

TABLE E-1 Cost and Outcome Variables Included in the Base Case Used in Strategy A and Values Required to Meet Thresholds for Cost-Effectiveness and Cost Savings*

Variable	Base Case	Cost-Effectiveness Threshold (Incremental Cost-Effectiveness Ratio < \$50,000/QALY)	Cost-Saving Threshold (Incremental Cost < \$0)
Percentage of effort of hospitalist paid	20%	Cost-effective even if 100% effort paid	15%
On-call cost per shift member: medical diagnostic technologist	\$45	\$542.71	\$20.80
Strategy A success rate (percentage of patients receiving surgery within 48 hr)	90%	75%	93%
Decrease in length of hospital stay with surgery within 48 hr	1 day	No threshold	1.17 days
Daily cost of hospitalization	\$743.02	No threshold	\$866.74
Number of operatively treated hip fractures per yr	350	248.60	451.86
Odds ratio of 1-yr mortality if surgery delayed past 48 hr	1.32	1.02	No threshold
Quality-of-life ratio 1 yr after hip fracture surgery	0.7	0.03	No threshold

*QALY = quality-adjusted life year.

TABLE E-2 Cost and Outcome Variables Included in the Base Case Used in Strategy B and Values Required to Meet Two Separate Thresholds for Cost-Effectiveness*

Variable	Base Case	Cost-Effectiveness Threshold (Incremental Cost-Effectiveness Ratio < \$50,000/QALY)	Cost-Effectiveness Threshold (Incremental Cost-Effectiveness Ratio < \$100,000/QALY)
Percentage of effort of hospitalist paid	20%	34%	No threshold
On-call cost per shift member: nurse, surgical technologist, diagnostic technologist	\$45	\$68.89	\$243.34
On-call cost per shift: anesthesiologist	\$250	\$321.66	\$845.01
Strategy B success rate (percentage of patients receiving surgery within 48 hr)	90%	88%	80%
Decrease in length of hospital stay with surgery within 48 hr	1 day	0.51 days	No threshold
Daily cost of hospitalization	\$743.02	\$377.68	No threshold
Number of operatively treated hip fractures per yr	350	339.90	176.26
Odds ratio of 1-yr mortality if surgery delayed past 48 hr	1.32	1.28	No threshold
Quality-of-life ratio 1 yr after hip fracture surgery	0.7	0.6	0.3

*QALY = quality-adjusted life year.

TABLE E-3 Probability Distribution for Variables in Monte Carlo Simulation

Variable	Distributi on	Mea n	Stand ard Devia tion
Odds ratio for mortality if surgery delayed >48 hr ¹¹	Normal	1.32	0.055
Health-related quality of life 1 yr after hip fracture surgery ⁵	Normal	0.7	0.03
On-call cost per shift member (registered nurse, surgical and diagnostic technologists)*	Normal	\$45	\$5
Number of operatively treated hip fractures per yr*	Normal	350	35

*Estimated from incidence and patient case flow data from the current authors' medical institutions.

TABLE E-4 League Table of Incremental Cost-Effectiveness Ratios for Interventions Applicable to the Hip Fracture Population*

