Journal of Neurology, Neurosurgery, and Psychiatry 1989;52:449–458

The development of a disease classification system, based on the International Classification of Diseases, for use by neurologists

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SUMMARY Effective planning and evaluation of medical services is only possible if appropriate and reliable information is available. Diagnoses of patients seen are essential data. The epidemiological value of standard, reliable diagnostic data could also be considerable. The International Classification of Diseases (ICD) is the only system currently available which provides a common basis of classification for general statistical use. A booklet, using ICD codes, for classifying in-patients and out-patients seen by neurologists has been developed. It is simple and easy to use, affords the necessary economy of time, and should result in uniformity of coding. Reliability studies confirm that inaccuracies occur when patients' diagnoses are coded retrospectively from their medical files, even when observers are medically trained. It is recommended that doctors should accept personal responsibility for coding patients' diagnoses at the time of consultation or discharge from hospital.

The manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death (ICD), currently based on the recommendations of the ninth revision conference, 1975, and adopted by the twenty-ninth World Health Assembly,[1] is used for the coding of all hospital in-patients and day cases. It is the only accepted system which provides a common basis of classification of diagnoses for national and international statistical use.

Coding of patients (often undertaken weeks or months after a patient's discharge from hospital) is usually done by clerks who have no medical training, and are usually centrally-based in the medical records department of the hospital. They have to interpret a patient's diagnosis from the discharge summary and notes held within the patient's medical file, in order to arrive at one or more codes from the ICD. Problems may arise if the patient has several diseases, such as stroke and head injury, or if the terms used in the discharge summary are not synonymous with those in the ICD, for example Steele Richardson Olszewski syndrome.

The validity and reliability of the information derived has been questioned many times,[2–6] with claims that 17%–40% of cases are inaccurately coded.[7–9] The process for coding in-patients' diagnoses remains unchanged even after implementation of the Korner recommendations.[10] The diagnoses of out-patients are not routinely recorded,[11] although they represent a substantial workload within most medical specialties.

Responsibility for coding has not been accepted generally by clinicians. There are probably several reasons for this. Some doctors may not be happy with the system adopted in the ICD, others may argue that their busy clinical schedule does not afford them the time, or that it is impractical to carry two volumes of the ICD round the hospital and the task of locating the directory would be both laborious and time-consuming.

To analyse the use of his own department the clinician must have baseline data. For instance, the neurologist would need to know the number of cases of motor neuron disease and epilepsy currently being seen in the department. He might also require information about the problems generated, for example the number of patients with uncontrolled epileptic attacks. Such information clearly has implications for the management of his service, e.g. the way clinics are organised. Analyses of this type are impossible with existing routine information.

"For the sake of analysing the use of his own unit and for the sake of his colleagues in epidemiology, he (the clinician) should accept the responsibility of making the diagnostic coding as accurate as possible".[12] Some doctors have developed their own personal diagnostic index. However, the ICD is the

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Received 28 October 1986 and in final revised form 4 November 1988. Accepted 8 November 1988

only standardised coding system currently available. The question is: Can the ICD form the basis for a classification of neurological disorders which might eventually become widely acceptable?

This study addresses the following particular questions:

(1) Is it possible to develop a comprehensive booklet for classifying neurology in-patients and out-patients, based on the ICD, which could achieve uniformity of coding and not consume an unreasonable amount of time?

(2) Can the booklet be made small enough to fit into a jacket pocket and/or brief case?

(3) Who should be responsible for undertaking the necessary coding?

Method

Research site

The study was undertaken in the Neurology Department, Frenchay Hospital (a 538-bed district general hospital on the outskirts of Bristol), which is part of the Subregional Neurosciences Department of the South West Regional Health Authority. The diagnoses of patients seen in the department cover the normal range seen in any neurology department, and include acute neurological problems (for example meningitis) and those with chronic disability (for example multiple sclerosis).

