

Supplementary Table S1 Diagnosis codes used for the identification of patients with rheumatoid arthritis

Data source/description	Diagnosis codes ^a
The Danish National Patient Registry 1977- (hospital admissions) 1995- (outpatient care contacts) Criteria used: Registration of ≥ 2 ICD-8 or ICD-10 codes ≤ 90 days apart (last of which considered the date of diagnosis) from departments of internal medicine or rheumatology	ICD-10: DM05. 9 Seropositive rheumatoid arthritis DM06. 0 Seronegative rheumatoid arthritis DM06. 9 Unspecified rheumatoid arthritis DM05. 8 Other types of rheumatoid arthritis ICD-8: 712. 39 Arthritis rheumatoides alia et non specificata 712. 19 Syndroma Felty 712. 59 Fibrositis rheumatoides chronica nodularis
DANBIO 2000- (initiation year. Registration of newly referred rheumatoid arthritis patients has been mandatory since 2006) Criteria used: Registration of ICD-10 code together with a registered date of diagnosis (or, if missing, of symptom start) amongst individuals with ≥ 2 contacts (rheumatology nurse or physician) and/or commencing antirheumatic treatment.	ICD-10: DM05. 9 Seropositive rheumatoid arthritis DM06. 0 Seronegative rheumatoid arthritis DM06. 9 Unspecified rheumatoid arthritis
ICD the International Classification of Diseases a) source of diagnostic codes (last accessed 04 October 2021), URL: https://medinfo.dk/sks/brows.php	

Supplementary Table S2 Surgical procedure codes used for the identification of orthopedic implants in the Danish National Patient Registry, hospital admissions from 1977 and forward and outpatient care contacts from 1995 and forward

Surgical procedure codes ^a
NOMESCO codes (1996-): KNBB Primary prosthetic replacement of joints of shoulder KNBC Secondary prosthetic replacement of joints of shoulder KNBG49 Fusion of joint of shoulder with internal fixation KNBJ4y Internal fixation of fracture of shoulder or upper arm using wire, rod, cerclage or pin KNBJ5y Internal fixation of fracture of shoulder or upper arm using intramedullary nail KNBJ6y Internal fixation of fracture of shoulder or upper arm using plate and screws KNBJ 7y Internal fixation of fracture of shoulder or upper arm using screws alone KNBJ 8y Internal fixation of fracture of shoulder or upper arm using other or combined methods KNCB Primary prosthetic replacement of elbow joint KNCC Secondary prosthetic replacement of elbow joint KNCG49 Fusion of elbow joint with internal fixation KN CJ4y Internal fixation of fracture of elbow or forearm using wire, rod, cerclage or pin KN CJ 5y Internal fixation of fracture of elbow or forearm using intramedullary nail KN CJ 6y Internal fixation of fracture of elbow or forearm using plate and screws KN CJ 7y Internal fixation of fracture of elbow or forearm using screws alone

KNCJ 8y Internal fixation of fracture of elbow or forearm using other or combined methods, e.g. using sliding nail
 KNCT51 Osteosynthesis of pseudarthrosis of elbow or forearm
 KNCT53 Osteosynthesis and external fixation of pseudarthrosis of elbow or forearm
 KNDB Primary prosthetic replacement of joint of wrist and hand
 KNDC Secondary prosthetic replacement of joints of wrist and hand
 KNDG4y Fusion of joint of wrist or hand with internal fixation
 KNDJ4y Internal fixation of fracture of wrist or hand using wire, rod, cerclage or pin
 KNDJ 5y Internal fixation of fracture of wrist or hand using intramedullary nail
 KNDJ 6y Internal fixation of fracture of wrist or hand using plate and screws
 KNDJ 7y Internal fixation of fracture of wrist or hand using screws alone
 KNDJ 8y Internal fixation of fracture of wrist or hand using other or combined methods, e.g. using sliding nail
 KNDT49 Correction of deformity of wrist or hand using external or internal fixation
 KNDT51 Osteosynthesis of pseudarthrosis of wrist or hand
 KNDT53 Osteosynthesis and external fixation of pseudarthrosis of wrist or hand
 KNFB Primary prosthetic replacement of hip joint
 KNFC Secondary prosthetic replacement of hip joint
 KNFG49 Fusion of hip joint with internal fixation
 KNFJ4y Internal fixation of fracture of femur using wire, rod, cerclage or pin
 KNFJ 5y Internal fixation of fracture of femur using intramedullary nail
 KNFJ 6y Internal fixation of fracture of femur using plate and screws
 KNFJ 7y Internal fixation of fracture of femur using screws alone
 KNFJ 8y Internal fixation of fracture of femur using other or combined methods, e. g. using sliding nail or screw
 KNFT51 Osteosynthesis of pseudarthrosis of femur
 KNFT53 Osteosynthesis and external fixation of pseudarthrosis of femur
 KNGB Primary prosthetic replacement of knee joint
 KNGC Secondary prosthetic replacement of knee joint
 KNGG49 Fusion of knee joint with internal fixation
 KNGJ4y Internal fixation of fracture of knee or lower leg using wire, rod, cerclage or pin
 KNGJ 5y Internal fixation of fracture of knee or lower leg using intramedullary nail
 KNGJ 6y Internal fixation of fracture of knee or lower leg using plate and screws
 KNGJ 7y Internal fixation of fracture of knee or lower leg using screws alone
 KNGJ 8y Internal fixation of fracture of knee or lower leg using other or combined methods, e.g. using sliding nail
 KNGT51 Osteosynthesis of pseudarthrosis of knee or lower leg
 KNGT53 Osteosynthesis and external fixation of pseudarthrosis of knee or lower leg
 KNHB Primary prosthetic replacement of joint of ankle and foot
 KNHC Secondary prosthetic replacement of joint of ankle and foot
 KNHG4y Fusion of joint of ankle or foot with internal fixation
 KNHJ4y Internal fixation of fracture of ankle or foot using wire, rod, cerclage or pin
 KNHJ 5y Internal fixation of fracture of ankle or foot using intramedullary nail
 KNHJ 6y Internal fixation of fracture of ankle or foot using plate and screws
 KNHJ 7y Internal fixation of fracture of ankle or foot using screws alone
 KNHJ 8y Internal fixation of fracture of ankle or foot using other or combined methods, e.g.: using sliding nail
 KNHT49 Correction of deformity of ankle or foot using external or internal fixation
 KNHT51 Osteosynthesis of pseudarthrosis of ankle or foot

