

Supplementary Information 2 – Description of selected studies (n = 70)

Study	Data			Patient Sample			Comorbid Conditions	Outcomes
	Country	Years of data	Data source	Type of surgery	Primary or Revision surgery	Sample Size		
Ackland (2011)	UK	2004-2005	Single-site	THA and TKA	Primary & Revision	526	Chronic Kidney disease	Infection, Pain, Postoperative morbidity
Adams (2013)	USA	2001-2009	Joint registry	TKA	Primary	40,491	Controlled diabetes	All-cause rehospitalizations, Deep Infection, Deep vein thrombosis, Revisions
Aggarwal (2013)	USA	2007-2011	Single-site	THA and TKA	Primary & Revision	323	Atrial Fibrillation	Readmission rate
Amusat (2014)	Canada	NS	Multi-site	TKA	Primary	405	Diabetes without impact on routine activities, Kidney Disease	Overall health (HUI3) -6m post-operative, WOMAC function, WOMAC pain
Ayers (2005)	USA	NS	Single-site	TKA	Primary	165	Lower extremity (PVD, venous insufficiency)	Mean change in Physical Function (SF-36) 12mths post surgery, Mean change in Physical Function (WOMAC) 12mths post surgery
Belmont (2016)	USA	2011-2012	Multi-site	TKA	Revision	1754	Cardiac disease, COPD, CVA/Stroke, Diabetes, Hypertension	Readmissions within 30 days
Bolognesi (2008)	USA	1988-2003	Administrative data	THA and TKA	Primary & Revision	2,249,427	Diabetes	DVT, Died, Infection
Browne (2014)	USA	2006-2008	Administrative data	THA and TKA	Primary	497,222	Depression	Infection, Pulmonary embolism
Buller (2015)	USA	1990-2007	Administrative data	THA and TKA	Primary	8,379,490	Chronic pulmonary disease, CAD, Depression, Diabetes, Hypertension	Adverse Events (wound complication , postoperative shock, postoperative bleeding, acute postoperative infection, acute postoperative anemia, acute renal failure, acute myocardial infarction, pulmonary embolism, induced mental disorder, pneumonia, pulmonary insufficiency, DVT, intubation and transfusion of blood)
Chan (2005)	UK	2000-2003	Single-site	THA	NS	1,297	Diabetes	Deep Infection, Deep vein thrombosis
Clement (2013)	UK	NS	Single-site	TKA	Primary	2,389	Depression, Diabetes, Heart disease, High blood pressure,	Post-operative OKS at 12mths, post-operative SF-12 at 12mths

							Kidney disease, Lung disease, Neurological diseases, Vascular disease	
Cohen (2005)	USA	1986-2002	Single-site	THA and TKA	Primary	122	Liver cirrhosis	Death, Major complications
Courtney (2017)	USA	2011-2014	Multi-site	THA and TKA	Primary	169,406	Cardiac disease, Diabetes, History of stroke, Preoperative creatinine >1.5mg/dL	30 day complications (SSI, pneumonia, respiratory, pulmonary embolism, DVT, stroke, cardiac arrest, renal failure, UTI, sepsis, septic shock), 30 day readmissions
Deegan (2014)	USA	2004-2011	Single-site	THA and TKA	NS	779	Chronic Kidney Disease	Death, Infections, Revisions
Deleuran (2015)	Denmark	1995-2001	Administrative data	THA and TKA	Primary	109,522	Liver cirrhosis	Deep prosthetic infection, Intraoperative complications, Mortality within 30 days Readmission within 30 days, Revision in one year
Dowsey (2009)	Australia	1998-2005	Single-site	TKA	Primary	1,214	Cardiovascular disease, Diabetes, Respiratory diseases	Deep Infection
Erkocak (2016)	USA	2000-2012	Single-site	THA and TKA	NS	1077	Chronic Renal failure	Surgical site infections, In-hospital mortality
Gandhi (2009)	Canada	1998-2006	Single-site	TKA	NS	1,460	Diabetes, Hypertension	DVT within 3 months
Gaston (2007)	UK	1998-2006	Single-site	THA	Primary	1,744	Cerebrovascular disease, CHF, COPD, Diabetes	Mortality within 3mths after admission
Huddleston (2009)	USA	2002-2004	Multi-site	TKA	NS	2,033	Diabetes	Adverse events (deep infections, necrosis, nerve injury, dislocation, cardiovascular complication, periprosthetic fracture, Revision, UTI, DVT, Pneumonia, Death)
Hunt (2013)	UK	2003-2011	Joint registry	THA	NS	409,096	CHF, PVD, CVD, Chronic Pulmonary disease, Diabetes without complications, Renal disease, Cancer, Dementia	90-day mortality
Hunt (2014)	UK	2003-2011	Joint registry	TKA	NS	467,779	CHF, PVD, CVD, Chronic Pulmonary disease, Diabetes without complications, Renal disease, Cancer, Dementia	45-day mortality
Inacio (2016)	Australia	2001-2012	Administrative data	THA	NS	30820	Liver disease, CHF, Renal disease, Parkinson's disease, Dementia,	90-day mortality, 1-year mortality

