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ICPC as a standard classification in Norway

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Background. The International Classification for Primary Care (ICPC) has been the standard classification for diagnoses on sickness certificates and bills for services to the National Insurance Administration in Norway since 1992. Coding according to ICPC is compulsory for all general practitioners.

Objective. The objective of the present study was to describe the introduction of ICPC in Norway, to comment on introduction problems, and to examine the compliance and validity of coding.

Methods. The study was based on statistics for episodes of sickness certification in the National Benefit Absence Register.

Results. In 1994, the underlying medical diagnosis was coded in 98% of the sickness absence episodes lasting more than 2 weeks. Component 1 codes (symptom codes) were used in 23% of episodes, compared with 26–31% in practice studies.

Conclusions. ICPC-coded data in a large Norwegian register appear promising. Most doctors do accurate and careful work in coding, and data appear to be of acceptable quality for further analysis. It is a matter of concern, however, that as many as 23% of episodes had component 1 codes, since these certificates were issued during follow-up encounters. The introduction of ICPC coding has enabled researchers to use diagnoses in the analyses of sickness absence. The growing use of ICPC in general practice has made multi-practice studies possible. The introduction of criteria is mandatory for the improvement of validity in diagnostic coding.

Keywords. ICPC, medical classification, sickness certification, general practice.

Introduction

Since 1992, the International Classification for Primary Care (ICPC) has been the standard classification for diagnoses on sickness certificates and bills for services to the National Insurance Administration (NIA) in Norway. This has added a new dimension to sickness absence statistics and has facilitated a more extensive use of ICPC among general practitioners (GPs).

ICPC has gradually evolved as a comprehensive classification since 1978. It has a biaxial structure in which symptoms, procedures and diseases are coded into chapters (with letters) and components (with a two-digit numeric code). The diagnostic components are based on earlier classifications of diseases, mainly the International Classification of Health Problems in Primary Care, 2nd revision (ICHPPC-2),[1,2] which, in turn, was built on the International Classification of Diseases (ICD). The components describing the patient's symptoms and complaints were based on the Reason for Encounter Classification, and process codes describing therapeutic and diagnostic procedures have been included.

ICPC was designed to meet the needs of primary care physicians in research and general practice.[1] Administrative applications were never intended. Nevertheless, when such use takes place, it is essential to examine the compliance among doctors and the quality of their coding.

The present paper focuses on the use of ICPC in relation to sickness certification. The aim was to describe the introduction and present use of ICPC, to discuss problems that were encountered when it was introduced, to examine the compliance and validity of coding, and to sketch possibilities for future use in Norway.

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Introducing ICPC in Norway

By tradition, general practice holds a strong and vital position in the Norwegian health system. Norwegian GPs participated from the start in the development of ICPC, and they took part in the large-scale 'reason for encounter' study in 1982–1985. ICPC was introduced to Norwegian general practice in 1986.[3,4] Initially the spread of ICPC was limited, but the situation changed dramatically when computers were introduced in general practice in about 1990. It soon became apparent that computer-based practices needed a classification system for handling diagnostic and therapeutic data. In 1991, the Norwegian College of General Practitioners published a Norwegian translation of ICPC, edited by Bentsen.[5] A computer version was edited under the auspices of the College, and was made available to GPs. The alphabetical list was considerably expanded in the written and computer versions. The use of ICPC in general practice was the subject of field studies.[6]

Like many other countries, Norway experienced rapidly growing sickness benefit expenditure in the 1980s, mainly caused by musculoskeletal disorders. The Norwegian authorities suggested several countermeasures, particularly directed against long-term sickness absence.[7] The physicians were requested to code diagnoses on sickness certificates for episodes that exceeded 8 weeks. For this purpose a short coding list, based on an ICHPPC-2 study on duration of sickness certification, was created.[8] In 1989, the central sickness benefit register was expanded to facilitate a close monitoring of sickness absence expenditure and to provide statistics for epidemiological research.[9]

The coding of diagnoses underlying long-term sickness certification proved useful. The NIA therefore suggested that a standard classification system for coding of diagnoses on all sickness certificates, and on bills for services from the doctors, should be introduced.[10] There was no previous experience with large-scale coding of diagnostic data from general practice for administrative purposes. Hospital data, though, were already classified and coded according to the ICD, but the compliance and validity of ICD-coding were low.[11]

Following negotiations between the Ministry of Health and Social Affairs and the Norwegian Medical Association, compulsory coding of diagnoses on sickness certificates and on bills for services was introduced from October 1992.[12] GPs should use ICPC, while specialists could continue to use ICD-9. It was stated that GPs and the National Insurance system would need some time to become accustomed to and adapt their routines to ICPC, and that acceptable coding quality would be reached only after several years.