KNHT53 Osteosynthesis and external fixation of pseudarthrosis of ankle or foot
KNAJ4y Internal fixation of fracture of spine using wire, rod, cerclage or pin
KNAJ6y Internal fixation of fracture of spine using plate and screws
KNAJ7y Internal fixation of fracture of spine using screws alone
KNAJ 8y Internal fixation of fracture of spine using other or combined methods
KNAG4y Interbody fusion of spine with internal fixation
KNAB Primary prosthetic replacement of joints of spine
KNAC Secondary prosthetic replacement of joints of spine
KNAT1y Anterior traction of spine using internal correctional instrument
KNAT2y Posterior traction of spine using internal correctional instrument

Surgery and treatment classification codes (1971-1995):

7000 (and subgroups) Op. allopl. art. cinguli membri sup. et brachii
7001 (and subgroups) Op. alloplastica articuli cubiti et antebrachii
7002 (and subgroups) Operatio alloplastica articuli carpi et manus
7003 (and subgroups) Operatio alloplastica articuli coxae et femoris
7004 (and subgroups) Operatio alloplastica articuli genus et cruris
7005 (and subgroups) Op. allopl. articuli regionis talocruralis et pedis
7020 (and subgroups) Op. allopl. c. transplant. ossis cing. membri sup. et brach
7021 (and subgroups) Op. allopl. c. transpl. ossis cubiti et antebrachii
7022 (and subgroups) Op. allopl. c. transplantatione ossis carpi et manus
7023 (and subgroups) Op. allopl. cum transplant. ossis coxae et femoris
7024 (and subgroups) Op. alloplast. c. transplant. ossis genus et cruris
7025 (and subgroups) Op. allopl. c. transpl. ossis reg. talocrur. et pedis
7040 (and subgroups) Op. allopl. c. osteosynth. cing. membri sup. et brachii
7041 (and subgroups) Op. allopl. c. osteosynthesis cubiti et antebrachii
7042 (and subgroups) Op. alloplastica c. osteosynthesis carpi et manus
7043 (and subgroups) Op. alloplast. c. osteosynthesis coxae et femoris
7044 (and subgroups) Op. alloplast. c. osteosynthesis genus et cruris
7045 (and subgroups) Op. alloplast. c. osteosynth. reg. talocrur. et pedis
7060 (and subgroups) Op. allo. c. o. synth. et transpl. os. cing. m. sup. et brach.
7061 (and subgroups) Op. allopl. c. osteosynth. et transpl. os. cubit. antebr.
7062 (and subgroups) Op. allopl. c. osteosynth. et transpl. os. carpi et manus
7063 (and subgroups) Op. allopl. c. osteosynth. et transplant. coxae et fem.
7064 (and subgroups) Op. allopl. c. osteosynth. et transpl. os. genus et cruris
7065 (and subgroups) Op. allo. c. o. synth. et transpl. os. reg. talocrur. et ped.
75901 Operatio pro pseudarthrosis cum osteosynthesis c m s et b
75904 Op. pro pseudarthr. c. transpl. os. et osteosynth. c m s et b
75911 Operatio pro pseudarthrosis cum osteosynthesis c et a
75914 Op. pro pseudarthr. c. transpl. os. et osteosynth. c et a
75921 Operatio pro pseudarthrosis cum osteosynthesis c et m
75924 Op. pro pseudarthr. c. transpl. os. et osteosynth. c et m
75931 Operatio pro pseudarthrosis cum osteosynthesis c et f
75934 Op. pro pseudarthr. c. transpl. os. et osteosynth. c et f
75941 Operatio pro pseudarthrosis cum osteosynthesis g et c
75944 Op. pro pseudarthr. c. transpl. os. et osteosynth. g et c
75951 Operatio pro pseudarthrosis cum osteosynthesis r t et p
75954 Op. pro pseudarthr. c. transpl. os. et osteosynth. r t et p
75961 Operatio pro pseudarthrosis cum osteosynthesis r t
75964 Op. pro pseudarthr. c. transpl. os. et osteosynth. r t

