

Supplemental material

Supplemental Table 1: Kaplan-Meier estimates of cumulative revision of knee second revision

Age group (years)	n	Time since previous revision					
		1 year	3 years	5 years	7 years	10 years	13 years
All cases	3,575	6.29 (5.51-7.17)	15.85 (14.54-17.26)	20.66 (19.07-22.35)	23.03 (21.24-24.94)	25.74 (23.32-28.37)	..
Females	1,656	5.20 (4.19-6.44)	13.85 (12.07-15.86)	19.20 (16.94-21.73)	20.47 (18.04-23.18)	23.33 (19.80-27.36)	25.11 (20.47-30.59)
F <55	396	4.68 (2.93-7.42)	<i>15.37 (11.72-20.01)</i>	<i>24.33 (19.25-30.46)</i>	<i>25.11 (19.90-31.41)</i>	<i>34.05 (24.27-46.39)</i>	..
F 55-59y	298	<i>7.02 (4.53-10.80)</i>	<i>18.71 (14.21-24.42)</i>	<i>22.96 (17.71-29.47)</i>	<i>26.36 (20.27-33.87)</i>	<i>26.36 (20.27-33.87)</i>	<i>26.36 (20.27-33.87)</i>
F 60-64y	285	<i>4.96 (2.91-8.39)</i>	<i>11.67 (8.12-16.64)</i>	<i>13.01 (9.15-18.32)</i>	<i>15.76 (10.86-22.57)</i>	<i>15.76 (10.86-22.57)</i>	<i>15.76 (10.86-22.57)</i>
F 65-69y	303	<i>7.16 (4.68-10.89)</i>	<i>16.30 (12.22-21.58)</i>	<i>20.31 (15.47-26.40)</i>	<i>20.31 (15.47-26.40)</i>	<i>24.10 (16.49-34.44)</i>	..
F 70-74y	192	<i>5.07 (2.67-9.53)</i>	<i>10.01 (6.21-15.93)</i>	<i>19.89 (13.29-29.18)</i>	<i>19.89 (13.29-29.18)</i>	<i>19.89 (13.29-29.18)</i>	..
F 75-79y	110	0	<i>5.99 (2.54-13.82)</i>	<i>11.27 (5.67-21.74)</i>	<i>11.27 (5.67-21.74)</i>	<i>11.27 (5.67-21.74)</i>	..
F 80+	72	<i>1.41 (0.20-9.58)</i>	<i>5.79 (1.86-17.24)</i>	<i>5.79 (1.86-17.24)</i>	<i>5.79 (1.86-17.24)</i>	<i>5.79 (1.86-17.24)</i>	..
Males	1,919	7.22 (6.11-8.52)	17.55 (15.72-19.56)	21.86 (19.72-24.20)	25.15 (22.64-27.88)	27.79 (24.53-31.39)	27.79 (24.53-31.39)
M <55	435	8.37 (6.05-11.52)	<i>21.29 (17.36-25.98)</i>	<i>25.07 (20.60-30.30)</i>	<i>28.97 (23.70-35.11)</i>	<i>31.81 (24.79-40.24)</i>	<i>31.81 (24.79-40.24)</i>
M 55-59y	327	6.81 (4.49-10.26)	<i>16.26 (12.25-21.42)</i>	<i>18.88 (14.36-24.60)</i>	<i>24.84 (18.70-32.56)</i>	<i>33.43 (23.74-45.73)</i>	<i>33.43 (23.74-45.73)</i>
M 60-64y	403	6.30 (4.27-9.25)	<i>16.66 (12.99-21.24)</i>	<i>23.02 (18.47-28.48)</i>	<i>25.21 (20.24-31.14)</i>	<i>26.54 (21.13-33.03)</i>	<i>26.54 (21.13-33.03)</i>
M 65-69y	334	6.97 (4.60-10.51)	<i>16.75 (12.73-21.87)</i>	<i>22.18 (17.25-28.26)</i>	<i>24.68 (19.27-31.29)</i>	<i>24.68 (19.27-31.29)</i>	..
M 70-74y	262	<i>6.13 (3.74-9.96)</i>	<i>15.22 (11.09-20.71)</i>	<i>19.00 (14.04-25.44)</i>	<i>20.56 (15.03-27.76)</i>	<i>20.56 (15.03-27.76)</i>	..
M 75-79y	112	<i>9.09 (4.82-16.78)</i>	<i>19.38 (12.15-30.10)</i>	<i>21.30 (13.54-32.57)</i>	<i>25.67 (15.71-40.25)</i>	<i>25.67 (15.71-40.25)</i>	..
M 80+	46	<i>11.53 (4.97-25.52)</i>	<i>11.53 (4.97-25.52)</i>	<i>11.53 (4.97-25.52)</i>	<i>11.53 (4.97-25.52)</i>	..	..

Blue italics signify that fewer than 250 cases remained at risk at these time points.

