



Version 5: 09/04/2020

ST VINCENT'S MELBOURNE ARTHROPLASTY OUTCOMES (SMART) REGISTRY

Data Dictionary

9 April 2020

Version 5.0

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1. SMART Registry Custodians and Key Contacts

	Name	Academic affiliation	Contact details
Registry Custodian & Principle Investigator	A/Prof Michelle Dowsey	Principal Research Fellow, Department of Surgery, University of Melbourne Head Arthritis Research, Department of Orthopaedics, St. Vincent's Hospital Melbourne	E: mmdowsey@unimelb.edu.au P: +61 3 9231 3955
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Investigator - Health Economists	Prof Philip Clarke	Professor of Health Economics, Centre for Health Policy, School of Population and Global Health, University of Melbourne	E: philip.clarke@unimelb.edu.au
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	Ms Sharmala Thuraisingam	University of Melbourne Dept. of Surgery, St. Vincent's Hospital	E: Sharmala.thuraisingam@unimelb.edu.au
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2 Database Software: Socrates[®] Orthopaedic Outcomes Software (Database version 3.5.4.1. Software version 8.69)

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Source	Description
Patient Administration System (PAS)	Stores administrative data, including: Operative Theatre List – theatre room number and case number (e.g. case number 1 = first case of the day) Operative time (knife to skin) American Society of Anaesthesiologists (ASA) score
Patient Medical Record (Medical Record On-line (MRO))	Stores clinical data, including: Patient clinical pathway Anaesthetic chart Consent form Surgeon’s operative notes Surgeon’s pre-operative and post-operative assessment notes Blood Transfusion Report Medication Chart Analgesia Infusion Chart Recovery Room Chart Correspondence (e.g. GP referral letter) Discharge summary Progress notes
National Death Index	Death data are obtained from Australian Orthopaedic Association annually and added to the patient’s record where applicable
Clinical Integration System (CIS)	Pre-operative radiographs within 6 months of surgery
Phone call and mail-out to patients	Patient-Reported Outcome Measures (PROMs)

22. Data Sources

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3. Core Data Elements

- Unless otherwise specified, data elements have been collected for all patients who have undergone surgery since 01/01/1998.
- Unless otherwise specified, the Data Source is the St. Vincent’s Hospital Patient Administration System (PAS) and/or Patient Medical Record (Medical Record Online).
- Unless otherwise specified, there are no units of measurement for numeric variables.

3.1 Patient Details

3.1.1 Demographics and Patient Characteristics

The Kellgren-Lawrence grading system (KL-score) is a commonly used method for classifying the severity of osteoarthritis (OA) of the hip and knee.¹ Patients with more severe pre-operative radiographic hip or knee OA are more likely to achieve substantial gains in pain and function following total hip arthroplasty (THA) and total knee arthroplasty (TKA), respectively.^{2,3}

The Socio-Economic Indexes for Areas (SEIFA) are calculated based on postcode to provide a relative measure of socioeconomic disadvantage at the level of the Australian Government’s Census Collection Districts.⁴ SEIFA scores also correlate with the proportion of people living in an area who report poor health and risk factors for poor health, such as obesity.

The Australian Standard Geographical Classification (ASGC) was developed by the Australian Bureau of Statistics to facilitate quantitative comparisons between groups of people living in the ‘city’ and the ‘country, where the main distinguishing feature is physical remoteness from goods and services.⁵ The classification system is used to guide health policy development and decision-making.⁶

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
MART ID (smartid)		Numeric		
Patient ID = Hospital ID Number (patientid)		String		
Residential address (address)		String		
Suburb (suburb)		String		

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State (state)		String		
Country (country)		String		
Post Code (postcode)		Numeric	XXXX	
Arthroplasty type (arthroplasty_type)		Binary	1=Hip replacement 2=Knee replacement	
Last Name (lastname)		String		
First Name (firstname)		String		
Gender (gender)		Binary	1=Female 2=Male	
Date of Birth (dob)		Date	dd/mm/yyyy	
Marital status (maritalstatus)		Categorical	1=Single 2=Married 3=Divorced 4=Separated 5=Widowed	
Surgery side (surgeryside)		Categorical	1=Left 2=Right 3=Bilateral	Consent for Surgery Form
Place of birth (place_birth)		String		
Language (language)		String		
Deceased (deceased)		Binary	0=No; 1=Yes	National Death Index – Obtained through the Australian Orthopaedic Association National Joint Replacement Registry
Date deceased (date_deceased)		Date	dd/mm/yyyy	National Death Index – Obtained through the Australian Orthopaedic Association National Joint Replacement Registry
Preoperative Weight [kg] (preop_wt_kg)		Numeric	Preoperative mean (SD); range TKA	

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			80.9 (18.2); 36.0 to 159.0 THA 81.1 (18.0); 36.0 to 158.0	
Preoperative Height [cm] (preop_ht_cm)		Numeric	Preoperative mean (SD); range TKA 165.3 (10.1); 130 .0 to 200.0 THA 162.9 (10.1); 127.0 to 200.0	
Pathology (pathology)		Categorical	1=Inflammatory Arthritis 2=Osteoarthritis 3=Osteonecrosis 4=Other 5=Revision 6=Trauma 7=Tumour	Surgeon pre-operative assessment
Australian Statistical Geographical Classification (ASGC) Remoteness (asgc_remoteness)	01/01/2002	Categorical	1=Major city 2=Inner regional 3=Outer regional 4=Remote 5=Very remote 6=Migratory	Obtained from the Australian Institute of Health and Welfare website. ⁷
Interpreter required (interpreter)	01/01/2002	Binary	0=No; 1=Yes	
Socio-Economic Indexes for Areas (SEIFA) (seifa)	01/01/2002	Ordinal	1 to 10 (percentile) Lower percentile = lower SES	Obtained from the Australian Bureau of Statistics Dataset. ⁸
Contralateral hip KL score (contra_khip_klscore)	01/01/2006	Ordinal	Kellgren Lawrence Grade 1 to 4	Read from the pre-op radiographs within 6 months of surgery ¹ .
Contralateral knee KL score (contra_knee_klscore)	01/01/2006	Ordinal	Kellgren Lawrence Grade 1 to 4	Read from the pre-op radiographs within 6 months of surgery ¹ .

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3.1.2 Comorbidities

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All co-morbidities listed in the pre-operative medical assessment are cross-checked with anaesthetist review on day of surgery. When comorbidities are identified that

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are not yet included in the database, they are added accordingly.

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- 1 The Charlson Comorbidity Index was originally developed to predict mortality at one year in hospital in-patients with breast cancer, but it has since been widely used
 2 in the orthopaedic literature as a valid measure of comorbidity burden in total hip and knee arthroplasty patients.^{9,10}

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Charlson Comorbidity Index				
Charlson Comorbidity Index (charlsonscore)	01/01/2006	Ordinal	Preoperative range: TKA 0 to 8 THA 0 to 10	Calculated from documented comorbidities using method described by Hall et al. ⁹
Significant Comorbidity (sigcomorb)	01/01/2006	Binary	1=Significant comorbidities 2=No significant comorbidities	
Charlson Comorbidities				
Myocardial Infarction (MI) (charlson_mi)	01/01/2006	Binary	0=No; 1=Yes	
Congestive Heart Failure (CHF) (charlson_chf)	01/01/2006	Binary	0=No; 1=Yes	
Peripheral Vascular Disease (PVD) (charlson_pvd)	01/01/2006	Binary	0=No; 1=Yes	
Cerebrovascular Disease (CVA) or Transient Ischaemic Attack (TIA) (charlson_cva_tia)	01/01/2006	Binary	0=No; 1=Yes	
Dementia (charlson_dementia)	01/01/2006	Binary	0=No; 1=Yes	
Chronic Obstructive Pulmonary Disease (COPD) (charlson_copd)	01/01/2006	Binary	0=No; 1=Yes	
Connective Tissue Disease (Rheumatologic Disease) (charlson_connect_tiss)	01/01/2006	Binary	0=No; 1=Yes	
Peptic Ulcer Disease (PUD) (charlson_ulcer)	01/01/2006	Binary	0=No; 1=Yes	
Liver disease (charlson_liver)	01/01/2006	Categorical	0=No liver disease 1=Mild liver disease	

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			2=Moderate to severe liver disease	
Diabetes (charlson_diabetes)	01/01/2006	Categorical	0=No diabetes 1=Diabetes 2=Diabetes with end organ damage	
Hemiplegia (charlson_hemiplegia)	01/01/2006	Binary	0=No; 1=Yes	
Chronic Kidney Disease (CKD) (charlson_ckd)	01/01/2006	Binary	0=No; 1=Yes	
Tumour (charlson_tumor)	01/01/2006	Categorical	0=No tumour 1=any tumour (localised) 2=metastatic solid tumour	
Leukaemia (charlson_leukemia)	01/01/2006	Binary	0=No; 1=Yes	
Lymphoma (charlson_lymphoma)	01/01/2006	Binary	0=No; 1=Yes	
Moderate or severe liver disease (charlson_liver)	01/01/2006	Binary	0=No; 1=Yes	
Acquired Immunodeficiency Syndrome (AIDS) (charlson_aids)	01/01/2006	Binary	0=No; 1=Yes	
All Other Comorbidities				
Cardiovascular				
Abdominal Aortic Aneurysm (comorb_aaa)		Binary	0=No; 1=Yes	
Acute myocardial infarction (comorb_ami)		Binary	0=No; 1=Yes	
Angina (comorb_angina)		Binary	0=No; 1=Yes	
Aortic Stenosis (comorb_aort_sten)		Binary	0=No; 1=Yes	
Aortic Valve Replacement (comorb_avr)		Binary	0=No; 1=Yes	
Arrhythmia (comorb_arrhythmia)		Binary	0=No; 1=Yes	

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Atrial fibrillation (comorb_af)		Binary	0=No; 1=Yes	
Cardiac surgery (comorb_card_surg)		Binary	0=No; 1=Yes	
Cardiomyopathy (comorb_cardiomyopathy)		Binary	0=No; 1=Yes	
Carotid Artery Disease (comorb_carart_dis)		Binary	0=No; 1=Yes	
Congestive Cardiac Failure (comorb_ccf)		Binary	0=No; 1=Yes	
Coronary Artery Disease (comorb_corart_dis)		Binary	0=No; 1=Yes	
Heart Murmur (comorb_heart_murmur)		Binary	0=No; 1=Yes	
Hypercholesterolaemia (comorb_hypercholest)		Binary	0=No; 1=Yes	
Hypertension (comorb_ht)		Binary	0=No; 1=Yes	
Ischaemic Heart Disease (comorb_ihd)		Binary	0=No; 1=Yes	
Left Ventricular Failure (comorb_lvf)		Binary	0=No; 1=Yes	
Mitral Valve Replacement (comorb_mvr)		Binary	0=No; 1=Yes	
Pacemaker (comorb_pacemaker)		Binary	0=No; 1=Yes	
Palpitations (comorb_palpatations)		Binary	0=No; 1=Yes	
Paroxysmal Atrial Fibrillation (comorb_paroxysmal_af)		Binary	0=No; 1=Yes	
Peripheral Vascular Disease (comorb_pvd)		Binary	0=No; 1=Yes	
Renal Artery Stenosis (comorb_ren_art_sten)		Binary	0=No; 1=Yes	
Rheumatic Fever (comorb_rheum_fev)		Binary	0=No; 1=Yes	

