

Clinical coder training initiatives in Ireland

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Abstract

The Hospital In-Patient Enquiry and National Perinatal Reporting System (HIPE & NPRS) Unit of the Economic and Social Research Institute in Ireland requested a review of its coder training programs and data quality initiatives, primarily because of the decision to implement a major change in Ireland's morbidity classification in January 2005. In August 2004, a formative evaluation using qualitative methods was conducted to assess the Unit's programs and initiatives. A number of opportunities for building on the solid frameworks the Unit has implemented were identified. In this paper, we focus on the Unit's coder training programs. The Unit's data quality initiatives will be discussed in a subsequent paper (Bramley & Reid 2005).

Key words: *Best practice analysis; clinical coders; coder training programs; health information management*

Introduction

The Hospital In-Patient Enquiry and National Perinatal Reporting System (HIPE & NPRS) Unit (hereafter called the Unit) of the Economic and Social Research Institute (ESRI) in Ireland, manages the national morbidity data collected from acute care hospitals in Ireland. The Unit is committed to achieving best practice in the coding of morbidity data (Murphy et al. 2004) and has implemented training programs for hospital staff who abstract, code and report the data (clinical coders). The Unit also promotes data quality through a number of in-house/in-hospital data quality initiatives that aim to minimise sources of error.

In August 2004, the Unit requested a review of its coder training programs and data quality initiatives because of the decision to implement a major change in the morbidity classification in January 2005, and the expanding applications for HIPE data. The classification currently used is the ICD-9-CM, 1 October 1998 version (Commission on Professional and Hospital Activities 1998), an American product that is a clinical modification of the World Health Organization's *International Classification of Diseases, Ninth Revision*. The ICD-9-CM is outdated and no longer reflects current clinical practice, especially in respect of surgical procedures. The Unit's assessment of the best options for updating the classification system led to the decision to implement the ICD-10-AM Fourth Edition (Murphy et al. 2004; National Centre for Classification in Health 2004). There are many significant structural and content differences between the ICD-9-CM and the ICD-10-AM (Roberts 1999). Implementing a new national classification system is not a trivial exercise (Innes, Peasley and Roberts 2000; Roberts et al. 1999). A review of the Unit's existing training programs and data quality audit procedures was therefore necessary to determine if any structural or fundamental changes were necessary.

This review is timely and necessary for more reasons than one. A recent pilot study conducted by the Unit to assess the feasibility of implementing the ICD-10-AM found that some areas within the morbidity data collection system needed improving. These areas included clinical documentation, clinical coder education, adherence to coding guidelines and coding quality (accuracy) (Murphy et al. 2004). Updating the morbidity classification system is essential in order to

reflect current clinical practice. However, this move alone will not eliminate the problems mentioned above. Clinical coder education is integral to the quality of data within the national morbidity data collection, and the Unit acknowledges this in their quest for best practice.

In this paper, we report on our review, and include an overview of the Unit in order to place the work in context. The focus of our results is on the Unit's coder training programs. The Unit's data quality initiatives will be discussed in the following paper (Bramley & Reid 2005).

Background

An overview of the HIPE Unit

Ireland's national morbidity data collection system — the HIPE Scheme — has been managed by the Unit since 1990, through a contractual arrangement with the Department of Health and Children (DoHC). The Unit is contracted to oversee the 'collection, coding, input, quality, processing and reporting' of morbidity data from acute care hospitals (Economic and Social Research Institute 2002). In 1998, the Unit's mandate was broadened to include the development, implementation and maintenance of the HIPE computer system (Economic and Social Research Institute 2002) and provision of technical support and training to all users of the system. The system is designed to collect and report clinical, demographic and administrative data on deaths and discharges and is used by all hospitals participating in the HIPE data collection (Economic and Social Research Institute 2002, p.17). Three departments within the Unit support the HIPE data collection system; the Coding/Data Quality Department, the Information Technology Department, and the HIPE Data Management Department.

The HIPE Scheme

The HIPE Scheme is the national morbidity database containing clinical, demographic and administrative data relating to hospital in-patients. Each individual record represents an episode of in-patient or day-patient care, and therefore the database reflects hospital activity, rather than incidence or prevalence of disease (Economic and Social Research Institute

2002). Data are collected from all 60 participating hospitals (all public acute hospitals and some private acute hospitals in Ireland) and represent almost 96% of all in-patient discharges in Ireland (Economic and Social Research Institute 2002). Approximately one million records are submitted to the Unit each year.