Development of a booklet

The ICD is divided into seventeen diagnostic groups (for example neoplasms, diseases of the circulatory system), including one for "Symptoms, Signs and Ill-Defined Conditions". Under each group diagnoses are classified generally to 3 digits (for example mononeuritis of upper limb 354) and then further subdivided to 4 digits (for example carpal tunnel syndrome 3540, other lesion of median nerve 3541, lesion of ulnar nerve 3542, etc.). A special booklet, the size of a pocket diary, was constructed with the most common neurological diseases, using 4-digit ICD codes. It was produced in an alphabetical and numerical format (similar to the ICD itself).

To develop the booklet further the diseases and major symptoms of 429 patients (63 in-patients, 366 out-patients [79 new referrals and 287 follow-ups]), who came under the care of two neurologists over an 8 week period, were added. It is impractical to present a detailed analysis of these patients but certain general conclusions can be drawn and these are discussed within the results section.

Reliability of coding

Stage 1 Using the booklet, the reliability of coding was first tested using the medical files of 84 consecutive out-patients attending the neurology clinics (16 new patients and 68 follow-up patients). These were coded by five observers independently: two neurology registrars, two clerks, one of whom had experience of coding patients' diagnoses from medical files, and a researcher (VAW).

Stage 2 The ideal way of checking reliability of coding by doctors would be for the same patients to be seen by, say, three different doctors (either together or separately), each doctor coding independently. However, this was beyond the resources of this study and may well, in fact, be an unacceptable ordeal for patients. To check the reliability of doctors' coding, it was decided to draw up a list of 50 patients' diagnoses for coding by five doctors: three consultant neurologists (DTW, RLH, MJC), one registrar and one senior house officer.

Fifty consecutive patients' files (28 in-patients, 22 out-patients), received into the neurology office during July 1987 for typing of reports or letters, were examined (by VAW). A note was made of the diagnoses or major symptoms reported in the correspondence and a list of these formulated (see appendix 1). This was then circulated, together with a neurology coding booklet, to the five observers who were asked to code each item. Three separate codes were allowed with the instruction to code in order of priority. There was also a specific instruction to "code" *not* diagnose!

Results

Development of booklet

When developing the booklet a number of problems were highlighted.

(1) Some disorders had no code listed in the ICD index, for example facial migraine. These were included in the booklet by adding a further subdivision, and fourth digit, under the general diagnosis (such as migraine).

(2) Some cases had more than one applicable code. We therefore decided to amalgamate certain diagnoses, for example, all forms of headache (excluding migraine) were coded 784·0, non-haemorrhagic stroke was allocated four specific codes only—brain stem stroke 433·8, left hemisphere stroke 434·7, right hemisphere stroke 434·8, other or unspecified stroke 436·0.

(3) Many patients had no formal diagnosis, for example, a patient with "giddiness" or attacks of disturbed thought. We decided to code patients with no formal diagnosis according to their presenting or major symptom.

(4) Some patients were outside the realm of neurology. We included common non-neurological

Table 1 *Reliability of coding out-patients' diagnoses from medical files*

	New Referrals (n=16)	*Follow-ups (n=68)*	*Total (n=84)*
5 Observers agreed	12 (75%)	41 (60%)	53 (63%)
4/5 Observers agreed	0	14 (21%)	14 (17%)
3/5 Observers agreed (2 same)	1 (6%)	3 (4%)	4 (5%)
3/5 Observers agreed (2 different)	1 (6%)	5 (7%)	6 (7%)
2/5 + 2/5 Observers agreed (1 different)	2 (13%)	1 (2%)	3 (4%)
2/5 Observers agreed (3 different)	0	4 (6%)	4 (5%)

codes to make the booklet as comprehensive as possible. Further codes could be extracted from the ICD and added as required. The booklet has, in fact, been expanded in the department during 1987 and its present form, which includes some guidelines for use, is shown in appendix 2.

Reliability of coding

Stage 1 The results of reliability of coding from medical files by five varied observers using the booklet are given in the table. Fifty-three (63%) patients were coded identically by the five observers, and in four more cases the disagreement occurred only in patients who had two or more diagnoses.

In the 14 cases with a single observer disagreeing, seven were accounted for by one neurology registrar (probably indicating the difficulty of coding from patients' files—even with medical training) and 2 by the clerk with experience of ICD coding from patients' files.

