

Supplementary Table 1. One-year, three-year five-year and ten-year cumulative incidence and incidence rates of all fractures requiring hospitalization*

	Cumulative incidence, % (95% Confidence Intervals)			Incidence Rate per 1000 patient years (95% Confidence Intervals)		
	England	NYS	<i>P value</i>	England	NYS	<i>P value</i>
One-Year						
Overall (n=29,898)	0.74% (0.63-0.88)	0.66% (0.53-0.83)	0.488	7.44 (6.28-8.81)	6.73 (5.38-8.42)	0.489
Women < 50 y (n=6063)	0.41% (0.25-0.67)	0.33% (0.16-0.68)	0.603	4.12 (2.52-6.74)	3.26 (1.56-6.84)	0.623
Women ≥ 50 y (n=5557)	1.30% (0.95-1.77)	1.18% (0.81-1.70)	0.801	13.05 (9.58-17.80)	12.26 (8.52-17.64)	0.803
Men < 50 y (n=8808)	0.54% (0.38-0.76)	0.25% (0.12-0.52)	0.053	5.42 (3.83-7.66)	2.47 (1.18-5.18)	0.048
Men ≥ 50 y (n=9470)	0.88% (0.66-1.18)	0.83% (0.59-1.16)	0.771	8.90 (6.66-11.88)	8.31 (5.94-11.63)	0.767
Three-Year						
Overall (n=23,729)	1.96% (1.74-2.21)	1.76% (1.51-2.05)	0.265	6.62 (5.87-7.46)	5.93 (5.09-6.91)	0.269
Women < 50 y (n=5059)	1.56% (1.18-2.06)	0.98% (0.62-1.55)	0.086	5.24 (3.96-6.94)	3.28 (2.07-5.21)	0.084
Women ≥ 50 y (n=4240)	3.20% (2.54-4.04)	2.52% (1.91-3.33)	0.210	10.90 (8.60-13.80)	8.62 (6.49-11.43)	0.212
Men < 50 y (n=7148)	1.35% (1.06-1.73)	1.02% (0.68-1.52)	0.228	4.54 (3.55-5.81)	3.41 (2.29-5.09)	0.230
Men ≥ 50 y (n=7282)	2.34% (1.90-2.89)	2.29% (1.83-2.86)	0.845	7.96 (6.44-9.83)	7.71 (6.44-9.83)	0.842
Five-Year						
Overall (n=17810)	3.16% (2.83-3.53)	2.87% (2.51-3.28)	0.273	6.43 (5.75-7.19)	5.83 (5.10-6.67)	0.272
Women < 50 y (n=3955)	2.28% (1.75-2.97)	1.73% (1.18-2.53)	0.245	4.61 (3.53-6.02)	3.50 (2.38-5.14)	0.248
Women ≥ 50 y (n=3092)	5.38% (4.33-6.67)	4.04% (3.14-5.18)	0.099	11.06 (8.86-13.81)	8.32 (6.44-10.73)	0.098
Men < 50 y (n=5506)	2.43% (1.97-3.00)	2.37% (1.77-3.16)	0.869	4.93 (3.98-6.09)	4.78 (3.60-6.40)	0.880
Men ≥ 50 y (n=5257)	3.73% (3.05-4.56)	3.25% (2.62-4.03)	0.346	7.67 (6.25-9.42)	6.61 (5.32-8.22)	0.333

Ten-year						
Overall (n=4103)	1.39% (0.96-2.01)	1.62% (1.12-2.33)	0.532	1.36 (0.94-1.97)	1.63 (1.13-2.36)	0.503
Women < 50 y (n=923)	0.99% (0.41-2.36)	0.27% (0.04-1.93)	0.210	0.95 (0.39-2.28)	0.27 (0.39-1.95)	0.262
Women ≥ 50 y (n=696)	3.26% (1.70-6.20)	2.62% (1.37-4.97)	0.664	3.33 (1.73-6.40)	2.70 (1.40-5.19)	0.661
Men < 50 y (n=1441)	0.34% (0.11-1.04)	0.95% (0.40-2.26)	0.148	0.35 (0.11-1.09)	0.95 (0.40-2.29)	0.185
Men ≥ 50 y (n=1043)	2.96% (1.64-5.31)	2.62% (1.53-4.46)	0.836	2.71 (1.50-4.89)	2.63 (1.53-4.53)	0.942

*Cumulative incidence defined as the proportion of kidney transplant recipients who sustained a hip fracture within the specified period of follow-up: no hip fracture could occur if follow-up if the kidney transplant recipient died before hip fracture. Incidence rate defined as the rate per 1000 patient years of follow-up; censoring at the time of death or fracture in follow-up.

