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Continent	Incidence	Complication
Africa		1
North America	2	10
Europe	10	10
Asia	1	5
Country	Incidence	Complications
Japan	1	5
Finland	1	4
Netherlands	0	3
England	4 <sup>1,2,3</sup>	44
Sweden	3	3
Denmark	1	0
Wales	3 <sup>1,2,3</sup>	34
Greece	1	0
United States of America	2	8
Scotland	2 <sup>2,3</sup>	34
Northern Ireland	1 <sup>3</sup>	34
South Africa	0	1
Norway	0	2
Hungary	0	1
Germany	0	2
Canada	0	2
Austria	0	1
Decade	Incidence	Complications
1980-1989	0	2
1990-1999	1	12
2000-2009	3	12
2010-2019	9	10

## Table S1: Distribution of included studies by continent, country and decade

<sup>1</sup>: one paper from England and Wales
<sup>2</sup>: one paper from Scotland, England, and Wales

<sup>3</sup> and <sup>4</sup> each represent one paper from Scotland, England, Wales, and Northern Ireland

## Figure S1: Detailed search strategy used for systematic review of THA in RA patients

		01	1			
RA		Total hip replacement		Rates		Adult
Rheumatoid		Total hip replacements		Rate(s)		Adult
Arthritis		OR		OR		OR
OR		Total hip arthroplasty/		Incidence		Aged
Rheumatic		total hip arthroplasties		OR		OR
disease	AND	OR	AND	Prevalence	AND	Middle-
		Total hip		OR		aged
		implantation(s)		Trend(s)		
		OR		OR		
		Hip prosthesis		Epidemiology		
		implantation				

Limit

- Human(s)
- English
- 1980-2019

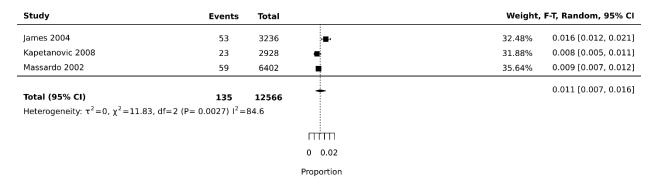
#### Detailed MEDLINE search

- 1. Arthritis, rheumatoid/
- 2. Rheumatic, diseases/
- 3. Rheumatoid arthritis.mp
- 4. Rheumatic disease\*.mp
- 5. 1 or 2 or 3 or 4
- 6. Arthroplasty, replacement, hip/
- 7. Hip prosthesis/
- 8. Total hip prosthesis.mp
- 9. arthroplast\*.mp
- 10. Total hip replacement\*.mp
- 11. Hip prosthesis implantation\*.mp
- 12. 6 or 7 or 8 or 9 or 10 or 11 or 12
- 13. Incidence/
- 14. Epidemiology/
- 15. Prevalence/
- 16. Prevalence.mp
- 17. Incidence.mp
- 18. Rate\*.mp
- 19. Trend\*.mp
- 20. Epidemiology.mp
- 21. 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20
- 22. Adult/
- 23. Aged/
- 24. Middle-aged/
- 25. Adult.mp
- 26. Aged.mp
- 27. Middle-aged.mp
- 28. 22 or 23 or 24 or 25 or 26 or 27 or 28
- 29. 28 and 21 and 12 and 5  $\,$
- 30. Limit 29 to English language and humans and yr=" 1980-2019"

#### **Databases searched and results**

- Scopus: 772
- MEDLINE: 307
- EMBASE: 651
- Cochrane: 68

# Supplementary figures related to incidence of THA in RA patients Figure S2a: Incidence of THA in RA patients from 2000-2009



#### Figure S2b: Incidence of THA in RA patients from 2010-2019

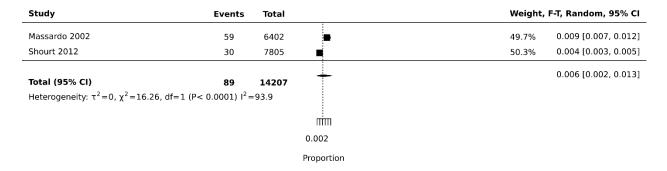
Study	Events	Total		Weight, F-T, Random, 95% Cl
Cordtz 2018	935	107225		9.24% 0.009 [0.008, 0.009]
Hawley 2018	465	75487		9.2% 0.006 [0.006, 0.007]
Hawley 2019	589	118990	•	9.24% 0.005 [0.005, 0.005]
Hawley 2019*	1028	161128	•	9.27% 0.006 [0.006, 0.007]
Aaltonen 2013	248	27747		8.99% 0.009 [0.008, 0.010]
Hekmat 2010	115	12727	-	8.62% 0.009 [0.007, 0.011]
Kapetanovic 2008	23	2928	н <del>.</del> -	6.87% 0.008 [0.005, 0.011]
Massardo 2002	59	6402	-	8.02% 0.009 [0.007, 0.012]
Matsumoto 2017	547	91012		9.22% 0.006 [0.006, 0.007]
Pantos 2013	8	1956	H-1	6.08% 0.004 [0.002, 0.007]
Shourt 2012	30	7805	H	8.22% 0.004 [0.003, 0.005]
James 2004	53	3236	H#-1	7.05% 0.016 [0.012, 0.021]
Total (95% CI) Heterogeneity: $\tau^2=0$ , $\chi^2=207$ .	<b>4100</b> 77, df=11 (P< 0.0001) I	<b>616643</b> <sup>2</sup> =97.8	•	0.007 [0.006, 0.009]
			0 0.02	
			Proportion	

