Quality of final diagnosis coding in the medical records of selected hospitals in the Colombo District, Sri Lanka

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Abstract
Clinical coding is a method of translating a clinical description of a disease or procedure into a standard code. Sri Lanka adopted the system of coding recommended by the WHO, The International Classification of Diseases – 10th Revision (ICD-10), in 1997, and this study was undertaken with the objectives of assessing the quality of ICD coding and to identify some factors influencing coding quality in this country. A sample of 1091 medical records was selected from six hospitals in the Colombo District, representing all categories of hospitals in the area. Quality of coding was assessed by using the Australian Coding Benchmark Audit (ACBA), a coding quality assessment tool developed by the National Centre for Classification in Health, Australia.

It was found that the availability of the final diagnosis on front sheets of medical records was satisfactory (94.7%), but the accuracy of the diagnostic statement was unsatisfactory (54%). Out of the six hospitals studied, only the Teaching Hospital and the Peripheral Unit practiced coding. The overall rate of accuracy of ICD coding in the Colombo District hospitals was 31%, which is unsatisfactory.

It is recommended that training opportunities in ICD–10 and other related subjects should be made available to the coders. Efforts should be made to improve the familiarity of the Medical Officers with the WHO guidelines on recording diagnostic information for ICD coding.

Background
The medical record, in manual or automated form, houses the medical information that describes all aspects of patient care. Physicians, nurses and other health care providers require medical information for treating a patient. Medical records form an important document in record-keeping processes in a hospital. It has been accepted world wide as a vital document in the health information system.

It is the duty of the Medical Officer in charge of the patient to record the Final Diagnosis or the Principal Diagnosis (or Main Condition) at the appropriate place of the front sheet of the medical record. In government hospitals of Sri Lanka, at the Medical Record Department (MRD), the Medical Record Officer (MRO) or the Medical Record Assistant (MRA) is responsible for coding of diagnostic information given on front sheets of medical records, and for recording them in a disease index called the Indoor Morbidity and Mortality Register (IMMR).

In Sri Lanka, all state-run hospitals practise single condition coding. In single condition coding the physician in charge of the patient has to select out the Principal Diagnosis from all the conditions the patient has had during his or her stay in the hospital, and record it in the appropriate place on the front sheet of the medical record for coding (World Health Organization 1993). In single condition coding, any condition other than the Principal Diagnosis will not be coded.

Objectives
The study was undertaken with the objectives of describing the availability and accuracy of diagnostic statements on the front sheet of medical records, assessing the quality of ICD-10 coding of diagnoses and identifying some factors influencing the coded data quality.

Methodology
A sample of 1091 medical records was selected from six hospitals in the Colombo District representing all categories of hospitals. Accuracy of the diagnosis was assessed using WHO guidelines on recording of diagnostic information for coding and the General Circular No. 01-05/99 of 26.02.1999 of Department of Health, Sri Lanka as "gold standards". Quality of coding was assessed by using Australian Coding Benchmark Audit (ACBA), a user-friendly, simple coding quality assessment tool developed by the National Centre for Classification in Health, Australia.

Results
The availability of the final diagnosis on front sheets of medical records was 94.7%, but the accuracy of the diagnostic statement was 54%. Use of abbreviations was the most common type of quality problem (34%). Incomplete diagnostic statements, recording of minor conditions as Principal Diagnosis, and illegibility were the sources of other frequent types of inaccuracies. Use of abbreviations was the commonest problem found in the Teaching Hospital (TH), Base Hospital (BH), and Peripheral Unit (PU). The study revealed that the 7.3% of the inaccuracies in diagnoses were due to incompatibility of the front sheet diagnosis with the content of the medical record. District Hospitals (DH) reported the highest percentage (27.4%) of incompatibility of diagnoses.

Availability of the diagnosis was highest for surgical patients (95.9%). Lowest availability of diagnosis was found in finer specialties (ENT, ophthalmology, psychiatry, rheumatology, and orthopaedics) and in dentistry, which could be due to the small number of records (n = 10) studied from those specialties. The percentage of inaccurate diagnostic statements in obstetrics was extremely high (87.4%) of diagnoses. Accuracy of diagnosis was found to increase with an increasing number of admissions per year.