Supplementary Table 2. Adjusted* associations between kidney transplant recipient demographics and co-morbidities with the cumulative incidence of all fractures requiring hospitalization (English and New York State kidney transplant recipients combined).

		Hazard Ratio (95% Confidence Intervals)	P value
Age	18 to 49	1	
	50 to 69	1.66 (1.46 - 1.90)	<0.001
	70 and over	3.02 (2.41 - 3.80)	<0.001
Gender	Male	1 (baseline group)	
	Female	1.34 (1.18 - 1.51)	<0.001
Ethnicity	White	1	
	Black	0.62 (0.50 - 0.77)	<0.001
	Other	0.68 (0.57 - 0.82)	<0.001
Pre-transplantation diabetes mellitus		2.04 (1.78 - 2.34)	<0.001
Previous Fractures		2.31 (1.78 - 3.01)	<0.001
Cohort	England	1	
	New York State	1.03 (0.89 - 1.18)	0.699

*Model adjusted for; age, gender, ethnicity, history of myocardial infarction, peripheral vascular disease, cerebrovascular disease, congestive cardiac failure, pulmonary disease, diabetes mellitus and previous fractures.

Supplementary Table 3. One-year, three-year five-year and ten-year cumulative incidence and incidence rates of hip fractures requiring hospitalization*

	Cumulative incidence, % (95% Confidence Intervals)			Incidence Rate per 1000 patient years (95% Confidence Intervals)		
	England	NYS	<i>P value</i>	England	NYS	<i>P value</i>
One-Year						
Overall (n=29,898)	0.23% (0.17-0.31)	0.16% (0.10-0.25)	0.162	2.33 (1.72-3.15)	1.57 (0.99-2.49)	0.160
Women < 50 y (n=6063)**						
Women ≥ 50 y (n=5557)	0.45% (0.27-0.76)	0.29% (0.14-0.62)	0.347	4.55 (2.70-7.69)	2.94 (1.40-6.18)	0.355
Men < 50 y (n=8808)	0.07% (0.03-0.18)	0.07% (0.02-0.28)	0.962	0.68 (0.25-1.80)	0.70 (0.18-2.82)	0.932
Men ≥ 50 y (n=9470)	0.42% (0.28-0.64)	0.22% (0.11-0.42)	0.092	4.25 (2.80-6.45)	2.19 (1.14-4.21)	0.090
Three-Year						
Overall (n=23,729)	0.42% (0.33-0.55)	0.42% (0.30-0.57)	0.899	1.43 (1.10-1.85)	1.39 (1.02-1.91)	0.913
Women < 50 y (n=5059)	0.19% (0.09-0.43)	0.06% (0.01-0.39)	0.215	0.64 (0.29-1.42)	0.18 (0.03-1.29)	0.242
Women ≥ 50 y (n=4240)	0.74% (0.45-1.20)	0.58% (0.32-1.04)	0.529	2.49 (1.52-4.07)	1.95 (1.08-3.53)	0.542
Men < 50 y (n=7148)	0.13% (0.06-0.29)	0.13% (0.04-0.39)	0.981	0.43 (0.19-0.96)	0.42 (0.14-1.32)	0.990
Men ≥ 50 y (n=7282)	0.81% (0.56-1.15)	0.73% (0.49-1.09)	0.670	2.76 (1.93-3.94)	2.45 (1.64-3.65)	0.668
Five-Year						
Overall (n=17810)	0.67% (0.52-0.85)	0.68% (0.51-0.89)	0.924	1.34 (1.05-1.71)	1.37 (1.04-1.80)	0.982
Women < 50 y (n=3955)	0.17% (0.06-0.45)	0.13% (0.03-0.53)	0.783	0.34 (0.13-0.90)	0.27 (0.07-1.07)	0.822
Women ≥ 50 y (n=3092)	1.67 (1.12-2.49)	0.89 (0.52-1.52)	0.068	3.34 (2.24-4.98)	1.80 (0.64-2.37)	0.071
Men < 50 y (n=5506)	0.20% (0.10-0.42)	0.42% (0.21-0.84)	0.143	0.40 (0.19-0.84)	0.84 (0.42-1.68)	0.162
Men ≥ 50 y (n=5257)	1.22% (0.86-1.74)	1.08% (0.74-1.57)	0.617	2.50 (1.75-3.58)	2.18 (1.50-3.18)	0.610

