IMPROVING HEALTH SERVICE PLANNING AND REIMBURSEMENT THROUGH QUALITY CODING

Samuel Chan[1,2**]
Andrew P Maurice[1,2]
Helen E Ward[2]
Darren L Walters[1,2]

1. The University of Queensland, School of Medicine, Brisbane, Queensland, Australia
2. Safety and Quality Unit, The Prince Charles Hospital, Brisbane, Queensland, Australia

Correspondence author:
Dr Samuel Chan MBBS BPharm
The Prince Charles Hospital, Brisbane, Queensland, Australia.
The University of Queensland, School of Medicine, Brisbane, Queensland, Australia.
Tel: +61 7 3139 4000
Fax: +61 7 3139 4220
Email:
samuel.chan@uqconnect.edu.au

ABSTRACT

Hospital funding for acute inpatient admissions in Australia is "Activity Based", such that each hospital unit is reimbursed for each admission based on the patient diagnosis, procedure, complications, comorbidities and other factors for each patient admitted. This is determined from the clinical documentation recorded by medical staff. Incomplete or inaccurate clinical documentation has been shown to cost one specialty unit at The Prince Charles Hospital (TPCH), a tertiary hospital in Queensland, Australia, approximately $450,000 of lost reimbursement over a three month period. To improve clinical documentation, an electronic prompting system was developed and implemented at TPCH. Medical staff in the cardiology department were required to use this system. The Diagnosis, Comorbidities, Procedures and Complications (DCPC) were required to be entered for each patient admission from a drop-down list of clinically appropriate terms. A list containing the DCPC was then printed, signed and placed in the medical record and clinical coders would accurately code from this sheet. Compared with the same period in the year before, in the two months in which DCPC was implemented in the cardiology department, there was a 6.1% increase in the proportion of patients who were deemed to be the most complex. Given that there were approximately 900 patients admitted in each of the two months that DCPC was on trial for in Cardiology, this equated to an average increase in revenue per patient by $200 and thus $180,000 in total for the hospital. Thus an electronic prompting system can improve clinical documentation and thus activity based reimbursement a hospital unit receives.

1. PROBLEM

The Prince Charles Hospital (TPCH) is a 600 bed tertiary public teaching hospital in Brisbane, Queensland, Australia, and provides services in The Heart and Lung Institute (cardio-thoracic medicine and surgery), General Medicine, General Surgery, Orthopaedics, Rehabilitation, Geriatrics, Palliative Care and Mental Health. TPCH has approximately 3500 staff of which there are 277 junior and 143 senior medical staff.

At our institution, medical staff were not adequately documenting the patient's Diagnosis, Comorbidities, Procedures and Complications (DCPC) during admission, which has led to inaccurate International Classification of Diseases (ICD) code assignment and therefore inaccurate Diagnosis Related Group (DRG) allocation. This has impacted negatively on reimbursement, which has compromised hospital income, leading to reductions in beds and staff.

After the introduction of Activity Based Funding (ABF), an internal audit was performed in one specialty unit at TPCH using a selection of 800 medical charts in a three month period. It was found 159 comorbidities were inadequately documented. That is, the exact wording of the medical notes was not appropriate for coding purposes. For instance, a medical record entry, "Hb 68, give two units", cannot be accurately coded by coding staff, and hence inappropriate reimbursement for the hospital would result. The correct terminology would have been "post-operative blood loss anaemia, requiring two units of pack red cell transfusion". Other examples include not documenting electrolyte abnormalities and their treatment. Moreover, staff commonly will begin treatment for complications such as electrolyte abnormalities without documenting this in the chart.

It was found that recoding these episodes with the correct terminology would have lead to a 25% improvement in clinical reimbursement through increased DRG complexity, corresponding to an increase in funding of $450,000 in a three month period alone for one specialty unit. Hence, a Quality Improvement Project was designed to improve the accuracy of clinical coding documentation so that a more accurate reimbursement for the Hospital could be achieved.

2. BACKGROUND

Numerous Health Care systems in the United States and Europe have implemented "Activity Based Funding" (ABF) to determine the hospital operational expenditure, budget and funding. In these healthcare systems, ABF means that a hospital unit will receive a particular amount of money for treating a particular patient for a particular disease. The precise reimbursement depends on the principal diagnosis, procedures performed on the patient, the patient's comorbidities and the complications the patient experiences in hospital.

In Australia, ABF has been used by several health care systems since the early 2000s, however a national scheme was agreed on in 2008 by the Council of Australian Governments (COAG) and was subsequently implemented in July 2012 as part of the National Partnership Agreement on Hospital and Health Workforce Reform. In the Australian model, each admission constitutes an "activity" in the Australian Refined Diagnosis Related Group (AR-DRG) classification. There are approximately 670 patient groups which are based on the diagnosis, comorbidities, procedures performed, complications and other routine collected data.

ABF should support timely access to quality health services, improve the value of the public investment in hospital care and ensure a sustainable and efficient network of public hospital services[1,2]. ABF payments

should be fair and equitable, including being based on the same price for the same service across public, private or not for profit providers of public hospital services[1,2].

