The increasing importance of clinical coding

Clinical coding is the process of transforming information about diseases or procedures into a numeric or alphanumeric format. Assigning a code for a specific diagnosis or procedure provides a way of standardizing the recording of clinical information. Clinical coding was originally applied to mortality data but is now used to classify all patient hospital episodes and procedures.

In recent years there have been efforts to further develop clinical coding systems. A major reason for this has been the introduction of the payment by results reimbursement scheme. Under payment by results, NHS trusts are paid according to clinical activity. As trusts rely on coding to record clinical activity, the quality of clinical coding has major financial implications. The responsibility for accurate clinical coding is a shared one, and hospital doctors should have an interest in improving coding systems.

Why is coding important?

Since the introduction of payment by results, trusts are reimbursed according to actual activity undertaken rather than by negotiated block contracts or 'cost and volume' contracts. Payment by results relies on an accurate record of each patient's experience. A tariff is then assigned based on the patient's length of hospital stay, morbidity and the complexity of any procedure undertaken. At present the range of tariffs is limited, but as more complex coding systems allow more detail to be recorded, there is greater potential for more individualized tariffs, and a fairer payment by results system.

In addition to ensuring NHS trusts receive accurate reimbursement, coded clinical information can prove a useful resource for clinicians. Coded hospital episodes provide an invaluable starting point for clinical audit. For example, patients who have undergone a particular surgical procedure can be identified from clinical codes rather than by more laborious methods.

Clinical coding is also used for epidemiological studies, measuring treatment effectiveness, assessing health trends, cost analysis, health-care planning and resource allocation.

Systems of clinical coding

The most established coding systems are the World Health Organization's (2007) *International Classification of Diseases* (ICD-10), which is used for diagnostic codes, and the Office of Population Census and Surveys (OPCS-4.4) classification of interventions and procedures (De Lusignan et al, 2001; Office of Population Censuses and Surveys, 2007). ICD-10 is a world-recognized system whereas OPCS-4.4 is specific to the UK. The ICD and OPCS classification systems are updated at regular intervals. The most recent edition of OPCS, version 4.4, was released in April 2007. The coding classifications consist of a letter followed by three or more digits. The letters denote chapters in classification, each of which deals with a different body system.

Although the method of coding may vary between institutions, in most circumstances coding is performed retrospectively by clinical coding staff. Clinical coders assign codes to each patient episode based on their interpretation of the available case notes or the electronic patient record systems. Therefore accurate coding depends on the legibility of the case notes and on the coders' understanding of medical terminology.

Several studies have indicated poor reproducibility of clinical coding. Dixon et al (1998) found that external coders agreed with codes assigned by local coders in only 43–72% of cases.

Who's best at coding?

There is little evidence as to whether coders or medically trained staff produce more accurate clinical coding. The few published comparisons show conflicting results, but it seems logical that the participation of clinicians in the coding process should lead to greater accuracy, even if in a purely supportive role to the clinical coders.

Yeoh and Davies (1993) found that medical staff achieved 85% accuracy when coding diagnoses. This compared favourably with clinical coders who achieved only 54% accuracy. However, since this study was conducted, central NHS services have introduced a comprehensive training and support system for clinical coders. NHS Connecting for Health provides self-training materials, training courses, training for coding managers and access to an NHS classification services helpdesk. An examination for clinical coders was introduced in 1999 (Mathieson, 2005). There is evidence that these measures have improved the quality of coding (Audit Commission, 2006).

In contrast many trainees feel that they are not well prepared for non-clinical areas of practice, including an understanding of clinical coding (McDonnell et al, 2007). Colville et al (2000) found that the OPCS-4 coding of plastic surgery operations was significantly less accurate when done by medical staff than by clinical coders.

An area of clinical coding that merits specific mention is its use to compare surgical complication rates. Jain et al (2007) examined the influence of clinical coding on the reported rates of complications during cataract surgery. They found that 50% of patients who had been assigned a code indicating that they had suffered a complication had in fact had uncomplicated surgery. Therefore coding errors resulted in a falsely high surgical complication rate being reported. This finding highlights the importance of auditing coding procedures, a process in which involvement of the surgeon is essential.

The Audit Commission plans to regularly audit the accuracy of clinical coding data within trusts. The information will be used to compare trusts' performance and those organizations with poor quality data may be fined. A pilot audit of 17 trusts published in December found a

high incidence of coding errors. Inaccuracies in diagnostic codes ranged from 4 to 38% and in procedural codes from 4 to 27%. This led to false reimbursement under the payment by results scheme (Audit Commission, 2006). Reasons for poor coding might include limited understanding of medical terminology and surgical techniques, difficulties reading medical notes and the complexity of clinical coding classifications.

How can coding be improved?

Much can be done to help clinical coders achieve accurate coding. The involvement of physicians in the coding process may result in better understanding of medical terminology and surgical procedures by coding staff. Clinicians have a responsibility to ensure that the information recorded in medical notes is clear and complete. Many trusts have introduced clinical coding to junior doctor training programmes. An increased awareness of the role of clinical coders can only help facilitate their work.

The Audit Commission has recommended regular clinical coding audit. As part of this process coders and clinicians should collaborate to identify ways in which coding can be improved. **BJHM**

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Audit Commission (2006) *Payment by Results data assurance framework. A briefing on the pilot results.* Audit Commission, London (www.audit-commission.gov.uk/pbr/downloads/PBRbriefing.pdf accessed 24 June 2008)
De Lusignan S, Minmagh C, Kennedy J et al (2001) A survey to identify the clinical coding and classification systems currently in use across Europe. *Medinfo* **10:** 86–9
Dixon J, Sanderson C, Elliott P et al (1998) Assessment of the reproducibility of clinical coding in routinely collected hospital activity data: a study in two hospitals. *J Public Health Med* **20:** 63–9
Colville RJ, Laing JH, Murison MS (2000) Coding plastic surgery operations: an audit of performance using OPCS-4. *Br J Plast Surg* **53:** 420–2
Jain A, Thanmpy R, Suharwardy J (2007) Deciphering the code: does clinical coding accurately reflect peroperative cataract surgery complication rates? *Eye* **21:** 670–1
Mathieson S (2005) Clinical coding. Code breakers. *Health Serv J* **24**(Suppl): 9–10,13
McDonnell PJ, Kirwan TJ, Brinton GS et al (2007) Perceptions of recent ophthalmology residency graduates regarding preparation for practice. *Ophthalmology* **114:** 387–91
Office of Population Censuses and Surveys (2007) *Tabular List of the Classification of surgical operations and procedures.* Edition 4.4. Office of Population Censuses and Surveys, London
World Health Organization (2007) *International Statistical Classification of Diseases and Related Health Problems*. 10th Revision. World Health Organization, Geneva
Yeoh C, Davies H (1993) Clinical coding: completeness and accuracy when doctors take it on. *Br Med J* **306:** 972

KEY POINTS

- Clinical coding provides a way of standardizing the recording of clinical information.
- Uses of clinical coding include health-care planning, resource allocation, clinical governance and audit.
- Clinical coding may be used to compare complication rates between units.
- Hospital doctors should have an interest in improving coding systems.