German Adaptations of ICD-10

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Abstract: The introduction of the ICD-10, published by WHO 1992–94 in English and by DIMDI 1994/95 in German, is a very slow process. Some states introduced ICD-10 for the preparation of statistics of mortality, but only few use it for morbidity. ICD-9 is in Germany only in hospitals still in use. Much effort was put into the improvement of the official ICD-10 and the development of additional aids for more simple and better encoding of diagnoses. Thus a revision especially for ambulatory health care (ICD-10-SGBV with the incorporated ICD-10-Basisschlüssel) and a collection of German terms and expressions of diagnoses that are not at all part of the official ICD-10 (ICD-10-Diagnosenthesaurus) were published. Three years ago a conversion table ICD-9/-10 was developed which can now be harmonised with WHO's Translator. The experiences with all these instruments are satisfying. The development of methods for automatic encoding of free-text phrases of diagnoses has now been started.

1. Introduction

The history of The International Statistical Classification of Diseases (ICD) goes back more then hundred years. It is the only world wide accepted universal classification of diseases and causes of death and represents the centre of the family of diseases and health-related classifications. But its wide distribution is also the cause of its weakness, because there are always contradictions between the demands for geographical and medical universality on the one hand, and the local, scientific and medicine-special requirements for a practicable and actual classification on the other hand. Nevertheless, all member countries of the World Health Organization (WHO) are obliged to provide by means of the currently valid version of ICD statistics on mortality and if possible also on morbidity.

The International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10), was published by the WHO in three volumes in the years 1992–1994. The German translation was performed by the German Institute of Medical Documentation and Information (Deutsches Institut für medizinische Information und Dokumentation [DIMDI]) in co-operation with the corresponding institutions in Austria and Switzerland. This was published 1994–1995 (version 1.0). Electronic updates were published in 1997 (version 1.1) and 1998 (version 1.2 [in accordance with the first WHO update]), however up to now only version 1.0 is available in a printed German version [3]. The next electronic update by DIMDI is expected for July 1999 (version 1.3).

Contrary to expectations by the WHO, the introduction of ICD-10 and the replacement of the old fashioned ICD-9 (1976) has been delayed in all countries. The situation in the three mainly German speaking countries is as follows:

- In the Federal Republic of Germany the ICD-10 has been in mandatory use for mortality statistics since 1998, and in voluntary use for medical documentation and morbidity statistics in ambulatory health care since 1997. The replacement of ICD-9 in hospital care, which has been used to encode the main diagnoses of all inpatients in East Ger-

many since 1979 and in West Germany since 1986, is expected for the year 2000 or 2001.

- In the Federal Republic of Austria the ICD-10 has also been in mandatory use for mortality statistics since 1998, but in hospitals a special version of ICD-9 (ICD-9 BMAGS 1998) is still in use. The change to ICD-10 is being prepared by a comprehensive experiment in all hospitals of the province Carinthia (Kärnten) started in January 1999. Hospital doctors use only the "ICD-10 BMAGS 1999", while all administrative work is still done with ICD-9 codes, automatically translated from ICD-10 codes. The "ICD-10 BMAGS 1999" was developed on the basis of DIMDI version 1.2. Books and files with tabular list and alphabetical index were published too [1] [2].
- In Switzerland the ICD-10 (DIMDI version 1.0) has been in use for mortality statistics and in all hospitals since 1998.