Supplemental Table 2: KM estimates of cumulative revision of knee third revision

Age group (years)	n	Time since previous revision				
		1 year	3 years	5 years	7 years	10 years
All cases	574	7.52 (5.55-10.16)	20.70 (17.14-24.88)	29.44 (24.60-34.99)	32.14 (26.68-38.40)	..
Females	235	5.99 (3.44-10.32)	17.91 (12.88-24.60)	25.25 (18.38-34.12)	28.13 (19.97-38.71)	28.13 (19.97-38.71)
F <55	67	3.34 (0.84-12.69)	17.37 (9.37-30.91)	21.12 (11.58-36.71)	21.12 (11.58-36.71)	21.12 (11.58-36.71)
F 55-59y	53	4.61 (1.17-17.21)	19.38 (9.65-36.69)	37.62 (20.03-63.08)	37.62 (20.03-63.08)	37.62 (20.03-63.08)
F 60-64y	31	16.96 (6.71-39.19)	23.35 (10.18-48.23)	32.93 (15.11-62.23)	32.93 (15.11-62.23)	..
F 65-69y	49	9.16 (3.53-22.65)	21.09 (11.02-38.13)	25.73 (13.86-44.74)	35.01 (18.05-60.66)	35.01 (18.05-60.66)
F 70-74y	24	0	11.46 (2.99-38.61)	11.46 (2.99-38.61)	11.46 (2.99-38.61)	..
F 75-79y	8	0	0	0	..	..
F 80+	3	..	..	..	..	..
Males	339	8.58 (5.96-12.27)	22.55 (17.90-28.19)	31.86 (25.65-39.15)	34.30 (27.55-42.17)	36.93 (28.99-46.24)
M <55	91	9.26 (4.74-17.69)	28.59 (19.41-40.87)	35.29 (23.88-50.05)	39.33 (26.63-55.37)	39.33 (26.63-55.37)
M 55-59y	55	15.77 (8.21-29.09)	26.06 (15.53-41.72)	32.64 (20.35-49.65)	32.64 (20.35-49.65)	..
M 60-64y	73	8.86 (4.07-18.70)	21.19 (12.80-33.90)	32.57 (20.13-49.88)	32.57 (20.13-49.88)	32.57 (20.13-49.88)
M 65-69y	57	4.07 (1.02-15.48)	14.65 (6.69-30.39)	37.30 (20.27-61.80)	37.30 (20.27-61.80)	37.30 (20.27-61.80)
M 70-74y	40	5.26 (1.34-19.44)	26.37 (13.94-46.45)	26.37 (13.94-46.45)	41.10 (18.93-73.68)	41.10 (18.93-73.68)
M 75-79y	18	5.88 (0.85-34.98)	5.88 (0.85-34.98)	17.65 (4.32-57.43)	17.65 (4.32-57.43)	..
M 80+	5	0	0	0	0	..

Blue italics signify that fewer than 250 cases remained at risk at these time points.

Supplemental Table 3: KM estimates of cumulative revision of knee first revision based on primary total knees.

Age group (years)	n	Time since first revision						
		1 year	3 years	5 years	7 years	10 years	13 years	15 years
All cases	24,117	3.99 (3.74-4.25)	10.30 (9.89-10.74)	13.46 (12.96-13.99)	15.77 (15.18-16.39)	17.98 (17.21-18.77)	<i>20.82 (18.93-22.88)</i>	
Females	13,084	3.32 (3.02-3.66)	8.46 (7.95-9.01)	11.45 (10.81-12.12)	13.22 (12.48-14.00)	15.07 (14.11-16.08)	<i>16.51 (14.97-18.18)</i>	<i>16.51 (14.97-18.18)</i>
F <55	1,768	3.48 (2.70-4.48)	9.64 (8.21-11.30)	14.75 (12.81-16.94)	18.13 (15.79-20.78)	<i>21.87 (18.67-25.52)</i>	<i>21.87 (18.67-25.52)</i>	..
F 55-59y	1,817	2.95 (2.25-3.88)	9.29 (7.91-10.91)	13.37 (11.60-15.39)	17.20 (14.96-19.74)	<i>20.39 (17.34-23.90)</i>	<i>21.11 (17.82-24.90)</i>	..
F 60-64y	2,300	2.89 (2.27-3.69)	8.67 (7.47-10.04)	11.70 (10.22-13.37)	13.48 (11.81-15.38)	<i>14.69 (12.76-16.89)</i>	<i>19.55 (14.30-26.41)</i>	<i>19.55 (14.30-26.41)</i>
F 65-69y	2,509	3.91 (3.19-4.77)	9.20 (8.03-10.54)	12.17 (10.74-13.77)	13.34 (11.77-15.10)	<i>15.04 (13.08-17.27)</i>	<i>15.89 (13.44-18.73)</i>	..
F 70-74y	2,166	2.98 (2.33-3.82)	7.49 (6.36-8.82)	9.66 (8.30-11.24)	10.44 (8.97-12.14)	<i>11.55 (9.79-13.61)</i>	<i>11.55 (9.79-13.61)</i>	..
F 75-79y	1,561	3.35 (2.54-4.41)	5.64 (4.52-7.03)	7.05 (5.71-8.69)	7.50 (6.05-9.28)	<i>8.31 (6.57-10.49)</i>	<i>8.31 (6.57-10.49)</i>	..
F 80+	963	3.98 (2.87-5.50)	8.88 (7.02-11.19)	<i>9.33 (7.40-11.73)</i>	<i>9.33 (7.40-11.73)</i>	<i>9.33 (7.40-11.73)</i>	..	..
Males	11,033	4.78 (4.39-5.21)	12.48 (11.82-13.18)	15.85 (15.06-16.68)	18.80 (17.86-19.78)	21.42 (20.21-22.69)	<i>25.60 (22.31-29.28)</i>	..
M <55	1,506	5.78 (4.68-7.14)	17.04 (15.03-19.30)	21.38 (19.02-23.98)	26.95 (24.01-30.18)	<i>30.50 (26.86-34.51)</i>	<i>31.72 (27.51-36.40)</i>	..
M 55-59y	1,553	4.34 (3.41-5.51)	14.36 (12.53-16.44)	18.31 (16.14-20.72)	21.19 (18.71-23.94)	<i>25.21 (21.75-29.10)</i>	<i>29.14 (23.85-35.29)</i>	..
M 60-64y	2,222	4.61 (3.80-5.60)	12.76 (11.32-14.37)	16.51 (14.79-18.40)	19.99 (17.93-22.26)	<i>21.91 (19.46-24.61)</i>	<i>22.92 (19.89-26.33)</i>	..
M 65-69y	2,238	4.54 (3.73-5.52)	11.74 (10.34-13.31)	14.72 (13.06-16.57)	16.75 (14.86-18.85)	<i>19.26 (16.87-21.95)</i>	<i>27.15 (19.14-37.65)</i>	..
M 70-74y	1,810	5.39 (4.41-6.57)	11.59 (10.09-13.30)	14.69 (12.91-16.70)	17.07 (14.95-19.45)	<i>19.13 (16.42-22.22)</i>	<i>19.13 (16.42-22.22)</i>	..
M 75-79y	1,133	3.88 (2.87-5.23)	8.35 (6.75-10.31)	11.09 (9.06-13.55)	<i>12.78 (10.44-15.61)</i>	<i>14.86 (11.39-19.26)</i>	<i>21.95 (11.44-39.68)</i>	..
M 80+	571	4.86 (3.33-7.06)	7.81 (5.71-10.63)	<i>8.59 (6.31-11.66)</i>	<i>9.60 (6.81-13.44)</i>	<i>11.24 (7.48-16.71)</i>	<i>11.24 (7.48-16.71)</i>	..

