

Supplementary 1. The selected MS and urological disorders with associated codes

Group = Cancer		Group = infertility		Group = infection		Group=Urolithiasis		Impotence	
Code	Name	Code	Name	Code	Name	Code	Name	Code	Name
C0005684	Malignant neoplasm of urinary bladder	C0004509	Azoospermia	C0042029	Urinary tract infection	C0403719	Uric acid urolithiasis	C0242350	Erectile dysfunction
C0005686	Urinary Bladder Diseases	C0028960	Oligospermia	C0149801	Sepsis due to urinary tract infection	C0451641	Urolithiasis	C1868524	Autonomic erectile dysfunction
C0005689	Bladder Exstrophy	C0037856	Spermatic Cord Torsion	C0242147	Acute urinary tract infection	C3665382	2,8-Dihydroxyadenine Urolithiasis	C3647902	Vasculogenic erectile dysfunction
C0005694	Bladder neck obstruction	C0037859	Spermatocele	C0262421	Chronic urinary tract infection	C4280806	Calcium oxalate kidney stones	C4022003	Erectile abnormalities
C0005695	Bladder Neoplasm	C0232981	Arrest of spermatogenesis	C0262655	Recurrent urinary tract infection	C0521623	Kidney crystallization	C0033038	Premature Ejaculation
C0005697	Neurogenic Urinary Bladder	C0232982	Complete spermatogenic arrest	C1827894	Upper urinary tract infection	C0242217	Calcium Pyrophosphate Dihydrate Deposition	C0243000	Impotence, Vasculogenic
C0149622	Neurogenic Urinary Bladder, Atonic	C0232983	Incomplete spermatogenic arrest	C3875265	Febrile urinary tract infection	C0553730	Calcium pyrophosphate deposition disease		
C0149632	Abnormality of the bladder	C0334517	Spermatocytic seminoma	C4552431	Complicated urinary tract infection	C0156257	Calculus of kidney and ureter		
C0154017	Benign neoplasm of bladder	C0403809	Primary spermatogenic failure	C0018204	Granulomatous prostatitis	C0266893	Subgingival dental calculus		
C0154091	Carcinoma in situ of bladder	C0403812	Male Infertility with Large-Headed, Multiflagellar, Polyploid Spermatozoa	C0033581	prostatitis	C0267842	Acute cholecystitis without calculus		
C0156273	Bladder Diverticulum	C0403813	Congenital obstructive azoospermia	C0085696	Chronic prostatitis	C0558595	Uric acid renal calculus		
C0232849	Bladder pain	C0403819	Acquired obstructive azoospermia	C0403683	Non-bacterial prostatitis	C0005683	Urinary Bladder Calculi (disorder)		
C0235754	Bladder papilloma	C0403823	Asthenozoospermia	C0748023	Bacterial prostatitis	C0022650	Kidney Calculi		
C0266335	Congenital anomaly of the bladder	C0403824	Teratozoospermia	C1720795	Acute Bacterial Prostatitis	C0042018	Urinary Calculi		
C0266336	Congenital absence of bladder	C0403825	Globozoospermia	C1720796	Asymptomatic Inflammatory Prostatitis	C1456865	Ureteral Calculi		
C0266337	Congenital obstruction of bladder neck	C0520933	Abnormal spermatogenesis	C1720797	Chronic Bacterial Prostatitis				
C0268855	Hypertrophy of bladder	C0541896	Spermatozoa abnormal	C1723764	Chronic Prostatitis with Chronic Pelvic Pain Syndrome				
C0270800	Autonomic hyperreflexia of bladder	C1839071	Spermatogenic Failure, Nonobstructive, Y-Linked	C0018078	Gonococcal urethritis				
C0278827	Bladder cancer recurrent	C1839841	SPERMATOGENIC FAILURE, X-LINKED, 2	C0041976	Urethritis				