Clinical coders, and in some instances, HIPE/Casemix Coordinators (HCCs¹), in hospitals abstract relevant information from each patient's chart (or clinical record) and translate the information into coded data. In the clinical data subset, up to 10 diagnoses and 10 procedure codes can be collected.² The data are entered into the HIPE computer system and submitted to the Unit each month. The HIPE instruction manual provides guidance to all users of the system and includes definitions of each data element within the HIPE Scheme and guidelines in relation to abstracting.

One key source for information within the chart is the HIPE summary sheet. Clinical consultants are responsible for completing this sheet, which contains a summary of the conditions that occasioned the admission and affected the patient during the episode of care, and the treatment provided for those conditions. However, coders are required to review the entire chart when abstracting relevant information, primarily because there may be additional information available within the chart that can assist with accurate code assignment. Coders are also required to follow HIPE data collection guidelines, classification conventions, and national coding guidelines, which are published in *Coding Notes*, the Unit's newsletter distributed quarterly to all HCCs and coders (and also to clinicians and administrators, on request).

The HIPE computer system

The HIPE computer system is the data entry and reporting software used by all hospitals participating in the HIPE scheme. Coders enter data on each episode of care for all in-patients and day-patients discharged from acute hospitals (Economic and Social Research Institute 2002).

Edits and validation checks are automated and are performed on individual data fields as data are entered into the system. There are inbuilt combination checks between two or more data fields and final cross comparisons between all data fields when data entry for the episode of care has been completed (but before the record is stored). Messages are displayed to prompt or guide the user in correcting the errors. Fields are also colour coded; for example, 'red' indicates a field with an error. Flags are inbuilt to reject certain codes or code combinations. They also allow users to confirm, endorse, or provide a textual explanation for their choice of codes. Two special flags — audit and report flags — are automatically triggered when users select certain codes. Queries are marked

in logs, and the logs can be viewed and accessed centrally by the Unit for analysis.

Automated edits, validations and data quality checking lists (reporter checks) enable hospitals to correct errors at the source and conduct local data quality improvement activities. Additional quality checks at the national level are performed on the data submitted to the Unit each month. Reports are sent to HCCs and coders for analysis and correction if any problems are found. Edits and reports are built on the collective advice of all departments within the Unit, the users and the DoHC. All user requests are evaluated (at HIPE unit level and in some cases by the DoHC), and adopted only if applicable nationally.

Scope and timeframe of the review

The aim of the review was to evaluate the Unit's coder education programs and data quality initiatives to determine if: (a) coders are being equipped with tools, facilities and skills required to produce quality morbidity data, and (b) adequate measures are in place to facilitate compliance with national coding guidelines and standards (Murphy et al. 2004).

The objectives were to:

- conduct an evaluation of the Unit's:
 - coder training programs and monitoring procedures
 - existing coding guidelines and compliance with same
 - policies and procedures at a national level concerned with auditing and improving quality assurance of coded records
- determine which coder training programs are performed at a local level (in hospitals)
- determine if the policies and procedures concerned with auditing and improving quality assurance of coded records, in place at a local level, align with national policies and procedures
- describe the strengths and weaknesses of the Unit's coder training programs and data quality audit procedures from the point of view of key stakeholders (HCCs), clinical coders and the Casemix Unit of the DoHC
- identify any coder workforce issues that may impact on the production of quality data.

We performed the review as a consultancy, in two phases. The investigative phase was conducted in Ireland over 2 weeks in July 2004 and involved site visits to HIPE units at seven hospitals; three hospitals in Dublin and four in various counties across Ireland. The reporting phase was conducted in Australia in August 2004.

Methods

A formative evaluation approach was adopted for the review. Formative evaluations assess the value of a current program or initiative, with the objective to improve the program or initiative (Scriven 1991). The focus is therefore on process and implementation. Two qualitative methods, content analysis and focus group sessions and interviews, were used with this approach to (a) gain insight into the work of the Unit and key stakeholder perceptions, and (b) source rich, interpre-

¹ HCCs manage the operations and staff of the local HIPE Units within hospitals. They may also be responsible for the collection, analysis and reporting of casemix data.