Blue italics signify that fewer than 250 cases remained at risk at these time points.

Supplemental Table 4: KM estimates of cumulative revision of knee second revision based on primary total knees.

Age group (years)	n	Time since previous revision					
		1 year	3 years	5 years	7 years	10 years	13 years
All cases	2,736	6.56 (5.66-7.60)	16.31 (14.81-17.94)	21.50 (19.65-23.49)	23.95 (21.86-26.20)	<i>26.76 (23.82-29.99)</i>	
Females	1,233	5.40 (4.23-6.89)	13.85 (11.81-16.20)	19.30 (16.67-22.28)	<i>20.70 (17.87-23.91)</i>	<i>24.00 (19.60-29.21)</i>	<i>27.46 (20.33-36.46)</i>
F <55	213	<i>4.58 (2.41-8.62)</i>	<i>13.22 (8.95-19.31)</i>	<i>22.32 (15.99-30.66)</i>	<i>23.68 (17.03-32.38)</i>	<i>34.93 (21.23-53.88)</i>	..
F 55-59y	210	<i>7.45 (4.47-12.27)</i>	<i>21.25 (15.58-28.63)</i>	<i>25.94 (19.24-34.43)</i>	<i>29.23 (21.68-38.69)</i>	<i>29.23 (21.68-38.69)</i>	<i>29.23 (21.68-38.69)</i>
F 60-64y	226	<i>5.29 (2.96-9.35)</i>	<i>12.04 (8.05-17.81)</i>	<i>13.71 (9.31-19.94)</i>	<i>17.21 (11.43-25.47)</i>	<i>17.21 (11.43-25.47)</i>	<i>17.21 (11.43-25.47)</i>
F 65-69y	252	<i>7.31 (4.61-11.51)</i>	<i>17.74 (13.12-23.74)</i>	<i>22.40 (16.92-29.33)</i>	<i>22.40 (16.92-29.33)</i>	<i>26.49 (18.13-37.71)</i>	..
F 70-74y	171	<i>5.75 (3.03-10.78)</i>	<i>9.63 (5.79-15.79)</i>	<i>20.12 (12.96-30.50)</i>	<i>20.12 (12.96-30.50)</i>	<i>20.12 (12.96-30.50)</i>	..
F 75-79y	91	0	<i>5.88 (2.24-14.93)</i>	<i>10.52 (4.69-22.67)</i>	<i>10.52 (4.69-22.67)</i>	..	..
F 80+	70	<i>1.45 (0.21-9.84)</i>	<i>5.83 (1.88-17.31)</i>	<i>5.83 (1.88-17.31)</i>	<i>5.83 (1.88-17.31)</i>	<i>5.83 (1.88-17.31)</i>	..
Males	1,503	7.50 (6.23-9.01)	18.29 (16.20-20.62)	23.24 (20.75-25.99)	<i>26.53 (23.61-29.73)</i>	<i>29.02 (25.18-33.30)</i>	<i>29.02 (25.18-33.30)</i>
M <55	281	<i>8.30 (5.54-12.34)</i>	<i>22.11 (17.24-28.09)</i>	<i>27.05 (21.40-33.85)</i>	<i>29.42 (23.20-36.86)</i>	<i>29.42 (23.20-36.86)</i>	<i>29.42 (23.20-36.86)</i>
M 55-59y	246	<i>6.91 (4.29-11.04)</i>	<i>18.68 (13.73-25.14)</i>	<i>22.29 (16.61-29.55)</i>	<i>31.10 (22.88-41.38)</i>	<i>43.13 (30.11-58.90)</i>	..
M 60-64y	322	7.88 (5.35-11.53)	<i>17.34 (13.26-22.51)</i>	<i>25.14 (19.82-31.57)</i>	<i>26.27 (20.67-33.05)</i>	<i>26.27 (20.67-33.05)</i>	<i>26.27 (20.67-33.05)</i>
M 65-69y	279	<i>7.47 (4.83-11.47)</i>	<i>18.48 (13.94-24.27)</i>	<i>23.45 (18.05-30.14)</i>	<i>26.37 (20.39-33.70)</i>	<i>26.37 (20.39-33.70)</i>	..
M 70-74y	230	<i>6.05 (3.56-10.20)</i>	<i>16.48 (11.91-22.57)</i>	<i>20.20 (14.72-27.37)</i>	<i>22.25 (15.92-30.59)</i>	<i>22.25 (15.92-30.59)</i>	..
M 75-79y	103	<i>7.85 (3.81-15.81)</i>	<i>15.52 (8.99-26.05)</i>	<i>17.53 (10.38-28.76)</i>	<i>22.11 (12.52-37.31)</i>	<i>22.11 (12.52-37.31)</i>	..
M 80+	42	<i>10.14 (3.93-24.80)</i>	<i>10.14 (3.93-24.80)</i>	<i>10.14 (3.93-24.80)</i>	<i>10.14 (3.93-24.80)</i>	..	..