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Supraventricular Tachycardia (comorb_svt)		Binary	0=No; 1=Yes	
Varicose Veins (comorb_varicose_veins)		Binary	0=No; 1=Yes	
Dermatological				
Bullous Pemphigoid (comorb_bull_pemp)		Binary	0=No; 1=Yes	
Dermatitis (comorb_dermatitis)		Binary	0=No; 1=Yes	
Eczema (comorb_eczema)		Binary	0=No; 1=Yes	
Lipodermatosclerosis (comorb_lipodermat)		Binary	0=No; 1=Yes	
Psoriasis (comorb_psoriasis)		Binary	0=No; 1=Yes	
Pyoderma Gangrenosum (comorb_pyo_gang)		Binary	0=No; 1=Yes	
Rosacea (comorb_rosacea)		Binary	0=No; 1=Yes	
Venous Ulcer (comorb_venous_ulcer)		Binary	0=No; 1=Yes	
Endocrine				
Addison's Disease (comorb_addisons_dis)		Binary	0=No; 1=Yes	
Goitre (comorb_goitre)		Binary	0=No; 1=Yes	
Hypothyroidism (comorb_hypothyroidism)		Binary	0=No; 1=Yes	
Hyperthyroidism (comorb_hyperthyr)		Binary	0=No; 1=Yes	
Insulin-dependent Diabetes Mellitus (comorb_iddm)		Binary	0=No; 1=Yes	
Non-Insulin-Dependent Diabetes Mellitus (comorb_niddm)		Binary	0=No; 1=Yes	

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Peripheral Neuropathy (diabetes complication) (comorb_periph_neuro)		Binary	0=No; 1=Yes	
Gastrointestinal				
Autoimmune Hepatitis (comorb_autoimmune_hep)		Binary	0=No; 1=Yes	
Barrett's Oesophagitis (comorb_barretts_oesophagitis)		Binary	0=No; 1=Yes	
Cirrhosis (comorb_cirrhosis)		Binary	0=No; 1=Yes	
Coeliac Disease (comorb_coeliac)		Binary	0=No; 1=Yes	
Crohn's Disease (comorb_crohns_disease)		Binary	0=No; 1=Yes	
Diverticular disease (comorb_diverticular_dis)		Binary	0=No; 1=Yes	
Fatty Liver (comorb_fatty_liver)		Binary	0=No; 1=Yes	
Gastroesophageal Reflux Disease (comorb_gord)		Binary	0=No; 1=Yes	
Hepatitis A (comorb_hepa)		Binary	0=No; 1=Yes	
Hepatitis C (comorb_hep_c)		Binary	0=No; 1=Yes	
Hepatitis B (comorb_hep_b)		Binary	0=No; 1=Yes	
Hiatus Hernia (comorb_hiatus_hernia)		Binary	0=No; 1=Yes	
Irritable Bowel Syndrome (comorb_ibs)		Binary	0=No; 1=Yes	
Liver Disease (comorb_liver_disease)		Binary	0=No; 1=Yes	
Oesophageal Ulcer (comorb_ulcer_oesophag)		Binary	0=No; 1=Yes	
Pancreatitis (comorb_pancreatitis)		Binary	0=No; 1=Yes	

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Peptic Ulcer Disease (comorb_pud)		Binary	0=No; 1=Yes	
Ulcerative Colitis (comorb_ulcerative_colitis)		Binary	0=No; 1=Yes	
Haematological				
Acromegaly (comorb_acromegaly)		Binary	0=No; 1=Yes	
Anaemia (comorb_anaemia)		Binary	0=No; 1=Yes	
Deep Vein Thrombosis (comorb_dvt)		Binary	0=No; 1=Yes	
Factor V Leiden (comorb_vleid_def)		Binary	0=No; 1=Yes	
Haemochromatosis (comorb_haemochrom)		Binary	0=No; 1=Yes	
Haemophilia (comorb_haemophilia)		Binary	0=No; 1=Yes	
Hyperparathyroidism (comorb_hyperparathyroidism)		Binary	0=No; 1=Yes	
Hypokalaemia (comorb_hypokalaemia)		Binary	0=No; 1=Yes	
Hypoparathyroidism (comorb_hypoparathyr)		Binary	0=No; 1=Yes	
Iron Deficiency (comorb_fe_deficiency)		Binary	0=No; 1=Yes	
Neutropenia (comorb_neutropenia)		Binary	0=No; 1=Yes	
Polycythaemia (comorb_polycythaemia)		Binary	0=No; 1=Yes	
Protein C Deficiency (comorb_protein_cdefic)		Binary	0=No; 1=Yes	
Pulmonary Embolism (comorb_pe)		Binary	0=No; 1=Yes	
Splenectomy (comorb_splenectomy)		Binary	0=No; 1=Yes	

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Thrombocytopaenia (comorb_thrombocyt)		Binary	0=No; 1=Yes	
Thalassaemia Minor (comorb_thalassaemia_minor)		Binary	0=No; 1=Yes	
Vitamin B12 Deficiency (comorb_vit_b12_deficiency)		Binary	0=No; 1=Yes	
Vitamin D Deficiency (comorb_vit_d_def)		Binary	0=No; 1=Yes	
Warfarin therapy (comorb_warfarin)		Binary	0=No; 1=Yes	
Neoplastic				
Bladder Cancer (comorb_ca_bladder)		Binary	0=No; 1=Yes	
Bowel Cancer (comorb_ca_bowel)		Binary	0=No; 1=Yes	
Breast Cancer (comorb_ca_breast)		Binary	0=No; 1=Yes	
Cervical Cancer (comorb_ca_cervix)		Binary	0=No; 1=Yes	
Endometrial Cancer (comorb_ca_endometrium)		Binary	0=No; 1=Yes	
Hepatobiliary Cancer (comorb_ca_hepat)		Binary	0=No; 1=Yes	
Leukaemia (comorb_leukaemia)		Binary	0=No; 1=Yes	
Liposarcoma (comorb_ca_liposarcoma)		Binary	0=No; 1=Yes	
Lung Cancer (comorb_ca_lung)		Binary	0=No; 1=Yes	
Lymphoedema (comorb_lymphodema)		Binary	0=No; 1=Yes	
Lymphoma (comorb_lymphoma)		Binary	0=No; 1=Yes	
Melanoma (comorb_ca_skin_mel)		Binary	0=No; 1=Yes	

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Meningioma (comorb_meningioma)		Binary	0=No; 1=Yes	
Multiple Myeloma (comorb_mul_myel)		Binary	0=No; 1=Yes	
Myelodysplasia (comorb_myelodysplasia)		Binary	0=No; 1=Yes	
Non-Hodgkin Lymphoma (comorb_nhl)		Binary	0=No; 1=Yes	
Oesophageal Cancer (comorb_ca_oesophagus)		Binary	0=No; 1=Yes	
Osteosarcoma (comorb_ca_ostsarc)		Binary	0=No; 1=Yes	
Ovarian cancer (comorb_ca_ovary)		Binary	0=No; 1=Yes	
Prostate Cancer (comorb_ca_prostate)		Binary	0=No; 1=Yes	
Renal Cancer (comorb_ca_kidney)		Binary	0=No; 1=Yes	
Skin Cancer (basal cell carcinoma, squamous cell carcinoma) (comorb_ca_skin)		Binary	0=No; 1=Yes	
Soft Tissue Cancer (comorb_ca_softtiss)		Binary	0=No; 1=Yes	
Stomach Cancer (comorb_ca_stomach)		Binary	0=No; 1=Yes	
Testicular Cancer (comorb_ca_testes)		Binary	0=No; 1=Yes	
Throat Cancer (comorb_ca_throat)		Binary	0=No; 1=Yes	
Thyroid Cancer (comorb_ca_thyroid)		Binary	0=No; 1=Yes	
Uterine Cancer (comorb_ca_uterus)		Binary	0=No; 1=Yes	
Vocal Fold Cancer (comorb_ca_vocalcords)		Binary	0=No; 1=Yes	
Neurological				

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Amyloidosis (comorb_amyloidosis)		Binary	0=No; 1=Yes	
Bell's Palsy (comorb_bells_palsy)		Binary	0=No; 1=Yes	
Cerebral Aneurysm (comorb_cereb_aneu)		Binary	0=No; 1=Yes	
Cerebral Palsy (comorb_cerebral_palsy)		Binary	0=No; 1=Yes	
Cerebrovascular Accident (comorb_cva)		Binary	0=No; 1=Yes	
Epilepsy (comorb_epilepsy)		Binary	0=No; 1=Yes	
Hearing Impaired (comorb_hear_impaired)		Binary	0=No; 1=Yes	
Meniere's Disease (comorb_menieres_disease)		Binary	0=No; 1=Yes	
Migraine (comorb_migraine)		Binary	0=No; 1=Yes	
Multiple Sclerosis (comorb_ms)		Binary	0=No; 1=Yes	
Parkinson's Disease (comorb_parkinsons)		Binary	0=No; 1=Yes	
Polio (comorb_polio)		Binary	0=No; 1=Yes	
Restless Legs Syndrome (comorb_restless_legs)		Binary	0=No; 1=Yes	
Subarachnoid Haemorrhage (comorb_sah)		Binary	0=No; 1=Yes	
Syphilis (comorb_syphilis)		Binary	0=No; 1=Yes	
Transient Ischaemic Attack (comorb_tia)		Binary	0=No; 1=Yes	
Trigeminal Neuralgia (comorb_trig_neural)		Binary	0=No; 1=Yes	
Vertigo (comorb_vertigo)		Binary	0=No; 1=Yes	

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Psychiatric & Cognitive				
Alcohol Abuse (comorb_alcohol_abuse)		Binary	0=No; 1=Yes	
Alzheimer Disease (comorb_alzheimers)		Binary	0=No; 1=Yes	
Bipolar Affective Disorder (comorb_bipolar_affect_disorder)		Binary	0=No; 1=Yes	
Borderline Personality Disorder (comorb_border_persdis)		Binary	0=No; 1=Yes	
Dementia (comorb_dementia)		Binary	0=No; 1=Yes	
Depression (comorb_depression)		Binary	0=No; 1=Yes	
Generalised Anxiety Disorder (comorb_anxiety)		Binary	0=No; 1=Yes	
Obsessive Compulsive Disorder (comorb OCD)		Binary	0=No; 1=Yes	
Post-Traumatic Stress Disorder (comorb PTSD)		Binary	0=No; 1=Yes	
Schizophrenia (comorb_schizophrenia)		Binary	0=No; 1=Yes	
Renal & Urological				
Benign Prostatic Hypertrophy (comorb_bph)		Binary	0=No; 1=Yes	
Chronic Kidney Disease (comorb_ckd)		Binary	0=No; 1=Yes	
End-Stage Kidney Disease (comorb_eskd)		Binary	0=No; 1=Yes	
Nephrectomy (comorb_nephrectomy)		Binary	0=No; 1=Yes	
Transurethral Resection of Prostate (comorb TURP)		Binary	0=No; 1=Yes	
Urinary Incontinence (comorb_urinary_incontinence)		Binary	0=No; 1=Yes	