² From January 2005, 20 diagnoses and 20 procedure codes will be collected.

tative data (Liamputtong and Ezzy 2005) on which a reasonable assessment of the Unit's training programs and data quality initiatives could be based.

The Unit identified the key stakeholders for the interviews and focus group sessions as: the Casemix Unit of the DoHC, HCCs, and clinical coders. The Unit also approached a number of hospitals across Ireland to participate in the review. The seven chosen were selected primarily for regional representation and in consideration of the time frame of the review.

Structured questionnaires were built from a review of the relevant literature and our knowledge and experience in this area, in line with the study objectives. The questionnaires provided a consistent base to the interviews and focus group sessions; they also provided the framework for the evaluation, analysis, and reporting of data. Different questionnaires were built for each stakeholder group and the staff of the Unit.

Detailed data were collected from documents relating to the Unit's data quality initiatives and coder training curriculum (policies, procedures, strategic plans, minutes from meetings, data quality framework, quality audit activities, coding guidelines, newsletters, training manuals and exercises, assessments, statistics, evaluations, software implementation and training manuals, reports, publications, outcome measurements etc.). In-depth interviews were conducted with the staff of the Unit to collect objective data to support the content analysis.

Results

We present first a description of the Unit's coder training programs, gleaned from content analysis and from staff interviews designed to collect objective data to support the content analysis. We then document key stakeholder perceptions, obtained from the focus group sessions.

The Unit's coder training programs

Background to the Unit's coder training programs

The Unit regularly conducts coder training workshops aimed at three different skill levels — basic, intermediate, and experienced (refresher and continuing education). Ad hoc coder training workshops are also designed on demand. Workshops are conducted at various times throughout the year at the ESRI in Dublin and at various locations throughout Ireland, with timing and location dependent on demand. All members of staff from the Coding/Data Quality Department of the Unit are involved in the workshops.

Content for all workshops is derived from requests from HCCs and coders, feedback from the evaluations of previous workshops, or feedback from data quality audit activities conducted at local and national levels. All workshops are advertised in *Coding Notes* and on the Unit's website to enable wide participation. Though some workshops are designed for and conducted in a specific region, they are open to coders in other regions who are willing to travel to participate. Several ICD-10-AM training workshops were conducted prior to implementation on 1 January 2005. Post-implementation workshops were held in March and April 2005 and more are planned for later in 2005.

Coding exercises are completed after each session in the workshop to reinforce learning and clarify understanding. Discussion sessions are also held to give participants a chance to discuss various coding issues and experiences that have arisen on the job.

Conferences and seminars are two other forms of educational initiatives organised by the Unit. An inaugural conference for clinical coders and HCCs was held in August 2002, and a seminar for HCCs, *Managing Coding Services*, was held in October 2003.

Registration process for training programs

The Unit monitors all requests for training programs. Registration forms are sent to all participants. The form also collects data about the participant's current level of coding experience. Each participant's details are updated in the Unit's documentation log for training programs. When new coders are booked for basic training sessions their details are recorded in two systems: the documentation log for training programs, and the registration database of all HIPE computer system users.

This tracking process provides a valuable snapshot of the national coder workforce, its years of experience, and its level of training. It also ensures that coders are not repeating training programs unnecessarily or inappropriately. The documentation log for training programs is maintained and cross-referenced with the registration database. No HCC or coder is ever deleted from the registration database. Those no longer in the coding workforce are differentiated from those still in the workforce by using shaded text in the database.

Basic coder training workshops

Basic coder training workshops are conducted every 6-8 weeks, depending on demand.

Every registrant receives a set of line-coding exercises to complete before they attend the workshop and answers are provided at the workshop. Each participant also receives a training folder at the beginning of the workshop, with reference material covering the topics to be taught. The folder becomes their reference tool and coders are advised to update it regularly with the material received from future workshops and on-the-job training. Course material covers a brief introduction to the coding role and the context within which coders function, data quality activities, and confidentiality and privacy aspects. Medical terminology reference material covers common medical terms, medical abbreviations, alternative terms for surgical procedures, eponyms, anatomical prefixes and surgical suffixes. Coding reference material covers classification and coding conventions, coding guidelines, and the conditions and surgical procedures that coders will frequently encounter on the job. A sample chart (clinical record) is included in the training material. Each form within the chart is explained and its significance to the abstraction process discussed. Coders are also taught how to use the HIPE computer system.