2. Objectives, methods and results: Development of ICD-10 adaptations and similar products in Germany

In Germany, the replacement of ICD-9 in hospitals and in particular the introduction of any classification of diagnoses in ambulatory health care has been highly debated. Due to strong criticism of ICD-10 by physicians in ambulatory health care the three partners of medical self-government (Spitzenverbände der Krankenkassen [Central Organisations of Health Insurance Companies], Deutsche Krankenhausgesellschaft [DKG] [German Hospital Association] and Kassenärztliche Bundesvereinigung [KBV] [National Association of Statutory Health Insurance Physicians]) signed an agreement about a revision of the official ICD-10 version in 1996. An expert group worked out a proposal for the so-called *ICD-10-SGBV* (ICD-10 for the purpose of §§ 295 and 301 of Fünftes Buch Sozialgesetzbuch [SGB V]), that is reduced in extent and has simplified rules for use in ambulatory health care (see Fig. 1). This special adaptation has been available in the version 1.2 from the DIMDI server (http://www.dimdi.de) since 1998 [6]. The ZI published two special editions of the ICD-10-SGBV in 1997: *"ICD-10-Basisschlüssel"* with tabular list (see Fig. 2) and alphabetical index [4] and a complete tabular list of the ICD-10-SGBV without glossary descriptions, inclusion and exclusion terms (*"ICD-10 ZI-Spezialausgabe"*) [7]. The ZI also published a short manual with an introduction to the organisation and performance of the encoding of diagnoses in ambulatory health care (*"ICD-10-Verschlüsselungsanleitung"*) [8] – The ZI intends to publish an edition of the complete and reduced version of ICD-10 in one combined volume this year.

The ICD-10-SGBV was designed for more practicable use, especially in ambulatory health care. The basic principles for its development were set up according to legal demands for medical documentation and ensured the complete main structure of ICD-10.

- All three-character categories of chapters I–XIX can be used for encoding.
- Those four-character subcategories which are essential are marked. These are part of the "Basisschlüssel". All other four-character subcategories may also be used. Alternatively their superior three-character categories may be used instead. For that reason they are not part of the "Basisschlüssel". But this rule is only valid for general practitioners, for medical specialist outside of their speciality and within the emergency medical service. Examples: A02.0 and A02.- (for A02.1, A02.2, A02.8 and A02.9). (See Fig. 1 and 2.)
- The chapters XXI (factors influencing health status and contact with health services) and especially XX (external causes of morbidity and mortality) can be used at a reduced extent only.
- Four-character subcategories for diseases that are very seldom in Middle Europe ("exotic") are shifted in an appendix (mainly from chapter I [certain infectious and parasitic diseases]). Examples: A00.0, A00.1 and A00.9.

- Some codes especially in the chapter XXI are not allowed as primary codes and have to be used similar to the asterisk-codes of ICD-10 only as secondary codes.
- Two groups of additional characters behind each code can (or shall) be used for the certainty of diagnosis ("V" = suspicion [Verdacht], "A" = exclusion [Ausschluß] or "Z" = condition after [Zustand nach]) and the side-location of a diagnosis ("L" = left [links], "R" = right [rechts], "B" = both [beiderseits]).