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Urinary Tract Infection (comorb_uti)		Binary	0=No; 1=Yes	
Respiratory				
Asbestosis (comorb_asbestosis)		Binary	0=No; 1=Yes	
Asthma (comorb_asthma)		Binary	0=No; 1=Yes	
Bronchiectasis (comorb_bronchiectasis)		Binary	0=No; 1=Yes	
Chronic Obstructive Airways Disease (comorb_coad)		Binary	0=No; 1=Yes	
Emphysema (comorb_emphysema)		Binary	0=No; 1=Yes	
Ex-smoker (comorb_ex_smoker)		Binary	0=No; 1=Yes	
Interstitial Lung Disease (comorb_inter_lung_dis)		Binary	0=No; 1=Yes	
Obstructive Sleep Apnoea (comorb_osa)		Binary	0=No; 1=Yes	
Pulmonary Fibrosis (comorb_pulmonary_fib)		Binary	0=No; 1=Yes	
Pulmonary Hypertension (comorb_pulm_hyper)		Binary	0=No; 1=Yes	
Smoker (comorb_smoker)		Categorical	0=Never 1=Ex 2=Yes	
Tuberculosis (comorb_tb)		Binary	0=No; 1=Yes	
Rheumatological & Orthopaedic				
Ankylosing Spondylitis (comorb_ank_spond)		Binary	0=No; 1=Yes	
Arthritis (comorb_arthritis)		Binary	0=No; 1=Yes	
Back Pain (comorb_back_pain)		Binary	0=No; 1=Yes	

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Below-Knee Amputation (comorb_bka)		Binary	0=No; 1=Yes	
Bilateral Total Hip Replacement (comorb_thr_bilateral)		Binary	0=No; 1=Yes	
Chronic Fatigue Syndrome (comorb_chronic_fatig)		Binary	0=No; 1=Yes	
Fibromyalgia (comorb_fibromyalgia)		Binary	0=No; 1=Yes	
Gout (comorb_gout)		Binary	0=No; 1=Yes	
Left Total Hip Replacement (comorb_l_thr)		Binary	0=No; 1=Yes	
Left Total Knee Replacement (comorb_ltkr)		Binary	0=No; 1=Yes	
Myasthenia Gravis (comorb_myas_grav)		Binary	0=No; 1=Yes	
Osteomyelitis (comorb_osteomyelitis)		Binary	0=No; 1=Yes	
Osteoporosis (comorb_osteoporosis)		Binary	0=No; 1=Yes	
Paget's Disease (comorb_pagets_dis)		Binary	0=No; 1=Yes	
Polymyalgia (comorb_polymyalgia)		Binary	0=No; 1=Yes	
Psoriatic Arthritis (comorb_psoriatic_arth)		Binary	0=No; 1=Yes	
Rheumatoid Arthritis (comorb_rheumatoid)		Binary	0=No; 1=Yes	
Right Total Hip Replacement (comorb_r_thr)		Binary	0=No; 1=Yes	
Right Total Knee Replacement (comorb_rtkr)		Binary	0=No; 1=Yes	
Sarcoidosis (comorb_sarcoidosis)		Binary	0=No; 1=Yes	
Scleroderma (comorb_scleroderma)		Binary	0=No; 1=Yes	

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Scoliosis (comorb_scoliosis)		Binary	0=No; 1=Yes	
Septic Arthritis (comorb_septic_arth)		Binary	0=No; 1=Yes	
Sjogren's Syndrome (comorb_sjogrens_syndrome)		Binary	0=No; 1=Yes	
Spinal Cord Infection (comorb_spinalcord_inf)		Binary	0=No; 1=Yes	
Systemic Lupus Erythematosus (comorb_sle)		Binary	0=No; 1=Yes	
Temporal Arteritis (comorb_temp_arteritis)		Binary	0=No; 1=Yes	
Total Hip Replacement (comorb_thr)		Binary	0=No; 1=Yes	
Vasculitis (comorb_vasculitis)		Binary	0=No; 1=Yes	
Visual System				
Cataracts (comorb_cataracts)		Binary	0=No; 1=Yes	
Blindness (comorb_blind)		Binary	0=No; 1=Yes	
Glaucoma (comorb_glaucoma)		Binary	0=No; 1=Yes	
Macular Degeneration (comorb_macular_degeneration)		Binary	0=No; 1=Yes	

3.2 Procedure Details

3.2.1 Surgery Details

The American Society of Anaesthesiologists (ASA) Physical Classification is a measure of the overall health status of patients undergoing surgery.¹¹ Higher scores have been correlated with increased risk of surgical complications.¹²

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
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Surgeon (surgeon)		String		Surgeon intraoperative-operative notes
Date of admission (dateofadmission)		Date	dd/mm/yyyy	
Date of discharge (dateofdischarge)		Date	dd/mm/yyyy	
Discharge destination (dischargedto)		Categorical	1=Home 2=Rehab Centre 3=Other Hospital 4=Other	
Date of Surgery (surgerydate)		Date	dd/mm/yyyy	Operative Theatre List
Surgery Status (surgerystatus)		Categorical	1=On-going 2=Lost to follow-up 3=Withdrawn from study 4=Failed 5=No further Follow-up required	Mail out and follow-up phone call
Surgery Type (surgerytype)		Categorical	1=Primary 2=Revision own 3=Revision (primary elsewhere)	
American Society of Anesthesiologists (ASA) Classification (anaestheticrating)	01/01/2002	Ordinal	ASA Physical Status 1 to 4 Owens et al. ¹³	Anaesthetic Chart on the day of surgery
Venous Thromboembolism (VTE) Prophylaxis (anticoagulant)		Categorical	1=Aspirin 150mg 2=Aspirin 300mg 3=Clexane 20u/ml 4=Clexane 40u/ml 5=Fragmin 2500u/ml 6=Fragmin 5000u/ml 7=Heparin 5000u/ml BD 8=Other	
Haemoglobin (Hb) [g/dL] (biochemistryhb)		Numeric	Preoperative Mean (SD); range TKA 136.2 (13.9); 71 to 186 THA 137.2 (13.7); 91 to 192	Obtained at preadmission assessment within 2 weeks of planned surgery
Wound drain (drains)		Categorical	1=Standard 2=Reinfusion 3=Other	

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			4=No drains	
Wound drain output [mL] (drain_loss)		Numeric	Preoperative range TKA 5 to 2,400 THA 5 to 2,960	
Duration of Surgery Knife to Skin [minutes] (durationofsurgery)		Numeric	Preoperative mean (SD); range TKA 103.4 (29.2); 40 to 296 THA 104.7 (32.4); 30 to 376	
Operator level (operator)	01/01/2002	Categorical	1=Surgeon 2=Fellow 3=Senior Registrar 4=Junior registrar/ resident	
Assistant (assistant)		Categorical	1=Fellow, 2=Registrar Set 1 3=Registrar Set 2 4=Registrar Set 3 5=Registrar Set 4 6=Registrar Set 5 7=Surgeon 8=Unaccredited Registrar	
Transfusion required (packedredbloodcells)		Binary	0=No; 1=Yes	
Transfusion quantity (packedredbloodcellsqty)		Numeric	Postoperative range TKA 0 to 10 THA 0 to 15	
Hospital (hospclinic)		Categorical	1=Public 2=Private	
Regional Block				

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Lumbar Plexus (regblock_lumbar)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Femoral Nerve (regblock_femnerve)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Facia Iliaca (regblock_fasciailiaca)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Sciatic Nerve (regblock_sciaticnerve)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Adductor Canal (regblock_addbcanal)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Femoral Triangle (regblock_femtriangle)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Local Wound Infiltration (regblock_lwi)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Other (regblock_other)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Anaesthetic				
General (anaesthetic_general)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Epidural (anaesthetic_epidural)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Sedation (anaesthetic_sedation)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Spinal (anaesthetic_spinal)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Regional block (anaesthetic_reg_block)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Local anaesthetic (anaes_local)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery
Other (anaes_other)		Binary	0=No; 1=Yes	Anaesthetic Chart on the day of surgery

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3.2.2 Arthroplasty Details

The Charnley classification system was originally designed to stratify patients into three categories in order to better understand the variability in the outcome of arthroplasty, namely walking ability, based on the severity of comorbid conditions which also impact upon mobility.¹⁰ Charnley score has subsequently been found to significantly affect pain and function according to a range of measures, some of which are included in this data dictionary, including the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).¹⁰

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Procedure (arthroplasty_type)		Binary	1=Hip replacement 2=Knee replacement	Consent Form
Bilateral Sequence (bilateral)		Categorical	0=No 1=Staged 2=Simultaneous	Noted in medical record and confirmed on X-ray
Charnley Score – Hip (charnley_*)		Categorical	1=A Unilateral Hip Arthritis 2=B1 Unilateral THA, opposite hip arthritis 3=B2 Bilateral THA 4=C1 THA, but remote arthritis affecting ambulation 5=C2 THA, but medical condition affecting ambulation 6=C3 Unilateral or Bilateral THA with Unilateral or Bilateral TKA	
Charnley Score – Knee (charnley_*)		Categorical	1=A Unilateral Knee Arthritis 2=B1 Unilateral TKA, opposite knee arthritis 3=B2 Bilateral TKA 4=C1 TKA, but remote arthritis affecting ambulation 5=C2 TKA, but medical condition affecting ambulation 6=C3 Unilateral or Bilateral TKA with Unilateral or Bilateral THA	
Surgery Type (surgerytype)		Categorical	1=Primary 2=Revision own 3=Revision elsewhere	Surgeon intraoperative-operative notes
Procedure Type – Knee (procedure_knee)		Categorical	1=TKA 2=Uni Medial 3=Uni Lateral	Surgeon intraoperative-operative notes