75971 Operatio pro pseudarthrosis cum osteosynthesis c
 75974 Op. pro pseudarthr. c. transplant. os. et osteosynth. c
 75981 Operatio pro pseudarthrosis cum osteosynthesis p
 75984 Op. pro pseudarthr. c. transplant. os. et osteosynth. p
 75991 Operatio pro pseudarthrosis cum osteosynthesis a s n s
 75994 Op. pro pseudarthr. c. transpl. os. et osteosynth. a s n s
 7520 (and subgroups) Osteosynthesis (interna) fracturae, cing. membri sup. et brach
 7521 (and subgroups) Osteosynthesis (interna) fracturae, cubit. ,antebr.
 7522 (and subgroups) Osteosynthesis (interna) fracturae, carpi et manus
 7523 (and subgroups) Osteosynthesis (interna) fracturae, coxae et fem.
 7524 (and subgroups) Osteosynthesis (interna) fracturae, genus et cruris
 7525 (and subgroups) Osteosynthesis (interna) fract., reg. talocrur. et pedis
 7526 (and subgroups) Osteosynthesis (interna) fracturae, regionis thoracalis
 7527 (and subgroups) Osteosynthesis (interna) fracturae, columnae
 7528 (and subgroups) Osteosynthesis (interna) fracturae, pelvis
 7529 (and subgroups) Osteosynthesis (interna) fracturae, alia s. non specificata
 75636 Osteosynthesis fracturae colli femoris
 75637 Osteosynthesis fracturae pertrochantericae femoris
 75638 Osteosynthesis fracturae subtrochantericae femoris
 82500 Osteosynthesis colli fem. (a. m. smith petersen, mclaughlin)
 82520 Operatio alloplastica humeri partialis
 82540 Operatio alloplastica humeri totalis
 82560 Operatio alloplastica cubiti partialis
 82580 Operatio alloplastica cubiti totalis
 82600 Operatio alloplastica carpi
 82620 Operatio alloplastica metacarpophalangea
 82640 Operatio alloplastica interphalangea manus
 82680 Operatio alloplastica capitis femoris
 82700 Operatio alloplastica coxae (cup-plastik)
 82740 Operatio alloplastica coxae totalis
 82780 Operatio alloplastica genus partialis
 82800 Operatio alloplastica genus totalis
 82830 Operatio alloplastica talocruralis
 74400 Arthrodesis articuli c m s et b
 74410 Arthrodesis articuli c et a
 74420 Arthrodesis articuli c et m
 74430 Arthrodesis articuli c et f
 74440 Arthrodesis articuli g et c
 74450 Arthrodesis articuli r t et p
 74460 Arthrodesis articuli r t
 74470 Arthrodesis articuli c
 74480 Arthrodesis articuli p
 74490 Arthrodesis articuli a s n s
 75600 Arthrodesis humeroscapularis
 75620 Arthrodesis cubiti
 75640 Arthrodesis radiocarpea
 75660 Arthrodesis carpi
 75680 Arthrodesis carpometacarpea
 75700 Arthrodesis metacarpophalangea

75720 Arthrodesis interphalangea manus	
75760 Arthrodesis coxae	
75780 Arthrodesis genus	
75800 Arthrodesis talocruralis	
75820 Arthrodesis tarsi	
75840 Panarthrodesis pedis	
75860 Arthrodesis tarsometatarsalis	
75880 Arthrodesis metatarsophalangea	
75900 Arthrodesis interphalangea pedis	
84510 Arthrodesis sub talo	
84520 Arthrodesis genus	
84530 Arthrodesis coxae	
84540 Arthrodesis talocruralis	
84550 Panarthrodesis pedis	
7007 (and subgroups) Operatio alloplastica articuli columnae	
7008 (and subgroups) Operatio alloplastica articuli pelvis	
7009 (and subgroups) Op. alloplastica articuli alia s. non specificata	
7027 (and subgroups) Op. allopl. c. transplantatione ossis columnae	
7028 (and subgroups) Op. allopl. c. transplantatione ossis pelvis	
7029 (and subgroups) Op. allopl. c. transplant. ossis alia s. non spec.	
7047 (and subgroups) Op. alloplastica cum osteosynthesis columnae	
7048 (and subgroups) Op. alloplastica cum osteosynthesis pelvis	
7049 (and subgroups) Op. allopl. c. osteosynthesis alia s. non specificata	
7067 (and subgroups) Op. allopl. c. osteosynth. et transpl. ossis columnae	
7068 (and subgroups) Op. allopl. c. osteosynth. et transpl. ossis pelvis	
7069 (and subgroups) Op. allopl. c. osteosynth. et transpl. os. al. s. non spec.	
7006 (and subgroups) Operatio alloplastica articuli regionis thoracalis	
NOMESCO Nordic Medico-Statistical Committee	
a) Sources of surgical procedure codes (last accessed 04 October 2021), URL: https://sundhedsdatastyrelsen.dk/da/rammer-og-retningslinjer/om-klassifikationer/sks-klassifikationer/klassifikation-operationer and https://sundhedsdatastyrelsen.dk/-/media/sds/filer/rammer-og-retningslinjer/klassifikationer/sks-download/lukkede-klassifikationer/operations-behandlings-klassifikation.txt?la=da	

Supplementary Table S3 Codes used for the identification of comorbidities

Condition	Diagnosis codes/ATC codes and surgical procedure codes ^a
Diabetes mellitus (≥2 contacts with one of the following diagnosis codes in The Danish National Patient Registry or one or more filled prescriptions of glucose-lowering medication, whichever comes first)	The Danish National Patient Registry (1977-): ICD-10: E10 (and subgroups) Type 1 diabetes mellitus E11 (and subgroups) Type 2 diabetes mellitus ICD-8: 249 (and subgroups) Insulin-dependent diabetes mellitus 250 (and subgroups) Non-insulin-dependent diabetes mellitus The Register of Medicinal Products Statistics (1995-2017): ATC: A10 Drugs used in diabetes