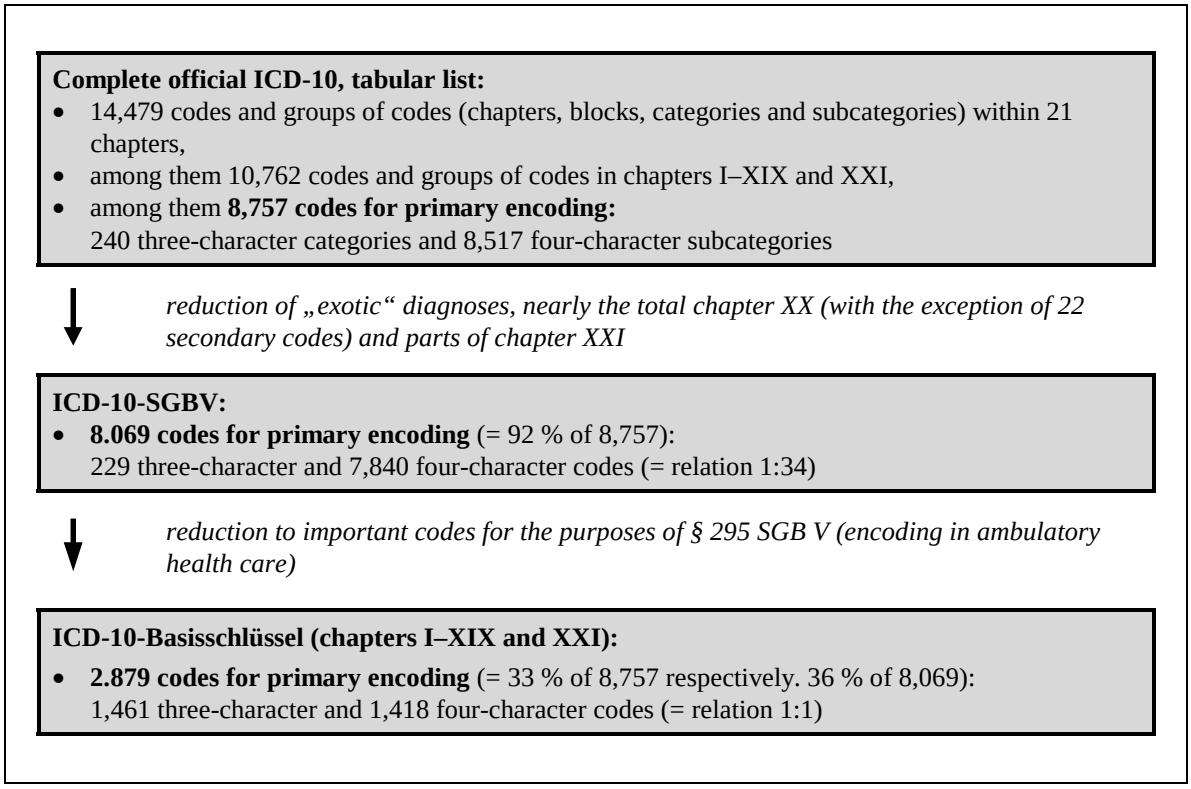

Fig. 1: Quantitative comparison of official ICD-10 and the two new versions ICD-10-SGBV and ICD-10-Basisschlüssel. Only one third of codes of the official ICD-10 and ICD-10-SGBV is used in the Basisschlüssel, and among them fewer than on fifth of all four-character subcategories of ICD-10-SGBV. On the other hand, most of all three-character categories in the ICD-10 can be used for primary encoding with the Basisschlüssel according to its special rules. Only 36 % of these 1,461 categories are divided by subcategories. Encoding with the ICD-10-Basisschlüssel is comparable simple due to this reduction (see Fig. 2).

The Central Research Institute of Ambulatory Health Care in Germany (ZI) established a team of scientists of different medical institutions, headed by Prof. W. Giere, Johann-Wolfgang-Goethe-Universität Frankfurt/Main, to develop the so-called *"ICD-10-Diagnosenthesaurus"*. The target is a validated collection of terms and expressions of diagnoses in German language with ICD-10 codes (and not a real "thesaurus"!), whereby many of them are (up to now) supplements of the official ICD-10. The version 2.2 (1999) contains nearly 30,000 terms (phrases) and is available in two different forms: as a computer file and as a book file with an alphabetical index (nearly 60,000 entries). This work is going on, and version 3.0 is expected by the end of this year. These files are available from the DIMDI server [5].

Replacing the ICD-9 in hospitals while ensuring the continuation of the ICD deployment can be simplified by using a translation table between ICD-9 and ICD-10. This *"Überleitungstabelle ICD-9/10"* was 1996 written by Dr. A. Zaiß, Albert-Ludwigs-Universität Freiburg i. Br., with the support of the Deutscher Ärzte-Verlag (DÄV) and is now also available from the DIMDI server. Meanwhile also the WHO published a Translator. This table and the German table will be compared and combined in 1999. The translation table is also published as software by the DÄV (version 2.1 [12]) and is a component of DÄV's