### Figure S3a: Incidence of THA in European RA patients

Study	Events	Total		Weight, F-T, Random, 95% Cl
Cordtz 2018	935	107225	•	12.35% 0.009 [0.008, 0.009]
Hawley 2018	465	75487	-	12.3% 0.006 [0.006, 0.007]
Hawley 2019	589	118990		12.36% 0.005 [0.005, 0.005]
Hawley 2019*	1028	161129		12.39% 0.006 [0.006, 0.007]
James 2004	53	3236	H <b>H</b> H	9.51% 0.016 [0.012, 0.021]
Aaltonen 2013	248	27747		12.03% 0.009 [0.008, 0.010]
Hekmat 2010	115	12727	-	11.55% 0.009 [0.007, 0.011]
Kapetanovic 2008	23	2928	H <b>#</b> -1	9.28% 0.008 [0.005, 0.011]
Pantos 2013	8	1956	)=-	8.24% 0.004 [0.002, 0.007]
<b>Total (95% CI)</b> Heterogeneity: $\tau^2 = 0$ , $\chi^2 = 185.25$ ,	<b>3464</b> , df=8 (P< 0.0001) I <sup>2</sup>	<b>511425</b> =98	•	0.008 [0.006, 0.010]
			0 0.02	
			Proportion	

#### One outlier study was removed from these results (1)

### Figure S3b: Incidence of THA in North American RA patients



### Figure S4a: Incidence of THA in RA population where OA diagnosis was specifically excluded

Study	Events	Total		Weight,	Weight, F-T, Random, 95% Cl	
Massardo 2002	59	6402	-	54.73%	0.009 [0.007, 0.012]	
Pantos 2013	8	1956	-	45.27%	0.004 [0.002, 0.007]	
Total (95% CI) Heterogeneity: $\tau^2$ =0, $\chi^2$ =5.62, df=	<b>67</b> 1 (P= 0.0177)   <sup>2</sup> =8	<b>8358</b> 32.2	÷-		0.007 [0.003, 0.012]	
			0 Proportion			

Figure S4b: Incidence of THA in RA population where OA diagnosis was not specifically excluded
--

Study	Events	Total		Weight, F-T, Random, 95% Cl
Cordtz 2018	935	107225		10.64% 0.009 [0.008, 0.009]
Hawley 2018	465	75487		10.6% 0.006 [0.006, 0.007]
Hawley 2019	589	118989		10.64% 0.005 [0.005, 0.005]
Hawley 2019*	1028	161129		10.66% 0.006 [0.006, 0.007]
James 2004	53	3236	+++	8.46% 0.016 [0.012, 0.021]
Aaltonen 2013	248	27747		10.4% 0.009 [0.008, 0.010]
Hekmat 2010	115	12727		10.04% 0.009 [0.007, 0.011]
Kapetanovic 2008	12	2928	te (	8.28% 0.004 [0.002, 0.007]
Matsumoto 2017	547	91012		10.62% 0.006 [0.006, 0.007]
Shourt 2012	30	7804	•	9.65% 0.004 [0.003, 0.005]
Total (95% CI)	4022	608284	•	0.007 [0.005, 0.009]
Heterogeneity: $\tau^2 = 0$ , $\chi^2 = 201.84$	4, df=9 (P< 0.0001) I <sup>2</sup>	=98.5		
			0 0.02	
			Proportion	

One outlier study was excluded (1)

# Supplementary figures related to post-operative complications for RA patients receiving THA

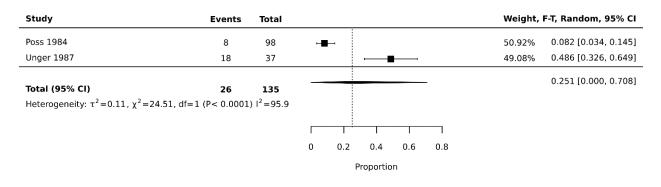
## Overall Complication rate

Figure S5a: Combined rate of post-operative periprosthetic fracture, revision, dislocation, infection, aseptic loosening for RA patients receiving THA from 1980-2019

