5 Post Index	
	Fracture Patients	Controls	Fracture Patients	Controls	Fracture Patients	Controls	Fracture Patients	Controls
OP prescription costs (Mean, SD)	\$4,921 (\$9,419)	\$2,935 (\$4,975)**	\$4,678 (\$9,493)	\$2,802 (\$4,619)**	\$4,535 (\$8,921)	\$2,767 (\$5,268)**	\$4,413 (\$9,111)	\$2,710 (\$5,709)**
Medicare NHNV fracture cohort	N=32,987	N=32,987	N=23,264	N=23,264	N=15,831	N=15,831	N=10,362	N=10,362
Patients with an inpatient admission (N, %)	7,188 (21.8)	5,690 (17.2)**	4,985 (21.4)	4,011 (17.2)**	3,249 (20.5)	2,658 (16.8)**	2,212 (21.3)	1,737 (16.8)**
Admissions per patient (Mean, SD)	0.3 (0.6)	0.2 (0.5)**	0.3 (0.6)	0.2 (0.5)**	0.3 (0.6)	0.2 (0.5)**	0.3 (0.6)	0.2 (0.5)**
Hospitalization days (Mean, SD)	1.0 (2.9)	0.8 (3.3)**	1.0 (2.7)	0.8 (2.7)**	1.0 (2.8)	0.8 (2.5)**	1.0 (2.6)	0.8 (2.5)**
Inpatient costs (Mean, SD)	\$5,634 (\$23,735)	\$4,093 (\$20,007)**	\$5,863 (\$24,592)	\$4,288 (\$20,702)**	\$5,368 (\$24,552)	\$4,182 (\$18,492)**	\$5,590 (\$27,175)	\$3,869 (\$14,569)**
Patients with a SNF visit (N, %)	4,503 (13.7)	3,432 (10.4)**	3,258 (14.0)	2,329 (10.0)**	2,135 (13.5)	1,581 (10.0)**	1,442 (13.9)	982 (9.5)**
SNF costs (Mean, SD)	\$1,571 (\$7,772)	\$1,012 (\$5,962)**	\$1,536 (\$7,529)	\$980 (\$5,936)**	\$1,574 (\$7,516)	\$1,060 (\$6,563)**	\$1,527 (\$7,036)	\$852 (\$5,112)**
Patients with an OP prescription (N, %)	31,313 (94.9)	30,189 (91.5)**	22,024 (94.7)	21,411 (92.0)**	14,991 (94.7)	14,666 (92.6)**	9,783 (94.4)	9,628 (92.9)**
OP prescription costs (Mean, SD)	\$3,974 (\$7,113)	\$2,957 (\$5,039)**	\$3,840 (\$6,861)	\$2,922 (\$5,623)**	\$3,709 (\$7,059)	\$2,883 (\$5,798)**	\$3,585 (\$6,596)	\$2,832 (\$5,893)**