THE INTERNATIONAL JOURNAL OF SCIENCE & TECHNOLEDGE

Quality of Clinical Coding at Mama Lucy Kibaki Hospital, Nairobi City County, Kenya

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Abstract:
Introduction: Professionals from various cadres in the health sector raise concerns regarding the poor quality of clinical coding leading to lack of evidence-based practice. Assessing the quality of the clinical coding in one of Nairobi City County's major hospital would be a step towards establishing the exact gaps in quality of the coding process and outcome.
Method: The study aimed at establishing the quality of clinical coding within Mama Lucy Kibaki Hospital. A cross-sectional descriptive design was used, with a quality of clinical coding checklist used classify codes assignment or lack of which. The sample included 300 patient files selected randomly from a month-long list of patients.
Results: The study found out that the overall code accuracy was above average given that majority (58%) of the code assignment were good as established by a composite score of the various coding quality attributes assessed. Code completion was excellent at the facility, as established from the 99% of the files that were completely coded.
Conclusions: The health facility could act as a good benchmark for code completion. However, code completion without accuracy in the code assignment invalidates the overall quality of coding. There is great room for improvement as far as code accuracy is concerned.

Keywords: *Quality, clinical coding, code completeness, code accuracy*

1. Introduction

The International Classification of Diseases (ICD) and ICP are the standard clinical coding tools used in diagnostics for epidemiology, clinical purposes and health management (WHO, 2015). It includes an analysis of specific population groups and their general health status. The tool is used to monitor the incidence or prevalence of specified diseases and other health related problems thus providing an overall picture of the health status of countries and populations. Clinical coding is used widely in the health sector by nurses, physicians, other healthcare providers, health information officers and managers, researchers, health information technology workers, insurers, policy-makers and patient organizations to do a classification of diseases and other health related problems recorded in the different forms of health and vital records like health records and death certificates. The records enable the storage and easy retrieval of information on diagnostics for purposes of clinical, epidemiological and quality as well as the compilation of national statistics on mortality and morbidity by the WHO Member States. Finally, clinical coding also facilitates decision making on reimbursement and resource allocation by countries (ICD, WHO, 2010).

Consistency in Clinical classification of diseases and medical procedures has been a huge challenge in the health sector, both locally and internationally. This is despite the globally approved use of ICD-10 and ICPM. In the global perspective, these coding tools serve well for comparability across nations. The current internationally available training modules endorsed by WHO are custom-made for the developed world, although the application of those modules is limited. South Africa has also made good use of the curriculum due to the capacity within the country's hospitals; the implication therefore is that the existing curriculum is best suited to well-established health systems. Locally, in Kenya, despite the setting up of the Disease Surveillance and Response Unit (DSRU), internal inconsistency of disease and medical procedure classification still remains a challenge thereby hindering the unit's early detection of outbreaks (Nzioka, 2009). The quality of clinical coding in Kenya is 33% - below the WHO standards (Gachoka & Gichuhi, 2015).

Accuracy of the codes, the completeness of codes as well as the timeliness of code assignment are key components that have compromised the quality of clinical coding. As such inadequacy of resources cannot be blamed for the below-par

quality of clinical coding in most health institutions. Universality in disease classification, coupled with periodic training on clinical coding relevant to the local context holds promise for both disease surveillance as well as improvement of healthcare quality.

Professionals from various cadres in the health sector raise concerns regarding the poor quality of clinical coding leading to lack of evidence-based practice. In Kenya, training more professionals in the medical field on disease and procedural coding is fundamental in eliminating the inconsistency. Resultantly, there would be accurate research, improved adherence to the set standards, improved reliability of data on cause of death and higher capacity to conduct ICD certification and coding (GOK, MOH, 2015). Tailor-made procedures for disease classification for particular contexts often translate to better consistency of responses and diagnoses as attested by medical practitioners (MSF, 2015). Training on disease and procedural coding is useful for uniformity and continuity in statistics of morbidity and mortality for evidence-based decision making and international and national comparability (GOK, MOH, 2015). The system of classification diseases employed in the ICD system is a complicated model and demands a lot and continuous training to adequately understand. Over time, in countries like Kenya, health information systems, health data and disease classification professionals have been involved in the clinical coding process, yet the variation in results still exists. Several studies conducted within the field of classification of disease, the effectiveness of the ICD and the challenges that face the implantation of the ICD codes reveal particular gaps in training. There is also the potential in the study providing a fine base for establishment of the exact disease burden in the nation as well as ways of improving health reporting. The study will also provide information that would enable NHIF which is now the main health insurance provider to be more objective in the reimbursement of funds.

2. Methods

The study was conducted as a form of a clinical audit. A sample of 346 files was randomly selected and coding quality checked, based on a pre-designed checklist. A unique serial number was assigned to each checklist providing reference to each of the audited files. The attributes of clinical coding quality that were assessed were diagnosis reporting, code assignment for diseases, external causes of injuries, medical procedure coding, causes of death, interpretation of medical abbreviations and indexing. The quality of clinical coding was assessed for each of these attributes. Based on the ratings for each attribute, a composite score was arrived at which was then used as an indication of the overall quality of clinical coding. The analysis was structured in such a way as to categorize the files based on single diseases (dubbed simple files) or comorbidities (dubbed complex files), and also comparisons made for various subsections. The audited files were from four subsections: Medicine [1], Paediatric [2], Surgery [3] and Obs/Gyn [4].