C0279600	Transitional cell carcinoma of bladder	C1847540	Azoospermia, Nonobstructive	C0010320	Cystitis and urethritis				
C0279681	Bladder Squamous Cell Carcinoma	C2208973	Tapered sperm head	C1112709	non-gonococcal urethritis (NGU)				
C0279682	Bladder Adenocarcinoma	C2751811	Spermatogenic Failure 7	C1278807	Chlamydial urethritis				
C0280218	stage, bladder cancer	C3151406	SPERMATOGENIC FAILURE 8	C0017658	Glomerulonephritis				
C0392115	Neurogenic Urinary Bladder, Uninhibited	C3151407	SPERMATOGENIC FAILURE 9	C0017661	IGA Glomerulonephritis				
C0403647	Hypotonic bladder disorder	C3164407	Oligoasthenozoospermia	C0017662	Glomerulonephritis, Membranoproliferative				
C0403654	Bladder outflow obstruction	C3279550	Cryptozoospermia	C0017665	Membranous glomerulonephritis				
C0429803	Bladder trabeculation	C3541908	Sperm Motility Measurement	C0024143	Lupus Nephritis				
C0496930	Neoplasm of uncertain or unknown behavior of bladder	C3553793	SPERMATOGENIC FAILURE 10	C0027697	Nephritis				
C0521626	Fibrosis of urinary bladder	C3554453	SPERMATOGENIC FAILURE 11	C0027706	Hereditary nephritis				
C0549253	Dilatation of the bladder	C3809427	SPERMATOGENIC FAILURE 12	C0027707	Nephritis, Interstitial				
C0586737	Bladder polyp	C3810324	MORBID OBESITY AND SPERMATOGENIC FAILURE	C0034188	Pyelonephritis, Xanthogranulomatous				
C0685828	Congenital dilatation of bladder	C4014449	SPERMATOGENIC FAILURE 13	C0041349	Nephritis, Tubulointerstitial				
C0698885	Carcinoma of bladder	C4014454	SPERMATOGENIC FAILURE 14	C0085697	Chronic pyelonephritis				
C0741548	bladder symptoms	C4016734	SPERMATOGENIC FAILURE, SUSCEPTIBILITY TO	C0086445	Idiopathic Membranous Glomerulonephritis				
C0750953	Urinary Bladder Neurogenesis	C4020789	Abnormal sperm development	C0149937	Acute interstitial nephritis				
C0750955	Neurogenic Urinary Bladder, Spastic	C4021107	Non-obstructive azoospermia	C0152451	Chronic glomerulonephritis				
C0840564	Rupture of bladder	C4022698	Acephalic spermatozoa	C0156221	Acute glomerulonephritis				
C0878773	Overactive Bladder	C4022699	Sperm tail anomaly	C0221238	Mesangial proliferative glomerulonephritis				
C1332562	Bladder Paraganglioma	C4022700	Sperm mid-piece anomaly	C0221239	Rapidly progressive glomerulonephritis				
C1332564	Small cell neuroendocrine carcinoma of bladder	C4022702	Sperm head anomaly	C0235618	Proliferative glomerulonephritis				
C1334281	Infiltrating Bladder Urothelial Carcinoma	C4023001	Nonmotile sperm	C0238304	Chronic interstitial nephritis				
C1336527	Carcinoma of urinary bladder, superficial	C4023106	Obstructive azoospermia	C0268742	Membranoproliferative Glomerulonephritis, Type I				
C1336891	Urinary Bladder Inflammatory Myofibroblastic Tumor	C4082176	Asthenozoospermia finding	C0268743	Membranoproliferative Glomerulonephritis, Type II				
C1720830	Painful Bladder Syndrome	C4310666	SPERMATOGENIC FAILURE 17	C0268749	Fibrillary glomerulonephritis				
C1827293	Carcinoma of urinary bladder, invasive	C4310674	SPERMATOGENIC FAILURE 16	C0268750	Necrotizing glomerulonephritis				
C1836904	Spastic/hyperactive bladder	C4310779	SPERMATOGENIC FAILURE 15	C0268757	SLE glomerulonephritis syndrome, WHO class IV				