One month after attending the basic training course, participants receive a special edition of *Coding Notes* that reiterates the main issues taught in the basic training session. This is accompanied by a confi-

dential follow-up questionnaire to obtain information on how many charts they are coding per day, which specialties they are coding, which areas they find the easiest and hardest to code, whether they require a 'hospital visit'³, and suggestions for future basic coding courses.

Intermediate coder training workshops

Intermediate coder training workshops are conducted over 2 days, when there is sufficient demand, and generally 4 months after the basic coding workshop. The content of the intermediate workshop consolidates coding training and experience to date. Coding reference material covered in the basic training course is reviewed and coding conventions and guidelines reinforced.

Experienced coder training workshops and continuing education

The Unit conducts a range of continuing education sessions for experienced coders. Regional coding workshops cover certain specialty areas (e.g. diabetes, injuries, obstetrics, neoplasms, cardiovascular, general surgery). Specialist nurses may be involved in the delivery of content to explain the clinical relevance of the classification logic. Refresher courses cover the basics — coding conventions, coding guidelines and compliance, and data quality initiatives — at local and national levels.

Participants must have completed an intermediate training course to be eligible to attend these workshops. The Unit recommends that experienced coders attend at least one workshop or refresher course each year.

Other ad hoc continuing education initiatives

Medical terminology workshops are conducted on request. The Unit also conducts in-hospital educational sessions, at a hospital's request or when the Unit deems it necessary after a data quality review. A log of every hospital visit is kept and formal feedback is provided to hospitals following a visit.

Coding Notes publishes, on an ad hoc basis, terminology notes, crosswords that test terminology skills, and coding advice that relates medical science to coding logic.

Monitoring procedures — coder training

All coders who attend the basic training sessions can request an in-hospital follow-up visit by the staff of the Unit to check their work and discuss coding issues with them. This generally occurs before the coder undertakes the intermediate training session.

Evaluations are performed at the end of every educational activity. The evaluations are analysed and the content of all training programs is informed by the feedback. The outcomes of training programs are monitored indirectly through quality initiatives under-

taken by the Unit. Ongoing audits identify patterns or trends in incorrectly coded data. The source can be identified and remedial action taken.

Key stakeholder perceptions

This section summarises the key stakeholders' opinions, obtained from interviews and focus group sessions, and outlines their suggestions for improvement. We acknowledge that points of view expressed by individuals who participated in the study are not necessarily representative of HCCs, clinical coders and Casemix Unit staff as a whole, and cannot therefore be generalised as such.

Clinical coders' and HCCs' perceptions on coder training programs

National training initiatives

National initiatives in coder training are generally well received. Most HCCs and coders appreciated the Unit's efforts because training initiatives are virtually non-existent at a local level. Coders also enjoy networking and discussing issues with colleagues. The material they receive in the sessions is useful and is often accessed as a primary reference source. They also value the opportunity to suggest content for future training initiatives.

Coders appreciate the Unit's efforts in conducting regional training activities. Coders in regional areas dislike having to travel to Dublin for training, mainly because of time constraints.

On the downside, coders are dissatisfied with the charts used in the basic training sessions. They think the charts are 'sanitised', that is, they are too simple and short, and too easy to read to be a true reflection of the real world. A low level of medical terminology knowledge is also a barrier to their learning. They believe the content of the intermediate sessions is repetitive (same as the basic training). They criticised the content of the experienced sessions, believing it is not updated from year to year and is not always relevant to their work. Some coders also believe the Unit tends to overlook their suggestions for content. For example, no educational sessions are conducted for ophthalmology, the neurosciences, vascular and renal systems in spite of requests. Some coders consider the regional workshops, some of which run for only 2 to 3 hours, are too short. Coders also raised concern about inconsistent advice given in workshops (e.g. coding of suicide). The perception is that it is difficult to receive written clarification from the Unit.