Blue italics signify that fewer than 250 cases remained at risk at these time points.

Supplemental Table 5: KM estimates of cumulative revision of knee third revision based on primary total knees.

Age group (years)	n	Time since previous revision				
		1 year	3 years	5 years	7 years	10 years
All cases	453	8.76 (6.39-11.95)	<i>22.54 (18.40-27.44)</i>	<i>31.75 (26.19-38.15)</i>	<i>35.45 (28.92-42.95)</i>	
Females	176	<i>6.61 (3.61-11.96)</i>	<i>21.00 (14.81-29.31)</i>	<i>29.39 (20.92-40.31)</i>	<i>33.54 (23.06-47.11)</i>	..
F <55	35	<i>3.13 (0.45-20.18)</i>	<i>27.62 (14.01-49.98)</i>	<i>34.86 (18.33-59.65)</i>	..	..
F 55-59y	40	<i>2.94 (0.42-19.10)</i>	<i>23.87 (11.34-46.09)</i>	<i>48.09 (22.00-82.28)</i>	<i>48.09 (22.00-82.28)</i>	..
F 60-64y	26	<i>19.45 (7.75-44.00)</i>	<i>26.77 (11.79-53.89)</i>	<i>37.23 (17.41-67.84)</i>	<i>37.23 (17.41-67.84)</i>	..
F 65-69y	45	<i>9.94 (3.84-24.42)</i>	<i>19.72 (9.80-37.36)</i>	<i>25.07 (12.84-45.45)</i>	<i>35.77 (17.45-64.03)</i>	..
F 70-74y	21	0	<i>12.50 (3.28-41.40)</i>	<i>12.50 (3.28-41.40)</i>	<i>12.50 (3.28-41.40)</i>	..
F 75-79y	6	0	0	0	..	..
F 80+	3			..	..	..
Males	277	<i>10.14 (7.01-14.54)</i>	<i>23.51 (18.30-29.91)</i>	<i>33.07 (26.14-41.26)</i>	<i>36.43 (28.61-45.60)</i>	<i>36.43 (28.61-45.60)</i>
M <55	61	<i>13.74 (7.11-25.62)</i>	<i>29.69 (18.74-45.01)</i>	<i>34.09 (21.56-51.11)</i>	<i>40.08 (25.11-59.63)</i>	<i>40.08 (25.11-59.63)</i>
M 55-59y	48	<i>18.30 (9.59-33.32)</i>	<i>28.19 (16.38-45.82)</i>	<i>36.41 (22.30-55.63)</i>	<i>36.41 (22.30-55.63)</i>	..
M 60-64y	61	<i>10.78 (4.98-22.49)</i>	<i>23.86 (14.19-38.46)</i>	<i>39.43 (23.82-60.31)</i>	<i>39.43 (23.82-60.31)</i>	<i>39.43 (23.82-60.31)</i>
M 65-69y	52	<i>4.41 (1.11-16.66)</i>	<i>15.79 (7.23-32.51)</i>	<i>33.49 (17.50-57.87)</i>	<i>33.49 (17.50-57.87)</i>	..
M 70-74y	37	<i>5.71 (1.46-20.97)</i>	<i>28.04 (14.94-48.80)</i>	<i>28.04 (14.94-48.80)</i>	<i>46.03 (20.44-81.06)</i>	..
M 75-79y	14	0	0	<i>14.29 (2.14-66.59)</i>	<i>14.29 (2.14-66.59)</i>	..
M 80+	4	0	0	..	..	..

Blue italics signify that fewer than 250 cases remained at risk at these time points.

Supplemental Table 6: KM estimates of cumulative revision of knee first revision based on primary unicondylar knees.