Chronic heart failure ^b	The Danish National Patient Registry (1977-): ICD-10: DI50 (and subgroups) Heart failure DI42 (and subgroups) Cardiomyopathy DI110 Hypertensive heart disease with (congestive) heart failure DI130 Hypertensive heart and renal disease with (congestive) heart failure DI132 Hypertensive heart and renal disease with both (congestive) heart failure and renal failure DJ81 Pulmonary oedema ICD-8: 425 Cardiomyopathy 428 Other myocardial insufficiency 4270 Decompensated heart failure 4271 Cardiac asthma
Chronic liver disease	The Danish National Patient Registry (1977-): ICD-10: DK70 (and subgroups) Alcoholic liver disease DK71 (and subgroups) Toxic liver disease DK72 (and subgroups) Hepatic failure, not elsewhere classified DK73 (and subgroups) Chronic hepatitis, not elsewhere classified DK74 (and subgroups) Fibrosis and cirrhosis of liver DK75 (and subgroups) Other inflammatory liver diseases DK76 (and subgroups) Other diseases of liver DK77 (and subgroups) Liver disorders in diseases classified elsewhere KB150 Hepatitis A with hepatic coma KB160 Acute hepatitis B with delta-agent (coinfection) with hepatic coma KB190 Unspecified viral hepatitis with hepatic coma ICD-8: 571 (and subgroups) Cirrhosis, fibrosis or steatosis of the liver 572 (and subgroups) Suppurative hepatitis and liver abscess 456 Esophageal varices
Chronic obstructive pulmonary disease	The Danish National Patient Registry (1977-): ICD-10: DJ41 (and subgroups) Simple and mucopurulent chronic bronchitis DJ42 (and subgroups) Unspecified chronic bronchitis DJ43 (and subgroups) Emphysema DJ44 (and subgroups) Other chronic obstructive pulmonary disease ICD-8: 491 (and subgroups) Chronic bronchitis 492 (and subgroups) Emphysema
HIV infection	The Danish National Patient Registry (1977-): ICD-10: DB20 Human immunodeficiency virus [HIV] disease resulting in infectious and parasitic diseases DB21 Human immunodeficiency virus [HIV] disease resulting in malignant neoplasms

	DB22 Human immunodeficiency virus [HIV] disease resulting in other specified diseases DB23 Human immunodeficiency virus [HIV] disease resulting in other conditions DB24 Unspecified human immunodeficiency virus [HIV] disease ICD-8: 07983 Acquired immunodeficiency syndrome
Cancer (except non-melanoma skin cancer), look-back period was 5 years before inclusion	The Danish National Patient Registry (1977-): ICD-10: DC00-DC96 Malignant neoplasms, not including DC44 Other malignant neoplasms of skin and DC460 Kaposi sarcoma of skin ICD-8: 140-209 Malignant neoplasms, not including 173 Other malignant neoplasm of skin
Solid organ transplantation	The Danish National Patient Registry (1977-): NOMESCO: KKAS10 and KKAS20 Kidney allotransplantation KFQA (and subgroups) Heart transplantation KFQB (and subgroups) Heart and lung transplantation KGDG (and subgroups) Lung transplantation KJJC00, KJJC10 and KJJC20 Liver allotransplantation KJJC30 and KJJC40 Liver xenotransplantation KJLE00, KJLE03, KJLE10, KJLE16 Pancreas allotransplantation KJFE00 Small bowel transplantation Surgery and treatment classification codes (1971-1995): 32209 Orthotopic heart transplantation 32219 Heterotopic heart transplantation 32229 Heart and lung transplantation 32250 Heart, lung and liver transplantation 57480 Kidney transplantation 35609 Lung transplantation 47270 Liver allotransplantation 47279 Liver transplantation 48840 and 48849 Pancreas transplantation
Vascular devices/pacemakers	The Danish National Patient Registry (1977-): NOMESCO codes (1996-): KJDB10B Percutaneous gastrostomy KFMD10 Replacement of aortic valve using biological prosthesis KFMD11 Transapical implantation of biological aortic valve KFMD12 Percutaneous transluminal replacement of aortic valve using biological prosthesis KFMD14 Percutaneous implantation of biological aortic valve KFMD20 Replacement of aortic valve using homograft KFMD30 Replacement of aortic root using homograft and reimplantation of coronary arteries KFMD00 Replacement of aortic valve using mechanical prosthesis KFGE00 Replacement of tricuspid valve using mechanical prosthesis KFGE10 Replacement of tricuspid valve using biological prosthesis KFGE20 Replacement of tricuspid valve using homograft KFKD00 Replacement of mitral valve using mechanical prosthesis