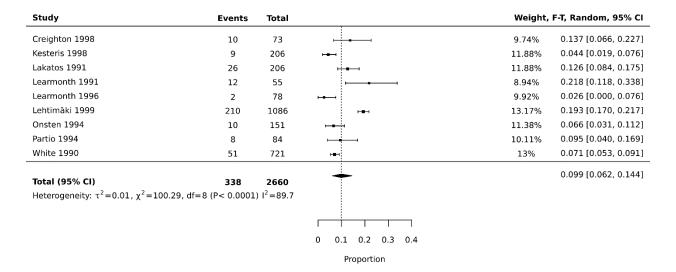
Study	Events	Total		Weight,	F-T, Random, 95% Cl
Burn 2018	31	851	н	3.55%	0.036 [0.025, 0.050]
Creighton 1998	10	73	H	3.26%	0.137 [0.066, 0.227]
Effenberger 2002	5	53	H H	3.16%	0.094 [0.028, 0.190]
Eskelinen 2006	1147	2557	н	3.57%	0.449 [0.429, 0.468]
Fink 2000	9	29	H	2.88%	0.310 [0.153, 0.492]
Furnes 2001	131	1988	н	3.57%	0.066 [0.055, 0.077]
Haraguchi 2017	56	149	⊢I	3.42%	0.376 [0.300, 0.455]
Hayashi 2017	5	99	н	3.34%	0.051 [0.014, 0.104]
Kadota 2015	2	97	н	3.34%	0.021 [0.000, 0.061]
Katsimihas 2003	13	63	<b>⊢−−−</b> 1	3.22%	0.206 [0.114, 0.316]
Kesteris 1998	9	206	н	3.46%	0.044 [0.019, 0.076]
Lakatos 1991	26	206	H	3.46%	0.126 [0.084, 0.175]
Learmonth 1991	12	55	·	3.17%	0.218 [0.118, 0.338]
Learmonth 1996	2	78	H	3.28%	0.026 [0.000, 0.076]
Lehtimäki 1999	210	1086	н	3.56%	0.193 [0.170, 0.217]
Makela 2011	578	4019	н	3.57%	0.144 [0.133, 0.155]
Massardo 2002	10	59	H	3.2%	0.169 [0.083, 0.277]
Momohara 2011	6	81	⊢i	3.29%	0.074 [0.025, 0.143]
Niggemeyer 2010	30	46	⊢	3.11%	0.652 [0.508, 0.784]
Onsten 1994	10	151	⊢	3.42%	0.066 [0.031, 0.112]
Partio 1994	8	84	<b>⊢</b> -	3.3%	0.095 [0.040, 0.169]
Poss 1984	8	98	<u>⊢</u>	3.34%	0.082 [0.034, 0.145]
Ravi 2014	79	1163	н	3.56%	0.068 [0.054, 0.083]
Rosenberg 2000	2	28	<b>F</b>	2.86%	0.071 [0.001, 0.203]
Schnaser 2016	338	63550	1	3.58%	0.005 [0.005, 0.006]
Stundner 2013	428	5400	н	3.58%	0.079 [0.072, 0.087]
Unger 1987	18	37		3.01%	0.486 [0.326, 0.649]
van Stralen 2003	2	52	<b>⊢</b> −4	3.15%	0.038 [0.001, 0.112]
White 1990	51	721	н	3.55%	0.071 [0.053, 0.091]
Zwartele 2008	12	64	H	3.22%	0.188 [0.100, 0.293]
Total (95% CI)	<b>3248</b>	<b>83143</b>	•		0.128 [0.084, 0.179]
Heterogeneity: $\tau^2 = 0.04$ , $\chi^2 = 74$	+o1.04, di=29 (P< 0.00	01)1~=99.4			
			0 0.2 0.4 0.6	0.8	

Proportion

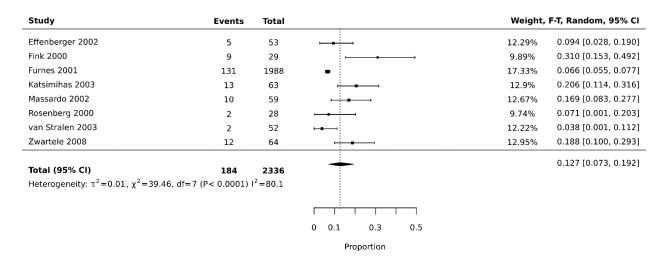
*Figure S5b: Combined rate of post-operative periprosthetic fracture, revision, dislocation, infection, aseptic loosening for RA patients receiving THA from 1980-1989* 



*Figure S5c: Combined rate of post-operative periprosthetic fracture, revision, dislocation, infection, aseptic loosening for RA patients receiving THA from 1990-1999* 

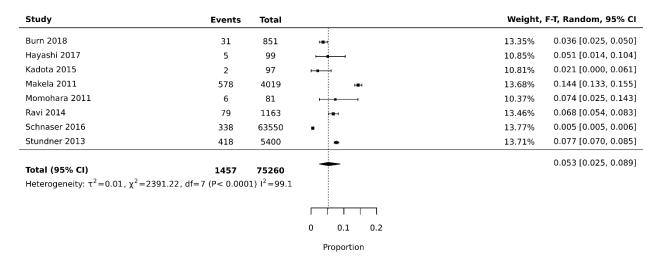


# *Figure S5d: Combined rate of post-operative periprosthetic fracture, revision, dislocation, infection, aseptic loosening for RA patients receiving THA from 2000-2009*



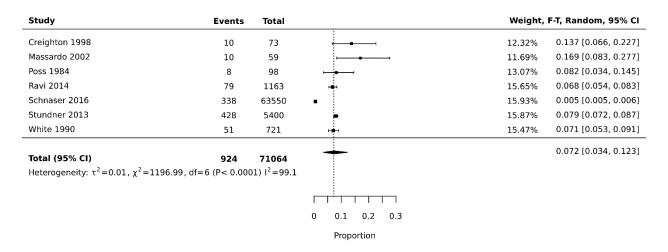
One outlier study removed (2)

