Supplementary data

Table 2. Hazard rate ratios (HRR) and 5-year revision rate estimates, for revision due to deep infection, with number of primary THAs included and number of revisions due to deep infection reported, for the 3 time periods and the 4 fixation methods

THA fixation Period	No. of THAs	Number revised [a]	HRR (CI)	p-value	5-year follow-up Number revised [a]	Adjusted revision rate (CI)	At risk after 5 years
All							
2005–2009	30,668	348	1		279	0.8 (0.7–0.9)	29,740
2010–2014	35,338	487	1.4 (1.2–1.6)	< 0.001	465	1.2 (1.1–1.3)	34,130
2015–2019	42,848	530	1.6 (1.3–1.9)	< 0.001	530	n.a.	32,334
Cemented							
2005–2009	20,031	237	1		190	0.9 (0.8–1.1)	19,389
2010–2014	11,478	188	1.4 (1.2–1.7)	0.001	180	1.4 (1.2–1.6)	11,022
2015–2019	11,263	144	1.5 (1.1–1.9)	0.002	144	n.a.	8,534
Uncemented							
2005–2009	5,008	63	1		48	0.8 (0.5–1.0)	4,858
2010–2014	9,495	121	1.2 (0.7–1.7)	0.3	116	1.1 (0.9–1.3)	9,192
2015–2019	16,530	392	1.6 (1.2–2.3)	0.005	372	n.a.	11,964
Reverse hybrid							
2005–2009	5,026	44	1		38	0.7 (0.5–1.0)	4,909
2010–2014	13,660	165	1.3 (0.9–1.9)	0.1	156	0.9 (0.8–1.1)	13,244
2015–2019	11,464	125	1.5 (1.0–2.2)	0.04	125	n.a.	9,481
Hybrid							
2005–2009	603	4	1		3	0.3 (0.0–3.1)	584
2010–2014	705	13	3.6 (1.1–12)	0.04	13	1.4 (0.1–13)	672
2015–2019	3,591	53	3.6 (1.1–12)	0.04	53	n.a.	2,355

[a] Due to infection.
The HRR and revision estimates are adjusted for sex, age, ASA class, indication for primary THA, duration of surgery, surgical approach, and modularity of the THA. HRRs are given with 95% confidence intervals (CI).
n.a. = not applicable due to incomplete 5-year follow up.

Table 3. HRR with 95% confidence intervals for revision due to infection relative to timespan postoperatively, for the 3 time periods

Period	THAs overall	Revised [a] overall	0–30 days Revised [a]	0–30 days HRR (CI)	31–90 days Revised [a]	31–90 days HRR (CI)	91 days–1 year Revised [a]	91 days–1 year HRR (CI)	1–5 years Revised [a]	1–5 years HRR (CI)	THAs at risk after 5 years
2005–2009	30,668	348	103	1	41	1	41	1	94	1	20,173
2010–2014	35,338	487	283	2.2 (1.8–2.8)	54	1.0 (0.7–1.6)	52	1.1 (0.7–1.8)	76	0.7 (0.5–1.0)	26,076
2015–2019 [b]	42,848	530	327	2.3 (1.8–2.9)	83	1.6 (1.0–2.5)	72	1.6 (1.0–2.6)	48	0.9 (0.6–1.3)	25,214

[a] Due to infection.
[b] The number revised due to infection will be an underestimate due to incomplete 5-year follow-up.
The HRR and revision estimates are adjusted for sex, age, ASA class, indication for primary THA, duration of surgery, surgical approach, and modularity of the THA. HRRs are given with 95% confidence intervals.

Table 4. Distribution of patient and surgery related factors, in the 3 periods

Risk factor	No. of THAs	Distribution of factors (%) 2005–2009	2010–2014	2015–2019
Total number	108,854	30,668	35,338	42,848
Sex				
Male	37,710	33	35	36
Female	71,144	67	65	64
Age				
< 45	3,490	3	3	3
45–54	8,909	7	8	9
55–64	24,981	23	23	22
65–74	39,144	33	36	38
75–84	27,258	28	25	23
≥ 85	5,072	5	5	5
ASA class				
1	20,682	29	16	14
2	66,407	52	64	65
3	21,318	19	19	20
4	447	0.4	0.3	0.5
Indication for primary THA				
Osteoarthritis	83,770	76	77	77
Inflammatory hip disease	2,346	3	2	2
Acute hip fracture	3,769	2	3	5
Complications after hip fracture	5,743	7	5	4
childhood hip disease	9,624	9	9	8
Avascular necrosis of the femoral head	2,888	3	3	3
Other	714	1	1	1
Duration of surgery				
< 70 minutes	29,709	18	27	34
70–99 minutes	46,287	44	42	41
100–129 minutes	24,126	27	22	18
≥ 130 minutes	8,732	10	8	6
Surgical approach				
Anterior	5,979	1	6	8
Anterolateral	8,247	6	12	14
Lateral	47,048	67	50	12
Posterolateral	47,580	25	32	66
Modularity of THA				
Monobloc	3,936	11	2	0
Modular	104,918	89	98	100
Fixation principle				
Cemented	42,772	65	32	26
Uncemented	31,033	16	27	39
Reverse hybrid	30,150	16	39	27
Hybrid	4,899	2	2	8