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			4=Patello femoral 5=Patella replacement 6=Bi-compartmental 7=Removal of prosthesis 8=Liner exchange 9=Tibial component	
Procedure Type - Hip (procedure_hip)		Categorical	1=THA 2=Hip Resurfacing 3=Femoral replacement 4=Acetabular replacement 5= Liner exchange	Surgeon intraoperative-operative notes
Preoperative Alignment (preopalignment)		Categorical	1=Normal 2=Valgus 3=Varus	
Range of Motion – Hyperextension (romhyperextensionflag)		Binary	0=No; 1=Yes	
Hyperextension [degrees] (romhyperextension)		Numeric	Preoperative range 1 to 10	
Mechanical Axis [degrees] (romalignmechaxis)		Numeric	Preoperative range -33 to 44	
Approach (Hip) (approach)		Categorical	1=Posterior 2=Direct lateral/trans gluteal 3=Anterior 4=Lateral 5=Combined 6=Superpath	Surgeon intraoperative-operative notes
Approach (Knee) (approach)		Categorical	1=Med Parapatellar 2=Mid Vastus 3=Sub Vastus 4=Lat Parapatellar	Surgeon intraoperative-operative notes
Navigation Used (navigation)		Binary	0=No; 1=Yes	Surgeon intraoperative-operative notes
Alignment Referencing (alignmentreferencing)	01/01/2014	Categorical	1=Intramedullary femur/ Extramedullary tibia 2=All IM 3=Navigation, 4=Patient specific guides 5=Robotic	Surgeon intraoperative-operative notes

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1 3.2.3 Implant and Bone Graft Details (Hip)

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Femur Brand (femurbrand)		Categorical	1=ACCOLADE 2=ALLOCLASSIC SL 3=ALLOCLASSIC SLL 4=AMIS 5=AMIS-h 6=ARCOS MODULAR REVISION 7=BIRMINGHAM 8=C-STEM 9=C-STEM AMT 10=CHART-STIK 11=CLS 12=CONE 13=CORAIL 14=CORAIL REVISION 15=CPT 16=DUROM 17=ELITE PLUS 18=EPOCH 19=EXETER 20=GMRS 21=GUARDIAN 22=HNR 23=KAR 24=KOTZ 25=MALLORY TAPER 26=MATRIX 27=METASUL 28=MIA 29=MS 30 30=NIL 31=NITRIDED 32=OMNIFIT 33=PFM 34=PROFEMUR 35=PROFEMUR Xm 36=PROFEMUR-L	Electronic Medical Record - As per manufacturer implant label

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			37=QUADR-C 38=QUADRA-H 39=R3 40=RECLAIM 41=RESTORATION 42=REV. VERSYS 43=REVITAN 44=S/ROM 45=SECURA-FIT 46=SL-INTEGRATION + 47=SL-PLUS 48=SOLUTION 49=STREAMLINE 50=TAPERFIT 51=VERSYS 52=WAGNER 53=X-ACTA 54=ZMR NITRIDED 55=ZWEYMULLER	
Femur Fixation (femurthrfixation)		Categorical	1=Cement 2=Cementless	Surgeon intraoperative-operative notes
Femur Cement Type (femurcementtype)		Binary	1=Plain 2=Antibiotic	
Cementation (cementation)		Categorical	1=Hybrid 2=Resurfacing 3=Totally cemented 4=Uncemented	
Cement Type (acetabulumcementtype)		Binary	1=Plain 2=Antibiotic	Electronic Medical Record – As per manufacturer label
Femoral Head Size [mm] (headdiametersize)		String	22.2, 26, 28, 32, 36, 48, 50, 52, 58, Other	Electronic Medical Record - As per manufacturer implant label
Acetabulum Brand (acetabulumbrand)		String	1=ALLOFIT 2=ALLPRO 3=ARMOR 4=ARTEK 5=ARTHROPOR II 6=BIPOLAR 7=BURCH-SCHNEIDER 8=CHARNLEY	Electronic Medical Record - As per manufacturer implant label

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			9=CHART-STIK 10=CONTEMPORARY 11=CONTINUUM/TRABEC 12=COTYLE VERSYS 13=CUSTOM MADE 14=DELTA-ONE-TT 15=DELTA-TT 16=DELTAMOTION 17=DURALOC BANTOM 18=DURALOC DYNAMIC 19=DURALOC LOCK RING 20=DURALOC SECTOR 21=DUROM, Dynasty-PC 22=ELITE PLUS 23=ELITE/OGEE 24=EXETER 25=EXETER RIMFIT 26=FITMORE 27=G7 OSSEO TI 28=HNR 29=KERBOUL SHELL M.E. 30=MULLER MALLORY 31=MARATHON XPLE 32=METSUL 33=MITCH TRH 34=MPACT 35=PINNACLE 100 36=PINNACLE BANTOM 37=PINNACLE BANT W 38=PINNACLE DUOFIX 39=PINNACLE GRIPTON 40=PINNACLE GVF 41=PINNACLEMULTI 42=PINNACLE SECTOR 43=PROCOTYL-L 44=PROTEK 45=REFLECTION SP3 HA 46=REINFORCE-RING 47=RESTORATION ADM 48=RESTORATION GAP II 49=RINGLOCK	
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			50=SECURA – FIT 51=STIKTITE R3 52=TRABECULAR 53=TRIDENT 54=TRILOGY 55=TRINITY 56=TRITANIUM 57=UNIPOLAR 58=VERSAFIT 59=VITALOCK, 60=WROB GOLF BALL 61=ZWEYMUELLER	
Cup Fixation (acetabulumcupfixation)		Categorical	1=Cement 2=Cementless	Surgeon intraoperative-operative notes
Articulating Surface (articulatingssurface)		Categorical	1=Metal/Polyethylene (PE) 2=Ceramic/PE 3=Metal/Metal 4=Ceramic/Ceramic 5=Metal/Ceramic	Electronic Medical Record - As per manufacturer label
Mini Incision (mini_incision)		Binary	0=No; 1=Yes	Surgeon intraoperative-operative notes

1

2

3.2.4 Implant and Bone Graft Details (Knee)

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Femur Brand (femurbrand)		Categorical	1=AVANTIM 2=AGC 3=ALLEGRETTO 4=APOLLO 5=ATTUNE 6=AVON 7=DURACON 8=DURATION 9=GENESIS II 10=GMK 11=GMK REVISION 12=GMRS 13=GUARDIAN	Electronic Medical Record - As per manufacturer implant label

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			14=J &J REV 15=KINEMATIC 16=KINEMAX CONDUL 17=LEGION 18=LEGION - OXINUM 19=LEGION REVISION 20=M.B.T. REVISION 21=MAXIM 22=MG 2 23=MILLER GALLANTE 24=MRH 25=NAT-KNEE 26=NEXGEN 27=NEXGEN-MBK 28=NEXGEN M/BLOCK 29=NEXGEN-LCCK 30=OSTEONICS 31=OXFORD UC 32=PFC 33=PFC TC3 34=PRESERVATION 35=RBK 36=REPICCI 37=RESTORIS MCK 38=S-ROM 39=SCORPIO NRG X3 40=SCORPIO TKS 41=SCORPIO (OSTEONICS) 42=TRIATHLON 43=TRIATHLON TS 44=UNI-COMP 45=UNICOMP TKS 46=UNIX 47=VANGUARD 48=ZUK	
Femur Fixation (femurfixation)		Categorical	1=Cement 2=Cementless	Surgeon intraoperative-operative notes
Femur Cement Type (femurcementtype)		Binary	1=Plain 2=Antibiotic	Surgeon intraoperative-operative notes

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Patella Intervention (patellaintervention)		Categorical	1=Resurfaced 2=Not Resurfaced 3=Patelloplasty	Surgeon intraoperative-operative notes
Patella Fixation (patellafixation)		Categorical	1=Cement 2=Cementless	Surgeon intraoperative-operative notes
Patella Brand (patellabrand)		String	1=ADVANTIM 2=AGC 3=APOLLO 4=ATTUNE 5=AVON 6=DURACON 7=DURATION 8=GENISIS I 9=GMK 10=GMK REVISION 11=GMRS 12=GUARDIAN 13=KINEMATIC 14=KINEMAX CONDUL 15=MAXIM 16=MG 2 17=MILLER GALLANTE 18=NAT-KNEE 19=NEXGEN 20=OSTEONICS 21=PFC 22=PFC TC3 23=RESTORIS MCK 24=S-ROM 25=SCORPIO NRG X3 26=SCORPIO TKS 27=SCORPIO (OSTEONICS) 28=TRIATHLON 29=TRIATHLON TS 30=UNIX 31=VANGUARD	Electronic Medical Record - As per manufacturer implant label
Patella Cement Type (patellacementtype)		Binary	1=Plain 2=Antibiotic	Surgeon intraoperative-operative notes
Tibia Brand (tibiabrand)		Categorical	1=AVANTIM 2=AGC	Electronic Medical Record - As per manufacturer implant label

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			3=ALLEGRETTO 4=APOLLO 5=ATTUNE 6=AVON 7=DURACON 8=DURATION 9=GENESIS II 10=GMK 11=GMK REVISION 12=GMRS 13=GUARDIAN 14=J &J REV 15=KINEMATIC 16=KINEMAX CONDUL 17=LEGION 18=LEGION - OXINUM, 19=LEGION REVISION 20=M.B.T. REVISION 21=MAXIM 22=MG 2 23=MILLER GALLANTE 24=MRH 25=NAT-KNEE 26=NEXGEN 27=NEXGEN-MBK 28=NEXGEN M/BLOCK 29=NEXGEN-LCCK 30=OSTEONICS 31=OXFORD UC 32=PFC 33=PFC TC3 34=PRESERVATION 35=RBK 36=REPICCI 37=RESTORIS MCK 38=S-ROM 39=SCORPIO NRG X3 40=SCORPIO TKS 41=SCORPIO (OSTEONICS) 42=TRIATHLON 43=TRIATHLON TS	
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			44=UNI-COMP 45=UNICOMP TKS 46=UNIX 47=VANGUARD 48=ZUK	
Tibial Fixation (tibiafixation)		Categorical	1=Cement 2=Cementless	Surgeon intraoperative-operative notes
Tibial Cement Type (tibiacementtype)		Binary	1=Plain 2=Antibiotic	Surgeon intraoperative-operative notes
Bearing Type (bearingtype)		Binary	1=Fixed 2=Mobile	Electronic Medical Record - As per manufacturer implant label
Constraint				
Constrained Condylar (constraint_condylar)		Binary	0=No; 1=Yes	
Cruciate Retaining (constraint_cruc_retain)		Binary	0=No; 1=Yes	
Cruciate Sacrificing (constraint_cruc_sacrif)		Binary	0=No; 1=Yes	
Deep Dish (constraint_deep_dish)		Binary	0=No; 1=Yes	
High flexion (constraint_high_flex)		Binary	0=No; 1=Yes	
Hinge (constraint_hinge)		Binary	0=No; 1=Yes	
Medial Pivot (constraint_med_pivot)		Binary	0=No; 1=Yes	
Other (constraint_other)		Binary	0=No; 1=Yes	
Posterior Stabilized (constraint_post_stab)		Binary	0=No; 1=Yes	
Tumour (constraint_tumour)		Binary	0=No; 1=Yes	

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3.2.5 Post-Operative Details