Out of the total of 1091 medical records analysed, only 55% had the ICD code recorded on the front sheet. In the Base Hospital, two District Hospitals and in the Rural Hospital, none of the diagnoses had been coded. In the Teaching Hospital, 95% of the records had been coded. In the Peripheral Unit, 87% of the records had been coded.
In this study, TH has demonstrated a coding error rate of 42%, while PU was showing an error rate of 53% of coded records, and no significant difference was observed in coding error rates between TH and PU ($p = 0.112$). In the present study, coding error rates were also analysed by specialties or disciplines and a highly significant association was observed between accuracy of coding and specialty ($p = 0.000$).

Out of the ACBA coding error categories (National Centre for Classification in Health, 1998a), the most frequent error (49.8%) detected in the study was CMjDx1 (incorrect Principal Diagnosis sequencing), CMjDx2 (42.4%) indicates that the coder has made an error in the Principal Diagnosis code assignment. No significant association was observed between ACBA error categories and the category of hospital or specialty.

Error categories CMjDx4 (incorrect additional diagnosis), CMjDx6 (unjustified additional diagnosis code) and CMnDx1 (incorrect additional diagnosis) were not detected in any of the hospitals studied. The obvious reason for this is the practice of single condition coding in Sri Lanka. In this method, coding of additional diagnoses is not done. No 'system errors' were detected in the current study.

The overall rate of accuracy of ICD coding in the hospitals of the Colombo District was 31%.

Conclusions

Availability of the Principal Diagnosis on the front sheet of the medical records was high. A majority (54%) of the records contained inaccurate diagnostic statements. There was a significant association between accuracy of diagnosis and the category of hospital. A significant association was also observed between accuracy of diagnosis and the specialty. Accuracy of diagnosis increased with an increasing number of admissions per year. A significant association was observed between the number of admissions per year and the accuracy of the diagnoses. The idea behind the analysis of diagnostic accuracy with the number of admissions per year was to examine the effect of workload on the accuracy of diagnosis, which was not found to be a problem. The commonest quality problem for diagnostic information was the use of abbreviations. Incomplete diagnosis, recording of minor conditions as Principal Diagnosis, and illegibility were other common inaccuracies. Use of block capitals in recording diagnosis was very low; only 11.9% of the accurate diagnoses were written in block capitals.

Of the total records analysed, only 55% were found to be coded; coding had been done only in the Teaching Hospital and Peripheral Unit, and the percentage of records coded was significantly higher in the Teaching Hospital (96%). The percentage of records coded significantly varied with the specialty, and the highest rate was observed in gynaecology, while the lowest was in surgery (37.1%).

The commonest coding error category was CMjDx1 (incorrect Principal Diagnosis sequencing) (49.8%), while the second-commonest error category was CMjDx2 (incorrect Principal Diagnosis coding) (42.4%). Australian Coding Benchmark Audit (ACBA) seems to be a useful and effective tool in the assessment of quality of ICD coding in Sri Lanka.

Recommendations

A number of recommendations can be made as a result of this study:

- It is recommended that improvements in the familiarity of the medical officers with the classification systems and the WHO guidelines on recording diagnostic information for coding be made. The following are suggested as useful strategies to achieve this objective:
  - Incorporation of health information components in medical school curricula
  - Making available pre-employment and in-service training programs for the intern and grade Medical Officers
  - Making available a handbook on guidelines for recording diagnostic information and a standard list of abbreviations, to be uniformly used in all the hospitals in the country
  - Responsibility for ensuring the Principal Diagnosis is correctly recorded on the front sheets of the medical records on discharge of patients should be given to consultants in charge of wards.

- Comprehensive pre-employment training should be given to the coders.
- In-service training programs on ICD-10 and other related subjects should be organised for coders who have not previously undergone training.
- International journals on clinical coding and health information should be made available for the reference of the coders.
- The Australian Coding Benchmark Audit (ACBA) is a suitable tool to assess the quality of coding in Sri Lanka. Therefore, it is recommended that the hospital authorities should be encouraged to use ACBA for their own coding audits.

References


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