	KFKD10 Replacement of mitral valve using biological prosthesis KFKD20 Replacement of mitral valve using homograft KFJF00 Replacement of pulmonary valve using mechanical prosthesis KFJF10 Replacement of pulmonary valve using biological prosthesis KFJF20 Replacement of pulmonary valve using homograft KFJF30 Percutaneous transluminal replacement of pulmonary valve using biological prosthesis KFAA20 Repair of thoracic vena cava using graft KFAC20 Resection and reconstruction of thoracic vena cava using prosthetic graft KFAC25 Percutaneous transluminal angioplasty of thoracic vena cava with insertion of stent KFBE20 Reconstruction of pulmonary artery using tube graft KFBE35 Percutaneous transluminal angioplasty of pulmonary artery with insertion of stent KFCA45 Percutaneous insertion of stent into ascending aorta KFCA50 Resection and reconstruction of ascending aorta using tube graft KFCA60 Resection of aortic root and ascending aorta with reimplantation of coronary arteries and use of composite graft with mechanical valve prosthesis KFCA70 Resection of aortic root and ascending aorta with reimplantation of coronary arteries and use of biological valve prosthesis and tube graft KFCB35 Percutaneous insertion of stent into aortic arch KFCB40 Resection and reconstruction of aortic arch using tube graft KFCC45 Percutaneous insertion of stent into descending aorta KFCC50 Resection and reconstruction of descending aorta using tube graft KFCC60 Resection of descending aorta and reimplantation of branches KFCC70 Bypass to descending aorta using tube graft KFCC76 Bypass to thoracoabdominal aorta using tube graft KFCD35 Percutaneous insertion of stent into thoracoabdominal aorta KFCD50 Resection and reconstruction of thoracoabdominal aorta using tube graft KFCD60 Resection of thoracoabdominal aorta and reimplantation of branches KFCD70 Bypass of thoracoabdominal aorta using tube graft KFDJ30 Reconstruction of aorta for coarctation using tube graft KFDJ45 Percutaneous transluminal angioplasty of thoracic aorta in coarctation with insertion of stent KFDN02 Percutaneous transluminal insertion of stent into ductus arteriosus KFFH25 Percutaneous transluminal angioplasty of pulmonary vein with insertion of stent KFNG05 Percutaneous transluminal coronary angioplasty with insertion of stent KFAD10 Bypass operation on thoracic vena cava using tube graft KFBM30 Closure of prosthetic aorto-pulmonary connection KFDC00 Repair of persistent truncus arteriosus with simple prosthetic connection to pulmonary artery from right ventricle KFDC10 Repair of persistent truncus arteriosus using valved prosthesis KFDH30 Reconstruction of interrupted or hypoplastic aortic arch using tube graft KFDJ30 Reconstruction of aorta for coarctation using tube graft KFHF10 Repair of pulmonary atresia with ventriculo-pulmonary prosthesis or homograft KFJD20 Bypass of pulmonary valve with ventriculopulmonary prosthesis or homograft
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KFPF (and subgroups) Implantation or replacement of permanent epicardial pacemaker
KFPG (and subgroups) Implantation of permanent cardioverter-defibrillator

Surgery and treatment classification codes (1971-1995):

30930 Implantation of pacemaker
32122 Implantatio convertatoris cordis (defibrillator)
31268 Excisio valvulae aortae c. insert. prostheseos biologica
31269 Excisio valvulae aortae c. Insert. Prostheseos mechanica
31280 Excis. Valv. Aortae et resect. Aneurysma aort.c.insert.prosth
31129 Excisio valvulae mitralis c. insert. prostheseos biologica
31130 Excisio valvulae mitralis c. insert. prostheseos mechanica
30729 Excisio valvulae tricuspid. c. insert.prosth. (biol./mechan.)
30959 Excisio valvulae pulmonalis cum insertione prostheseos
30360 Implantatio valvulae cordis artificialis
31760 Operatio pro ruptura aortae c. implant.prosthesis vascularis
31780 Resectio arcus aortae cum implant. prostheseos vascular.
31980 Resectio coarctationis aortae cum implant. prostheseos vasc.
30610 Occl. defectus septi atriorum cum insertione prostheseos
30611 Occl. defectus septi atriorum cum insertione bioprostheseos
30809 Occl. defect. septi ventriculor. c. insert. prosth./bioprosth.
31340 Occl. defect. septi atriorum cum insertione prostheseos
31355 Anastom. aortico-pulmonalis c. insert. prosth. vascularis
31401 Resectio aneurysmatis aortae ascend. c. insert. prostheseos
31419 Resectio aneurysmatis aortae cum insertione prostheseos
31439 Resect. aneurysmatis aortae descend. c. insert. prosthesis
31459 Resect. aneurysmatis arcus aortae cum insert. prostheseos
31489 Resectio coarctationis aortae cum insertione prostheseos
31540 Occl. defect. septi ventriculorum cum insertione prostheseos
31659 Excisio aneurysmatis art. intrathor. c. insert. prostheseos
86720 Implantatio prostheseos subclavio-caroticae
86740 Implantatio prostheseos aorto-iliacae
86760 Implantatio prosthesis aortofemoralis
86900 Implantatio prosthesis arteriarum
87010 Implantatio prosthesis. a. brachiocephalica
87011 Implantatio prosthesis. a. carotidis communis
87012 Implantatio prosthesis. a. carotidis internae
87013 Implantatio prosthesis. a. carotidis externae
87014 Implantatio prosthesis. a. vertebralis
87015 Implantatio prosthesis. a. carotico-subclavia
87016 Implantatio prostheseos a. temporalis
87019 Implantatio prosthesis. a. colli aliae
87020 Implantatio prosthesis. a. subclaviae
87021 Implantatio prosthesis. a. axillaris
87022 Implantatio prosth. a. axillo-femoralis s. axillo-bifemoral.
87023 Implantatio prosthesis. a. brachialis
87024 Implantatio prosthesis. a. radialis s. ulnaris
87029 Implantatio prosthesis. a. extremitatis superioris aliae
87040 Implantatio prosth. aortae supracoecalis s. juxtarenal