Age group (years)	n	Time since first revision					
		1 year	3 years	5 years	7 years	10 years	13 years
All cases	7,429	2.77 (2.41-3.19)	7.92 (7.27-8.62)	10.97 (10.16-11.84)	12.96 (12.02-13.97)	15.58 (14.33-16.94)	<i>18.25 (15.68-21.20)</i>
Females	3,808	2.36 (1.91-2.91)	6.84 (6.01-7.79)	10.01 (8.93-11.21)	11.97 (10.72-13.37)	14.59 (12.90-16.47)	<i>17.23 (13.43-21.97)</i>
F <55	1,117	3.24 (2.32-4.50)	9.27 (7.56-11.33)	14.96 (12.61-17.71)	<i>18.46 (15.63-21.73)</i>	<i>22.96 (19.00-27.60)</i>	<i>29.38 (18.75-44.16)</i>
F 55-59y	726	2.22 (1.34-3.65)	9.02 (6.95-11.66)	10.50 (8.20-13.41)	<i>12.91 (10.15-16.35)</i>	<i>15.53 (12.00-19.97)</i>	<i>15.53 (12.00-19.97)</i>
F 60-64y	682	1.71 (0.95-3.06)	5.50 (3.89-7.76)	8.09 (5.98-10.91)	<i>9.13 (6.80-12.21)</i>	<i>10.89 (7.78-15.13)</i>	<i>10.89 (7.78-15.13)</i>
F 65-69y	549	2.78 (1.66-4.65)	5.17 (3.49-7.63)	<i>8.53 (6.10-11.86)</i>	<i>9.86 (7.13-13.56)</i>	<i>12.91 (8.99-18.35)</i>	<i>12.91 (8.99-18.35)</i>
F 70-74y	374	1.68 (0.76-3.70)	<i>3.37 (1.87-6.04)</i>	<i>5.08 (3.06-8.37)</i>	<i>5.83 (3.52-9.58)</i>	<i>6.99 (4.12-11.75)</i>	<i>12.80 (5.08-30.26)</i>
F 75-79y	241	<i>1.74 (0.66-4.58)</i>	<i>4.78 (2.59-8.75)</i>	<i>6.31 (3.57-11.01)</i>	<i>7.30 (4.19-12.57)</i>	<i>7.30 (4.19-12.57)</i>	<i>7.30 (4.19-12.57)</i>
F 80+	119	0	<i>1.05 (0.15-7.24)</i>	<i>1.05 (0.15-7.24)</i>	<i>1.05 (0.15-7.24)</i>	<i>1.05 (0.15-7.24)</i>	..
Males	3,621	3.21 (2.67-3.86)	9.05 (8.07-10.14)	11.97 (10.79-13.27)	14.00 (12.63-15.50)	16.64 (14.81-18.65)	<i>19.21 (16.24-22.64)</i>
M <55	930	4.45 (3.27-6.04)	12.74 (10.57-15.31)	15.86 (13.33-18.81)	<i>18.12 (15.21-21.52)</i>	<i>22.17 (18.02-27.10)</i>	<i>25.05 (18.78-32.94)</i>
M 55-59y	707	2.05 (1.22-3.43)	7.36 (5.51-9.78)	12.10 (9.57-15.24)	<i>13.64 (10.81-17.13)</i>	<i>17.24 (13.45-21.95)</i>	<i>23.20 (15.44-34.00)</i>
M 60-64y	749	4.31 (3.03-6.12)	8.44 (6.51-10.90)	11.57 (9.16-14.57)	<i>14.50 (11.59-18.06)</i>	<i>15.65 (12.44-19.58)</i>	<i>15.65 (12.44-19.58)</i>
M 65-69y	585	2.84 (1.75-4.60)	9.25 (6.94-12.28)	<i>10.45 (7.94-13.70)</i>	<i>11.40 (8.65-14.95)</i>	<i>14.97 (10.56-21.01)</i>	<i>17.34 (11.64-25.40)</i>
M 70-74y	391	1.88 (0.90-3.91)	<i>6.82 (4.53-10.22)</i>	<i>8.97 (6.19-12.91)</i>	<i>11.52 (8.07-16.30)</i>	<i>11.52 (8.07-16.30)</i>	<i>11.52 (8.07-16.30)</i>
M 75-79y	186	<i>2.22 (0.84-5.81)</i>	<i>4.94 (2.49-9.71)</i>	<i>4.94 (2.49-9.71)</i>	<i>6.84 (3.29-13.94)</i>	<i>6.84 (3.29-13.94)</i>	<i>6.84 (3.29-13.94)</i>
M 80+	73	0	<i>5.53 (1.78-16.48)</i>	<i>8.58 (3.17-22.09)</i>	<i>8.58 (3.17-22.09)</i>	<i>8.58 (3.17-22.09)</i>	..

Blue italics signify that fewer than 250 cases remained at risk at these time points.

Supplemental Table 7: KM estimates of cumulative revision of knee second revision based on primary unicondylar knees.

