Supplementary Table 1: Norwegian results from the MSE analysis using 5-years survival probability estimates. M = metal, C = ceramic, XLP = highly crosslinked polyethylene, Poly = conventional polyethylene. The first letter gives the femoral head material while the second gives the acetabulum bearing material.

Patient category	Number of Norwegian patients	Number of NARA patients (excluding the Norwegian patients)	Number of Norwegian patients when the Norwegian MSE becomes lower than the NARA MSE
20-59 years, male, cemented, head size less than 32 mm, M+Poly	460	2586	440
20-59 years, female, cemented, head size less than 32 mm, M+Poly	804	2863	560
60-74 years, male, cemented, head size less than 32 mm, M+Poly	2937	16190	460
60-74 years, female, cemented, head size less than 32 mm, M+Poly	6235	22348	360
over 75 years, male, cemented, head size less than 32 mm, M+Poly	2391	11131	120
over 75 years, female, cemented, head size less than 32 mm, M+Poly	6274	20807	960

Supplementary Table 2: Norwegian results from the MSE analysis using 10-years survival probability estimates. M = metal, C = ceramic, XLP = highly crosslinked polyethylene, Poly = conventional polyethylene. The first letter gives the femoral head material while the second gives the acetabulum bearing material.

Patient category	Number of Norwegian patients	Number of NARA patients (excluding the Norwegian patients)	Number of Norwegian patients when the Norwegian MSE becomes lower than the NARA MSE
20-59 years, female, cemented, head size less than 32 mm, M+Poly	804	2863	140
60-74 years, male, cemented, head size less than 32 mm, M+Poly	2937	16190	2060
60-74 years, female, cemented, head size less than 32 mm, M+Poly	6235	22348	1460
over 75 years, male, cemented, head size less than 32 mm, M+Poly	2391	11131	160
over 75 years, female, cemented, head size less than 32 mm, M+Poly	6274	20807	1340

Supplementary Table 3: Danish results from the MSE analysis using 5-years survival probability estimates. M = metal, C = ceramic, XLP = highly crosslinked polyethylene, Poly = conventional polyethylene. The first letter gives the femoral head material while the second gives the acetabulum bearing material. At 10 years there was no patient category with sufficient number of observations.

Patient category	Number of Danish patients	Number of NARA patients (excluding the Danish patients)	Number of Danish patients when the Danish MSE becomes lower than the NARA MSE
60-74 years, male, cemented, head size less than 32 mm, M+Poly	428	18699	160
60-74 years, female, cemented, head size less than 32 mm, M+Poly	746	27837	80
60-74 years, female, hybrid, head size less than 32 mm, M+Poly	520	335	440
over 75 years, male, cemented, head size less than 32 mm, M+Poly	475	13047	200
over 75 years, female, cemented, head size less than 32 mm, M+Poly	926	26155	100

Supplementary Table 4: Finish results from the MSE analysis using 5-years survival probability estimates. M = metal, C = ceramic, XLP = highly crosslinked polyethylene, Poly = conventional polyethylene. The first letter gives the femoral head material while the second gives the acetabulum bearing material.

Patient category	Number of Finnish patients	Number of NARA patients (excluding the Finnish patients)	Number of Finnish patients when the Finnish MSE becomes lower than the NARA MSE
60-74 years, male, cemented, head size less than 32 mm, M+Poly	2175	16952	120
60-74 years, female, cemented, head size less than 32 mm, M+Poly	3209	25374	100
over 75 years, male, cemented, head size less than 32 mm, M+Poly	1447	12075	140
over 75 years, female, cemented, head size less than 32 mm, M+Poly	3490	23591	260
over 75 years, female, cemented, head size32 mm, M+Poly	1197	2461	400

Supplementary Table 5: Finish results from the MSE analysis using 10-years survival probability estimates. M = metal, C = ceramic, XLP = highly crosslinked polyethylene, Poly = conventional polyethylene. The first letter gives the femoral head material while the second gives the acetabulum bearing material.

Patient category	Number of Finnish patients	Number of NARA patients (excluding the Finnish patients)	Number of Finnish patients when the Finnish MSE becomes lower than the NARA MSE
60-74 years, male, cemented, head size less than 32 mm, M+Poly	2175	16952	200
60-74 years, female, cemented, head size less than 32 mm, M+Poly	3209	25374	80
over 75 years, male, cemented, head size less than 32 mm, M+Poly	1447	12075	220
over 75 years, female, cemented, head size less than 32 mm, M+Poly	3490	23591	240

Supplementary Table 6: Swedish results from the MSE analysis using 5-years survival probability estimates. M = metal, C = ceramic, XLP = highly crosslinked polyethylene, Poly = conventional polyethylene. The first letter gives the femoral head material while the second gives the acetabulum bearing material.

Patient category	Number of Swedish patients	Number of NARA patients (excluding the Swedish patients)	Number of Swedish patients when the Swedish MSE becomes lower than the NARA MSE
20-59 years, male, cemented, head size less than 32 mm, M+Poly	2400	646	100
20-59 years, female, cemented, head size less than 32 mm, M+Poly	2672	995	1880
60-74 years, male, cemented, head size less than 32 mm, M+Poly	13587	5540	100
60-74 years, female, cemented, head size less than 32 mm, M+Poly	18393	10190	60
60-74 years, female, cemented, head size less than 32 mm, C+Poly	3110	364	40
60-74 years, female, cemented, head size32 mm, M+Poly	2342	741	100
over 75 years, male, cemented, head size less than 32 mm, M+Poly	9209	4313	40
over 75 years, female, cemented, head size less than 32 mm, M+Poly	16391	10690	140

Supplementary Table 7: Swedish results from the MSE analysis using 10-years survival probability estimates. M = metal, C = ceramic, XLP = highly crosslinked polyethylene, Poly = conventional polyethylene. The first letter gives the femoral head material while the second gives the acetabulum bearing material.

Patient category	Number of Swedish patients	Number of NARA patients (excluding the Swedish patients)	Number of Swedish patients when the Swedish MSE becomes lower than the NARA MSE
20-59 years, female, cemented, head size less than 32 mm, M+Poly	2672	995	1100
60-74 years, male, cemented, head size less than 32 mm, M+Poly	13587	5540	440
60-74 years, female, cemented, head size less than 32 mm, M+Poly	18393	10190	80
over 75 years, male, cemented, head size less than 32 mm, M+Poly	9209	4313	100
over 75 years, female, cemented, head size less than 32 mm, M+Poly	16391	10690	220