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Anticoagulation - Aspirin (postopanticoag_aspirin)		Binary	0=No; 1=Yes	Medication Chart
Anticoagulation - Combination (postopanticoag_combination)		Binary	0=No; 1=Yes	Medication Chart
Anticoagulation - LMWH (postopanticoag_lmwh)		Binary	0=No; 1=Yes	Medication Chart
Anticoagulation - Other (postopanticoag_other)		Binary	0=No; 1=Yes	Medication Chart
Anticoagulation - Warfarin (postopanticoag_warfarin)		Binary	0=No; 1=Yes	Medication Chart
DVT Prophylaxis - Anticoagulation (postopdvt_anticoag)		Binary	0=No; 1=Yes	Patient Clinical Pathway
DVT Prophylaxis - Anti-embolic Stockings (postopdvt_stockings)		Binary	0=No; 1=Yes	Patient Clinical Pathway
DVT Prophylaxis - Compression Devices (postopdvt_compdev)		Binary	0=No; 1=Yes	Patient Clinical Pathway
DVT Prophylaxis - None (postopdvt_none)		Binary	0=No; 1=Yes	Patient Clinical Pathway
DVT Prophylaxis - Other (postopdvt_other)		Binary	0=No; 1=Yes	Patient Clinical Pathway
Analgesia (analgesia)			1=Epidural 2=PCA 3=Local Infiltration 4=Intravenous Narcotic 5=Infusion Intramuscular narcotic 6=Oral Narcotic 7=Narcotic Patches 8=Intrathecal Narcotics 9=Femoral Nerve Block 10=Sciatic Nerve Block	Anaesthetic Chart, Recovery Room Chart, Medication Chart, Analgesia Infusion Chart

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			11=Other Nerve Block 12=Oral Anti-inflammatories	
Length of Stay [days] (lengthofstay)		Numeric	Preoperative mean (SD); range TKA 5.4 (2.8); 1 to 99 THA 5.6 (3.9); 1 to 159 days	

3.3 Complications

- Any complication that results in a deviation from the clinical pathway, delay in length of stay, re-operation and readmission within 30 days of the index procedure. Beyond 30 days, any re-operation or readmission related to the index procedure.
- When complications are identified that are not yet in Socrates, they are added accordingly.
- Index Surgery – Clinical Pathway, Medical Record, Discharge Summary.
- Post Discharge – Review of Medical Record at Follow-up appointment at 6 weeks, 12 months, 2 years, 5 years 7 years 10 years
- Annual questionnaire +/- phone call.

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Occurrence of any complication (compsoccurrence)		Binary	0=No; 1=Yes	
Complication date of occurrence (compsdate)		Date	dd/mm/yyyy	
Intraoperative complication (complperiodintraop)		Binary	0=No; 1=Yes	

3.3.1 Medical Complications

Variable (code)	Collection Period	Type of Variable	Relevant definition/ Mean (SD); range	Data Source(s)
Acopia (comp_acopia)		Binary	0=No; 1=Yes	
Acute Kidney injury (comp_aki)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Blood markers, Physician Assessment)

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Acute Myocardial Infarct (comp_ami)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Blood markers, ECG, Physician Assessment)
Acute Pulmonary Oedema (comp_apo)		Binary	0=No; 1=Yes	
Alcohol Withdrawal Syndrome (comp_alc_withdrawal)		Binary	0=No; 1=Yes	
Anaemia (comp_anaemia)		Binary	0=No; 1=Yes	
Angina (comp_angina)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Blood markers, ECG, Physician Assessment)
Anuria (comp_anuria)		Binary	0=No; 1=Yes	
Apnoea (comp_apnoeic)		Binary	0=No; 1=Yes	
Asthma exacerbation (comp_exac_asthma)		Binary	0=No; 1=Yes	
Asystole (comp_asystole)		Binary	0=No; 1=Yes	Medical Record, Physician Assessment
Atelectasis (comp_atelectasis)		Binary	0=No; 1=Yes	
Atrial Fibrillation (comp_af)		Binary	0=No; 1=Yes	Medical Record, Physician Assessment
Bowel Obstruction (comp_bowel_obs)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Imaging, Physician Assessment)
Bowel Pseudo-Obstruction (comp_pseudo_bowelob)		Binary	0=No; 1=Yes	
Bradycardia (comp_bradycardia)		Binary	0=No; 1=Yes	Medical Record, Physician Assessment
Cholecystitis (comp_cholecystitis)		Binary	0=No; 1=Yes	
Confusion (comp_confusion)		Binary	0=No; 1=Yes	Clinical Presentation – Medical Record

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Congestive Cardiac Failure (comp_ccf)		Binary	0=No; 1=Yes	
Cerebrovascular Accident (comp_cva)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Imaging, Physician Assessment)
Chest Infection (chest_infection)		Binary	0=No; 1=Yes	
Deranged LFT's (comp_deranged_lfts)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Blood markers, Physician Assessment)
Diarrhoea (comp_diarrhoea)		Binary	0=No; 1=Yes	
Drug Reaction (comp_drug_rxn)		Binary	0=No; 1=Yes	Medical Record, Physician Assessment
Deep Vein Thrombosis (comp_dvt)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation on Ultrasound
Empyema (comp_empyema)		Binary	0=No; 1=Yes	Medical Record, Imaging, Physician Assessment
Fall (comp_fall)		Binary	0=No; 1=Yes	Clinical Presentation; Medical Record
Febrile (comp_febrile)		Binary	0=No; 1=Yes	
Fluid Overload (comp_fluid_overload)		Binary	0=No; 1=Yes	
GI Bleed (comp_gi_bleeding)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Physician Assessment, Gastroscopy)
Haematemesis (comp_haematemesis)		Binary	0=No; 1=Yes	
Haematuria (comp_haematuria)		Binary	0=No; 1=Yes	
Heart Block (comp_heart_block)		Binary	0=No; 1=Yes	
Hydronephrosis (comp_hydronephrosis)		Binary	0=No; 1=Yes	
Hyperglycaemia (comp_hyperglycaemia)		Binary	0=No; 1=Yes	

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Hypertension (comp_hypertension)		Binary	0=No; 1=Yes	
Hypokalaemia (comp_hypokalaemia)		Binary	0=No; 1=Yes	Medical Record, Blood markers, Physician Assessment
Hyponatraemia (comp_hyponatramia)		Binary	0=No; 1=Yes	Medical Record, Blood markers, Physician Assessment
Hypotension (comp_hypotension)		Binary	0=No; 1=Yes	
Hypoxia (comp_hypoxia)		Binary	0=No; 1=Yes	
Intensive Care Unit (ICU) Admission – Planned, for monitoring (comp_icu_mon)		Binary	0=No; 1=Yes	
ICU Admission - Resulting from Complication (comp_icu_admission_comp)		Binary	0=No; 1=Yes	
Ileus (comp_ileus)		Binary	0=No; 1=Yes	
Lower Respiratory Tract Infection (comp_lrti)		Binary	0=No; 1=Yes	Medical Record, Imaging, Physician Assessment
Melaena (comp_malaena)		Binary	0=No; 1=Yes	
Narcosed (comp_narcosed)		Binary	0=No; 1=Yes	
Nausea (comp_nausea)		Binary	0=No; 1=Yes	
Pericardial Effusion (comp_peri_effusion)		Binary	0=No; 1=Yes	
Pneumonia (comp_pneumonia)		Binary	0=No; 1=Yes	Medical Record, Imaging, Physician Assessment
Pneumothorax (comp_pneumothorax)		Binary	0=No; 1=Yes	
Pressure Sore (comp_pressure_sore)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Braden Scale for Pressure Injury Risk)

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Pulmonary Embolism (comp_pe)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Confirmed on CT Pulmonary Angiogram)
Rapid Atrial Fibrillation (comp_rapid_af)		Binary	0=No; 1=Yes	
Respiratory Depression (comp_resp_dep)		Binary	0=No; 1=Yes	
Seizure (comp_seizure)		Binary	0=No; 1=Yes	
Sepsis (comp_sepsis)		Binary	0=No; 1=Yes	
Shingles (comp_shingles)		Binary	0=No; 1=Yes	
Supraventricular Tachycardia (comp_svt)		Binary	0=No; 1=Yes	
Transient Ischaemic Attack (comp_tia)		Binary	0=No; 1=Yes	
Upper Respiratory Tract Infection (comp_urti)		Binary	0=No; 1=Yes	Medical Record, Imaging, Physician Assessment
Urinary Tract Infection (comp_uti)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Mid-Stream Urine Specimen)
Urinary Retention (comp_urinary_ret)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Medical Record, Bladder Scanner, Physician Assessment)
Hydrocoele (comp_urinary_strict)		Binary	0=No; 1=Yes	
Vasovagal Syncope (comp_vasovagal)		Binary	0=No; 1=Yes	

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3.3.2 Surgical Complications

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Arthrofibrosis (comp_arthrofibrosis)		Binary	0=No; 1=Yes	Surgeon Assessment

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Aseptic Loosening (comp_aseptic_loose)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Assessment, Imaging)
Aseptic Loosening Femoral Stem (comp_al_femstem)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Assessment, Imaging)
Cement Extravasation (comp_cement_extrav)		Binary	0=No; 1=Yes	
Compartment Syndrome (comp_compartment_synd)		Binary	0=No; 1=Yes	
Discharge Delay - Slower than Clinical Pathway (comp_dis_delay_pw)		Binary	0=No; 1=Yes	
Dislocation – Insert (comp_disloc_insert)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Assessment, Imaging)
Dislocation – Patella (comp_disloc_patella)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Assessment, Imaging)
Dislocation – Hip (comp_disloc)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Assessment, Imaging)
Drain Tube Incomplete Removal (comp_tube_incomp)		Binary	0=No; 1=Yes	
Emergency Presentation (comp_emerg_pres)		Binary	0=No; 1=Yes	
Fat Embolus (comp_fat_embolus)		Binary	0=No; 1=Yes	
Fixed Flexion Deformity (comp_ffd)		Binary	0=No; 1=Yes	Surgeon Assessment
Foot Drop (comp_foot_drop)		Binary	0=No; 1=Yes	
Gout (comp_gout)		Binary	0=No; 1=Yes	
Granuloma (comp_granuloma)		Binary	0=No; 1=Yes	

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Haemarthrosis (comp_haemarthrosis)		Binary	0=No; 1=Yes	
Haematoma (comp_epi_haematoma)		Binary	0=No; 1=Yes	
Fracture - Acetabulum (comp_fract_acetab)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Ankle (comp_fracture_ankle)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Calcaneus (comp_fract_calcar)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Femoral Condyle (comp_frac_femcond)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Femur (comp_fracture_femur)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Greater Trochanter (comp_fract_greattroch)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Orbital (comp_fract_orb)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Patella (comp_fract_pat)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Periacetabular (comp_fract_periacetab)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Periprosthetic (comp_fract_peri_pros)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture – Superior rim of acetabulum (comp_fract_suprim)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Fracture - Tibia (comp_fracture_tibia)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)

