

chapter sixteen

NordDRG: The benefits of coordination

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16.1 Introduction

Since the early 1990s the Nordic countries (Finland, Sweden, Denmark, Norway and Iceland) have been experimenting with patient classification systems. This led to a common Nordic patient classification system known as 'NordDRG' in the mid-1990s. NordDRG is a diagnosis-related group (DRG) grouper which emulates Health Care Financing Administration (HCFA)-DRG Version 12, using definitions based on the WHO International Classification of Diseases 10th revision (ICD-10) and the NOMESCO (Nordic Medico-Statistical Committee) Classification of Surgical Procedures (NCSP). The first grouper was finished in 1996. The grouper is updated yearly, according to the NordDRG maintenance process. This chapter explores the methods the Nordic countries have used to establish a grouping system which is unique on the DRG landscape and functions across the different countries. The implementation of the NordDRGs in Sweden, Finland and Estonia will be examined more closely in the chapters that follow.

During the early 1990s Finland developed a 'FinDRG' grouper based on the HCFA grouping system, which automatically converted Finnish ICD-9 diagnosis and procedure codes into HCFA-DRGs (Salonen et al., 1995; Linnakko, 2001). At the same time, other Nordic countries were also using DRGs, albeit somewhat unsystematically. The groupers used were mainly the 3M™ All Patient (AP)-DRG grouper or the United States HCFA-DRG grouper. DRG application in the Nordic countries was not at this time directly linked to hospital payment, but DRGs were used for benchmarking hospitals, health system evaluation or statistical reporting purposes. However, some of the Swedish county councils used the 3M™ AP-DRGs and the HCFA-DRG grouper in order to reimburse hospitals or inpatient care in some specialties (Håkansson & Gavelin, 2001). In Finland, FinDRGs were mainly used for managerial purposes rather than for hospital reimbursement (Linna, 1997).

Since the beginning of 1996 all Nordic countries decided to start using the ICD-10 classification for clinical diagnoses. However, it was impossible to employ a satisfactory conversion from ICD-9 (used for example, by the HCFA and FinDRG groupers) to ICD-10 and, in addition, the Nordic countries were in the process of implementing the new NCSP. Furthermore, the use of DRGs for hospital reimbursement in Sweden was increasing and several Finnish municipalities had expressed their interest in using hospital service definitions based on DRGs. Thus, the NOMESCO assigned the WHO Collaborating Centre for the Classification of Diseases in the Nordic countries to design a new cross-country DRG system, namely the NordDRG.

The national health authorities and associations in Finland (the Finnish Association of Local and Regional Authorities), Sweden (the National Board of Welfare and Health) and Iceland (the Ministry of Health and Social Insurance) started the NordDRG project, later accompanied by the Danish and Norwegian ministries of health. These organizations established the Nordic Casemix Centre,¹ which is responsible for the distribution, maintenance and development of the NordDRG grouper.

With the introduction of the system in 1996, separate country versions for Sweden and Finland were released, based on common definitions. Later, Denmark (2000), Iceland and Norway (2002) were also included in the set of country versions. In 2002 Denmark decided to leave the joint project in order to build its own system of DRGs (DkDRG), based on different primary classifications (procedures) and major revisions to the NordDRG grouping definitions (Hansen & Nielsen 2001) (Figure 16.1). In 2003 Estonia joined the NordDRG consortium. However, until 2009 they used the 2003 NordDRG grouper, particularly because the Estonian procedure classification (based on the NCSP) was not updated during this period. There is also an agreement with the Ministry of Health of the Republic of Latvia regarding the right to use NordDRGs in Latvia.

Aside from the national NordDRG versions there is also a NordDRG version based on the common Nordic components of ICD-10 and the NCSP. This version is used in Iceland. In 2003 an extended NordDRG version was developed that also includes national modifications to the grouping logic, using national codes that are unique to some of the countries (NCSP+).

16.2 Development and updates of the NordDRG system

The annual maintenance and updating of the NordDRG system is carried out according to a specified protocol and a fixed timetable. This updating process is intended to meet the emerging needs of the main stakeholders of the system within the Nordic countries. Modifications are validated with clinical and cost data to ensure that both economic and medical (clinical) homogeneity are retained or improved. Each country tests and implements these modifications separately, using their own data.