*Figure S5e: Combined rate of post-operative periprosthetic fracture, revision, dislocation, infection, aseptic loosening for RA patients receiving THA from 2010-2019* 



2 outlier studies removed (3, 4)

# *Figure S5f: Combined rate of post-operative periprosthetic fracture, revision, dislocation, infection, aseptic loosening for RA patients receiving THA in North America*



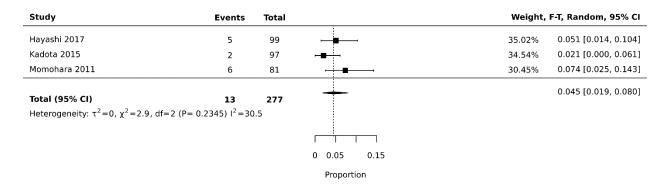
One outlier study removed (5)

*Figure S5g: Combined rate of post-operative periprosthetic fracture, revision, dislocation, infection, aseptic loosening for RA patients receiving THA in Europe* 

Study	Events	Total		Weight, F-T, Random, 95%
Burn 2018	31	851	H=1	8.07% 0.036 [0.025, 0.05
Effenberger 2002	5	53	F	5.72% 0.094 [0.028, 0.19
Fink 2000	9	29	·	4.57% 0.310 [0.153, 0.49
Furnes 2001	131	1988	iei	8.2% 0.066 [0.055, 0.07
Katsimihas 2003	13	63	·	6.02% 0.206 [0.114, 0.31
Kesteris 1998	9	206	⊢•)	7.43% 0.044 [0.019, 0.07
Lakatos 1991	26	206	1 <del></del>	7.43% 0.126 [0.084, 0.17
Learmonth 1996	2	78	<b>⊢−</b> −1	6.35% 0.026 [0.000, 0.07
Lehtimäki 1999	210	1086	H=H	8.12% 0.193 [0.170, 0.21
Makela 2011	578	4019	i=i	8.25% 0.144 [0.133, 0.15
Onsten 1994	10	151	F = i	7.16% 0.066 [0.031, 0.11
Partio 1994	8	84	<b>⊢</b> • • •	6.46% 0.095 [0.040, 0.16
Rosenberg 2000	2	28	<b>⊢−−↓</b>	4.5% 0.071 [0.001, 0.20
van Stralen 2003	2	52	<b>⊢</b>	5.69% 0.038 [0.001, 0.11
Zwartele 2008	12	64	i	6.04% 0.188 [0.100, 0.29
Total (95% CI)	1048	8958	+	0.099 [0.066, 0.13
Heterogeneity: $\tau^2 = 0.01$ , $\chi^2 = 2$				
			0 0.1 0.3 0.5	
			Proportion	

Two outlier studies removed (2, 4)

# *Figure S5h: Combined rate of post-operative periprosthetic fracture, revision, dislocation, infection, aseptic loosening for RA patients receiving THA in Asia*



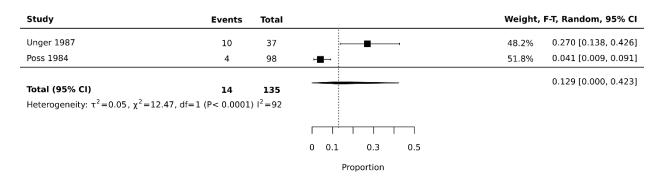
#### One outlier study removed (3)

#### **Revision** rate

#### Figure S6a: Rate revision for RA patients receiving THA from 1980-2019

Study	Events	Total		Weight,	F-T, Random, 95% Cl
Burn 2018	24	851	H	5.62%	0.028 [0.018, 0.040]
Creighton 1998	7	73	⊢∔I	4.43%	0.096 [0.037, 0.176]
Eskelinen 2006	605	2557	H=4	5.71%	0.237 [0.220, 0.253]
Fink 2000	5	29	F	3.29%	0.172 [0.053, 0.335]
Furnes 2001	111	1988	н	5.7%	0.056 [0.046, 0.066]
Haraguchi 2017	16	149	<b>⊢</b> 1	5.02%	0.107 [0.062, 0.163]
Katsimihas 2003	6	63	⊢∔—i	4.27%	0.095 [0.033, 0.182]
Kesteris 1998	3	206	H-1	5.2%	0.015 [0.002, 0.037]
Lakatos 1991	13	206	ь.	5.2%	0.063 [0.033, 0.101]
Learmonth 1991	6	55	<b>⊢</b> ∔4	4.12%	0.109 [0.038, 0.207]
Lehtimäki 1999	185	1086	<b>⊢</b>	5.65%	0.170 [0.149, 0.193]
Makela 2011	371	4019	H	5.73%	0.092 [0.084, 0.101]
Massardo 2002	10	59	·	4.2%	0.169 [0.083, 0.277]
Niggemeyer 2010	6	46	F=	3.9%	0.130 [0.046, 0.245]
Onsten 1994	10	151	L	5.03%	0.066 [0.031, 0.112]
Partio 1994	8	84	<u>⊢</u>	4.57%	0.095 [0.040, 0.169]
Poss 1984	4	98	ь	4.71%	0.041 [0.009, 0.091]
Ravi 2014	20	1163	н	5.66%	0.017 [0.010, 0.026]
Unger 1987	10	37	·	3.62%	0.270 [0.138, 0.426]
Zwartele 2008	5	64		4.29%	0.078 [0.023, 0.159]
Effenberger 2002	2	53	F	4.08%	0.038 [0.001, 0.110]
Total (95% CI)	1427	13037	•		0.088 [0.061, 0.119]
Heterogeneity: $\tau^2 = 0.01$ , $\chi^2 = 75$	59.17, df=20 (P< 0.000	1) I <sup>2</sup> =96			