							Chronic airway disease, Solid tumour without metastasis	
Iorio (2012)	USA	2004-2009	Single-site	THA and TKA	Primary	1,529	Diabetes	Infection
Jain (2005)	USA	1988-2000	Administrative data	THA and TKA and shoulder arthroplasty	Primary	959,839	Diabetes, Hypertension	Complications (infections, wound infections, pulmonary embolism, thrombophlebitis, vascular complications, other)
Jamsen (2013)	Finland	1998-2008	Joint registry	THA and TKA	Primary	96,754	Cancer, CHD, Depression, Diabetes, Hypertension (without CVD), Pulmonary disease	Risk of Revision surgery
Jamsen (2014)	Finland	1998-2009	Administrative data + Joint registry	THA and TKA	Primary	3,428	Parkinson's disease	Infection at 1 year, Mortality > 1 year Revisions in 0-2 years postoperative
Jamsen (2015)	Finland	1998-2009	Administrative data + Joint registry	THA and TKA	Primary	4,526	Alzheimer's disease	Mortality after 10 years, Rate of surgical site infection, Risk of Revision
Jorgensen (2015a)	Denmark	2010-2012	Multi-site	THA and TKA	Primary	8,757	Cardiovascular disease, Pulmonary disease	90-day readmission
Jorgensen (2015b)	Denmark	2010-2012	Multi-site	THA and TKA	Primary	8,055	Diabetes Type II	"Diabetes-related morbidity" (cardiac arrhythmias, acute congestive heart failure, MI, prosthetic or wound infections, renal insufficiency, cerebral attacks, pneumonia, UTI>4days, dysregulated blood glucose, other infections), 90-day readmission
Judge (2012)	UK	1993-1995	Multisite	THA	NS	282	Diabetes	SF-36 Physical functioning
Kapoor (2010)	USA	2003-2006	Administrative data	THA and TKA	Primary	316,671	COPD, CAD, Cerebrovascular disease, Diabetes	Venous Thromboembolism
Kapoor (2013)	USA	2002-2009	Administrative data	THA and TKA	Primary & Revision	24,051	COPD, CAD, Cerebrovascular disease, Diabetes	Venous Thromboembolism
Karam (2015)	USA	2000-2011	Single-site	THA and TKA	Primary & Revision	26,415	Cancer	Deep vein thrombosis, Mortality Overall in-hospital complications, Periprosthetic joint infection
Keswani (2016)	USA	2011-2013	Multi-site	THA and TKA	Revision	10,112	Disseminated cancer, Cardiac disease, Diabetes, Renal disease, Stroke, Hypertension, Pulmonary disease	30-day readmissions

Kildow (2017)	USA	2005-2012	Multi-site	THA	NS	61,778	Diabetes	DVT- 30 days, Prosthetic Joint infection - 90 days, THA Revision - 2-years
Kuo (2017)	Taiwan	2009-2012	Single-site	TKA	Primary	615	Chronic Kidney Disease	30-day readmissions
Lee (2017)	Korea	2004-2013	Single-site	TKA	Primary	3,049	Diabetes, Hypertension	90-day readmission
Liao (2016)	Taiwan	2004-2008	Administrative data	THA	NS	2,426	Cardiovascular disease, CVA, Chronic Kidney disease, COPD, Hypertension	1-year mortality, 30-day readmissions
Marchant (2009)	USA	1988-2005	Administrative data	THA and TKA	Primary & Revision	1,030,013	Controlled diabetes	DVT, Died, Infection
Martinez (2013)	Spain	2001-2008	Administrative data	THA and TKA	Primary	373,131	Diabetes	In-hospital mortality
Mazoch (2009)	USA	2004-2012	Single-site	THA and TKA	Revision	130	Diabetes	All complications, Infection
McCleery (2010)	UK	1985-2008	Joint registry	TKA	NS	59,288	Renal failure	Early infection (<90 days), Late Revision
Meding (2003)	USA	1987-1999	Single-site	TKA	Primary	5,220	Diabetes	Deep Infection, DVT, Knee Society Pain score - 1yr
Menendez (2016)	USA	2002-2011	Multi-site	THA and TKA	Primary	6,054,344	Multiple Myeloma	In-hospital mortality, SSI, Thromboembolic events
Miric (2014a)	USA	2005-2010	Joint registry	TKA	Primary	41,852	Chronic Renal Disease	DVT, Mortality (anytime), Mortality within 90 days, Readmission within 90 days, Revision, SSI deep
Miric (2014b)	USA	2006-2010	Joint registry	THA	Primary	20,720	Chronic Kidney Disease	DVT, Mortality (anytime), Mortality within 90 days, Readmission within 90 days, Revision (any), SSI (any)
Moon (2008)	Korea	1995-2004	Single-site	TKA	Primary	1,581	Diabetes	Deep joint infection, DVT, Knee Society Score – function, Knee Society Score – Pain, Overall complications
Pedersen (2010)	Denmark	1996-2005	Joint registry	THA	Primary	57,575	Diabetes	Overall Revisions
Perez (2014)	Spain	NS	Single-site	TKA	NS	736	Depression	SF-36 Physical component scores, WOMAC score
Radkte (2016)	Germany	2011-2012	Single-site	THA	Primary	498	Cancer, Depression, Diabetes	Periprosthetic joint infection
Rajamaki (2015)	Finland	2009-2011	Single-site	THA and TKA	Primary	134	Glucose metabolism abnormalities	Persistent Pain