Suggestions for annual system updates are administered through an expert network, which consists of nominated experts from each participating country. The network is the main advisory group and platform for discussions relating to the maintenance, performance evaluation and development of the NordDRG

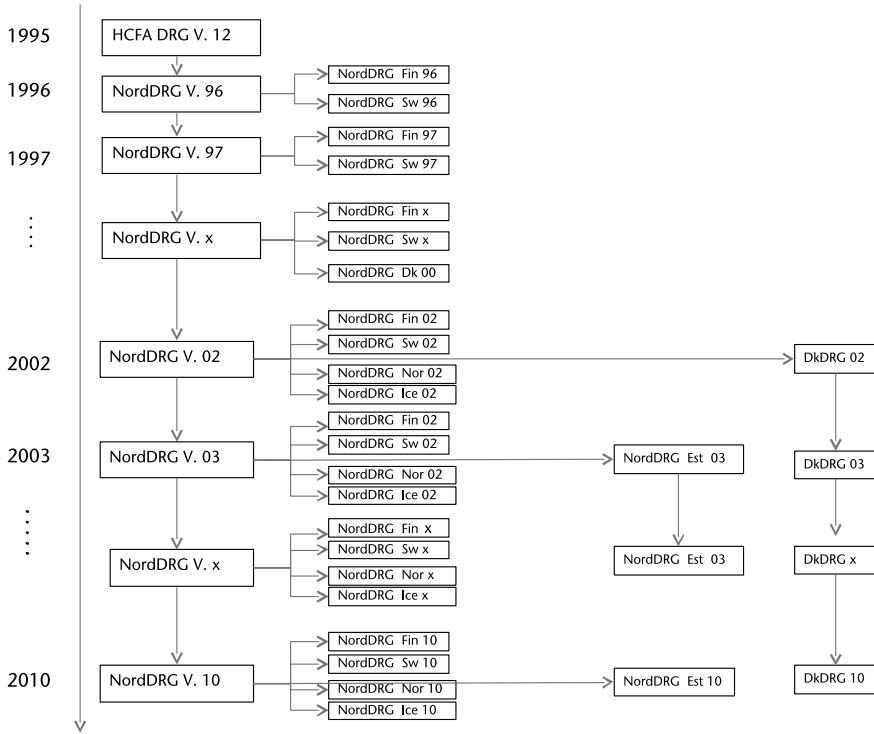


Figure 16.1 The development of the NordDRGs country versions

system. Meetings of the expert network are arranged twice per year. Based on the experts’ suggestions, the NordDRG steering group makes the final decision (by consensus) regarding any changes to be made to the system.

The common NordDRG grouper is the reference grouper for inpatient care. Some modifications have been incrementally incorporated to better reflect the Nordic health care system context. Except for Denmark, all of the country-specific modifications represent only minor adaptations in the grouping algorithm for inpatient care. However, the incorporation of outpatient and day care differs markedly. From 2004 to 2007 the grouping of outpatient care was fairly similar in the Finnish and Swedish versions. In 2007 the Swedish version incorporated large revisions to the conservative cases in outpatient care. The operative cases/groups remain quite similar in the Swedish, Finnish and Norwegian versions. Norway integrated DRGs for outpatient care into its NordDRG country version in 2010 and Estonia did so during 2011.

General system information is available through an edited and open NordDRG discussion forum.² In addition, the forum is used for proposing updates and answering questions relating to the NordDRG system, and changes made to the NordDRG system each year are also documented.

Each year in which changes are necessary, two evolution versions are produced. The first (planning) version includes changes of the grouping logic of some DRGs for the next year. These changes may include entirely new groups,

splitting of DRGs into sub-groups or changes in the assignment rules (patient case being entered into different DRGs). The first version is based on the primary classifications of the concurrent year and can therefore be used to test the effect(s) of the changes. The second (production) version is based on the primary classifications for the next year, but there are no new changes to the assignment logic of the NordDRG. If no errors are revealed, the second version will be accepted as the official production version for the next year.

In Finland all proposed alterations are discussed at the Finnish DRG Centre in cooperation with an expert physician from each medical specialty. They select which of the suggestions are relevant for the system update. If necessary, the suggestions are further discussed with the NordDRG expert network.

In Sweden the National Board of Health and Welfare is responsible for maintaining and developing the Swedish version of the NordDRG system. The National Board works together with the Swedish Association of Local Authorities and Regions (SALAR), representing the 21 county councils and regions in Sweden. There are also a number of expert groups in which the hospitals are represented. The test data for the updating process originate from the National Patient Register. For validating the homogeneity of DRGs, patient-level cost data are supplied by the National Cost Database. This database contains cost-accounting information from several hospitals.

Responsibility for developing and updating the DRG system in Estonia relies on the Estonian Health Insurance Fund (EHIF) and these tasks are carried out according to the DRG development plan.