Fifteen of the 31 cases in which there was not full agreement had no clearcut pathological diagnosis, for example dystonic movements or vertigo of uncertain cause.

Stage 2 Forty-two (84%) of the diagnoses presented on the typed list (see appendix 1) were coded identically by all five doctors. Those where discrepancies occurred need discussion: in one case (no. 14—pneumonia, cardiac failure, ischaemic heart disease) all five observers allocated the same three codes but in a different priority order. Two more cases were given the same two codes but, again, in a different order. Another two cases were given the same primary code by all five observers. However, in one case two observers added one identical second code; while in the second four observers added two identical codes. In case number 20, the condition given in the list was "atypical migraine"; four doctors coded it "migraine" but one coded it as "transient ischaemic attack". In case 46, two doctors coded spastic left hemiparesis 342·1 (spastic hemiplegia), while the other three coded it as stroke. Case 18 presents a more complicated picture. Two observers coded diabetes mellitus as the first primary code and two others as the second code. Other first and second codes included 335·8—muscular atrophy (one observer), 353·9—nerve root and plexus disorders (two observers), and 355·9—neuropathic muscle wasting (one observer).

Discussion

The Griffiths Report,[13] which has been the basis of recent management structures, challenged the National Health Service (NHS) Management Boards and Chairmen "to ascertain how well the service is being delivered at local level". Consequently, evalution, audit, and peer review are some of the most commonly used expressions in managerial circles in the NHS today. The current climate would seem to dictate that clinicians must themselves judge the effectiveness of what they do.

To examine the processes at work within his own department a clinician must have available accurate, complete and relevant information. Information on the diagnoses of patients is seen to be of paramount importance to clinicians, managers and epidemiologists. However, clinicians, researchers and administrators have little confidence in the diagnostic information routinely collected on hospital in-patients.[14] Accurate coding requires considerable medical knowledge and reliable information will probably only be forthcoming if clinicians accept personal responsibility for coding patients' diagnoses themselves.

Development of booklet

The booklet developed in this study is now in routine use within the Neurology Department of Frenchay Hospital. The clinical neurologists participating do not find it difficult or time-consuming to code patients' diagnoses at the time of their consultation (out-patients) or discharge from hospital (in-patients).

The methodology involved in constructing the ICD booklet could be easily replicated in any medical specialty. Use of a simple booklet, such as the one developed in this study, would achieve the necessary uniformity of coding and the necessity of carrying around two volumes of the ICD would be avoided. The statistics derived on in-patients and out-patients could benefit the audit process and be of considerable epidemiological value.

The main aim of this study was to develop a common basis of classification which could be used by any neurology department. It was not intended to present an all encompassing classification but endeavoured to provide a skeleton upon which others could build. For instance, only two codes are used for epilepsy (generalised epilepsy 345·1, focal or partial epilepsy (including temporal lobe)—345·4). Such an arrangement by itself does not allow the clinician to separate out different types of epilepsy. However, it is perfectly possible to subdivide classifications on the basis of anatomical location, pathology or EEG findings to suit personal requirements. This might be the subject of a series of further studies.

It is important to recognise that the disease classification system, based on the ICD, developed in this study can be adapted and expanded to suit the purposes of any neurology department, or individual neurologist.

Reliability

The first study of reliability showed that, when simply given the hospital medical files, five varied observers agreed upon a single diagnosis in 63% of neurology out-patients. The two doctors involved coded differently in some cases. This relatively low rate of agreement has implications if diagnostic information on out-patients is to be extracted from medical files; although it is no worse than the accuracy found in studies on in-patients.[6-8]

Factors militating against a high level of agreement in this first reliability study included the requirement to code from the medical files; the relatively high proportion (18%) of patients with no clear-cut diagnosis which has previously been noted to reduce reliability;[15] and the different experience of observers. A major obstacle faced by all coders was trying to discover any diagnosis (or even major symptom) from the medical files. This information was usually, though not always, given in the letters relating to patients seen for the first time, but was rarely present in letters relating to follow-up patients.

The second study of reliability, when doctors were asked to code diagnoses from a typed list, indicated total agreement in 42 (84%) cases. The reasons for disagreement seemed to be primarily related to a doctor's inclination to "diagnose" the condition rather than simply allocate a symptom-related code (three cases), and the difficulty in prioritising codes from a typed list (five cases).