Intervention	Population Studies	Cost per QALY (2008 U.S. Dollars)	Cost per QALY (June 2009 U.S. Dollars)	Journal
Systems-based program for early hip fracture surgery: Strategy A (evaluation-focused)	Literature review of patients with hip fracture presenting to a tertiary-care medical center	—	\$2318.00	Current study
Alendronate, 70 mg weekly by mouth for 5 yr vs. no treatment	Postmenopausal women 50 yr of age at the threshold of osteoporosis (femoral neck T-score = – 2.5 std. dev.) with previous fracture	\$13,000.00	\$13,393.90	Kanis JA, et al. Bone. 2008;42:4-15
Bisphosphonates monthly vs. no treatment	U.S. postmenopausal women over 50 yr of age with osteoporosis, at high risk of fracture	\$15,000.00	\$15,454.50	Earnshaw SR, et al. Curr Med Res Opin. 2007;23:2517-29
Bisphosphonate treatment vs. no treatment	U.K. women 70-79 yr of age with high baseline fracture risk and a history of fracture	\$16,000.00	\$16,484.80	van Staa TP, et al. Value Health. 2007;10:348-57
Hip protector vs. no treatment	A hypothetical cohort of women 75 yr of age without a hip fracture and initially living at home	\$22,000.00	\$22,666.60	Honkanen LA, et al. J Am Geriatr Soc. 2006;54:1658-65
Transfer to a high-volume hospital vs. remaining at current (low or high-volume) hospital	Patients with an average age of 76 yr hospitalized for hip fracture surgery	\$22,000.00	\$22,666.60	Gandjour A, Welyer EJ. Health Care Manag Sci. 2006;9:359-69
Alendronate, 70 mg weekly by mouth for 5 yr vs. no treatment	Postmenopausal women 50 yr of age with previous fracture and	\$29,000.00	\$29,878.70	Kanis JA, et al. Bone. 2008;42:4-15

	unknown bone mineral density			
Alendronate, 70 mg weekly by mouth for 5 yr vs. no treatment	Postmenopausal women 50 yr of age at the threshold of osteoporosis (femoral neck T-score = -2.5 std. dev.) with no previous fracture	\$30,000.00	\$30,909.00	Kanis JA, et al. Bone. 2008;42:4-15
Alendronate, 70 mg weekly for 5 yr vs. no intervention	Women 70 yr of age with osteoporosis and a T-score = -3 std. dev.	\$30,000.00	\$30,909.00	Zethraeus N, et al. Osteoporos Int. 2008;19:819-27
Bisphosphonate treatment vs. no treatment	U.K. women 70-79 yr of age with low baseline fracture risk and a history of fracture	\$34,000.00	\$35,030.20	van Staa TP, et al. Value Health. 2007;10:348-57
Systems-based program for early hip fracture surgery: Strategy B (evaluation and surgery)	Literature review of patients with hip fracture presenting to a tertiary-care medical center	—	\$43,153.00	Current study
Bisphosphonate treatment vs. no treatment	U.K. women 60-69 yr of age with high baseline fracture risk and a history of fracture	\$46,000.00	\$47,393.80	van Staa TP, et al. Value Health. 2007;10:348-57
Alendronate, 70 mg for 5 yr vs. no treatment	Women 70 yr of age with osteoporosis and a T-score = -2.5 std. dev.	\$49,000.00	\$50,484.70	van Staa TP, et al. Value Health. 2007;10:348-57
Bone densitometry of hip plus alendronate therapy for 5 yr for osteoporosis vs. no intervention	White women 65 yr of age	\$49,000.00	\$50,484.70	Schousboe JT, et al. J Am Geriatr Soc. 2005;53:1697-704
Vitamin D with calcium (\$125/yr) vs.	Women 60 yr of age at average risk	\$52,000.00	\$53,575.60	Kanis JA, et al. Osteoporos

no treatment	of hip fracture			Int. 2001;12:356-61
Bone densitometry screening with dual x-ray absorptiometry (DXA), followed by alendronate treatment of persons with osteoporosis, or with anamnestic fracture and osteopenia vs. no intervention	Women entered the Markov model at 50 yr of age but underwent first DXA screening at 65 yr of age	\$63,000.00	\$64,908.90	Schwenkglenks M, et al. Osteoporos Int. 2007;18:1481-91
Bisphosphonate treatment vs. no treatment	U.K. women 60-69 yr of age with low baseline fracture risk and a history of fracture	\$100,000.00	\$103,030.00	van Staa TP, et al. Value Health. 2007;10:348-57
5 yr of treatment with alendronate vs. conservative care	Women 60 yr of age with a T-score in the middle of the osteopenic range (-1.8 std. dev.)	\$120,000.00	\$123,636.00	Meadows ES, et al. BMC Womens Health. 2007;7:6

*QALY = quality-adjusted life year.