C1838703	Bladder Exstrophy and Epispadias Complex	C4539783	SPERMATOGENIC FAILURE 18	C0341699	Granulomatous interstitial nephritis				
C1843663	Urinary bladder sphincter dysfunction	C4539786	Absent sperm flagella	C0403367	proliferative nephritis unspecified				
C1855335	Hypoplasia of the bladder	C4539787	Short sperm flagella	C0403379	Emphysematous pyelonephritis				
C1883722	Stage 0a Bladder Urothelial Carcinoma AJCC v6 and v7	C4539789	Coiled sperm flagella	C0403411	Endocapillary glomerulonephritis				
C1987362	Nonneurogenic neurogenic bladder dysfunction	C4539818	SPERMATOGENIC FAILURE 19	C0403414	Acute post-streptococcal glomerulonephritis				
C2242601	Bladder hyperplasia	C4539824	SPERMATOGENIC FAILURE 20	C0403416	Idiopathic crescentic glomerulonephritis				
C2721606	Bladder dysplasia	C4539991	SPERMATOGENIC FAILURE 21	C0403428	Chronic mesangial proliferative glomerulonephritis				
C2902981	Neurogenic bladder dysfunction	C4540179	SPERMATOGENIC FAILURE 22	C0403528	Henoch-Schönlein nephritis				
C3160917	Bladder pain syndrome	C4540185	SPERMATOGENIC FAILURE 23	C0451718	Non-obstructive reflux-associated chronic pyelonephritis (disorder)				
C3806583	Functional abnormality of the bladder	C4693751	SPERMATOGENIC FAILURE 24	C0473221	Cryoglobulinemic glomerulonephritis				
C4016403	BLADDER CANCER, TRANSITIONAL CELL, SOMATIC	C4693760	Microcephalic sperm head	C0477729	Other chronic tubulo-interstitial nephritis				
C4020898	Overactive bladder syndrome	C4693765	SPERMATOGENIC FAILURE 25	C0520575	Acute pyelonephritis				
C4021531	Hypertrophy of the urinary bladder	C4693784	SPERMATOGENIC FAILURE 27	C0744421	Immune-complex glomerulonephritis				
C4023812	Aplasia of the bladder	C4721889	SPERMATOGENIC FAILURE 3	C0854406	Chronic proliferative glomerulonephritis				
C4025212	Autonomic bladder dysfunction	C4748117	SPERMATOGENIC FAILURE 28	C0948908	Nephroticx serum nephritis				
C4269195	Chronic bladder pain	C4748234	SPERMATOGENIC FAILURE 31	C1142150	Autoimmune nephritis				
C4324732	Bladder wall thickening	C4748253	SPERMATOGENIC FAILURE 32	C1332309	Anti-Basement Membrane Glomerulonephritis				
C4476807	Abnormality of bladder morphology	C4748395	SPERMATOGENIC FAILURE 33	C1392616	Nonobstructive chronic pyelonephritis NOS				
C4551642	Stage 0is Bladder Urothelial Carcinoma AJCC v6 and v7	C4748403	SPERMATOGENIC FAILURE 34	C1400417	Immune complex nephritis				
C4704753	Urinary Bladder, Underactive	C0021359	Infertility	C1704315	Pyelonephritis acute necrotizing				
C4721666	Bladder cancer stage IV	C0021364	Male infertility	C1704320	Glomerulonephritis, Minimal Change				
C4725675	Refractory Bladder Carcinoma	C0403800	Secondary male infertility	C1704378	Seymnan Nephritis				
C4725793	Metastatic Bladder Urothelial Carcinoma	C0403810	Oligospermic Infertility	C1720821	Membranoproliferative Glomerulonephritis, Type III				
C0007112	Adenocarcinoma of prostate	C0553573	Primary infertility	C1737225	Mesangioproliferative glomerulonephritis				
C0033579	Prostate nodule	C0745287	infertility tubal factor	C1843273	Tubulointerstitial nephritis and uveitis				