Age group (years)	n	Time since previous revision					
		1 year	3 years	5 years	7 years	10 years	13 years
All cases	719	5.87 (4.32-7.96)	14.71 (12.00-17.95)	<i>17.93 (14.83-21.59)</i>	<i>20.38 (16.87-24.50)</i>	<i>23.16 (18.72-28.46)</i>	
Females	334	5.23 (3.23-8.39)	<i>13.82 (10.11-18.75)</i>	<i>17.97 (13.50-23.71)</i>	<i>19.01 (14.25-25.12)</i>	<i>21.26 (15.33-29.06)</i>	..
F <55	145	<i>4.53 (2.06-9.80)</i>	<i>17.87 (11.69-26.80)</i>	<i>25.67 (17.60-36.53)</i>	<i>25.67 (17.60-36.53)</i>	<i>32.43 (19.78-50.20)</i>	..
F 55-59y	71	<i>7.45 (3.17-17.00)</i>	<i>12.75 (6.55-24.02)</i>	<i>16.96 (9.40-29.51)</i>	<i>21.11 (11.62-36.57)</i>	<i>21.11 (11.62-36.57)</i>	..
F 60-64y	46	<i>4.84 (1.23-18.07)</i>	<i>13.89 (5.95-30.53)</i>	<i>13.89 (5.95-30.53)</i>	<i>13.89 (5.95-30.53)</i>	<i>13.89 (5.95-30.53)</i>	..
F 65-69y	40	<i>8.51 (2.82-24.13)</i>	<i>8.51 (2.82-24.13)</i>	<i>8.51 (2.82-24.13)</i>	<i>8.51 (2.82-24.13)</i>	..	..
F 70-74y	18	0	<i>9.09 (1.33-49.19)</i>	<i>9.09 (1.33-49.19)</i>	<i>9.09 (1.33-49.19)</i>	<i>9.09 (1.33-49.19)</i>	..
F 75-79y	13	0	0	0	0	0	..
F 80+	1		..	..	..	..	..
Males	385	6.43 (4.32-9.53)	<i>15.48 (11.84-20.11)</i>	<i>17.85 (13.84-22.87)</i>	<i>21.43 (16.68-27.31)</i>	<i>24.70 (18.62-32.33)</i>	<i>24.70 (18.62-32.33)</i>
M <55	132	<i>9.14 (5.16-15.93)</i>	<i>21.66 (14.85-30.97)</i>	<i>23.19 (16.01-32.90)</i>	<i>30.93 (21.16-43.80)</i>	<i>40.80 (23.82-63.59)</i>	..
M 55-59y	77	<i>6.79 (2.88-15.55)</i>	<i>10.06 (4.90-20.03)</i>	<i>10.06 (4.90-20.03)</i>	<i>10.06 (4.90-20.03)</i>	<i>10.06 (4.90-20.03)</i>	<i>10.06 (4.90-20.03)</i>
M 60-64y	78	0	<i>13.89 (7.18-25.93)</i>	<i>15.89 (8.57-28.41)</i>	<i>21.00 (12.04-35.14)</i>	<i>25.65 (14.62-42.62)</i>	..
M 65-69y	54	<i>4.20 (1.06-15.87)</i>	<i>6.72 (2.20-19.58)</i>	<i>15.17 (6.22-34.39)</i>	<i>15.17 (6.22-34.39)</i>	<i>15.17 (6.22-34.39)</i>	..
M 70-74y	31	<i>6.91 (1.77-24.95)</i>	<i>6.91 (1.77-24.95)</i>	<i>11.57 (3.82-32.18)</i>	<i>11.57 (3.82-32.18)</i>	<i>11.57 (3.82-32.18)</i>	..
M 75-79y	9	<i>22.22 (6.07-63.52)</i>	..	..	..	..	..

Blue italics signify that fewer than 250 cases remained at risk at these time points.

Supplemental table 8: Number of revisions by reason for revision for 1st revision and 2nd revision

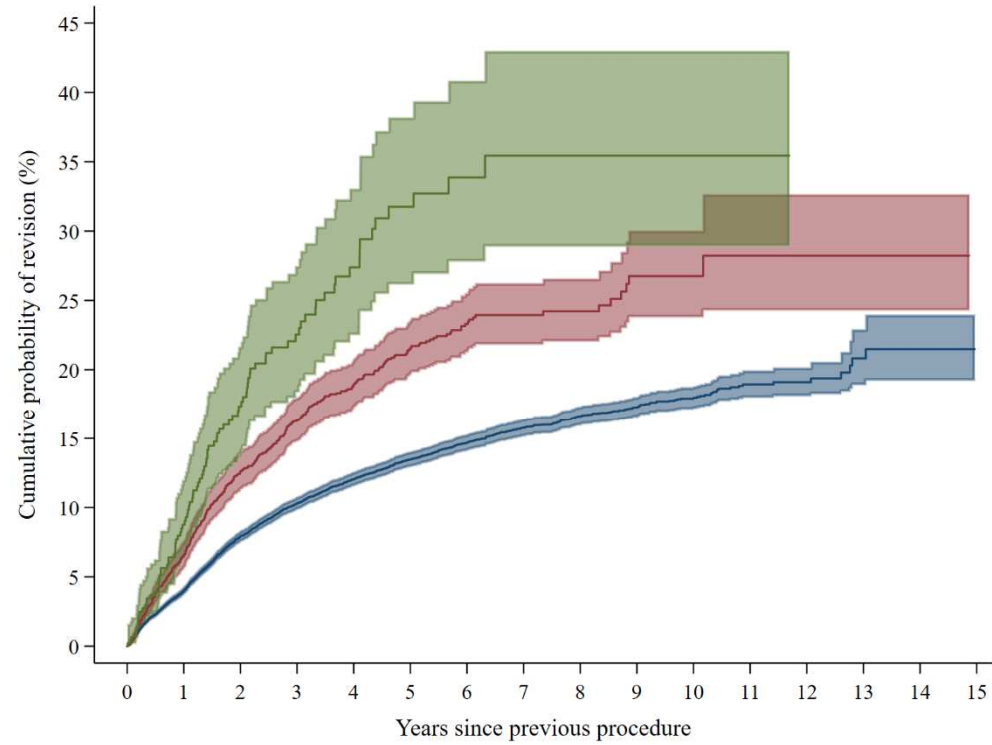
Reason for revision	1st revision		2nd revision
	N (%)	Subsequently re-revised N (%)	N of indicated reason for revision
Aseptic loosening / Lysis	9,010 (27.1%)	841 (9.3%)	887
Infection	6,310 (19.0%)	1,012 (16.0%)	1,248
Pain	5,452 (16.4%)	585 (10.7%)	389
Instability	4,658 (14.0%)	492 (10.6%)	635
Malalignment	2,488 (7.5%)	218 (8.8%)	219
Implant wear	2,005 (6.0%)	184 (9.2%)	135
Dislocation/subluxation	1,212 (3.6%)	178 (14.7%)	155
Periprosthetic fracture	1,103 (3.3%)	76 (6.9%)	72
Other indication	3,814 (11.5%)	358 (9.4%)	271
Stiffness*	2,122 (6.4%)	224 (10.6%)	241
Progressive arthritis remains*	4,696 (15.0%)	221 (4.7%)	110