Table 5. Number of primary THAs included and number of reported first revisions due to deep infection, and the association between potential risk factors and revision due to infection

Risk factor	No. of THAs	Number revised [a]	HRR (CI)	Adjusted 5-year revision rate [a] (CI)
Total number	108,854	1,365		
Sex				
Male	37,710	710	2.1 (1.9–2.3)	1.7 (1.6–1.9)
Female	71,144	655	1	0.8 (0.8–0.9)
Age				
< 45	3,490	45	1.1 (0.8–1.6)	1.1 (0.7–1.5)
45–54	8,909	86	0.9 (0.7–1.1)	0.9 (0.7–1.1)
55–64	24,981	289	1.0 (0.9–1.2)	1.0 (0.9–1.2)
65–74	39,144	452	1	1.0 (0.9–1.1)
75–84	27,258	397	1.2 (1.1–1.4)	1.2 (1.1–1.4)
≥ 85	5,072	96	1.5 (1.2–1.9)	1.5 (1.2–1.8)
ASA class				
1	20,682	160	1	0.7 (0.6–0.8)
2	66,407	770	1.5 (1.3–1.8)	1.1 (1.0–1.2)
3	21,318	422	2.3 (1.9–2.8)	1.6 (1.4–1.8)
4	447	13	3.3 (1.8–5.8)	2.4 (1.0–3.7)
Indication for primary THA				
Osteoarthritis	83,770	1,019	1	1.1 (1.0–1.2)
Inflammatory hip disease	2,346	38	1.3 (0.9–1.8)	1.3 (0.9–1.7)
Acute hip fracture	3,769	53	1.1 (0.8–1.4)	1.1 (0.8–1.4)
Complications after hip fracture	5,743	104	1.2 (1.0–1.5)	1.3 (1.0–1.5)
childhood hip disease	9,624	78	0.7 (0.6–0.9)	0.8 (0.6–1.0)
Avascular necrosis of the femoral head	2,888	60	1.5 (1.1–1.9)	1.8 (1.3–2.3)
Other	714	13	1.1 (0.6–2.0)	1.7 (0.6–2.7)
Duration of surgery				
< 70 minutes	29,709	330	1.0 (0.8–1.1)	1.0 (0.9–1.1)
70–99 minutes	46,287	547	1	1.0 (0.9–1.1)
100–129 minutes	24,126	329	1.1 (1.0–1.3)	1.2 (1.0–1.3)
≥130 minutes	8,732	159	1.4 (1.2–1.7)	1.4 (1.2–1.7)
Surgical approach				
Anterior	5,979	52	0.8 (0.6–1.1)	0.7 0.5–1.0)
Anterolateral	8,247	81	1.0 (0.8–1.2)	0.9 (0.7–1.1)
Lateral	47,048	683	1.4 (1.2–1.6)	1.4 (1.3–1.5)
Posterolateral	47,580	549	1	0.9 (0.8–1.0)
Modularity of THA				
Monobloc	3,936	28	0.5 (0.3–0.7)	0.6 (0.4–0.8)
Modular	104,918	1,337	1	1.1 (1.0–1.2)
Fixation principle				
Cemented	42,772	569	1	1.0 (0.9–1.2)
Uncemented	31,033	392	1.2 (1.0–1.4)	1.3 (1.1–1.4)
Reverse hybrid	30,150	334	0.8 (0.7–1.0)	0.9 (0.8–1.0)
Hybrid	4,899	70	1.3 (1.0–1.6)	1.3 (1.0–1.7)

Adjusted revision rates and HRR estimates for sex, age, ASA class, indication for primary THA, duration of surgery, surgical approach, modularity of the THA, and fixation method. The HRRs are presented with 95% confidence intervals. The risk factors are adjusted for all the other risk factors in addition to year of primary surgery to assess the association with revision due to infection.