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Fracture - Tibial Plateau (comp_frac_tib_plat)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Operative Notes, Imaging)
Instability (comp_instability)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Assessment, Imaging)
Prosthetic Joint Infection – Acute (comp_joint_infection_acute)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation CDC Definitions Surgeon Assessment, medical record
Prosthetic Joint Infection - Latent (comp_jt_inf_latent)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation CDC Definitions Surgeon Assessment, medical record
Prosthetic Joint Infection - Haematogenous (comp_jt_infection_haematogenous)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation CDC Definitions Surgeon Assessment, medical record
Laceration of Soft Palate (comp_lacer_softpalate)		Binary	0=No; 1=Yes	
Neuropraxia (comp_neuropraxia)		Binary	0=No; 1=Yes	Physician Assessment, Nurse Assessment
Pain (comp_pain)		Binary	0=No; 1=Yes	Surgeon Assessment
Patella Loosening (comp_asceploose_pat)		Binary	0=No; 1=Yes	(Surgeon Assessment, Imaging)
Poor Range of Motion (comp_poor_rom)		Binary	0=No; 1=Yes	Surgeon Assessment
Retained Drain Tube (comp_ret_draintube)		Binary	0=No; 1=Yes	Surgeon Assessment
Stiffness (comp_stiffness)		Binary	0=No; 1=Yes	Surgeon Assessment
Swelling (comp_swelling)		Binary	0=No; 1=Yes	Surgeon Assessment
Tendon/Ligament Rupture – Medial Collateral Ligament Rupture (comp_ruptured_mcl)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Assessment, Imaging)

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Tendon/Ligament Rupture – Patella Tendon (comp_pat_ten_rup)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation
Tendon/Ligament Rupture – Quadriceps (comp_ruptured_quad)		Binary	0=No; 1=Yes	(Surgeon Assessment, Imaging)
Popliteal Artery Injury (comp_pop_artinjury)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Assessment)

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3.3.3 Wound Complications

Variable (code)	Collection Period	Type of Variable	Relevant definition/ Mean (SD); range	Data Source(s)
Cellulitis (comp_cellulitis)		Binary	0=No; 1=Yes	Clinical Presentation, Surgeon Assessment, medical record
Blisters (comp_blisters)		Binary	0=No; 1=Yes	Clinical Assessment, medical record
Erythema (comp_erythema)		Binary	0=No; 1=Yes	Clinical Assessment, medical record
Wound Problem: Other (comp_wound_prob_other)		Binary	0=No; 1=Yes	Clinical Presentation, Surgeon Assessment, medical record
Stitch abscess (comp_stitch_abscess)		Binary	0=No; 1=Yes	Clinical Assessment, medical record
Surgical site infection - Deep (comp_infection_deep)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation CDC Definitions Surgeon Assessment, medical record
Surgical site infection - Superficial (comp_infect_superfic)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation CDC Definitions Surgeon Assessment, medical record
Wound dehiscence (comp_dehiscence)		Binary	0=No; 1=Yes	Clinical Assessment, medical record
Wound Haematoma (comp_wound_haematoma)		Binary	0=No; 1=Yes	Clinical Presentation, Surgeon Assessment, medical record
Wound ooze (comp_wound_ooze)		Binary	0=No; 1=Yes	Clinical Assessment, medical record

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Wound necrosis (comp_wound_nec)		Binary	0=No; 1=Yes	Clinical Assessment, medical record
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3.3.4 Revisions, Readmissions, and Reoperations

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Additional Procedure – Manipulation Under Anaesthesia (addproc_mua)		Binary	0=No; 1=Yes	
Additional Procedure – Washout x1 (addproc_washout_x1)		Binary	0=No; 1=Yes	
Additional Procedure – Washout x2 (addproc_washout_x2)		Binary	0=No; 1=Yes	
Additional Procedure – Washout x3 (addproc_washout_x3)		Binary	0=No; 1=Yes	
Additional Procedure – Change of Liner (addproc_chgliner)		Binary	0=No; 1=Yes	
Additional Procedure – Arthroscopy (addproc_arthroscope)		Binary	0=No; 1=Yes	
Additional Procedure – Joint Aspiration (addproc_aspiration)		Binary	0=No; 1=Yes	
Additional Procedure – Patella Resurfacing (addproc_patresurf)		Binary	0=No; 1=Yes	
Additional Procedure – Revision (addproc_revtotal)		Binary	0=No; 1=Yes	
Additional Procedure – Debridement (addproc_debride)		Binary	0=No; 1=Yes	
Additional Procedure – Removal of Prosthesis (addproc_removpros)		Binary	0=No; 1=Yes	
Additional Procedure – Revision of Tibial Component (addproc_revtibial)		Binary	0=No; 1=Yes	

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Additional Procedure – Gastroscopy (addproc_gastroscopy)		Binary	0=No; 1=Yes	
Additional Procedure – Resuturing (addproc_resuturing)		Binary	0=No; 1=Yes	
Additional Procedure – Open Reduction Internal Fixation (addproc_orif)		Binary	0=No; 1=Yes	
Additional Procedure – Angiogram (addproc_angiogram)		Binary	0=No; 1=Yes	
Additional Procedure – 2 Stage Revision (addproc_2stagerev)		Binary	0=No; 1=Yes	
Additional Procedure – Pacemaker Insertion (addproc_pacemaker)		Binary	0=No; 1=Yes	
Additional Procedure – Cystoscopy (addproc_cystoscopy)		Binary	0=No; 1=Yes	
Additional Procedure – Repair ruptured quadriceps (addproc_rupquads)		Binary	0=No; 1=Yes	
Additional Procedure – Biopsy (addproc_biopsy)		Binary	0=No; 1=Yes	
Additional Procedure -Removal of Retained Drain Tube (addproc_retdraintube)		Binary	0=No; 1=Yes	
Additional Procedure – Vac Dressing (addproc_vacdress)		Binary	0=No; 1=Yes	
Additional Procedure – Removal of Excess Cement (addproc_excesscement)		Binary	0=No; 1=Yes	
Date of Reoperation (reoperationdate)		Date	dd/mm/yyyy	
Date of Revision Surgery (revisiondate)		Date	0=No; 1=Yes	
Readmission Occurrence (readmitted)		Binary	0=No; 1=Yes	
Readmission Medical Complication (comp_readmission_med_comp)		Binary	0=No; 1=Yes	

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Readmission Surgical Complication (comp_readmission_surg)		Binary	0=No; 1=Yes	
Readmission: Wound-Related (comp_ra_wound)		Binary	0=No; 1=Yes	
Reoperation Occurrence (reoperation)		Binary	0=No; 1=Yes	
Revision Occurrence (revision)		Binary	0=No; 1=Yes	Clinical Presentation – Diagnostic Confirmation (Surgeon Assessment, Imaging)

3.4 Patient-Reported Outcome Measures

The Harris Hip Score (HHS) was developed to assess the results of hip surgery and contains 10 items covering the domains of pain (1 item, 0-44 points), function (7 items, 0-47 points), absence of deformity (1 item, 4 points), and range of motion (2 items, 5 points).²⁴ The maximum score is 100 points, with higher scores indicating a better outcome.

The Knee Society Score 2011 (KSS) contains both patient-reported and surgeon-reported components from which a knee score (0-100) and a function score (0-100) are derived.²² A higher score indicates a better outcome.

Global physical and psychological health status was assessed using the Veterans RAND 12-item Health Survey (VR-12), with a higher score indicating better quality of life.²⁰ From 01/01/2006 to 30/04/2014, the Short Form 12 (SF-12) was collected.²¹ From 01/05/2014, SF-12 collection was replaced by VR-12. Questions and responses are near identical for SF-12 and VR-12, and the SF-12 scores were converted to VR-12 scores.

The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) is a multidimensional, self-administered outcome measure that consists of 24 items covering 3 subscales: pain (range 0-20), stiffness (range 0-8), and physical function (0- 68). It is validated, reliable, sensitive to change, and proven to be a responsive instrument for THA and TKA.¹⁴⁻¹⁹

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Harris Hip Score (HHS)				
HHS Follow-Up (hhsfollowup)	01/01/2006 to 31/12/2011	Binary	0=No; 1=Yes	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Pain (hhspain)	01/01/2006 to 31/12/2011	Categorical	1=No pain 2=Slight	Mail out and follow-up phone call Follow-up:

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			3=Mild 4=Moderate 5=Severe 6=Disabled	1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Limp (hhslimp)	01/01/2006 to 31/12/2011	Categorical	1=Not at all 2=Slight 3=Moderate 4=Severe	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Support (hhssupport)	01/01/2006 to 31/12/2011	Categorical	1=None 2=Stick (for long walk) 3=Stick all the time 4=One crutch 5=Two sticks 6=Walker, two crutches or unable to walk	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Distance Walked (hhsdistancewalked)	01/01/2006 to 31/12/2011	Categorical	1=Unlimited 2=Six blocks or >30 minutes 3=Two or three blocks or > 15 minutes 4=Indoors only 5=Cannot walk – use wheelchair	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Stairs (hhsstairs)	01/01/2006 to 31/12/2011	Categorical	1=Normally 2=Using banisters 3=Able to use some method 4=Unable to climb stairs	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Shoes and Socks (hhsshoesandsocks)	01/01/2006 to 31/12/2011	Categorical	1=With ease 2=With difficulty 3=Unable put on shoes and socks	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Sitting (hhssitting)	01/01/2006 to 31/12/2011	Categorical	1=On any chair 2=On a high 3=Unable to sit for more than half an hour	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Transport (hhstransport)	01/01/2006 to 31/12/2011	Categorical	1=Easily 2=Able to but not easily 3=Unable	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years

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HHS Degrees of Flexion (hhsabsdefflexion)	01/01/2006 to 31/12/2011	Categorical	0=No; 1=Yes	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Degrees of Adduction (hhsabsdefadduct)	01/01/2006 to 31/12/2011	Categorical	0=No; 1=Yes	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Degrees of Rotation (hhsabsdefrot)	01/01/2006 to 31/12/2011	Categorical	0=No; 1=Yes	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Limb Length Discrepancy (hhsabsdeflldisc)	01/01/2006 to 31/12/2011	Categorical	0=No; 1=Yes	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Range of Motion – Flexion [degrees] (hhsromflexion)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 80 (20); 0 to 140	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Range of Motion – Extension [degrees] (hhsromextension)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 6 (12); 0 to 60	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Range of Motion – Abduction [degrees] (hhsromabduction)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 16 (15); -15 to 80	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Range of Motion – External Rotation [degrees] (hhsromexternalrotation)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 11 (12); -30 to 80	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years

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HHS Range of Motion – Internal Rotation [degrees] (hhsrominternalrotation)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 3 (8); -45 to 60	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Range of Motion – Adduction [degrees] (hhsromadduct)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 6 (8); -25 to 45	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Pain Score (hhs painscore)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 12 (7); 0 to 44	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Gait Score (hhs gait score)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 12 (8); 0 to 33	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Activities Score (hhs activities score)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 8 (5); 0 to 47	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Deformity Score (hhs deformity score)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 3 (1); 0 to 4	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Range of Motion Score (hhs rom score)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 4 (1); 0 to 5	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
HHS Total Score (hhs total score)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 39 (14); 5 to 94	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years