NB: 4 of the 33,292 procedures were missing a reason for revision, so percentages are calculated from N=33,288 rather than N=33,292

*Stiffness as a reason for revision was not recorded in Minimum Data Set v1 and as such was only a potential reason for revision among a total of 33,262 revisions as opposed to 33,288 revisions for the other reasons.

*Progressive arthritis remains as a reason for revision was not recorded in Minimum Data Set v1 or v2 and as such was only a potential reason for revision among a total of 31,319 revisions as opposed to 33,288 revisions for the other reasons.

Supplemental Figure 1: Kaplan-Meier estimates of cumulative revision in those with linked primary total knee replacements by first revision, second revision and third revision



Key, with N of subsequent revision:

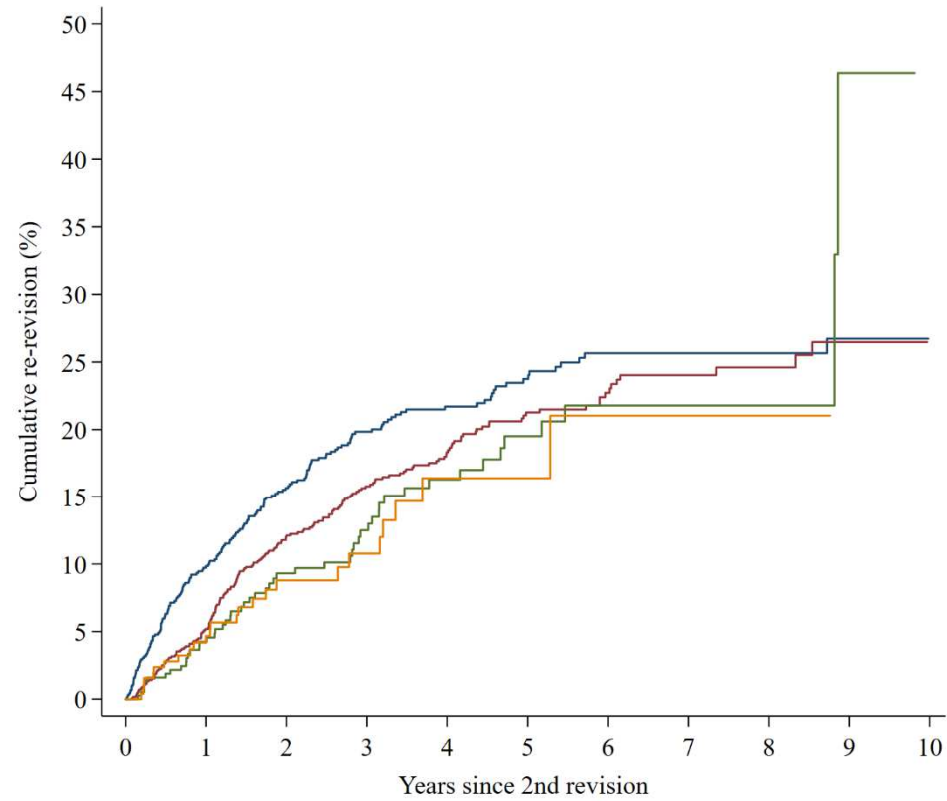
- First revision (N=2736)
- Second revision (N=453)
- Third revision (N=97)

Numbers at risk

24117	20136	16511	13410	10743	8487	6582	4754	3395	2232	1326	676	309	123	25	1
2736	2165	1713	1342	1019	720	491	319	206	121	57	28	13	5	1	0
453	339	242	163	110	72	47	26	15	10	3	1	0	0	0	0

Note: Populations not mutually exclusive; second and third revision are a subset of the first revision population

Supplemental Figure 2: Kaplan-Meier estimates of cumulative probability of third revision by time between first revision and second revision, in those with linked total primary knee replacements