The calculation of cost weights is accomplished separately in each country, using the NordDRGs and the respective cost data. In Finland the cost weights for the Finnish grouper have been calculated annually, based on patient-level cost data from the hospitals of the largest hospital district in Finland, Helsinki and Uusimaa, covering approximately 30 per cent of the specialized care setting in Finland (Mikkola & Linna, 2002). In Estonia the calculation of cost weights and DRG prices is based on the prices of the health services, not on the actual resource consumption. The main source used to develop the Estonian version is the case costing database of the EHIF. Expertise is also drawn upon from medical professionals' associations and health care providers. In Sweden the Centre for Patient Classification is responsible for the updating process and for calculating the cost weights. It is not mandatory to use the national weight sets in Sweden; there are also local weights in use in some of the counties. National weights are based on the national case costing database (using 'bottom-up' costing approach), which comprises 62 per cent of all inpatients in Sweden. Case costing data are also collected for outpatient care, and weights for day surgery and visits are also based on 'bottom-up' costing data.

The Finnish versions of NordDRGs only included groups for inpatient care until 2004. From then on, the hospital districts have gradually moved away from using the classic (only inpatient and day-care) grouper to using the outpatient DRGs.

Between 2003 and 2009, there were two versions of NordDRGs in effect in Sweden: a full version, which handled both inpatient care and day surgery (including intraluminal endoscopies); and a classic version for inpatient care only. Aside from these, a separate NordDRG grouper that included outpatient

care also existed. From 2010, there will be just one version of NordDRGs for handling inpatient care and outpatient care. Estonia has been using the same version of NordDRGs since the year 2000. This is partly because the procedure classification has not been updated during this time. In 2011 DRGs for 'short-term therapy' (day care) were introduced.

16.3 Differences in diagnosis and procedure classification

The responsibility for updating the NCSP lies with the Nordic Centre, which maintains the aforementioned electronic discussion forum for the discussion of changes (see section 16.2). The reference group makes recommendations on changes to the Board of the Nordic Centre, which makes any formal decisions.

To update the NCSP, the reference group requires certain information for taking update proposals into consideration. Proposals should be approved and submitted by a responsible national classification body. The proposal can be prepared by the relevant medical professionals' association. The proposal should include a description of the new method and an account of its indications. In addition, it should include a rough estimate of how many procedures are performed per year in the country submitting the proposal, or the expected annual number in the near future. References should be included to the relevant literature (preferably accessible on the Internet), documenting the fact that proposed new codes represent established procedures and are not purely experimental in nature, giving a broad overview of the indications and techniques of any proposed new code.

However, the classifications of diagnoses and procedures are all slightly different, varying across the countries using NordDRGs. Finland has added a number of 5th-character codes to the ICD-10, but mostly there are no conflicts with the original WHO version. However, the country has made a number of updates to the NCSP (for example, diagnostic radiology, including ultrasound examination, therapeutic radiology and rehabilitation interventions were added). The Finnish Full DRG version (grouping both inpatients and outpatients) has been expanded to outpatient care, with a number of groups for hospital outpatient visits. This is based on the common Nordic model, in which so-called day surgery has its own groups per visit. The national additions refer mostly to the expensive radiology procedures, usually coded in the patient administration systems in Finland. The Finnish model still uses the original concept, from the common Full NordDRGs system, of 'short-term therapy' (in and out during the same calendar day) instead of an outpatient approach. Expensive medication has been another issue for consideration, but – due to the lack of systematic data collection – this has produced only temporary solutions.

The Swedish ICD-10 includes a number of 5th-character additions to the original WHO ICD-10. Similar to the Finnish version, these are mostly compatible with the WHO original. Sweden is the only Nordic country that fully applies the external cause coding of the ICD-10 classification to 5th-character level (~25 000 external cause codes). Sweden uses the NCSP, along with a national classification of conservative interventions that are especially important for

DRGs in outpatient settings. Diagnostic radiology is much less developed in Sweden than its Finnish counterpart but minor (short-stay) procedures and rehabilitation, for example, are more detailed in the procedure classification than in Finland. The Swedish Full NordDRG version is expanded to include all specialized outpatient care (conservative and surgical), along with psychiatry and rehabilitation.

Iceland is using a version of the expanded NCSP called NCSP+ for procedure classification. NCSP+ is based on the different additions to the NCSP in different Nordic countries. NCSP+ was developed for the NordDRG process as a tool that links the different national versions of procedure classifications together, so that the rules for different countries can be defined together and applied through the NCSP+ mapping to all national versions. The ICD-10 in Iceland, similarly to the Estonian version, is a direct translation of the WHO ICD-10.