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Knee Society Score (KSS)				
KSS Follow-Up (kssfollowup)	01/01/2006 to 31/12/2011	Binary	0=No; 1=Yes	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
KSS Range of Motion [degrees] (kssrom)	01/01/2006 to 31/12/2011	Numeric	105 (16); 0 to 155	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
KSS Extension Lag [degrees] (kssexlag)	01/01/2006 to 31/12/2011	Categorical	1=<10 2=10-20 3=>20	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
KSS Flexion Contracture [degrees] (kssflexcontracture)	01/01/2006 to 31/12/2011	Categorical	1=5-10 2=10-15 3=16-20 4=>20	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
KSS Mediolateral Stability [degrees] (kssmlstability)	01/01/2006 to 31/12/2011	Categorical	1=<5 2=6-9 3=10-14 4=15	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
KSS Antero-Posterior Stability [mm] (kssapstability)	01/01/2006 to 31/12/2011	Categorical	1=<5 2=5-10 3=>10	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
KSS Alignment [degrees] (kssalignment)	01/01/2006 to 31/12/2011	Categorical	0 = 1 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5-10 6 = 11 7 = 12	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years

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			8=13 9=4 10=15 11=>15	
KSS Knee Score (ksskneescore)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 37 (12); 0 to 97	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
KSS Functional Score (kssfunctionalscore)	01/01/2006 to 31/12/2011	Numeric	Preoperative mean (SD); range 38 (21); 0 to 100	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. Annually to 5 years 3. 7 years, 10 years, 15 years, 20 years
Veterans Rand (VR12)				
VR12 Follow-Up (vr12followup)	01/05/2014 –	Binary	0=No; 1=Yes	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 General Health (vr12generalhealth)	01/05/2014 –	Categorical	5=Poor 4=Fair 3=Good 2=Very good 1=Excellent	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Moderate Activities (vr12moderateactivities)	01/05/2014 –	Categorical	1=Yes, limited a lot 2=Yes, limited a little 3=No, not limited at all	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Climbing Several Stairs (vr12climbingstairs)	01/05/2014 –	Categorical	1=Yes, limited a lot 2=Yes, limited a little 3=No, not limited at all	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years

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VR12 Accomplished Less Due To Physical Problems (vr12physicalhealthless)	01/05/2014 –	Categorical	1=No, none of the time 2=Yes, a little of the time 3=Yes, some of the time 4=Yes, most of the time 5=Yes, all of the time	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Limited Due To Physical Problems (vr12physhlthlimwork)	01/05/2014 –	Categorical	1=No, none of the time 2=Yes, a little of the time 3=Yes, some of the time 4=Yes, most of the time 5=Yes, all of the time	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Accomplished Less Due To Emotional Problems (vr12emotproblemsless)	01/05/2014 –	Categorical	1=No, none of the time 2=Yes, a little of the time 3=Yes, some of the time 4=Yes, most of the time 5=Yes, all of the time	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Limited Due To Emotional Problems (vr12emotproblemslimwork)	01/05/2014 –	Categorical	1=No, none of the time 2=Yes, a little of the time 3=Yes, some of the time 4=Yes, most of the time 5=Yes, all of the time	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
Vr12 Pain Interference (vr12paininterference)	01/05/2014 –	Categorical	1=Not at all 2=A little bit 3=Moderately 4=Quite a bit 5=Extremely	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Feeling Peaceful (vr12feelcalmpeace)	01/05/2014 –	Categorical	1=All of the time 2=Most of the time 3=A good bit of the time 4=Some of the time 5=A little of the time 6=None of the time	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Have Energy (vr12havelotofenergy)	01/05/2014 –	Categorical	1=All of the time 2=Most of the time 3=A good bit of the time 4=Some of the time 5=A little of the time	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months

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			6=None of the time	3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Feeling Downhearted (vr12feeldown)	01/05/2014 –	Categorical	1=All of the time 2=Most of the time 3=A good bit of the time 4=Some of the time 5=A little of the time 6=None of the time	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Interference with Social Activities (vr12socialactiv)	01/05/2014 –	Categorical	1=All of the time 2=Most of the time 3=Some of the time 4=A little of the time 5=None of the time	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
Vr12 Physical Health (vr12physicalhealthnow)	01/05/2014 –	Categorical	1=Much better 2=Slightly better 3=About the same 4=Slightly worse 5=Much worse	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Emotional Health (vr12emotionalhealthnow)	01/05/2014 –	Categorical	1=Much better 2=Slightly better 3=About the same 4=Slightly worse 5=Much worse	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Physical Score (vr12physicalscore)	01/05/2014 –	Numeric	Preoperative mean (SD); range TKA 24.5 (8.2); 3.6 to 60.3 THA 23.6 (8.0); 4.5 to 62.2	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
VR12 Mental Score (vr12mentalscore)	01/05/2014 –	Numeric	Preoperative mean (SD); range TKA 45.9 (15.5); 5.9 to 77.0 THA 43.7 (15.7); 6.0 to 76.4	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years, 7 years, 10 years and 15 years
Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)				

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WOMAC Follow-Up (womacfollowup)	01/01/12 –	Binary	1=Yes, 0=No	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Pain on Walking (womacpainwalking)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Pain Up and Down Stairs (womapainupdownstairs)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Pain in Bed (womacpaininbed)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Pain Sitting and Lying (womacpainsittinglying)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Pain on Standing (womacpainstanding)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years

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WOMAC Stiffness on Waking (womacstiffnesswakening)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Stiffness on Sitting and Lying (womacstiffnesssittinglying)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Descending Stairs (womacmotdescstairs)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Ascending Stairs (womacmotascstairs)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Rising from Sitting (womacmotrising)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Standing (womacmotstanding)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years

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WOMAC Function Bending to the Floor (womacmotbending)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Walking on Flat Surfaces (womacmotwalking)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Getting In and Out of Car (womacmotinoutcar)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Going Shopping (womacmotshopping)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Putting On Your socks or Stockings (womacmotsocks)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Rising From the Bed (womacmotrisingfrombed)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years

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WOMAC Function Taking Off Your Socks or Stockings (womacmotoffsocks)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Lying in Bed (womacmotlyinginbed)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Getting In or Out of Bath (womacmotinoutbath)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Sitting (womacmotsitting)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Getting On or Off the Toilet (womacmotonofftoilet)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Performing Heavy Domestic Duties (womacmotheavyduties)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years

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WOMAC Function Performing Light Domestic Duties (womacmotlightduties)	01/01/12 -	Categorical	0=None 1=Mil 2=Moderate 3=Severe 4=Extreme	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Pain Score (womacpainscore)	01/01/2012 –	Numeric	Preoperative mean (SD); range TKA 12.4 (3.6); 0.0 to 20.0 THA 12.7 (3.8); 0.0 to 20.0	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Motion Score (womacmotscore)	01/01/2012 –	Numeric	Preoperative mean (SD); range TKA 5.3 (1.7); 0.0 to 8.0 THA 5.5 (1.7); 0.0 to 8.0	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Function Score (womacfunctionscore)	01/01/2012 –	Numeric	Preoperative mean (SD); range TKA 42.0 (12.4); 0.0 to 68.0 THA 44.9 (12.4); 5.0 to 68.0	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years
WOMAC Total Score (womactotalscore)	01/01/2012 –	Numeric	Preoperative mean (SD); range TKA 59.6 (16.6); 2.0 to 96.0 THA 63.1 (16.7); 10.0 to 96.0	Mail out and follow-up phone call Follow-up: 1. Pre-operative 2. 3 or 6 months 3. 1 year, 2 years, 5 years 7 years, 10 years,15 years,20 years

4. Secondary Data Elements

4.1 Implant and Bone Graft Details (Hip)

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
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Liner Size (acetabulumlinersizeoutdiam)		String	Various labels depending on manufacturer's specifications	As per manufacturer implant label
Acetabulum Cement Brand (acetabulumcementbrand)		String	1=ABSIMPLEX 2=BIOSEL 3=CMW1G 4=CMW1R 5=CMW2G 6=CMWE 7=CMWEG 8=PALACOS 9=PALACOS MV&G 10=PALACOS R&G 11=SIMPLEX 12=SMARTSET GHV 13=SMARTSET GMV E	As per manufacturer implant label
Cup Size (acetabulumcupsize)		String	Various labels depending on manufacturer's specifications	As per manufacturer implant label
Liner Angle (acetabulumlinerangle)		String	1=0 degrees 2=0 degrees 3=20 degrees 4=Hooded 5=Other	As per manufacturer implant label
Number of Screws Used (acetabulumnbofscrews)		Numeric	0 to 11	As per manufacturer implant label
Screws Used (acetabulumscrowsused)		Binary	0=No; 1=Yes	As per manufacturer implant label
Femur Cement Type (femuracetabulumcementtype)		Binary	1=Plain 2=Antibiotic	As per manufacturer implant label
Femur Cement Brand (femurcementbrand)		String	1=ABSIMPLEX 2=BIOSEL 3=CMW1G 4=CMW1R 5=CMW2G 6=CMWE 7=CMWEG 8=PALACOS 9=PALACOS MV&G 10=PALACOS R&G 11=SIMPLEX 12=SMARTSET GHV	As per manufacturer implant label

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			13=SMARTSET GMV E	
Neck Offset (femurneckoffset)		String	Various labels depending on manufacturer's specifications	As per manufacturer implant label
Femur Size (femursize)		String	Various labels depending on manufacturer's specifications	As per manufacturer implant label

1

2

4.2 Implant and Bone Graft Details (Knee)

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Femur Cement Brand (femurcementbrand)		String	1=AB SIMPLEX 2=CMW1G 3=CMW1R 4=CMW2G 5=CMW3G 6=CMWE 7=CMWEG 8=DE PUY CMW 2 9=DURACEM 10=PALACOS 11=PALACOS MV&G 12=PALACOS R&G 13=PALAMED 14=REFOBACIN PLUS 15=SIMPLEX 16=SMARTSET GHV 17=SMARTSET GMV E 18=SULCEM 3	As per manufacturer implant label
Insert Thickness (insertthickness)		String	Various labels depending on manufacturer's specifications	As per manufacturer implant label
Patella Cement Brand (patellacementbrand)		String	1=AB SIMPLEX 2=CMW1G 3=CMW1R 4=CMW2G 5=CMW3G 6=CMWE 7=CMWEG	As per manufacturer implant label

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			8=DE PUY CMW 2 9=DURACEM 10=PALACOS 11=PALACOS MV&G 12=PALACOS R&G 13=PALAMED 14=REFOBACIN PLUS 15=SIMPLEX 16=SMARTSET GHV 17=SMARTSET GMV E 18=SULCEM 3	
Patella Material (patellamaterial)		Categorical	1=PE implant 2=Metal backed 3=Other	As per manufacturer implant label
Patella Size (patellasize)		String	Various labels depending on manufacturer's specifications	As per manufacturer implant label
Patella Type (patellatype)		Categorical	1=Inset 2=Onlay Symmetric 3=Mobile 4=Onlay Asymmetric	As per manufacturer implant label
Tibial Cement Brand (tibiacementbrand)		String	1=AB SIMPLEX 2=CMW1G 3=CMW1R 4=CMW2G 5=CMW3G 6=CMWE 7=CMWEG 8=DE PUY CMW 2 9=DURACEM 10=PALACOS 11=PALACOS MV&G 12=PALACOS R&G 13=PALAMED 14=REFOBACIN PLUS 15=SIMPLEX 16=SMARTSET GHV 17=SMARTSET GMV E 18=SULCEM 3	As per manufacturer implant label
Tibial Size (tibialsize)		String	Various labels depending on manufacturer's specifications	As per manufacturer implant label

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Number of Screws (tibianbofscrews)		Numeric	Intraoperative Range 0 to 10	As per manufacturer implant label
Screws Used (tibiасrewsused)		Binary	0=No; 1=Yes	As per manufacturer implant label
Femur Size (femoralsize)		String	Various labels depending on manufacturer’s specifications	As per manufacturer implant label

- 1
- 2
- 3
- 4.3 Patient-Reported Outcome Measures
- The patient satisfaction score included in the following table was included with Socrates. Details are available on the [Socrates website](#).