C0154009	Benign neoplasm of prostate	C1970187	Deafness, Sensorineural, And Male Infertility	C1843274	Acute Tubulointerstitial Nephritis				
C0154088	Carcinoma in situ of prostate	C4706677	Male infertility with teratozoospermia due to single gene mutation	C2364010	Chronic nephritis				
C0156296	Atrophy of prostate	C0004509	Azoospermia	C2721603	Henoch-Schonlein purpura nephritis				
C0201544	Prostate specific antigen measurement	C0028960	Oligospermia	C2902889	Nephrotic syndrome with focal glomerulonephritis				
C0278834	Stage I Prostate Carcinoma	C0037856	Spermatic Cord Torsion	C2919706	Idiopathic rapidly progressive glomerulonephritis				
C0278836	Stage III Prostate Carcinoma	C0037859	Spermatocele	C2931118	Megalocytic interstitial nephritis				
C0278837	Stage IV Prostate Carcinoma	C0232981	Arrest of spermatogenesis	C2931861	Hemorrhagic hereditary nephritis				
C0278838	Prostate cancer recurrent	C0232982	Complete spermatogenic arrest	C3266959	Acute focal bacterial nephritis				
C0280280	stage, prostate cancer	C0232983	Incomplete spermatogenic arrest	C3553774	INTERSTITIAL NEPHRITIS, KARYOMEGALIC				
C0347001	Secondary malignant neoplasm of prostate	C0334517	Spermatocytic seminoma	C3873417	Recurrent proliferative glomerulonephritis				
C0349672	Endometrioid carcinoma of prostate	C0403809	Primary spermatogenic failure	C3889846	Autoimmune crescentic glomerulonephritis				
C0376358	Malignant neoplasm of prostate	C0403812	Male Infertility with Large-Headed, Multiflagellar, Polyploid Spermatozoa	C4050407	Pauci-immune Glomerulonephritis associated with Granulomatosis with Polyangiitis				
C0600139	Prostate carcinoma	C0403813	Congenital obstructive azoospermia	C4054543	Membranous Lupus Nephritis				
C0748012	Nodular prostate	C0403819	Acquired obstructive azoospermia	C4055342	C3 Glomerulonephritis				
C0862636	Adenocarcinoma of the prostate metastatic	C0403823	Asthenozoospermia	C4324689	Pauci-immune glomerulonephritis				
C0938223	Metastatic Prostate Carcinoma	C0403824	Teratozoospermia	C0034186	Pyelonephritis				
C12824246	Metastasis from malignant tumor of prostate	C0403825	Globozoospermia	C0748199	Recurrent pyelonephritis				
C1300585	Small cell carcinoma of prostate	C0520933	Abnormal spermatogenesis	C4524049	Complicated pyelonephritis				
C1328504	Hormone refractory prostate cancer	C0541896	Spermatozoa abnormal	C4524264	Uncomplicated pyelonephritis				
C1332139	Prostate Acinar Adenocarcinoma	C1839071	Spermatogenic Failure, Nonobstructive, Y-Linked	C0008325	Cholecystitis				
C1332353	Atypical Small Acinar Proliferation of the Prostate Gland	C1839841	SPERMATOGENIC FAILURE, X-LINKED, 2	C0010692	Cystitis				
C1334615	Malignant Phyllodes Tumor of Prostate	C1847540	Azoospermia, Nonobstructive	C0010930	Dacryocystitis				
C1335409	Prostate Phyllodes Tumor	C2208973	Tapered sperm head	C0034184	Pyelocystitis				
C1335511	Prostate Leiomyosarcoma	C2751811	Spermatogenic Failure 7	C0085692	Hemorrhagic cystitis				
C1335512	Prostate Lymphoma	C3151406	SPERMATOGENIC FAILURE 8	C0085694	Chronic cholecystitis				
C1370963	Prostate cancer stage C	C3151407	SPERMATOGENIC FAILURE 9	C0149520	Acute Cholecystitis				