The list circulated to the observers had specific instructions to enter codes in order of priority, the first being the main principal diagnosis, and to code, not diagnose. However, the results indicate that these instructions might not have been followed.

It could be argued that if coding was undertaken at the time of seeing the patient the difficulties encountered may not have arisen. The facility to code more than one diagnosis is apparent but, again, the necessity to code secondary conditions and the priority order of codes is extremely difficult to decide from a typed list such as that presented. Again, when the patient is with a doctor the significance of multiple diagnoses or symptoms would probably be more apparent.

The difficulties encountered in this second reliability study were probably just as great as those encountered in coding from patients' medical files. Both reliability studies support the contention that accurate coding of patients' diagnoses is a virtually impossible task when attempted retrospectively from patients' medical files, even for those medically trained!

Conclusions

We conclude that the only way to improve accuracy of diagnostic coding is for the doctor to decide upon the relevant diagnosis and code it at the time of a patient's consultation or discharge from hospital. A simple booklet, such as the one developed in this study, could achieve the necessary uniformity of coding and economy of time.

As stated previously, in this study we were unable to investigate the accuracy of doctors coding at the time of consultation or discharge, and this is an area for further study. In undertaking such a study it will be important to ensure that reliability of the "coding" function is tested, and not the extent to which doctors reach the same diagnostic conclusions.

The ICD is the only standardised and currently accepted system of classification and should be used. Although the booklet developed in this study relates to clinical neurology the same principle could easily be adopted to encompass other medical specialties.

There is now an urgent need for the adoption of a widely accepted disease classification system for neurologists. It is suggested that the Association of British Neurologists might now consider supporting the development of a nationwide diagnostic index.

We gratefully acknowledge the assistance we received from Dr. N. Kent, Neurology Registrar, Mrs. Anita Williams, Higher Clerical Officer, and Mrs. Jill Scudamore, clerk, for scrutinising and coding 84 sets of case notes. We also acknowledge the considerable help we received from Mrs. Judith Weeks, Higher Clerical Officer, and Mrs. Susan James, Medical Secretary, in tracing and keeping track of case notes. Mrs. Wood acknowledges the support she received from Mr. P. Kirk, Senior Lecturer, Bristol Polytechnic and Dr. P. M. Enderby, District Speech Therapist, Frenchay Hospital.

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Appendix 1

List of diagnoses and symptoms for coding by doctors

Please code each of the following. Up to 3 codes may be used, but please enter in order of priority, the first being the main principal diagnosis.
Note: 'Coding' *not* diagnosing of patients is required.

Code: 1 2 3

1. Acute confusional state
2. Stroke affecting left hemisphere
3. Acute episodes of pain right side of face
4. Papilloedema (cause unknown)
5. Encephalitis
6. Cerebral infarct (right temporal region)
7. Probable ulnar nerve palsy in left hand; cannot rule out a T1 root lesion
8. Episode of acute labrinthitis secondary to a viral infection in Oct. '86; improved but post-viral syndrome
9. Transient ischaemic attacks affecting right hemisphere
10. Right parietal glioma
11. Hypercalcaemia, cerebral infarct in right frontal and right temporal regions
12. Multiple sclerosis
13. Minor epilepsy (Invest: no evidence of petit mal or temporal lobe epilepsy)
14. Pneumonia, cardiac failure, ischaemic heart disease
15. Right cerebral infarction with transient ischaemic attacks
16. Right parietal glioma
17. Transient ischaemic attack, rheumatoid arthritis
18. Diabetes mellitus, proximal muscular weakness. Diabetic Amyotrophy?
19. Right sided lateral medullary syndrome
20. Atypical attack of migraine
21. Bilateral subdural haematomas
22. Non-convulsive status
23. Multiple sclerosis
24. Cerebral secondaries, primary unknown
25. Left-sided ulnar nerve palsy
26. Brain stem stroke
27. Epilepsy (EEG: excessive underlying slow activity and some indefinite left temporal sharp waves and non-specific generalised paroxysmal discharges)
28. Transient ischaemic attack possibly affecting left hemisphere
29. Migraine attacks
30. Epilepsy. Generalised convulsions
31. Fascio-scapulo humeral dystrophy
32. Headaches
33. Cervical spondylosis with myelopathy
34. Right frontal haemorrhage with intra-ventricular extension
35. Motor neuron disease
36. Recurrent cerebrovascular ischaemia affecting vertebrobasilar and carotid territory (some residual dysarthria)
37. Right amaurosis fugax
38. Attack of loss of consciousness probably due to alcohol intoxication
39. Malignant infiltration of brachial plexus. Secondary to breast carcinoma
40. Grand mal fits following RTA. Craniotomy with resection of an epidermoid cyst from the right anterior cranial fossa
41. Andrenoleukodystrophy
42. Vertigo
43. Right sided intra-cerebral and subarachnoid bleed with extensive brain shift
44. Probable Multiple Sclerosis
45. Brain stem ischaemia sometmes triggered by neck extension, suggestive of vertebral artery compromise
46. Spastic left hemiparesis
47. Congenital idiopathic hypoglycaemia. Temporal Lobe Epilepsy
48. Left-sided headache, probably migrainous
49. Parkinsons disease
50. Petit mal epilepsy