Norway has modified the NCSP only when the common version has been updated. However, there is a separate classification of 'non-surgical' interventions that can be used together with the NCSP. It covers important areas, even for the classic NordDRG, and thus also includes important features for the outpatient groups. Norway has developed an expanded version of the Full NordDRG system, which is closely related to the Swedish version.

Denmark has revised the ICD-10 coding by replacing the 'dagger-asterisk' system with a large number of predefined combination codes. External cause codes were also replaced by the NOMESCO Classification of External Causes of Injury (NCECI). The procedure classification is mostly taken from the NCSP.

Some countries have added a system of 'nursing interventions' (comprising a number of codes) to the NordDRG system. For example, the Finnish and Swedish Full NordDRG version includes a number of DRG groups for (outpatient-based) nursing procedures.

16.4 Grouping process

The information required by the NordDRG grouper includes the following items: main diagnosis, secondary diagnoses (a list of diagnoses), procedures (a list of procedures), age, gender, mode of discharge and length of stay.

Internally, the grouping algorithm uses various predefined sets and sub-groupings of diagnoses and procedures to determine the properties which affect the grouping of each case (for example, the complication properties for diagnoses and procedures). This information is available in the definition tables for the NordDRG logic. Diagnoses and procedures that have an effect on the grouping are clustered into *intermediate groups* called 'categories' and 'properties'. Each code belongs to only one category, but it may have several properties. Properties relating to co-morbidities and/or complications (CCs) are binary, that is, having only two levels. About 75 per cent of the inpatient DRGs are divided into 'non-complicated' DRGs (without CCs) and 'complicated' DRGs (with CCs). Complicated cases are defined based on secondary diagnoses or in some cases procedures undertaken because of complication(s).

Operating room (OR) properties are binary in the Classic grouper, but in the Full grouper can have three values. Values 1 and 0 indicate whether a surgical

procedure has been undertaken or not. According to this information, cases are assigned into 'surgical' and 'medical' DRGs, respectively. Procedures that are important in outpatient setting but do not affect DRG assignment of hospital inpatients have OR-property 2 (OR=2). In the case of hospital inpatients, OR=2 has no impact on the DRG assignment. The grouper algorithm returns three codes: the major diagnostic category (MDC) code, the NordDRG group code and a separate return code which indicates the outcome of the grouping, consistency checks and the reason for unsuccessful grouping.

16.5 Reimbursement via DRGs

The Finnish version of NordDRGs was initially introduced at the Helsinki University Central Hospital at the beginning of 1998. In 2001, five Finnish districts were employing NordDRGs to some extent in their pricing of hospital treatment. Today, 13 out of 21 districts have incorporated DRG-based pricing, but the methodology still varies greatly because regulations or even guidelines for hospital reimbursement are lacking at national level in Finland. Therefore, each district may determine the hospital payment method autonomously (Häkkinen & Linna, 2006).

In Sweden, different DRG systems (but mainly the HCFA-DRGs) have been used since the beginning of the 1990s. Stockholm County Council implemented DRGs as a payment system for inpatient care in 1992. The DRG system was developed as a process of cooperation between the National Board of Health and Welfare and the county councils, and the adoption of the DRGs has mainly been the concern of the county councils. This background – together with a tradition of a high degree of local autonomy – resulted in a situation in which central coordination on DRG-related issues was relatively weak during the 1990s. Since 1999 the National Board of Health and Welfare has coordinated DRG matters. All county councils and regions now use DRGs to some extent.

The DRG system introduced in Estonia in 2003 replaced the previous fee-for-service and per diem payments for hospital reimbursement. In 2011 the update of the current DRG grouping version took place, with the aim of increasing clinical relevance and resource homogeneity in DRGs by introducing them for 'short-term therapy' (day care), taking into account the different costs according to the patient's length of stay.

In Norway the funding of hospital care has largely comprised a mixture of global budgeting and activity-based funding (DRGs) since 1997. The implementation of the 1997 reform changed the format of hospital financing from block grants to a combination of block grants and activity-based reimbursement using NordDRGs.

In Denmark, the Ministry of the Interior and Health introduced casemix rates for the reimbursement of patients who received basic-level treatment outside of their home county ('free-choice patients') in 2000. At the same time, the voluntary 90/10 payment model was introduced in the counties. In the 90/10 model, 90 per cent of the predicted health care delivery/production costs were allocated to hospitals and the remaining 10 per cent of the hospital funding

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was to be allocated based on health care activities carried out, as measured by DRGs.

16.6 Notes

- 1 For more details see the Nordic Casemix Centre web site (www.nordcase.org, accessed 10 July 2011).
- 2 See the Nordic Centre for Classifications in Health Care dedicated forum web site for further details (www.norddrg.net/norddrgforum, accessed 10 July 2011).

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