C1514507	Prostate Basal Cell Carcinoma	C3164407	Oligoasthenozoospermia	C0149523	Acute cystitis				
C1514517	Prostate Stromal Proliferation of Uncertain Malignant Potential	C3279550	Cryptozoospermia	C0156270	Irradiation cystitis				
C1654637	androgen independent prostate cancer	C3541908	Sperm Motility Measurement	C0221763	Chronic cystitis				
C1708566	Invasive Prostate Carcinoma	C3553793	SPERMATOGENIC FAILURE 10	C0267841	Acalculous Cholecystitis				
C1739135	Progression of prostate cancer	C3554453	SPERMATOGENIC FAILURE 11	C0267842	Acute cholecystitis without calculus				
C1837593	Prostate Cancer, Hereditary, 4	C3809427	SPERMATOGENIC FAILURE 12	C0268837	Cystitis glandularis				
C1844923	Hypoplasia of the prostate	C3810324	MORBID OBESITY AND SPERMATOGENIC FAILURE	C0282488	Interstitial Cystitis				
C1853195	Prostate Cancer, Hereditary, 7	C4014449	SPERMATOGENIC FAILURE 13	C0403639	Chemical cystitis				
C1863600	PROSTATE CANCER/BRAIN CANCER SUSCEPTIBILITY (Tm)	C4014454	SPERMATOGENIC FAILURE 14	C0581366	Recurrent cystitis				
C1970250	Prostate Cancer, Hereditary, 9	C4016734	SPERMATOGENIC FAILURE, SUSCEPTIBILITY TO	C0600040	Chronic interstitial cystitis				
C2677821	Prostate Cancer, Hereditary, 13	C4020789	Abnormal sperm development	C0600041	Infective cystitis				
C2678479	Prostate Cancer, Hereditary, 12	C4021107	Non-obstructive azoospermia	C0742964	Bacterial cystitis				
C2931456	Prostate cancer, familial	C4022698	Acephalic spermatozoa	C0742965	Eosinophilic cystitis				
C3146263	Stage I Prostate Cancer AJCC v7	C4022699	Sperm tail anomaly	C1337035	Xanthogranulomatous cholecystitis				
C3146264	Stage IV Prostate Cancer AJCC v7	C4022700	Sperm mid-piece anomaly						
C3146265	Prostate cancer stage D	C4022702	Sperm head anomaly						
C3160891	Hormone-dependent prostate cancer	C4023001	Nonmotile sperm						
C3469524	PROSTATE CANCER, SUSCEPTIBILITY TO	C4023106	Obstructive azoospermia						
C3538120	PROSTATE CANCER, HEREDITARY, 2	C4082176	Asthenozoospermia finding						
C3898877	hormone-resistant prostate cancer	C4310666	SPERMATOGENIC FAILURE 17						
C4015779	PROSTATE CANCER, SOMATIC	C4310674	SPERMATOGENIC FAILURE 16						
C4076671	Prostate cancer metastatic to bone	C4310779	SPERMATOGENIC FAILURE 15						
C4302896	Hormone sensitive prostate cancer	C4539783	SPERMATOGENIC FAILURE 18						
C4527149	Intermediate Atypical Prostate Carcinoma	C4539786	Absent sperm flagella						
C4552675	Stage I Prostate Cancer AJCC v8	C4539787	Short sperm flagella						
C4553752	Stage IV Prostate Cancer AJCC v8	C4539789	Coiled sperm flagella						
C4721208	Metastatic castration-resistant prostate cancer	C4539818	SPERMATOGENIC FAILURE 19						
C4722327	PROSTATE CANCER, HEREDITARY, 1	C4539824	SPERMATOGENIC FAILURE 20						
C4722328	Hereditary Prostate Carcinoma	C4539991	SPERMATOGENIC FAILURE 21						
C4725110	Castration-Naïve Prostate Carcinoma	C4540179	SPERMATOGENIC FAILURE 22						
C4727179	Castration-Sensitive Prostate Carcinoma	C4540185	SPERMATOGENIC FAILURE 23						
C4744712	Advanced Prostate Carcinoma	C4693751	SPERMATOGENIC FAILURE 24						
C4744714	Advanced Prostate Adenocarcinoma	C4693760	Microcephalic sperm head						