The NIA established control routines, including recommendations that the local insurance clerks should contact the GP when diagnostic codes were missing or unacceptable.[12] Computer programs for conversion of ICD-9 codes to ICPC were installed at the local insurance offices in November 1993.[13]

The Administration distributed ICPC in short rubric titles to all GPs, and the principles for the classification were presented at seminars and meetings. Basic training in ICPC was started in medical schools and in the training of primary care specialists, and an information video and educational videos have been produced.[14]

The present use of ICPC

All Norwegians are members of a compulsory National Insurance Scheme that, among other things, offers sickness absence benefits.[15] When a sickness absence episode lasts more than 3 days, a sickness certificate must be issued by a medical doctor. He/she shall state the underlying medical condition by a diagnosis both in free text and as an ICPC code on the certificate.

Guidelines for the use of ICPC are given on the two-sided abridged version of ICPC that contains short rubric titles for all codes, in circulars[12] and in a handbook for social insurance medicine.[10] When the GP uses a computer, the software programs offer alternative pathways to the correct ICPC code.

The NIA explicitly recommends that sickness certificate diagnoses should, if possible, be coded in ICPC component[7] (diagnosis/disease), and that component 1 (complaint/symptom) codes should be used only as secondary choices. Process codes, and codes from the chapter, 'Z—Social problems', are, in general, not accepted as diagnostic codes on sickness certificates.[10,12]

A copy of the sickness certificate is forwarded to the local insurance office. ICD-9 codes are converted to ICPC and, together with other relevant information, are entered into computer files, and sent monthly to the NIA.

Methods

The sickness benefit register comprises all individuals who are certified sick and entitled to benefits, i.e. employees and self-employed persons with a yearly income above a certain level (at present NOK19 615). Civil servants are entitled to sickness benefits, but were not included in the present study. The economically active population in Norway is approximately 2.1 million, and civil servants constitute 8.5% of these.

The register is based on episodes of sickness certification.[16] Before 1994, the register only included diagnostic codes for episodes lasting more than 8 weeks. From 1994, the register includes codes for all episodes longer than 2 weeks. In the present study, we have analysed episodes during 1989–1992 and in 1994. Due to the mixture of coding that year, data from 1993 were not used.

It was of paramount interest to examine doctors' compliance with the coding procedure. Coding was defined as completed when the episode had a code from the abbreviated ICHPPC list in 1989–1992, or an ICPC code in 1994. If the code was absent, or outside the coding range of the systems, e.g. ICPC code E27, it was defined as 'missing'. The proportion of missing codes in episodes longer than 8 weeks was examined.

Using the 1994 data, we also analysed the proportion of certificate diagnoses that were coded into the rubrics -29 or -99 in ICPC. The reason for this procedure was the assumption that busy doctors might have used the general rubrics -29 and -99 ('rag-bag' rubrics) when they had coding difficulties. For this analysis we used all episodes longer than 2 weeks.

Our aim was furthermore to evaluate how well the ICPC codes actually express the underlying medical condition, i.e. to study the validity of data that were classified and coded according to ICPC. In a coding context, validity can be assessed on several levels: (i) how medical information is transformed into a diagnosis (diagnostic validity); (ii) how diagnoses are classified (classification validity); and (iii) how classified diagnoses are coded (coding validity). In this study it was only possible to give a simplified, overall evaluation of validity, by examining the distribution of diagnoses with respect to chapters and components.

Results

In 1994, 99% of episodes longer than 8 weeks and 98% of episodes longer than 2 weeks were coded. ICPC codes -29 and -99 were used in 9% of episodes lasting more than 2 weeks in 1994 (Table 1). They were used in 36% of the episodes related to the chapter, 'W—Pregnancy, childbearing, family planning', and in 27% in relation to 'A—General and unspecified'. In 'L—Musculoskeletal', 7% of the episodes were coded either as -29 or -99 and in 'P—Psychological', 4%.

In 1994, close to 275 000 episodes of sickness certification lasted more than 2 weeks. Of all episodes, 52% were classified into 'L—Musculoskeletal' (Figure 1). A total of 23% of all diagnoses had codes from component 1 (symptom/complaint codes), 74% had codes from component 7 (disease codes), and 0.1% were process codes (Table 2). The proportion of component 1 codes decreased to 21% for episodes lasting more than 8 weeks, and 17% for episodes lasting more than 26 weeks.