Appendix 2

Coding Booklet

Recommended Guidelines

Note: Symptoms as well as diseases can be coded.

1. If a *diagnosis does not appear* in the coding sheet, please refer to International Classification of Diseases for appropriate code.

2. If patient has a *possible or probable disease* initially classify under that disease, even though not certain.

3. Unless a psychiatrist or psychologist is involved with patient, try and avoid using codes for *mental disorders*.

4. If there is *more than one diagnosis* take the one which the patient is consulting about. If, however, patient is actually consulting about more than one disease (e.g. epilepsy and stroke) code each separately—in order of priority if possible.

5. If patient has *no formal diagnosis*, code according to presenting or major symptom.

6. If patient is consulting about *faints* and is on anticonvulsant drugs (e.g. tegretol, phenytoin) use epilepsy code, even if not sure epileptic. If anticonvulsant drugs have not been prescribed, and patient is undiagnosed, code 7802.

7. If patient is having *'odd' turns* (e.g. giddiness, 'distant' feelings, etc.) which you are unable to diagnose, code 7804.

8. Refer to numerical coding sheet for general *vague symptoms*.

9. If patient has *no disease or major symptom remaining* at the time of consultation code 0000.

NEUROLOGY CODES—Numerical Index

0000 No disease or major symptom

INFECTIOUS AND PARASITIC DISEASES
0130 Tuberculosis of meninges and cns
0369 Meningococcal infection
0370 Tetanus
0389 Septicaemia

0459 Acute Poliomyelitis
0469 Slow virus infection of cns
0539 Herpes Zoster, Shingles
0949 Neurosyphilis
1179 Mycoses
1300 Toxoplasmosis
1350 Cerebral Sarcoidosis
1361 Behcets' syndrome
1371 Late effects of cns tuberculosis
1380 Late effects of poliomyelitis

NEOPLASMS
1729 Malignant Melanoma
1909 Malignant Neoplasm of eye
1919 Malignant Neoplasm of Brain, inc. Astrocytoma, Glioma, etc.
1929 Malignant Neoplasm of nervous system, inc. Spinal cord, cranial nerves, etc.
1983 Malignant Secondary—Brain and spinal cord
1984 Malignant Secondary—other parts of nervous system
1985 Malignant Secondary—Bone
2019 Hodgkin's disease
2028 Lymphoma (malignant)
2030 Myelomatosis
2089 Leukaemia
2140 Lipoma
2251 Acoustic neuroma
2259 Benign Neoplasm brain and other parts of nervous system
2370 Craniopharyngioma & Pituitary Neoplasm
2377 Neurofibromatosis (von Recklinghausen's disease)
2379 Other neoplasms endocrine glands and nervous system

ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND IMMUNITY DISORDERS
2427 Thyrotoxicosis with or without goitre
2469 Disorders of thyroid
2500 Diabetes Mellitus
2505 Diabetes with neurological manifestations
2511 Hyperinsulinism
2512 Hypoglycaemia
2549 Diseases of thymus gland
2592 Carcinoid syndrome
2669 Deficiency of B-complex components
2729 Disorders of lipoid metabolism
2732 Paraproteinaemia
2750 Disorders of mineral metabolism

DISEASES OF BLOOD AND BLOOD-FORMING ORGANS
2800 Iron deficiency anaemia

MENTAL DISORDERS
2909 Senile and Presenile Dementia
2919 Alcoholic psychoses
2959 Schizophrenia
2989 Psychosis, confusion
3009 Neurotic disorders, e.g. anxiety, panic attacks, hysteria, neurotic depression
3030 Alcohol dependence syndrome
3069 Physiological malfunction arising from mental factors
3109 Organic brain syndrome
3190 Mental retardation

DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS

Inflammatory diseases of central nervous system
3204 Tuberculous Meningitis
3209 Bacterial Meningitis
3217 Viral Meningitis
3229 Other Meningitis
3234 Encephalitis due to infection
3238 Other encephalitis, myelitis and encephalomyelitis, excluding bacterial
Royal Free Disease
3240 Intracranial abscess
3241 Intraspinal abscess
3250 Phlebitis and thrombophlebitis of intracranial venous sinuses

Hereditary and degenerative diseases of central nervous system
3300 Leucodystrophy
3309 Other cerebral degenerations usually manifest in childhood
3310 Alzheimer's disease
3311 Pick's disease
3313 Communicating hydrocephalus
3315 Jakob-Creutzfeldt disease
3319 Other cerebral degenerations
3320 Parkinson's disease
3330 Degenerative disease of the Basal ganglia
Steele Richardson
Supernuclear bulbar palsy
3331 Essential, intention and familial tremor
3332 Myoclonus
3333 Tics of organic origin
3334 Huntington's chorea
3335 Choreo-athetosis
3336 Idiopathic torsion dystonia
Dystonia musculorum deformans
3337 Symptomatic torsion dystonia
Athetoid cerebral palsy/athetosis
3338 Fragments of Torsion dystonia, inc. Spasmodic torticollis, Organic writers' cramp
3339 Other extrapyramidal disease and abnormal movement disorders
Restless leg syndrome
3340 Friedreich's Ataxia
3341 Hereditary spastic paraplegia
3342 Primary Cerebellar degeneration
3343 Cerebellar ataxia
3349 Other Spinocerebellar disease
3350 Werdnig-Hoffman disease
Spinal muscular atrophy—infantile
3351 Kugelberg-Welander disease
Spinal muscular atrophy—adult
3352 Motor neuron disease
Progressive muscular atrophy
Progressive bulbar palsy
3358 Other Anterior horn cell disease
Post poliomyelitis (Muscular atrophy)
3360 Syringomyelia
3361 Vascular Myelopathy
3363 Myelopathy
Cervical spondylosis (with myelopathy) including Spinal Cord Compression
3379 Disorders of the autonomic nervous system

Other disorders of central nervous system
3400 Multiple Sclerosis
3421 Spastic hemiplegia
3439 Infantile cerebral palsy
3440 Quadriplegia
3441 Paraplegia (lower limbs)
3446 Cauda equina syndrome, Neurogenic bladder
3449 Other paralytic syndromes
3451 Generalised Epilepsy
3454 Focal or partial Epilepsy including temporal lobe epilepsy
3461 Migraine headache
3463 Facial migraine
3468 Hemplegic migraine
3470 Cataplexy and narcolepsy
3480 Cerebral cysts
3481 Anoxic brain damage
3482 Benign intracranial hypertension
3483 Encephalopathy, Cerebral dysfunction
3499 Other unspecified disorders of nervous system

Disorders of peripheral nervous system
3509 Trigeminal nerve disorders
3510 Bell's palsy
3519 Other facial nerve disorders
3529 Other cranial nerve disorders
3530 Brachial plexus lesion
3531 Lumbosacral plexus lesions
3539 Nerve root and plexus disorders
Thoracic outlet syndrome
3540 Carpal tunnel syndrome
3541 Median nerve lesion
3542 Ulnar nerve lesion
3543 Radial nerve lesion
3545 Mononeuritis multiplex
3549 Unspecified mononeuritis of upper limb
3551 Meralgia paraesthetica
3552 Femoral nerve lesion
3553 Lateral popliteal nerve lesion