0 0.1 0.3 0.5 Proportion



#### Figure S6b: Rate revision for RA patients receiving THA from 1980-1989

#### Figure S6c: Rate revision for RA patients receiving THA from 1990-1999

Study	Events	Total		Weight, F-T, Random, 95% Cl
Creighton 1998	7	73	·	12.58% 0.096 [0.037, 0.176]
Kesteris 1998	3	206	H <b>B</b> -1	15.44% 0.015 [0.002, 0.037]
Lakatos 1991	13	206	<b>⊢_≣</b>	15.44% 0.063 [0.033, 0.101]
Learmonth 1991	6	55	· · · · · · · · · · · · · · · · · · ·	11.5% 0.109 [0.038, 0.207]
Lehtimäki 1999	185	1086		17.2% 0.170 [0.149, 0.193]
Onsten 1994	10	151	<b>⊢</b> ∎	14.77% 0.066 [0.031, 0.112]
Partio 1994	8	84	·	13.07% 0.095 [0.040, 0.169]
<b>Total (95% CI)</b> Heterogeneity: $\tau^2 = 0.01$ , $\chi^2 = 76$	<b>232</b> .68. df=6 (P< 0.0001)	<b>1861</b>		0.081 [0.044, 0.128]
	,,			
			0 0.1 0.2	
			Proportion	

#### Figure S6d: Rate revision for RA patients receiving THA from 2000-2009

Study	Events	Total		Weight, F	-T, Random, 95% Cl
Fink 2000	5	29	·	10.37%	0.172 [0.053, 0.335]
Furnes 2001	111	1988	•	28.08%	0.056 [0.046, 0.066]
Katsimihas 2003	6	63		15.78%	0.095 [0.033, 0.182]
Massardo 2002	10	59	<b></b>	15.32%	0.169 [0.083, 0.277]
Zwartele 2008	5	64	<b></b>	15.89%	0.078 [0.023, 0.159]
Effenberger 2002	2	53	<b></b>	14.55%	0.038 [0.001, 0.110]
Total (95% CI)	139	2256	-		0.085 [0.047, 0.132]
Heterogeneity: $\tau^2 = 0$ , $\chi^2 = 15.32$ , c	$f=5 (P=0.0091) I^2 =$	65.7			
			0 0.1 0.2 0.3 0.4		
			Proportion		

One outlier study was excluded (2)

#### Study Total Weight, F-T, Random, 95% Cl Events Burn 2018 24 851 21.81% 0.028 [0.018, 0.040] Haraguchi 2017 16 149 19.26% 0.107 [0.062, 0.163] Makela 2011 371 4019 22.31% 0.092 [0.084, 0.101] Niggemeyer 2010 6 46 14.64% 0.130 [0.046, 0.245] Ravi 2014 20 1163 21.98% 0.017 [0.010, 0.026] . 0.062 [0.023, 0.115] Total (95% CI) 437 6228 Heterogeneity: $\tau^2 = 0.01$ , $\chi^2 = 147.01$ , df=4 (P< 0.0001) I<sup>2</sup>=97.1 Г 0 0.1 0.2

#### Figure S6e: Rate revision for RA patients receiving THA from 2010-2019

#### Periprosthetic Fracture

Figure S7a: Post-operative periprosthetic fracture rate in RA patients receiving THA from 1990-2019

Proportion

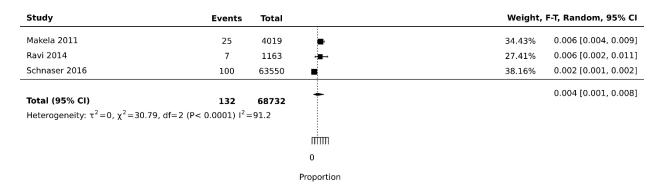
Study	Events	Total		Weight, F-T, Random, 95% Cl
Eskelinen 2006	11	2557		19.54% 0.004 [0.002, 0.007]
Lehtimäki 1999	6	1086	-	15.33% 0.006 [0.002, 0.011]
Makela 2011	25	4019		21.09% 0.006 [0.004, 0.009]
Ravi 2014	7	1163		15.72% 0.006 [0.002, 0.011]
Schnaser 2016	100	63550	•	24.25% 0.002 [0.001, 0.002]
Zwartele 2008	2	64		2.21% 0.031 [0.001, 0.092]
Effenberger 2002	1	53	ı	1.86% 0.019 [0.000, 0.079]
Total (95% CI)	152	72492	•	0.003 [0.001, 0.006]
Heterogeneity: $\tau^2 = 0$ , $\chi^2 = 50.56$	5, df=6 (P< 0.0001) $I^2$ =	80.8		
			0 0.06	
			Proportion	