Ten-year						
Overall (n=4103)	1.39% (0.96-2.01)	1.62% (1.12-2.33)	0.5323	1.36 (0.94-1.97)	1.63 (1.13-2.36)	0.5031
Women < 50 y (n=923)	0.99% (0.41-2.36)	0.27% (0.04-1.93)	0.2099	0.95 (0.39-2.28)	0.27 (0.39-1.95)	0.2624
Women ≥ 50 y (n=696)	3.26% (1.70-6.20)	2.62% (1.37-4.97)	0.6642	3.33 (1.73-6.40)	2.70 (1.40-5.19)	0.6611
Men < 50 y (n=1441)	0.34% (0.11-1.04)	0.95% (0.40-2.26)	0.1478	0.35 (0.11-1.09)	0.95 (0.40-2.29)	0.1853
Men ≥ 50 y (n=1043)	2.96% (1.64-5.31)	2.62% (1.53-4.46)	0.8363	2.71 (1.50-4.89)	2.63 (1.53-4.53)	0.9419

*Cumulative incidence defined as the proportion of kidney transplant recipients who sustained a hip fracture within the specified period of follow-up: no hip fracture could occur if follow-up if the kidney transplant recipient died before hip fracture. Incidence rate defined as the rate per 1000 patient years of follow-up; censoring at the time of death or fracture in follow-up.

**Less than 5 events in this group so data not presented for reasons of privacy.

Supplementary Table 4. Adjusted* associations between kidney transplant recipient demographics and co-morbidities with the cumulative incidence of hip fractures (English and New York State kidney transplant recipients combined).

		Hazard Ratio (95% Confidence Intervals)	P value
Age	18 to 49	1	
	50 to 69	4.26 (3.05,5.95)	<0.001
	70 and over	10.61 (6.81,16.54)	<0.001
Gender	Male	1	
	Female	1.36 (1.05,1.76)	0.019
Ethnicity	White	1	
	Black	0.42 (0.25,0.71)	0.001
	Other	0.44 (0.28,0.69)	<0.001
Pre-transplantation diabetes mellitus		2.22 (1.68,2.94)	<0.001
Previous Fractures		2.48 (1.49,4.14)	<0.001
Country	England	1	
	New York State	0.90 (0.67,1.20)	0.473

*Model adjusted for; age, gender, ethnicity, history of myocardial infarction, peripheral vascular disease, cerebrovascular disease, congestive cardiac failure, pulmonary disease, diabetes mellitus and previous fractures.

Supplementary Table 5. Adjusted* associations between kidney transplant recipient demographics and co-morbidities with one-year mortality after any fracture requiring hospitalization (English and New York State kidney transplant recipients combined).

	One-Year Post-Fracture Mortality	Odds Ratio (95% Confidence Intervals)	P-value
Age	18 to 49	1	0.018
	50 to 69	1.80 (1.11-2.93)	
	70 and over	2.01 (0.96-4.22)	
Gender	Male	1	0.35
	Female	0.82 (0.53-1.25)	
Ethnicity	White	1	0.457
	Black	1.29 (0.66-2.56)	
	Other	0.58 (0.27-1.24)	
	Pre-transplantation diabetes mellitus	1.09 (0.69-1.73)	
	Previous Fractures	0.85 (0.33-2.19)	0.732
Cohort	England	1	0.655
	New York State	1.11 (0.69-1.79)	

*Model adjusted for; age, gender, ethnicity, history of myocardial infarction, peripheral vascular disease, cerebrovascular disease, congestive cardiac failure, pulmonary disease, diabetes mellitus and previous fractures.

Supplementary Table 6. Adjusted* associations between kidney transplant recipient demographics and co-morbidities with one-year mortality after a hip fracture (English and New York State kidney transplant recipients combined).

	One-Year Post-Hip Fracture Mortality	Odds Ratio (95% Confidence Intervals)	P-value
Age	18 to 49	1	
	50 to 69	1.30 (0.53-3.18)	0.561
	70 and over	2.26 (0.75-6.80)	0.147
Gender	Male	1	
	Female	0.84 (0.43-1.64)	0.601
Ethnicity	White	1	
	Black	2.55 (0.89-7.34)	0.083
	Other	0.38 (0.09-1.71)	0.208
Pre-transplantation diabetes mellitus		1.49 (0.75-2.96)	0.253
Previous Fractures		1.14 (0.35-3.73)	0.823
Cohort	England	1	
	New York State	0.92 (0.47-1.82)	0.819

*Model adjusted for; age, gender, ethnicity, history of myocardial infarction, peripheral vascular disease, cerebrovascular disease, congestive cardiac failure, pulmonary disease, diabetes mellitus and previous fractures.