encoding software for diagnoses (ICD-9/-10) and medical procedures (OPS-301 [ICPM]) "ICD/ICPM professional" [9]. These tables are used for clinical research, statutory minimum basic data sets, epidemiological morbidity trends and public health statistics. They will be helpful for comparing data collected in ICD-10 with data formerly classified by ICD-9, and when using ICD-10 in documentation if there is the necessity of delivering still ICD-9-codes for legal purposes [11] [13] – *"Full-text versions"* of all these classifications with the complete text-formulation for each code are commercially available, e. g. [9], whereas the DIMDI server provides SGML, ASCII or WORD files with the data as printed in the books.

A00–B99	**I. Bestimmte infektiöse und parasitäre Krankheiten**
A00–A09	**Infektiöse Darmkrankheiten**
A01.-	**Typhus abdominalis und Paratyphus**
A02.-	**Sonstige Salmonelleninfektionen**
A02.0	Salmonellenenteritis
A03.-	**Shigellose [Bakterielle Ruhr]**
A04.-	**Sonstige bakterielle Darminfektionen**
A04.4	Sonstige Darminfektionen durch Escherichia coli
A05.-	**Sonstige bakteriell bedingte Lebensmittelvergiftungen**
A05.0	Lebensmittelvergiftung durch Staphylokokken
A06.-	**Amöbiasis [Amöbenruhr]**
A07.-	**Sonstige Darmkrankheiten durch Protozoen**
A07.1	Giardiasis [Lambliasis]
A08.-	**Virusbedingte und sonstige näher bezeichnete Darminfektionen**
A08.0	Enteritis durch Rotaviren
A09	**Diarrhoe und Gastroenteritis, vermutlich infektiösen Ursprungs**

Fig. 2: The first entries of the tabular list of the ICD-10-Basisschlüssel [4]. The block A00–A09 contains only 14 codes and all of them are primary codes. The same block in the complete official ICD-10 contains 59 primary codes and 8 three-character categories.

3. Discussion and conclusion

In 1997 the ZI performed a voluntary comprehensive field test: More than 2,000 ambulatory physicians in the federal states of Lower Saxony (Niedersachsen) and Saxony-Anhalt (Sachsen-Anhalt) applied the ICD-10 for encoding their diagnoses. In general, the ICD-10 was found to be practicable. The ambulant physicians made good use of the German adaptations of ICD-10 and particularly preferred the ICD-10-Diagnosenthesaurus for daily practice [10].

Similar positive experience had physicians of the hospitals in Carinthia, who use the ICD-10 BMAGS 1999 [1] and the Austrian version of the Diagnosenthesaurus [2] in an obligatory comprehensive test since January 1999. The automatic conversion of ICD-10 codes into ICD-9 codes does not cause any particular problems.

Because of the current unsteadiness in the German ICD-legislation, the ICD-10 is not really introduced in the ambulatory health care, but it is used on a voluntary basis by about 10 % of the physicians. The general use of ICD-10 in hospitals is still an exception (e. g. in the University hospital Heidelberg). Although so many adaptations of ICD-10 are now

available and encoding in ICD-10 is easier than encoding in ICD-9, the ICD-10 is hardly in use in the daily operations.

In addition to the above mentioned special editions of ICD-10, in Germany there are also speciality-based adaptations available, e.g. for Dermatology, Oncology, Ophthalmology, Orthopaedics, Paediatrics and Psychiatry (see [10]). Currently, there are no plans to develop a German clinical modification of the ICD-10 comparable to ICD-10-CM, that is being prepared in the U.S.A. However, for all physicians, medical record officers and other people engaged in encoding of diagnoses useful aids have been developed. Work is in progress to encode the diagnoses of German ambulatory physicians in an automatic way. This is co-ordinated by the ZI.

We are convinced that a joint effort to improve the use of ICD by scientists in the German speaking countries as well as in the European Union and in the WHO will be successful.

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