#### One outlier study was removed (3)

#### Figure S7b: Post-operative periprosthetic fracture rate in RA patients receiving THA from 2000-2009

Study	Events	Total		Weight, F-T, Random, 95	
Eskelinen 2006	11	2557		50.34%	0.004 [0.002, 0.007]
Zwartele 2008	2	64		26.04%	0.031 [0.001, 0.092]
Effenberger 2002	1	53	• <b>•</b> ••	23.63%	0.019 [0.000, 0.079]
Total (95% CI) Heterogeneity: $\tau^2$ =0, $\chi^2$ =6.1, di	<b>14</b> f=2 (P= 0.0475) I <sup>2</sup> =64	<b>2674</b>	<b>-</b>		0.010 [0.000, 0.039]
			0 0.06		
			Proportion		

### Figure S7c: Post-operative periprosthetic fracture rate in RA patients receiving THA from 2010-2019



#### Infection

#### Figure S8a: Post-operative infection rate for RA patients receiving THA from 1980-2019

Study	Events	Total		Weight, F-T, Random, 95% Cl
Burn 2018	2	851	н	5.46% 0.002 [0.000, 0.007]
Creighton 1998	3	73	⊢ <u>∔</u>	3.88% 0.041 [0.005, 0.102]
Eskelinen 2006	17	2557	н	5.6% 0.007 [0.004, 0.010]
Fink 2000	2	29	<b>⊢</b> ∔	2.64% 0.069 [0.001, 0.197]
Furnes 2001	1	620	н	5.38% 0.002 [0.000, 0.007]
Haraguchi 2017	5	149	F∳1	4.63% 0.034 [0.010, 0.070]
Hayashi 2017	5	99	H	4.23% 0.051 [0.014, 0.104]
Kadota 2015	2	97	⊢ i i i i i i i i i i i i i i i i i i i	4.21% 0.021 [0.000, 0.061]
Katsimihas 2003	6	63	·	3.7% 0.095 [0.033, 0.182]
Lakatos 1991	8	206	r <u>∔</u> i	4.88% 0.039 [0.016, 0.070]
Learmonth 1991	1	55	F====-4	3.52% 0.018 [0.000, 0.076]
Learmonth 1996	2	78	F	3.96% 0.026 [0.000, 0.076]
Lehtimäki 1999	19	1086	H	5.51% 0.017 [0.010, 0.026]
Makela 2011	17	4019	н	5.63% 0.004 [0.002, 0.007]
Momohara 2011	6	81	<u> </u>	4.01% 0.074 [0.025, 0.143]
Niggemeyer 2010	5	46	F4	3.28% 0.109 [0.032, 0.218]
Poss 1984	2	98	⊢ i i i i i i i i i i i i i i i i i i i	4.22% 0.020 [0.000, 0.061]
Ravi 2014	17	1163	H	5.52% 0.015 [0.008, 0.022]
Schnaser 2016	137	63550	•	5.68% 0.002 [0.002, 0.003]
Stundner 2013	428	5400	н	5.64% 0.079 [0.072, 0.087]
Unger 1987	2	37	F	2.98% 0.054 [0.001, 0.156]
White 1990	51	721	++-1	5.42% 0.071 [0.053, 0.091]
Total (95% CI)	738	81078	•	0.026 [0.014, 0.042]
Heterogeneity: $\tau^2 = 0.01$ , $\chi^2 = 14$				

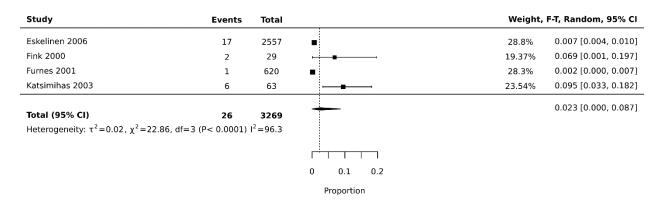


#### Study Weight, F-T, Random, 95% Cl Events Total Creighton 1998 3 73 0.041 [0.005, 0.102] 11.11%Lakatos 1991 8 206 23.19% 0.039 [0.016, 0.070] Learmonth 1991 1 55 8.8% 0.018 [0.000, 0.076] Learmonth 1996 78 0.026 [0.000, 0.076] 2 11.71% Lehtimäki 1999 0.017 [0.010, 0.026] 19 1086 45.2% 0.023 [0.011, 0.039] Total (95% CI) 33 1498 Heterogeneity: $\tau^2\!=\!0,\,\chi^2\!=\!5.13,\,df\!=\!4$ (P= 0.2745) $I^2\!=\!35.2$ 0 0.06 Proportion