The areas in which new coders would like more training are medical terminology, anatomy and physiology, and medical science. Experienced coders requested more training in casemix and certain aspects of information management, for example, audit, data quality and the reporting functions of the HIPE software (how to analyse reports and determine what each report is designed to show).

HCCs mentioned that they would like training in casemix. Surprisingly, not one HCC interviewed has received any formal casemix education. Some have no background in classification theory or practical coding. They learn their skills on the job. Many have a back-

³ A staff member from the Unit will visit a new coder in their work environment to discuss coding issues, when required.

ground in nursing; in fact, a nursing background is an essential requirement for HCC positions in certain regions.

The DoHC conducts casemix education sessions on request. The coders who have attended them, however, have not found them useful because they could not understand many of the concepts discussed. Their preference is for basic, introductory casemix education, delivered by the Unit. The Unit is perceived as having a better understanding than the DoHC of the relationship between coding and casemix.

Coders also suggested inclusion of more clinicians as instructors in the experienced coder training initiatives to discuss certain disease processes or new surgical techniques. Coders enjoy the training sessions delivered by nurses.

Local training initiatives

Hospital HIPE units have a mentor ('coding buddy') program for new coders (Groom 2003) that aligns with the Unit's basic training workshops. New coders are teamed with an experienced coder and their work is guided, audited and assessed by their mentors.

Workload is distributed in two ways; either by specialty (and coders tend to change specialties regularly), or by medical record numbers (giving coders exposure to a range of specialties). Both methods facilitate 'upskilling' and succession planning. Not every coder changes specialties on a regular basis. In some facilities, coders can choose to specialise in one area only and some prefer this approach.

Hospitals provide very few training initiatives for coders. Some do offer personal computer training and anatomy/medical terminology courses. A few keen coders have sought external training in medical terminology and anatomy and physiology and have been supported by their hospitals; distance education or online education was their only option, because there are few formal (certified) training courses on offer in Ireland, apart from those undertaken in a clinical or health sciences university degree. Many coders stated they were not in a position to undertake formal university training, and would prefer to upgrade their knowledge through distance or online learning.

HCCs conduct very few continuing education initiatives for coders, relying on the Unit to deliver these. HCCs explained that they have a significant workload, leaving little time for implementing local data quality initiatives and coder training programs for their staff. Coders also have limited access to clinicians or clinical education sessions in hospitals.

Assessment of skill levels following training

Coders have no way of judging their skill levels. No examinations or tests of a coder's ability are conducted following the Unit's training programs. Some HCCs believe the training programs for coders should be academically linked and accredited. This was seen as particularly important for teaching hospitals. HCCs and coders also saw value in an accreditation process that determines skill levels and is linked to coder competencies, career paths and salary gradings.

The Casemix Unit of the DoHC and their perceptions

The proportion of funding to hospitals based on casemix will soon rise to fifty per cent, and so the quality of the underlying ICD data is of primary concern to the Casemix Unit. Trends emerging in the latest analysis of data indicate problems with the application of coding conventions and the definition of principal diagnosis (Curley 2003). There is a demonstrated lack of knowledge of the training material issued in the training courses, and there is evidence that local coding practices conflict with national coding guidelines (Curley 2003). Plainly, the Casemix Unit is keen to see the Unit implementing effective coder training programs.

Casemix and coding are intrinsically linked by a classification system, and understandably, there are many issues relating to casemix and coding that need to be resolved. The Casemix Unit would like to see the establishment of a national clinical advisory panel with appropriate representation from all stakeholders.

Discussion and recommendations

The Unit has established a solid framework for training a professional coder workforce. It orientates new coders to the work of the Unit. It delivers education where and when it is required, particularly to those who reside outside the major cities, and the training initiatives are generally well received. Education sessions are designed on a needs basis, which is driven by feedback from all stakeholders. There is an excellent registration and monitoring process, which provides a snapshot of the coder workforce, years of training and level of experience (basic, intermediate or experienced). There are two key areas where this framework could be improved: (a) by including assessment of the skill level of coders, and (b) by basing the Unit's curriculum on competencies.