Discussion

Introductory problems

In 1992, ICPC was introduced to GPs that had little previous experience with it. Only a few colleagues,

TABLE 1 *The use of ICPC codes -29 and -99 (%) on sickness certificates, 1994; based on the Sickness Benefit Register, Norway*

			ICPC code				
			-29		-99		-29 + -99
ICPC chapter	No.	%	*n*	%	*n*	%	%
A—General and unspecified	8015	2.9	1003	12.5	1141	14.2	26.7
B—Blood, lymphatics, spleen	1184	0.4	19	1.6	112	9.5	11.1
D—Digestive	13257	4.8	194	1.5	667	5.0	6.5
F—Eye	2058	0.8	80	3.9	443	21.5	25.4
H—Ear	1576	0.6	36	2.3	77	4.9	7.2
K—Circulatory	11879	4.3	176	1.5	462	3.9	5.4
L—Musculoskeletal	142275	51.7	1385	1.0	8689	6.1	7.1
N—Neurological	9011	3.3	217	2.4	836	9.3	11.7
P—Psychological	27410	10.0	456	1.7	498	1.8	3.5
R—Respiratory	15664	5.7	150	1.0	684	4.3	5.3
S—Skin	8460	3.1	90	1.1	290	3.4	4.5
T—Endocrine, metabolic, nutrition	2425	0.9	42	1.7	150	6.2	7.9
U—Urology	2170	0.8	68	3.1	288	13.3	16.4
W—Pregnancy, family planning	15241	5.5	2312	15.2	3159	20.7	35.9
X—Female genital system	6289	2.3	173	2.8	595	9.4	12.2
Y—Male genital system	1044	0.4	26	2.5	68	6.5	9.0
Z—Social problems	393	0.1	20	5.1	-	-	5.1
No coding	6623	2.4					
Total	274974	100.0	6447	2.3	18159	6.6	8.9

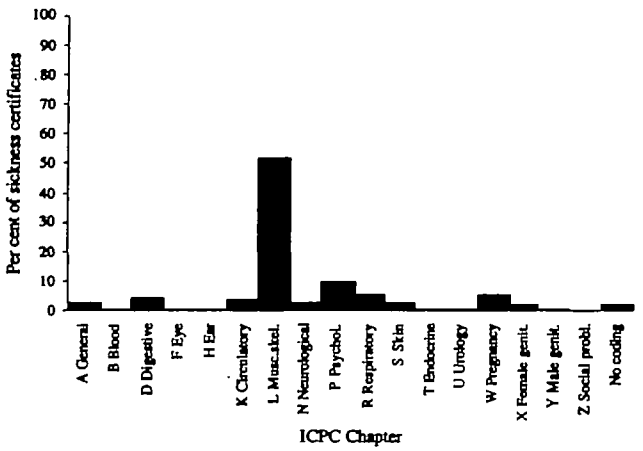

FIGURE 1 *Distribution of ICPC chapters on sickness certificates for episodes lasting >2 weeks in 1994; based on the Sickness Benefit Register, Norway*

engaged in research or in the development of computer-based records, were familiar with the system. Initially, there were some very harsh comments and a heated debate about the classification. Perhaps the most frequent comment was that coding according to ICPC resulted in lower diagnostic precision than necessary, because of the wide rubrics in the system.

Software manufacturers introduced impractical and incorrect ICPC applications on to the market, causing additional problems for the users.[17] These errors have been difficult to correct, since no governmental authority has accepted the responsibility of supervising the use of ICPC among software companies.

Initially, the NIA could not utilize the information on diagnostic codes. In addition to the unavoidable mixture of coding in the last quarter of 1992 and in 1993, some errors in central computer programming resulted in incomplete sickness absence statistics. After reinforcement of control routines, the quality of the register has improved significantly.

Compliance

In 1994, the proportion of uncoded sickness certificates was very small: 1% for long-term certificates. The improvement can mainly be attributed to the control routines in the local insurance offices. However, such a high proportion of coding would be impossible without high compliance by the GPs. In our view, two factors may have contributed to high compliance. The introduction of ICPC was given far more attention than the earlier coding list. Furthermore, the comprehensive and exhaustive ICPC was probably more attractive to the users than the abbreviated ICHPPC list, since it also fulfilled needs for recording patient information and issuing bills for services.