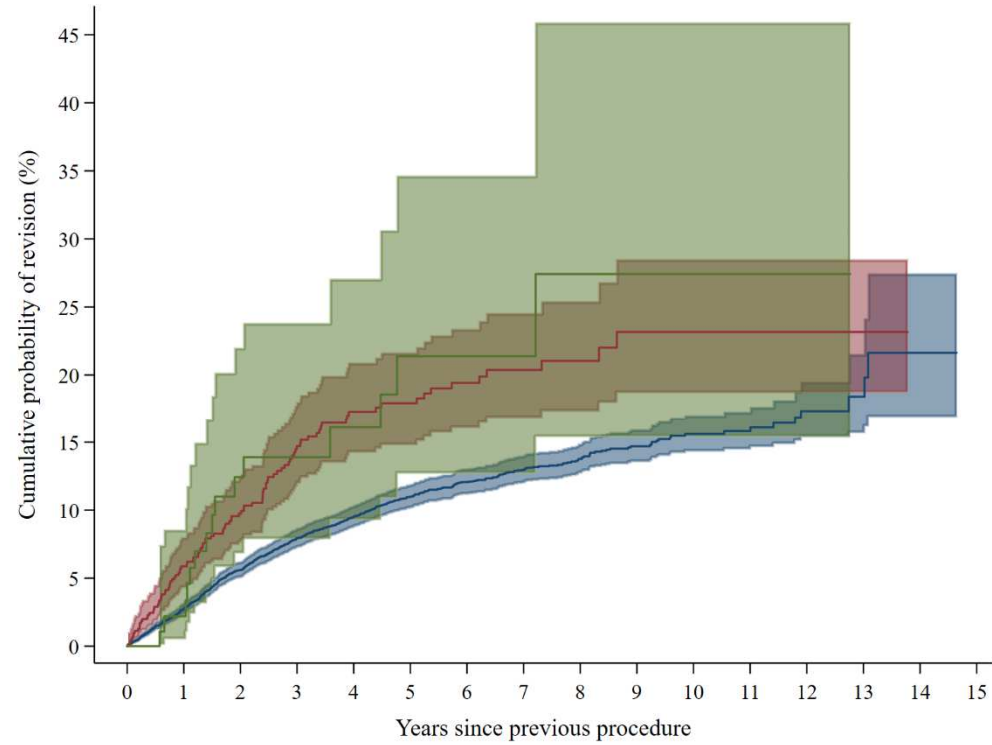
Key: Time between 1st and 2nd revisions

- <1 year
- 1 to 3 years
- 3 to 5 years
- ≥5 years

Numbers at risk

904	709	586	465	359	265	198	126	96	60	36
1162	953	766	624	496	359	238	161	95	57	21
394	311	237	176	124	77	50	30	14	4	0
276	192	124	77	40	19	5	2	1	0	0

Supplemental Figure 3: Kaplan-Meier estimates of cumulative revision in those with linked primary unicondylar knee replacements by first revision, second revision and third revision



Key, with N of subsequent revision:

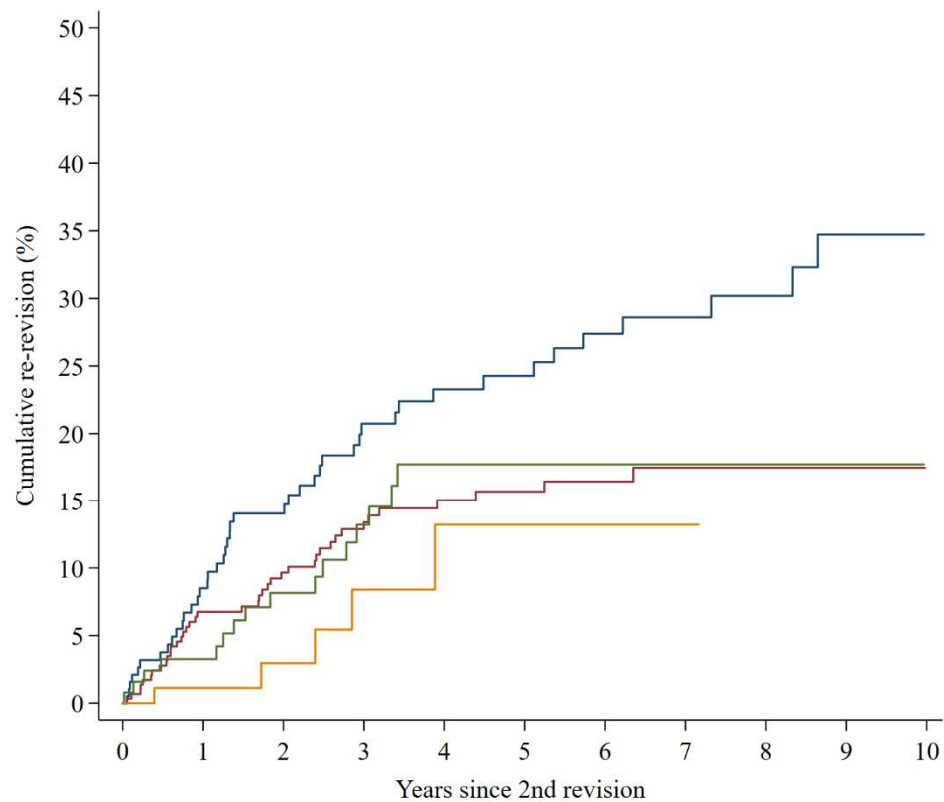
- First revision (N=719)
- Second revision (N=105)
- Third revision (N=15)

Numbers at risk

7423	6387	5383	4510	3723	3026	2447	1820	1345	900	554	314	162	59	12	0
719	577	465	365	285	235	184	132	91	53	37	19	6	1	0	0
105	83	61	47	37	28	21	14	11	9	5	4	2	0	0	0

Note: Populations not mutually exclusive; second and third revision are a subset of the first revision population

Supplemental Figure 4: Kaplan-Meier estimates of cumulative probability of third revision by time between first revision and second revision, in those with linked unicondylar primary knee replacements



Key: Time between 1st and 2nd revisions

- <1 year
- 1 to 3 years
- 3 to 5 years
- ≥5 years

Numbers at risk

194	151	126	100	86	75	63	47	37	20	14
298	248	212	170	140	120	91	67	45	29	22
127	104	82	65	41	32	26	17	9	4	1
100	74	45	30	18	8	4	1	0	0	0