Introducing a competency-based curriculum and assessment model will strengthen the Unit's coder training framework. It will provide coders with credible evidence of their skill levels, particularly if the Unit seeks recognition as an accredited training body and the Unit's certificates of attainment are recognised in the workplace as an entry requirement. Clinical coder competencies must be developed before this can be achieved. We would like to see Clinical Coding Ireland (CCI)⁴ carry out this work; however, they are a fledgling organisation and may not yet have the capacity to deliver on this substantial recommendation. Therefore, we have recommended that an appropriate body, such as the National Qualifications Authority of Ireland, undertake this work in consultation with CCI, the Unit and HCCs.

We recommended that the Unit broaden and deepen the content and structure of the training sessions over a longer time frame to avoid repetition, build on skills learnt, and cover topics such as medical terminology, anatomy and physiology, classification theory, information management, and casemix. With the introduction of a competency-based curriculum, it will also be necessary to broaden the source material,

⁴ The society established in March 2004 to raise the profile of clinical coders in Ireland.

and vary the coding exercises, both practical and theoretical, in order to match skill level.

Of primary concern to the staff members of the Coding/Quality Department of the Unit was their need for casemix education, and we have suggested they undertake formal education in this area before conducting any casemix training sessions for coders.

We recommended the involvement of more clinicians in the coder training programs because this strategy benefits all stakeholders. Clinical updates on medical science and surgical techniques are fascinating and relevant and coders appreciate them (Carol 2004; McKenzie and Walker 2003). Clinicians could also be involved in discussing with coders their research and any issues they found with the coded data. Indeed, all other users of the data could present to HCCs and coders at conferences or training sessions — the feedback is invaluable. Involving clinicians may also serve to close the quality loop. Clinicians contribute significantly to documentation in charts. Accurate, timely documentation influences the quality of the coded data.

Developing a national training strategy will enable Ireland to grow and nurture its own workforce of health information management professionals. We proposed the establishment of a national steering committee, under the auspices of the DoHC, to develop a strategy. The committee's role should be to explore a variety of educational opportunities for both coders and HCCs, with flexible modes of delivery, in response to local demand.

We made clear one very important point, that the Unit should maintain control over the development and delivery of all coder training education. Although we have recommended a variety of training options, we believe that the Unit should maintain control for they provide excellent professional support to coders and HCCs. We believe this is achievable through the Unit working in collaboration with accredited educational facilities and the Unit seeking recognition as an accredited training body.

The Unit collects valuable statistics about the coder workforce and these statistics are vital to workforce planning (McKenzie and Walker 2003). Our final recommendations were that the Unit should build on the existing collection by developing indicators of coder skill levels and retention/turnover rates of coding staff in hospitals, and should publish coder workforce statistics in the ESRI's annual report of hospital activity.

Conclusion

The Unit is committed to achieving best practice in the coding of morbidity data. Health information is the 'backbone' of any healthcare system. It shapes the way healthcare is planned, promoted, delivered, researched and funded. Clinical coder education is integral to the quality of data within the national morbidity data collection and the Unit acknowledges this in their quest for best practice. In this paper, we identified opportunities where the Unit may build on the solid framework that has been established for coder education.

The opportunities that we saw while undertaking this review were not only beneficial to Ireland, but perhaps Australia as well. We see opportunities for

Australian organisations that specialise in coder education programs to expand into global markets. Australian organisations offer a variety of coder training options. Four universities offer a degree in Health Information Management, one of which offers the course by distance education (Postle et al. 2003). The distance education arm of Technical and Further Education NSW (TAFE) offers a course in medical terminology, and clinical classification is an optional extension to this course (Open Training and Education Network 2003). The Health Information Management Association of Australia (HIMAA) offers clinical coder training via distance education at introductory, intermediate and advanced levels (Dimitropoulos 2005). Business opportunities may exist for organisations specialising in distance education to tailor their products to the Irish market and work collaboratively with the ESRI to deliver coder education programs. Online technologies are proving to be a real boon to distance education. Introductory level programs could be offered as interactive web-based programs with sophisticated online advice that explains clearly to new coders which particular codes are correct, and the inappropriateness of other codes.

We also see opportunities for Australian Health Information Managers and clinical coders to work overseas. The ESRI is seeking applications from qualified and experienced coders to work in the areas of data quality review and audit, and training coders to use ICD-10-AM.

For more information on opportunities to work in Ireland, visit the ESRI website: <<http://www.esri.ie>>.

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