In the Dutch Transition study, 2.3% of all episodes were coded to -29 or -99.[18] The higher proportion of -29/-99 coding in our study (9% of certificates related to episodes longer than 2 weeks) might indicate that the Norwegian GPs, in general, were less keen than the sample of Dutch GPs to find precise and correct diagnoses.

The use of general rubrics varied considerably between ICPC chapters. The extensive use in 'W—Pregnancy, childbearing, family planning' was striking. In Norway, sickness absence incidence during pregnancy is very high, but 'normal pregnancy', as such, is not considered sufficient medical cause for issuing a sickness certificate.[19] In this situation a GP, meaning that sickness leave is necessary for the pregnant patient, might use one of the general rubrics to certify the cause for absence. The comparatively high proportion of codes -29 and -99 in chapter A is probably a consequence of the more general character of this chapter. Medical diagnoses that cannot be classified into other chapters will be classified here, and often to -29 or -99. In chapters L and P, the general rubric codes were used only to a limited extent. In chapter L, codes -29 and -99 comprise many important clinical condition, e.g. polymyalgia, and a certain level of coding according to these rubrics is intended and unavoidable.

Validity

The striking dominance of musculoskeletal diseases among sickness certification diagnoses has been noted in earlier Norwegian studies.[8,20] Chapter A accounted for no more than 3% of the diagnoses, indicating that GPs have used these codes with moderation.

Component 1 codes (symptom codes) were used to a somewhat lesser extent than in practice registration

TABLE 2 *Distribution of ICPC components (%) on sickness certificates for episodes that have lasted >2, >8, and >26 weeks in 1994; based on the Sickness Benefit Register, Norway*

Length of sickness certification	No.	ICPC component				
		Component 1	Components 2–6	Component 7	Missing code	All codes
>2 weeks	274 974	23.1	0.1	74.4	2.4	100.0
>8 weeks	97 289	20.5	0.2	78.3	1.0	100.0
>26 weeks	17 990	17.4	0.1	82.1	0.4	100.0

studies. In our study 23% were symptom codes, compared with 26–31% in other studies.[6,18,21] It seems indisputable that the recommendation from the NIA to use codes from component 7 as a first choice had affected the GPs.

All patients had been certified sick for at least 2 weeks, and, consequently, the certificate diagnosis was set during a follow-up encounter. Considering that GPs had at least 2 weeks to observe and investigate the patient's condition, it is of some concern that as many as 23% of the codes were symptom codes. The proportion of symptom codes decreased slowly, and was 17% after half a year. In the Dutch Transition Study, the proportion of symptom codes fell clearly in long-standing episodes.[18] In our study, the decrease can be attributed both to the revision of diagnoses, and to selection mechanisms, i.e. shorter episodes of sickness certification are more often given a symptom diagnosis.

Our estimation of validity of coding was only indicative. A more correct measure is not possible in the absence of clear criteria for classification and coding. Theoretically, the establishment of criteria, based on consensus among experts, would make it possible to measure validity expressed as criterion validity.[22] The introduction of criteria for coding is mandatory for the improvement of validity in the fields of public health and epidemiology.

Bills for services

Most GPs with computer-based patients' records use ICPC to issue sickness certificates, bills for services and to write patients' notes, since this is the most efficient work routine. The growing use of ICPC in general practice has made multi-practice studies possible.[23] Data from one of these studies indicated satisfactory reliability and validity at chapter level.[24]

Future possibilities for ICPC

ICPC-based statistics can now be used for detailed studies on incidence, prevalence, and duration of sickness absence, and for prospective studies on determinants of sickness absence. ICPC will probably become more important in the handling of diagnostic data in the Norwegian social insurance system. In addition to sickness absence statistics, ICPC will probably be used to an increasing extent in the evaluation of rehabilitation and intervention programmes. Conversion codes from ICD-10 to ICPC will be essential.

Within the administrative domain, ICPC can be useful in monitoring the health status in local communities, in accordance with provisions of the 1984 Norwegian Law on Community Health. It will be possible to perform registration studies in general practice, quality assurance projects, and studies on practice profiles, where the participants can easily obtain feedback on their own practices.

The development of criteria for use of ICPC codes is very important. This ongoing work in the Classification Committee of WONCA will probably be completed in 1997. The introduction of such inclusion criteria has the potential of improving validity further.

Conclusion

ICPC-coded data in a large Norwegian register appear promising. Most GPs do accurate and careful work in coding, and data appear to be of acceptable quality for further analysis. The introduction of ICPC coding has enabled researchers to use diagnoses in the analyses of sickness absence at national and regional levels.

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