	87041 Implantatio prothes. truncus coeliacus 87042 Implantatio prothes. a. mesentericae superioris 87043 Implantatio prothes. a. renalis 87044 Implantatio prothes. a. mesentericae inferioris 87049 Implantatio prothes. a. abdominis aliae 87050 Implantatio prothes. aortae infrarenalis 87051 Implantatio prothes. a. aorto-iliacae 87052 Implantatio prothes. a. aorto-biiliacae 87053 Implantatio prothes. a.aorto-iliacae/-femoralis 87054 Implantatio prothes. a. aorto-femoralis 87055 Implantatio prothes. a. aorto-bifemoralis 87060 Implantatio prothes. a. iliacae 87063 Implantatio prothes. a. iliaca-femoralis 87064 Implantatio prosth. a. iliaca-poplitealis per canal.obturat. 87069 Implantatio prosth. systematis aortae iliacae aliae 87070 Implantatio prothes. a. femoralis communis 87071 Implantatio prothes. a. profundae femoris 87072 Implantatio prothes. a. femoralis superficialis 87073 Implantatio prothes. a.femoro-femoralis "cross over" 87074 Implantatio prosth. a.femoro-popliteae suprageniculata 87075 Implantatio prosth. a.femoro-popliteae infrageniculata 87076 Implantatio prothes. a. femoro-cruralis 87081 Implantatio prothes. a. femoro-pedalis 87085 Implantatio prothes. a. popliteae 87087 Implantatio prothes. a. cruralis 87089 Implantatio prothes. a. extremitatis inferioris aliae 87099 Implantatio prothes. a. non specificata 30354 Stent arteriae coronariae 41765 Gastrostomia endoscopica
Chronic dialysis treatment (by first registration of a dialysis procedure in individuals also registered with a diagnosis code of chronic renal insufficiency)	The Danish National Patient Registry (1977-): Chronic renal insufficiency codes: ICD-10: DN18 (and subgroups) Chronic kidney disease DI12 (and subgroups) Hypertensive renal disease, not including DI129 Hypertensive renal disease without renal failure DI131 Hypertensive heart and renal disease with renal failure DI132 Hypertensive heart and renal disease with both (congestive) heart failure and renal failure Dialysis procedure codes: ICD-10: (1991-) DZ992 Dependence on renal dialysis SKS: (1999-) BJFD (and subgroups) Dialysis
Recent surgical procedure	the Danish National Patient Registry (1977-): All "K" codes, except where skin penetration was considered unlikely: KUDB02 Otoscopy KUDB22 Otomicroscopy

	KUDH02 (and subgroups) Nasal-oropharyngoscopy KUDQ02 Direct laryngoscopy KUDQ12 flexible fiberoptic laryngoscopy KUDQ22 Microlaryngoscopy KUEN02 Oropharyngoscopy KUEN12 Hypopharyngoscopy KUJH02 (and subgroups) Anoscopy KULD12 Vaginoscopy
ATC Anatomical Therapeutic Chemical, ICD the International Classification of Diseases, NOMESCO Nordic Medico-Statistical Committee, SKS Danish health authorities' classification codes (Sundhedsvæsnets Klassifikationssystem) a) Sources of diagnostic codes, ATC codes and surgical procedure codes (last accessed 04 October 2021), URL:https://medinfo.dk/sks/brows.php, https://sundhedsdatastyrelsen.dk/da/rammer-og-retningslinjer/om-klassifikationer/sks-klassifikationer/klassifikation-operationer, https://sundhedsdatastyrelsen.dk/-/media/sds/filer/rammer-og-retningslinjer/klassifikationer/sks-download/lukkede-klassifikationer/operations-behandlings-klassifikation.txt?la=da and https://pro.medicin.dk/Laegemiddelgrupper/Grupper b) Algorithm by the Danish Heart Association, (last accessed on 04 October 2021), URL:https://hjerteforeningen.dk/wp-content/uploads/sites/17/2018/02/hjertesvigt-i-danmark-2017.pdf	

Supplementary Table S4 Description of the educational levels used as a measure of socioeconomic status

Educational level*	Description/examples
Basic school, <10 years, ISCED 0-2	Primary or lower secondary school
Upper secondary school, +3 years, ISCED 3	General secondary school, technical secondary school or "high-school"
Vocational education, +4 years, ISCED 3	Electrician, chef, etc.
Short or medium length higher education, +2-4 years, ISCED 5-6	Academy profession degree, professional bachelor's degree, university bachelor's degree (2–4 years following upper secondary)
Long-term higher education or research, +≥5 years, ISCED 7-8	Master's degree or Ph.D.
ISCED International Standard Classification of Education *As done by Oestergaard, L. B. et al. The associations between socioeconomic status and risk of Staphylococcus aureus bacteremia and subsequent endocarditis - a Danish nationwide cohort study. BMC Infect. Dis. 17, 1–9 (2017). Detailed description on codes for educational level can be found on the Statistics Denmark's web page (last accessed 04 October 2021), URL:https://www.dst.dk/da/TilSalg/Forskningsservice/Dokumentation/hoekvalitetsvariable/hoejst-fuldfoerte-uddannelse/hfaudd	