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Patient Satisfaction - Follow-Up (patsatfollowup)		Binary	0=No; 1=Yes	
Patient Satisfaction – Relieve pain (patsatpain)		Categorical	1=Excellent 2=Very good 3=Good 4=Fair 5=Poor	
Patient Satisfaction – Increase activities (patsatactivities)		Categorical	1=Excellent 2=Very good 3=Good 4=Fair 5=Poor	
Patient Satisfaction – Perform heavy work or sport (patsatwork)		Categorical	1=Excellent 2=Very good 3=Good 4=Fair 5=Poor	
Patient Satisfaction – Meet expectations (patsatexpectations)		Categorical	1=Excellent 2=Very good 3=Good 4=Fair 5=Poor	
Patient Satisfaction – Willingness to have the operation again on another joint (patsatagain)		Categorical	1=Definitely yes 2=Probably yes 3=Possibly not 4=Definitely not	

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1 4.4 Hospital Cost Data

Variable (code)	Collection Period	Type of Variable	Relevant definition/ mean (SD); range	Data Source(s)
Hospital Cost Data - Available (costdata)		Binary	0=No; 1=Yes	Hospital Decision Support Unit
Knee				
Total Direct Hospital Costs (totalcost)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 16,226 (8,643); 7,951 to 86,269 2007: 19,840 (10,233); 9,991 to 109,863 2012: 18,152 (4,633); 8,264 to 55,614 2013: 19,607 (6,631); 6,531 to 94,363 2014: 19,636 (3,936); 11,689 to 51,137 2015: 19,277 (3,796); 10,348 to 43,266 2016: 19,616 (10,705) 9,039 to 180,810	Hospital Decision Support Unit
Allied Health (alliedhealthtotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 578 (364); 132 to 3,796 2007: 741 (463); 18 to 4,189 2012: 843 (386); 82 to 2,761 2013: 902 (432); 0 to 3,714 2014: 821 (398); 34 to 3,238 2015: 923 (447); 199 to 2,564 2016: 935 (687); 79 to 9,785	Hospital Decision Support Unit
Imaging (imagingtotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 177 (254); 60 to 2,241 2007: 168 (276); 0 to 2,019 2012: 174 (263); 0 to 1,805 2013: 162 (242); 0 to 1,652 2014: 191 (363); 66 to 3,108 2015: 164 (247); 66 to 1,703 2016: 195 (474) (52 to 5,702	Hospital Decision Support Unit
Surgical Care (medicalsurgtotal)	01/01/2006 to 31/12/2007	Numeric	Preoperative mean \$ (SD); range 2006: 1,168 (788); 553 to 7,158 2007: 1,288 (797); 521 to 7,947 2011:	Hospital Decision Support Unit

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	01/01/2012 to 31/12/2016		2012: 1,235 (425); 346 to 2,852 2013: 1,137 (415); 276 to 3,614 2014: 1,098 (375); 216 to 3,043 2015: 1,272 (493); 305 to 4,305 2016: 1,522 (924); 346 to 13,984	
Medical Care (medicalnonsurgtotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 161 (101); 46 to 780 2007: 139 (111); 38 to 897 2012: 1,293 (604); 357 to 5,590 2013: 1,390 (990); 189 to 12,685 2014: 1,337 (572); 443 to 5,623 2015: 1,277 (512); 389 to 4,196 2016: 1,198 (947); 327 to 15,595	Hospital Decision Support Unit
Nursing Care (nursingtotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 5,927 (4,302); 2,096 to 39,713 2007: 7,398 (5,418); 1,336 to 60,020 2012: 3,214 (1,348); 1,040 to 12,900 2013: 3,494 (2,109); 681 to 27,153 2014: 3,868 (1,360); 1,782 to 12,089 2015: 4,075 (1,560); 1,655 to 17,294 2016: 4,451 (3,561); 1,700 to 60,900	Hospital Decision Support Unit
Pathology (pathologytotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 115 (180); 11 to 1,993 2007: 106 (128); 3 to 1,072 2012: 266 (300); 53 to 1,852 2013: 270 (318); 0 to 2,322 2014: 254 (268); 14 to 2,160 2015: 249 (297); 61 to 3,269 2016: 267 (545); 36 to 7,816	Hospital Decision Support Unit
Pharmacy (pharmacytotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 523 (408); 211 to 4,276 2007: 538 (827); 163 to 11,563 2012: 463 (649); 154 to 11,931 2013: 532 (2,125); 125 to 37,541 2014: 355 (188); 147 to 2,577 2015: 293 (128); 76 to 1,098 2016: 381 (1,307); 102 to 23,677	Hospital Decision Support Unit

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Theatre (theatretotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 6,192 (2,139); 2,967 to 19,308 2007: 7,380 (2,835); 4,448 to 33,832 2012: 10,616 (2,940) 3,174 to 25,429 2013: 11,595 (2,719); 1,553 to 29,845 2014: 11,600 (2,159); 6,231 to 23,556 2015: 10,920 (1,857); 4,240 to 18,146 2016: 10,431 (2,564); 4,403 to 28,345	Hospital Decision Support Unit
Prosthesis (prosthesis)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 3,739 (1,773); 880 to 12,511 2007: 4,053 (1,600); 2,490 to 12,155 2012: 6,598 (2,752); 179 to 21,401 2013: 7,572 (2,484); 0 to 25,973 2014: 7,663 (1,903); 3,102 to 16,219 2015: 7,017 (1,511); 2,778 to 13,312 2016: 6,066 (1,615); 1,121 to 14,383	Hospital Decision Support Unit
Hip				
Total Direct Hospital Costs (totalcost)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 20,846 (17,340); 9,699 to 159,373 2007: 20,437 (12,268); 10,252 to 128,102 2012: 18,154 (5,019); 7,613 to 56,977 2013: 18,630 (5,905); 11,393 to 60,929 2014: 19,137 (5,165); 11,461 to 58,653 2015: 20,569 (15,741); 12,892 to 267,874 2016: 18,661 (4,746); 11,157 to 65,474	Hospital Decision Support Unit
Allied Health (alliedhealthtotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 797 (866); 141 to 8,724 2007: 886 (1,009); 199 to 12,297 2012: 820 (431); 92 to 3,617 2013: 943 (618); 134 to 4,888 2014: 875 (523); 17 to 3,581 2015: 941 (1,117); 0 to 18,719 2016: 845 (617); 0 to 7,609	Hospital Decision Support Unit
Imaging (imagingtotal)		Numeric	Preoperative mean \$ (SD); range	Hospital Decision Support Unit

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	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016		2006: 284 (902); 65 to 10,629 2007: 199 (429); 0 to 4,727 2012: 211 (320); 0 to 2,076 2013: 296 (693); 71 to 6,791 2014: 237 (438); 0 to 4,796 2015: 255 (628); 0 to 9,030 2016: 254 (595); 57 to 7,888	
Surgical Care (medicalsurgtotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 1,438 (1,636); 19 to 16,229 2007: 1,278 (823); 483 to 7,609 2012: 1,281 (637); 201 to 9,441 2013: 1,171 (496); 251 to 3,381 2014: 1,168 (497); 305 to 3,675 2015: 1,414 (762); 371 to 11,033 2016: 1,420 (537); 234 to 4,236	Hospital Decision Support Unit
Medical Care (medicalnonsurgtotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 218 (298); 40 to 3,018 2007: 157 (242); 37 to 2,581 2012: 1,240 (802); 382 to 9,276 2013: 1,362 (845); 563 to 7,578 2014: 1,357 (757); 445 to 7,538 2015: 1,418 (2,309); 163 to 36,609 2016: 1,053 (607); 308 to 9,083	Hospital Decision Support Unit
Nursing Care (nursingtotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 9,326 (9,110); 1,959 to 88,696 2007: 8,653 (6,566); 2,017 to 62,517 2012: 3,143 (1,916); 994 to 21,817 2013: 3,531 (2,151); 1,398 to 18,347 2014: 3,931 (1,990); 1,549 to 21,978 2015: 4,547 (7,917); 553 to 132,237 2016: 3,954 (1,817); 1,000 to 20,100	Hospital Decision Support Unit
Pathology (pathologytotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 241 (649); 6 to 6,818 2007: 162 (349); 6 to 4,278 2012: 374 (520); 0 to 5,006 2013: 412 (557); 0 to 4,743	Hospital Decision Support Unit

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			2014: 354 (386); 14 to 3,387 2015: 369 (721); 0 to 11,308 2016: 317 (355); 14 to 2,178	
Pharmacy (pharmacytotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 562 (1,370); 42 to 12,129 2007: 424 (1,225); 115 to 16,223 2012: 437 (296); 177 to 4,029 2013: 405 (289); 147 to 3,059 2014: 370 (273); 147 to 3,743 2015: 363 (658); 87 to 9,758 2016: 280 (153); 95 to 1,771	Hospital Decision Support Unit
Theatre (theatretotal)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 6,948 (2,564); 767 to 27,507 2007: 7,624 (2,539); 2,284 to 28,719 2012: 10,446 (2,582); 2,064 to 28,993 2013: 10,279 (2,671); 4,664 to 39,240 2014: 10,614 (2,040) 5,903 to 27,389 2015: 11,066 (3,210); 6,241 to 46,138 2016: 10,361 (1,995); 5,991 to 30,816	Hospital Decision Support Unit
Prosthesis (prosthesis)	01/01/2006 to 31/12/2007 01/01/2012 to 31/12/2016	Numeric	Preoperative mean \$ (SD); range 2006: 4,227 (1,384); 0 to 14,217 2007: 4,235 (1,074); 0 to 9,558 2012: 6,677 (2,041); 23 to 18,876 2013: 6,430 (2,274); 0 to 32,506 2014: 6,746 (1,546); 3,379 to 20,042 2015: 6,990 (2,226); 3,404 to 34,669 2016: 6,379 (1,520); 2,400 to 25,793	Hospital Decision Support Unit

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