#### Figure S8b: Post-operative infection rate for RA patients receiving THA from 1990-1999

#### Removal of one outlier study (6)

#### Figure S8c: Post-operative infection rate for RA patients receiving THA from 2000-2009

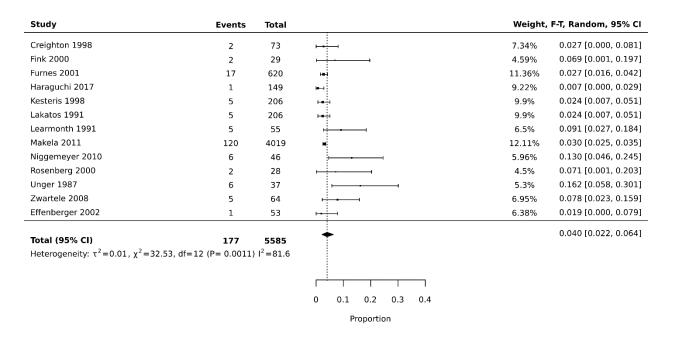


#### Figure S8d: Post-operative infection rate for RA patients receiving THA from 2010-2019

Events Total	Weight,	F-T, Random, 95% Cl
2 851 -	11.04%	0.002 [0.000, 0.007]
5 149 🛏	9.72%	0.034 [0.010, 0.070]
5 99 🕂	9.07%	0.051 [0.014, 0.104]
2 97 🛏	9.03%	0.021 [0.000, 0.061]
17 4019 .	11.29%	0.004 [0.002, 0.007]
6 81	8.68%	0.074 [0.025, 0.143]
5 46 🛏	7.37%	0.109 [0.032, 0.218]
17 1163 🛶	11.12%	0.015 [0.008, 0.022]
137 63550 •	11.36%	0.002 [0.002, 0.003]
428 5400	11.31%	0.079 [0.072, 0.087]
624 75455		0.026 [0.008, 0.052]
=0.01, $\chi^2$ =1207.77, df=9 (P< 0.0001) $I^2$ =98.9		
r the second sec		
0		
-		

#### Aseptic Loosening

Figure S9a: Post-operative aseptic loosening rate for RA patients receiving THA from 1980-2019



#### Figure S9b: Post-operative aseptic loosening rate for RA patients receiving THA from 1990-1999

Study	Events	Total		Weight, F-	T, Random, 95% Cl
Creighton 1998	2	73		13.57%	0.027 [0.000, 0.081]
Kesteris 1998	5	206		38.09%	0.024 [0.007, 0.051]
Lakatos 1991	5	206		38.09%	0.024 [0.007, 0.051]
Learmonth 1991	5	55	••	10.25%	0.091 [0.027, 0.184]
<b>Total (95% CI)</b> Heterogeneity: $\tau^2 = 0$ , $\chi^2 = 4.7$ , c	<b>17</b> $h_{1}^{2} = 0$	540	+		0.028 [0.015, 0.045]
Therefore the transformation $\chi = 4.7$ , c	ai=5 (i = 0.1954) i =0.	<b>-</b>			
			0 0.1 0.2		
			Proportion		

Study	Events	Total		Weight,	F-T, Random, 95% Cl
Fink 2000	2	29	· · · · · · · · · · · · · · · · · · ·	11.03%	0.069 [0.001, 0.197]
Furnes 2001	17	620		42.25%	0.027 [0.016, 0.042]
Rosenberg 2000	2	28	·	10.74%	0.071 [0.001, 0.203]
Zwartele 2008	5	64	·	19.05%	0.078 [0.023, 0.159]
Effenberger 2002	1	53	• <b>=</b>	16.92%	0.019 [0.000, 0.079]
Total (95% CI)	27	794	-		0.038 [0.014, 0.072]
Heterogeneity: $\tau^2 = 0$ , $\chi^2 = 6.6$ , df	=4 (P= 0.1589) l <sup>2</sup> =42	.5			
			0 0.1 0.2		
			Proportion		

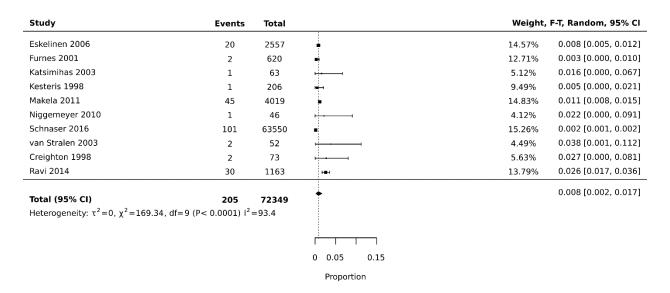
# Figure S9c: Post-operative aseptic loosening rate for RA patients receiving THA from 2000-2009

#### *Figure S9d: Post-operative aseptic loosening rate for RA patients receiving THA from 2010-2019*

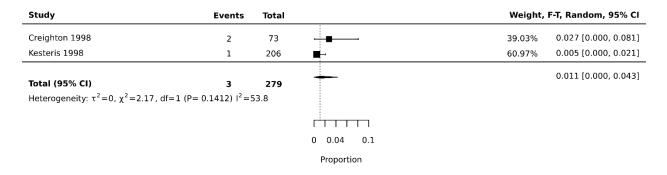
Study	Events	Total		Weight,	F-T, Random, 95% Cl
Haraguchi 2017	1	149	8-	34.17%	0.007 [0.000, 0.029]
Makela 2011	120	4019		37.68%	0.030 [0.025, 0.035]
Niggemeyer 2010	6	46	<b>——</b>	28.15%	0.130 [0.046, 0.245]
<b>Total (95% CI)</b> Heterogeneity: $\tau^2 = 0.02$ , $\chi^2 = 11.3$	<b>127</b> :4, df=2 (P= 0.0034) I	<b>4214</b> <sup>2</sup> =92.2			0.038 [0.000, 0.119]
			0 0.1 0.2		
			Proportion		