Supplementary Table S5 Risk of *Staphylococcus aureus* bacteremia (SAB) in patients with rheumatoid arthritis according to disease duration compared with the general population

		Duration of rheumatoid arthritis					
		≤2 years		3 to 9 years		≥10 years	
Sex	Age, y	SAB, n	IRR (95% CI)*	SAB, n	IRR (95% CI)*	SAB, n	IRR (95% CI)*
Women	18-59	8	1.9 (1.0 to 3.8)	16	2.9 (1.7 to 4.8)	6	2.5 (1.1 to 5.5)
	60-69	11	2.0 (1.1 to 3.5)	11	1.8 (1.1 to 3.1)	12	1.9 (1.0 to 3.9)
	≥70	9	1.2 (0.7 to 2.0)	41	1.6 (1.2 to 2.2)	19	1.1 (0.7 to 1.8)
Men	18-59	0	-	7	2.4 (1.2 to 4.8)	7	5.7 (2.5 to 12.6)
	60-69	5	1.3 (0.7 to 2.5)	16	1.5 (0.8 to 2.5)	8	2.1 (1.0 to 4.4)
	≥70	16	1.4 (1.0 to 2.2)	19	0.7 (0.4 to 1.1)	13	0.8 (0.4 to 1.4)

y years, **SAB** *S. aureus* bacteremia, **IR** incidence rate, **PY** person-years, **IRR** incidence rate ratio, **CI** confidence interval

*adjusted for age, calendar year, diabetes mellitus, chronic heart failure, chronic dialysis treatment, chronic liver disease, cancer, vascular device or pacemaker, orthopedic implant, chronic obstructive pulmonary disease, and socioeconomic status

Supplementary Table S6 Model control, estimates when adding calendar year in one-year timespans to Poisson regression models

Reference to table/figure in main text	Sex	Age, years	Cohort (RA/GPC) and orthopedic implant status (only Figure 3)	Reference category	Adjusted IRR* (95% CI)
Model in Table 2	Women	18-59	RA	Corresponding age group GPC	2.6 (1.8 to 3.7)
		60-69			2.0 (1.4 to 2.8)
		≥70			1.4 (1.1 to 1.8)
	Men	18-59	RA	Corresponding age group GPC	1.8 (1.1 to 3.0)
		60-69			1.6 (1.1 to 2.3)
		≥70			1.0 (0.7 to 1.3)
Model in Figure 3	Women	18-59	GPC + implant	GPC, no implant	2.9 (2.6 to 3.3)
			RA, no implant		2.7 (1.8 to 3.9)
			RA + implant		4.2 (1.9 to 9.3)
		60-69	GPC + implant	GPC, no implant	2.4 (2.1 to 2.6)
			RA, no implant		1.6 (1.0 to 2.5)
			RA + implant		5.2 (3.2 to 8.3)
		≥70	GPC + implant	GPC, no implant	1.7 (1.6 to 1.8)
			RA, no implant		1.6 (1.2 to 2.2)
			RA + implant		1.9 (1.3 to 2.8)
	Men	18-59	GPC + implant	GPC, no implant	2.3 (2.1 to 2.5)
			RA, no implant		1.5 (0.8 to 2.9)
			RA + implant		5.3 (2.2 to 12.8)
		60-69	GPC + implant	GPC, no implant	1.9 (1.7 to 2.0)
			RA, no implant		1.6 (1.0 to 2.4)
			RA + implant		2.6 (1.3 to 5.1)
		≥70	GPC + implant	GPC, no implant	1.5 (1.4 to 1.5)
			RA, no implant		0.7 (0.5 to 1.1)
			RA + implant		2.1 (1.4 to 3.2)
IRR incidence rate ratio, CI confidence interval					
*Incidence rate ratios adjusted for age (one-year spans), calendar year (three-year and one-year spans), diabetes mellitus, chronic heart failure, chronic dialysis treatment, chronic liver disease, cancer, vascular device or pacemaker, chronic obstructive pulmonary disease and socioeconomic status					

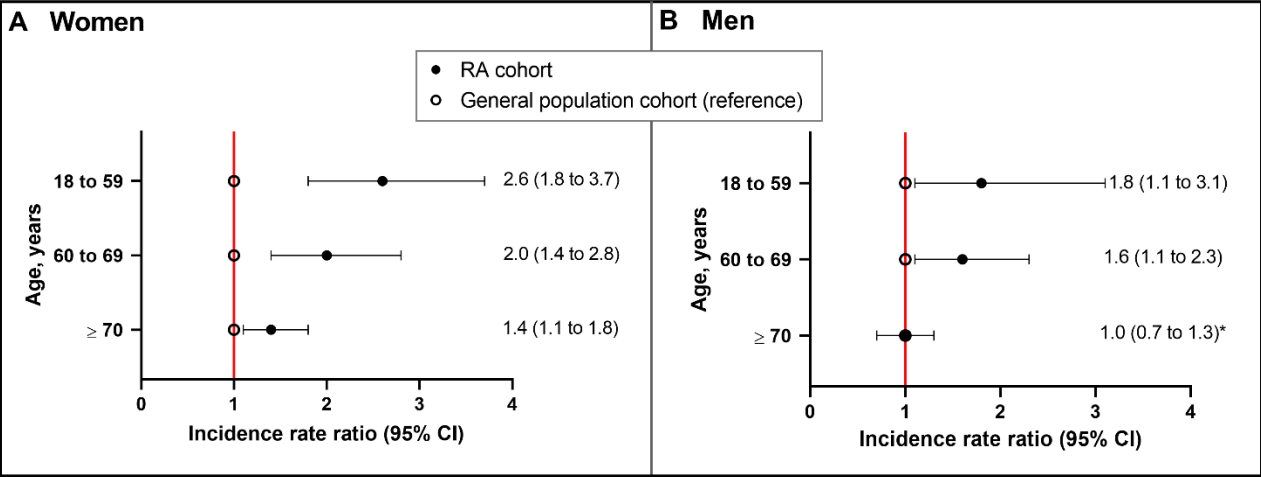
Supplementary Table S7 Number of cases and incidence rate ratios of *S. aureus* bacteremia in DANBIO patients with rheumatoid arthritis (RA) compared with the general population (sex- and age stratified).