3. Results

3.1. Accuracy

A composite score was derived from the scores obtained in the various attributes of clinical coding quality. After-which, a mean score was obtained from the nonmissing codes for each case. The overall code accuracy was Good given that majority (58%) of the code assignment were well coded.

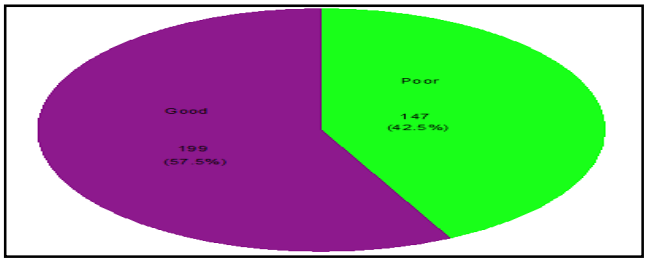

Figure 1: Accuracy of Disease Code Assignment

3.2. Completeness

The completeness of the codes for disease classification was exemplary with 99% of the audited files found to be having at least a code assigned for the disease-related codes.

Disease Code Completeness	Frequency	Percentage
Complete	342	98.8%
Incomplete	4	1.2%
Total	346.0	100.0%

Table 1

3.3. Simple Files

Overall, the quality of clinical coding for simple files was above average, given that for all the concerned sub-section, at least more than 70% of the files were coded appropriately for the single diseases. Most of the simple files that were coded were from Obs/Gyn (91). The quality of coding for files in Obs/Gyn was the best as evidenced by the 93% of its files that were well coded, followed by paediatric, and then outpatient medical subsection. Surgery was the most poorly coded section among patients with single conditions.

Speciality	Single Diseases Coding Quality							
	Not coded		Well coded		Wrongly coded		Total	
	n	%	n	%	n	%		
Medical	2	5.6%	28	77.8%	6	16.7%	36	100.0%
Paediatric	4	7.4%	45	83.3%	5	9.3%	54	100.0%
Surgery	3	11.1%	19	70.4%	5	18.5%	27	100.0%
Obs/Gyn		0.0%	85	93.4%	6	6.6%	91	100.0%
Total	**9**	**4.3%**	**177**	**85.1%**	**22**	**10.6%**	**208**	**100.0%**

Table 2

3.4. Comorbidities (Complex Files)

Overall, the quality of clinical coding of complex files was below average, given the cumulative 36% of files that were well coded. The clinical coding of paediatric comorbidities were, however, slightly above average.

Speciality	Comorbidity Coding Quality							
	Not coded		Well coded		Wrongly coded		Total	
	n	%	n	%	n	%	n	%
Medical	2	5.4%	4	10.8%	31	83.8%	37	100.0%
Paediatric	2	2.7%	38	51.4%	34	45.9%	74	100.0%
Surgery	1	8.3%	3	25.0%	8	66.7%	12	100.0%
Obs/Gyn	0	0.0%	1	20.0%	4	80.0%	5	100.0%
Total	**5**	**3.9%**	**46**	**35.9%**	**77**	**60.2%**	**128**	**100.0%**

Table 3

3.5. External Causes of Injuries

Code assignment for external causes of injuries was required for only 12 files – all of which came from Surgery and Obs/Gyn specialities. Of all those files, the codes were not assigned for only 10 cases, with the remaining 2 cases bearing wrong codes. The implication of these results is that most patients in the facility have conditions that do not have external causes.

Speciality	External Causes Coding Quality					
	Not coded		Wrongly coded		Total	
	n	%	n	%	n	%
Surgery	0	0.0%	1	100.0%	1	100.0%
Obs/Gyn	10	90.9%	1	9.1%	11	100.0%
Grand Total	**10**	**83.3%**	**2**	**16.7%**	**12**	**100.0%**

Table 4

3.6. Procedures in Medicine

A total of 37 files were assessed for quality of medical procedures coding for all the specialties of concern to the study. In the assessment, only 4 (11%) were well coded. The rest of the files were not coded at all. There is then the impression that had the codes been assigned, probably, the accuracy would have been great. However, given that code completeness is also part of the quality of coding assessment, there is indeed work required to ensure the quality of procedure coding is better.

Speciality	Procedure Coding Quality					
	Not coded		Well coded		Total	
	n	%	n	%	n	%
Medical	2	100.0%	0	0.0%	2	100.0%
Paediatric	0	0.0%	1	100.0%	1	100.0%
Surgery	20	87.0%	3	13.0%	23	100.0%
Obs/Gyn	11	100.0%	0	0.0%	11	100.0%
Total	**33**	**89.2%**	**4**	**10.8%**	**37**	**100.0%**

Table 5

4. Conclusion

The overall quality of clinical coding of single diseases at Mama Lucy Kibaki Hospital was found to be above average, although with great room for improvement. The interpretation of medical abbreviations was also exemplary by the clinical coders given that all abbreviations were well interpreted. As a result, the study concludes that:

- First, the hospital's clinical coders are more comfortable coding the single disease cases, and in so doing, they work rather efficiently, as seen in the cumulative 85% accurately coded and the less than 5% code-incomplete files.
- Secondly, relating to the overall quality of clinical coding of complex files, the meagre 36% of files that were well coded shows just how difficult the clinical coders at the facility found to code comorbidities.
- Thirdly, coding quality of external causes of injuries was the poorest attribute. This was observed by the either lack of codes or the wrong code assignment for all the cases that were assessed on these criteria.
- Finally, there was good quality of medical procedure coding, as given the accuracy of the files that were coded. However, the glaring lack of code among approximately 90% of files that required assignment of at least a procedure code is alarming.

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