#### Dislocation

Figure S10a: Post-operative dislocation rate in RA patient receiving THA from 1990-2019



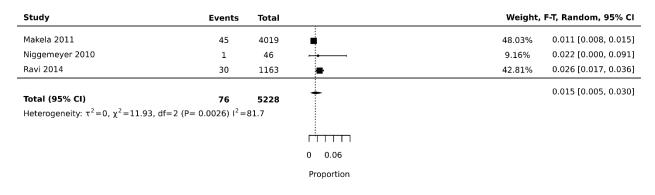
#### Figure S10b: Post-operative dislocation rate in RA patient receiving THA from 1990-1999



#### Figure S10c: Post-operative dislocation rate in RA patient receiving THA from 2000-2009

Study	Events	Total		Weight,	F-T, Random, 95% Cl
Furnes 2001	2	620	•	26.34%	0.003 [0.000, 0.010]
Katsimihas 2003	1	63	·	3.26%	0.016 [0.000, 0.067]
van Stralen 2003	2	52		2.71%	0.038 [0.001, 0.112]
Eskelinen 2006	20	2557		67.69%	0.008 [0.005, 0.012]
Total (95% CI)	25	3292	•		0.004 [0.001, 0.008]
Heterogeneity: $\tau^2 = 0$ , $\chi^2 = 6.12$ ,	, df=3 (P= 0.1058) I <sup>2</sup> =1	3.3			
			0 0.05 0.15		
			Proportion		

#### Figure S10d: Post-operative dislocation rate in RA patient receiving THA from 2010-2019



#### One outlier study was removed (7)

#### VTE

#### Figure S11a: Rate of post-operative VTE in RA patients receiving THA 1980-2019

Study	Events	Total		Weight, F-T, Random, 95% Cl
Burn 2018	5	851		37.31% 0.006 [0.002, 0.012]
Poss 1984	2	98	· · · · ·	10.19% 0.020 [0.000, 0.061]
Ravi 2014	5	1163	<b>.</b>	41.16% 0.004 [0.001, 0.009]
Niggemeyer 2010	1	46	· · · · · · · · · · · · · · · · · · ·	5.31% 0.022 [0.000, 0.091]
Effenberger 2002	1	53	,	6.03% 0.019 [0.000, 0.079]
Total (95% CI) Heterogeneity: $\tau^2$ =0, $\chi^2$ =6.31, df=4	<b>14</b> (P= 0.1771)   <sup>2</sup> =4	<b>2211</b> 1.1		0.004 [0.000, 0.012]
			0 0.06	
			Proportion	

#### *Figure S11b: Rate of post-operative VTE in RA patients receiving THA 2010-2019*

Study	Events	Total		Weight,	F-T, Random, 95% Cl
Burn 2018	5	851		41.31%	0.006 [0.002, 0.012]
Ravi 2014	5	1163	÷	56.43%	0.004 [0.001, 0.009]
Niggenmeyer 2010	1	46	·	2.26%	0.022 [0.000, 0.091]
Total (95% CI) Heterogeneity: $\tau^2 = 0$ , $\chi^2 = 2.21$ , d	<b>11</b> If=2 (P= 0.331) I <sup>2</sup> =0.1	2060			0.003 [0.000, 0.006]
			r++++		
			0 0.06		
			Proportion		

#### Mortality

Study Events Total Weight, F-T, Random, 95% CI Parvizi 2001 8 1072 24.13% 0.007 [0.003, 0.014] Stundner 2013 11 5400 30.83% 0.002 [0.001, 0.003] Ravi 2014 0.008 [0.003, 0.014] 9 1163 24.65% Burn 2018 20.39% 0.011 [0.004, 0.021] 7 639 0.006 [0.002, 0.011] Total (95% CI) 35 8274 Heterogeneity:  $\tau^2 = 0$ ,  $\chi^2 = 17.83$ , df=3 (P< 0.0001) I<sup>2</sup>=78.6 гіпп 0 0.02 Proportion

Figure S12a: Post-operative 90-day mortality rate for RA patients receiving THA between 1980 and 2019

#### Figure S12b: Mortality rate for studies from 2010-2019 with mean follow up time less than 90 days

Study	Events	Total		Weight, F-T, Random, 95% Cl
Stundner 2013	11	5400		38.69% 0.002 [0.001, 0.003]
Ravi 2014	9	1163	r <b>a</b> ri	32.88% 0.008 [0.003, 0.014]
Burn 2018	7	639		28.42% 0.011 [0.004, 0.021]
<b>Total (95% CI)</b> Heterogeneity: $\tau^2 = 0$ , $\chi^2 = 14.4$	<b>27</b> 1, df=2 (P< 0.0001) I <sup>2</sup> =	<b>7202</b> =84.1	-	0.006 [0.001, 0.013]
			0 0.02	
			Proportion	

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