Rasouli (2016)	USA	2009-2009	Single-site	THA and TKA	Primary & Revision	1,969	Depression	Surgical complications
Robertson (2012)	UK	1989-2002	Single-site	TKA	NS	734	Diabetes	Knee Society knee score year 1
Sanders (2012)	UK	2006-2010	Administrative data	THA and TKA	Primary	414,985	Cancer, Diabetes, Heart Failure, Hypertension, Liver disease, PVD, Renal failure, Respiratory disease, Stroke	In-hospital mortality, Readmission
Seol (2017)	South Korea	2007-2015	Multi-site	THA and TKA	Primary	143	Liver Cirrhosis	Infections, Medical complications
Sikora-Klak (2017)	USA	2012-2014	Single-site	THA and TKA	Primary	2,914	Diabetes	90-day readmission
Singh (2014a)	USA	1993-2005	Joint registry	TKA	Primary and Revision	8,672	Depression	Knee status: much better 2- years
Singh (2009)	USA	1993-2005	Joint registry	THA	Revision	2,687	Depression	Moderate-Severe ADL limitation - 2 years Moderate-severe pain - 2 years
Singh (2014b)	USA	1993-2005	Joint registry	TKA	Primary & Revision	7,139	Cerebrovascular disease	Moderate-Severe ADL limitation - 2 years Moderate-severe pain - 2 years
Singh (2013a)	USA	1993-2005	Joint registry	THA	Primary & Revision	8,394	COPD, Diabetes, Heart disease, PVD, Renal disease	Moderate-severe pain at 2 years
Singh (2013b)	USA	1993-2005	Joint registry	TKA	Primary	7,139	Diabetes without complications	Moderate-severe ADL limitation 2 -years
Singh (2013c)	USA	1993-2005	Joint registry	TKA	Primary	8,672	COPD, Depression, Diabetes, Heart disease, PVD, Renal disease	Moderate-severe pain at 2 years
Singh (2014)	USA	1993-2005	Joint registry	TKA	Revision	1,533	Depression	Moderate-severe pain at 2 years
Stundner (2013)	USA	2000-2008	Administrative data	THA and TKA	Primary	1,212,493	Depression	In-hospital mortality, Major complications, Sepsis, Venous Thromboembolism
Tiberi (2014)	USA	2000-2012	Single-site	THA and TKA	NS	230	Liver cirrhosis	Infections within 90 days, Mortality most recent follow-up, Mortality within 90 days, Readmissions 90 days, Revision surgery during follow up
Vannini (1984)	Italy	1969-1979	Single-site	THA	NS	1,227	Diabetes	Post-surgery infections

Wang (2013)	China	2003-2011	Single-site	TKA	NS	245	CHD, Diabetes, Hypertension	DVT
Warth (2015)	USA	2006-2012	Administrative data	THA and TKA	Primary	74,300	Chronic Renal disease	Overall complications
Zhao (2014)	China	2011-2013	Single-site	TKA	NS	358	Diabetes, Hypertension	DVT within 14 days

Note. NS = not stated; THA = Total Hip Arthroplasty; TKA = Total Knee Arthroplasty; PVD = Peripheral Vascular Disease; COPD = Chronic Obstructive Pulmonary Disorder; CAD = Coronary Artery Disease ; CHD = Coronary Heart Disease ; CHF = Coronary Heart Failure; CVA/CVD = Cerebrovascular Accident/Disease; SF-36= Short-form 36; WOMAC = Western Ontario and McMaster Universities Osteoarthritis Index; OKS = Oxford Knee Score; SF-12 = Short-form 12; SSI = Surgical Site Infection; DVT = Deep Vein Thrombosis; UTI = Uterine Infection; MI = Myocardial Infarction.