3559 Unspecified mononeuritis of lower limb
Neuropathic muscle wasting
Neurogenic atrophy
3561 Charcot-Marie-Tooth disease
Peroneal muscular atrophy
3563 Refsum's disease
3570 Guillain-Barré syndrome
3579 Neuropathy (unless specific name given)
3580 Myasthenia Gravis
3589 Other myoneural disorders
3591 Muscular dystrophy
3592 Myotonic disorders
3599 Other muscular dystrophies and myopathies

Disorders of the eye and adnexa
3623 Retinal vascular occlusion
3627 Retinitis pigmentosa
3684 Visual field defect (no known cause)
Scotoma
3689 Visual disturbance, unspecified
Transient blindness
3699 Blindness & visual loss
3749 Disorders of eyelids
3763 Exophthalmic eye disease
3770 Papilloedema
3773 Optic neuritis
3777 Cortical blindness
3779 Other unspecified disorders of optic nerve and visual pathways
3785 Ocular palsy
3787 Duane's syndrome
Progressive external ophthalmoplegia
3794 Adie pupil & anomalies of pupillary function
3795 Nystagmus

Diseases of the ear and mastoid process
3860 Meniere's disease
3863 Labyrinthitis
3883 Tinnitus
3889 Other disorders of ear
3899 Unspecified deafness

DISEASES OF THE CIRCULATORY SYSTEM
3989 Rheumatic heart disease
4010 Malignant hypertension
4011 Benign hypertension
4149 Ischaemic heart disease
4179 Diseases of pulmonary circulation
4219 Acute or subacute bacterial endocarditis
4289 Heart failure
4299 Other forms of heart disease
4300 Subarachnoid haemorrhage
4310 Intracerebral haemorrhage
4329 Other intracranial haemorrhage
4331 Carotid artery occlusion
4338 Brain stem stroke
4347 Left hemisphere stroke
4348 Right hemisphere stroke
4350 Transient ischaemic attack
4360 Stroke, unspecified
Medullary syndrome
4373 Cerebral aneurysm
4375 Moyamoya disease
4379 Ill-defined cerebrovascular disease
4409 Artherosclerosis
4439 Peripheral vascular disease
4465 Cranial arteritis
4479 Other disorders of arteries and arterioles
4489 Diseases of capillaries
4599 Other disorders of circulatory system

DISEASES OF THE RESPIRATORY SYSTEM
4619 Acute Sinusitis
4860 Pneumonia

DISEASES OF THE DIGESTIVE SYSTEM
5249 Dentofacial anomalies, including malocclusion

DISEASES OF THE GENITOURINARY SYSTEM
5990 Urinary tract infection

COMPLICATIONS OF PREGNANCY, CHILDBIRTH AND THE PUERPERIUM
6426 Eclampsia

DISEASES OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE
7104 Polymyositis
7140 Rheumatoid arthritis
7159 Osteoarthritis
7169 Other unspecified arthropathies and related disorders
7197 Difficulty in walking
7200 Ankylosing spondylitis and other inflammatory spondylopathies
7210 Cervical spondylosis without myelopathy
7219 Other Spondylosis and allied disorders
7225 Lumbar disc lesion
7229 Intervertebral disc disorders
7239 Other disorders of cervical region
7240 Spinal stenosis
7249 Unspecified back disorders
7250 Polymyalgia rheumatica
7269 Peripheral enthosopathies & allied syndromes
7282 Muscular wasting and disuse atrophy
Myofibrosis
7289 Limb weakness (no known cause)
7295 Pain in limb
7299 Unspecified disorders of muscles and other soft tissues
7309 Osteomyelitis, periostitis and other infections involving bone
7310 Paget's disease
7320 Bamberger-Marie disease

CONGENITAL ANOMALIES
7410 Spina bifida with hydrocephalus
7419 Spina bifida without hydrocephalus
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