Sex	Age, years	Number of cases of <i>Staphylococcus aureus</i> bacteremia	Incidence rate ratio* (95% confidence interval)
Women	18-59	18	2.5 (1.8 to 3.7)
	60-69	22	2.0 (1.4 to 2.8)
	≥70	29	1.4 (1.1 to 1.8)
Men	18-59	6	1.8 (1.1 to 3.1)
	60-69	13	1.6 (1.1 to 2.3)
	≥70	21	1.0 (0.7 to 1.3)

Total number of DANBIO RA patients n=22,589. The Danish National Patient Registry criteria for RA was fulfilled by 76% (n=17,201) of the DANBIO RA patients.

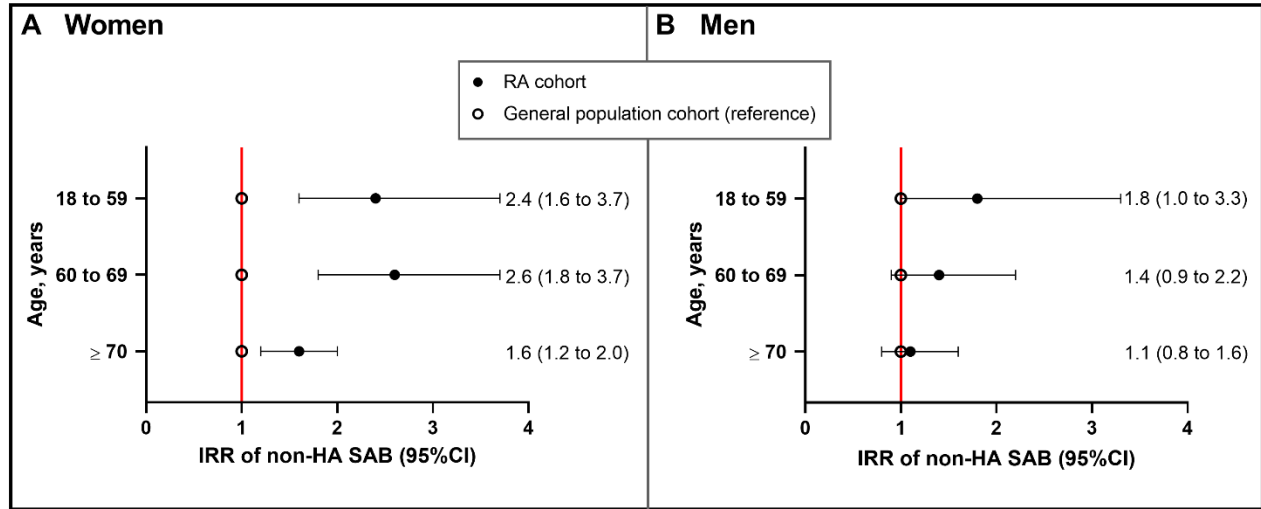
*Poisson regression model adjusted for age, calendar year, diabetes mellitus, chronic heart failure, chronic dialysis treatment, chronic liver disease, cancer, vascular device or pacemaker, chronic obstructive pulmonary disease and socioeconomic status

Supplementary figure S1 Age- and sex stratified adjusted incidence rate ratios of *Staphylococcus aureus* bacteremia in the RA cohort compared with general population cohort (within-group comparisons). Data also presented in Table 2.



RA rheumatoid arthritis, CI confidence interval
Incidence rate ratios adjusted for age, calendar year, diabetes mellitus, chronic heart failure, chronic dialysis treatment, chronic liver disease, cancer, vascular device or pacemaker, chronic obstructive pulmonary disease, and socioeconomic status
*Reference not visible due to complete overlap with estimate

Supplementary figure S2 Sensitivity analysis of non-hospital-acquired *Staphylococcus aureus* bacteremia. Adjusted incidence rate ratios of non-hospital-acquired *Staphylococcus aureus* bacteremia in the rheumatoid arthritis cohort compared with the general population cohort (within-group comparisons).



RA rheumatoid arthritis, IRR Incidence rate ratio, non-HA SAB non-hospital acquired *Staphylococcus Aureus* bacteremia, CI confidence interval
Incidence rate ratio adjusted for age, calendar year, diabetes mellitus, chronic heart failure, chronic dialysis treatment, chronic liver disease, cancer, vascular device or pacemaker, chronic obstructive pulmonary disease, and socioeconomic status