Each admission thus receives a DRG classification and the hospital will receive a particular amount of reimbursement based on the typical cost of treating that particular DRG. A more complex patient will correspond to a more complex DRG and thus the hospital will receive more reimbursement. If a patient was, for example, diagnosed with the principal diagnosis of chest pain, the estimated DRG reimbursement for the Hospital would be $1,242. However, if the patient was diagnosed with coronary atherosclerosis without complication and or comorbidity, an estimated DRG reimbursement would be $1,851. Similarly, if the patient was diagnosed with circulatory disorders with acute myocardial infarction without invasive cardiac investigative procedure, the estimated DRG reimbursement would be $3,800. Hence, clinical documentation accurately reflecting the complexity of the patient stay translates directly to more accurate reimbursement for the Hospital.

After a patient is discharged, the medical record is examined by clinical coding staff. The clinical coders abstract terms from the record which are consistent with the AR-DRG terminology. These terms are then uploaded to a computer program that calculates the specific DRG classification for that inpatient stay and thus the reimbursement the hospital will receive for that particular patient.

Depending on the severity of illness and comorbidities, the DRG is graded A, B or C based on complexity. Sub-group A represents the most complex patients with the highest DRG and reimbursement, whereas sub-group C represents the least complex patients with the lowest reimbursement. Sub-group B is intermediate. ABF was implemented at TPCH in July 2012 in acute inpatient admission services including surgery and medicine.

3. DESIGN

The intervention implemented was the use of an electronic prompting system to enter the DCPC of a patient admission which would populate a document that is placed into the patient's chart and thus used by clinical coding staff. The prompting system uses terminology that is appropriate for clinical coding use.

This system was implemented into the pre-existing "Patient Electronic Journey Board" (PEJB) in the hospital (Figure 1). The PEJB contains an up-to-date list of all the patients on the ward and extensive patient information including the principal diagnosis, comorbidities, procedures performed, complications, allied health information and the treatment plan (Figure 2). The PEJB is regularly updated and used by the medical staff for treatment planning for patients.

A special tab was added to the program which would bring up a "DCPC" page (Figure 2). This page contains four drop down boxes corresponding to the diagnosis, procedures, comorbidities and complications for a particular patient. These contained further drop-down boxes with coding-appropriate terms so that medical records included correct coding terminology (Figure 2).

This information was then printed, signed and placed in the chart and formed the basis of the ward round notes for a particular day and was placed in the medical chart (Figure 3).

4. BASELINE

The DCPC page was implemented in a variety of departments within the hospital. Most departments did use the DCPC page, but also implemented other strategies to improve coding. Uptake of the DCPC was not universal in those units. However, in the cardiology department, it was the primary

strategy implemented to improve clinical coding and it was used by all cardiology teams during the trial period. We, therefore, were able to examine the effect of DCPC alone in Cardiology.

Financial information from TPCH Financial Department including DRG classifications and reimbursement was obtained for a two month period after implementation. For comparison, data was obtained for the same two month period one year prior to the intervention.

5. STRATEGY

Education and training on use of the DCPC page was provided for all medical staff within the cardiology department, including all levels of medical officers. The use of the DCPC was made mandatory for each day during the period examined. The Director of Cardiology at TPCH along with the treating cardiology consultants involved with the project regularly checked on the ward to ensure the program was being utilised and encouraged accurate DCPC for the patients.

The authors worked with Business Solutions Group to develop an electronic solution and suggestions were presented at departmental and hospital wide-forums, and at a national Health Improvement Forum. Junior doctors trialled the process and provided feedback. The authors informed hospital staff electronically regarding the implementation of this project.

The Hospital Executive Director sponsored this project and resolved complex issues. Senior hospital medical and allied health staff assisted with implementation. TPCH Finance Department tracked changes in DRG coding.

To create incentives for medical staff to use the program, information entered into the DCPC was automatically copied into the patient's discharge summary as well as into patient lists that could be used by the treating teams to coordinate ward rounds, thus reducing the amount of duplicated work.

6. POST MEASUREMENT

In the Cardiology department, two months after implementation, the proportion of admissions classed in the "A" category increased by 6.1%. The proportion of admissions in the "B" category dropped by 1.4%. Given that there were approximately 900 patients admitted in each of the two months that DCPC was on trial for, this equates to an average increase in revenue per patient by $200 and thus $180,000 in total.

Another benefit reported by the medical staff, albeit not specifically evaluated in this project, is the improvement in clinical documentation. Not only were more of the patient's comorbidities and complications actually recorded (such as malnutrition and electrolyte disturbances), printed notes improved the legibility of the medical record[3].

7. LESSONS AND LIMITATIONS

- Use of accurate clinical documentation is vital to ensure the medical record accurately reflects the complexity of the patients that are cared for.
- An electronic prompting system can be used effectively to improve clinical documentation and thus improve hospital reimbursement based on activity based funding.

8. CONCLUSION

Electronic prompting systems can be used to improve the accuracy of clinical documentation. Integrating such systems into pre-existing programs that clinicians already use and providing incentives for use is likely to improve uptake. Improved clinical documentation is likely to correspond to improved reimbursement for the hospital.

FIGURES

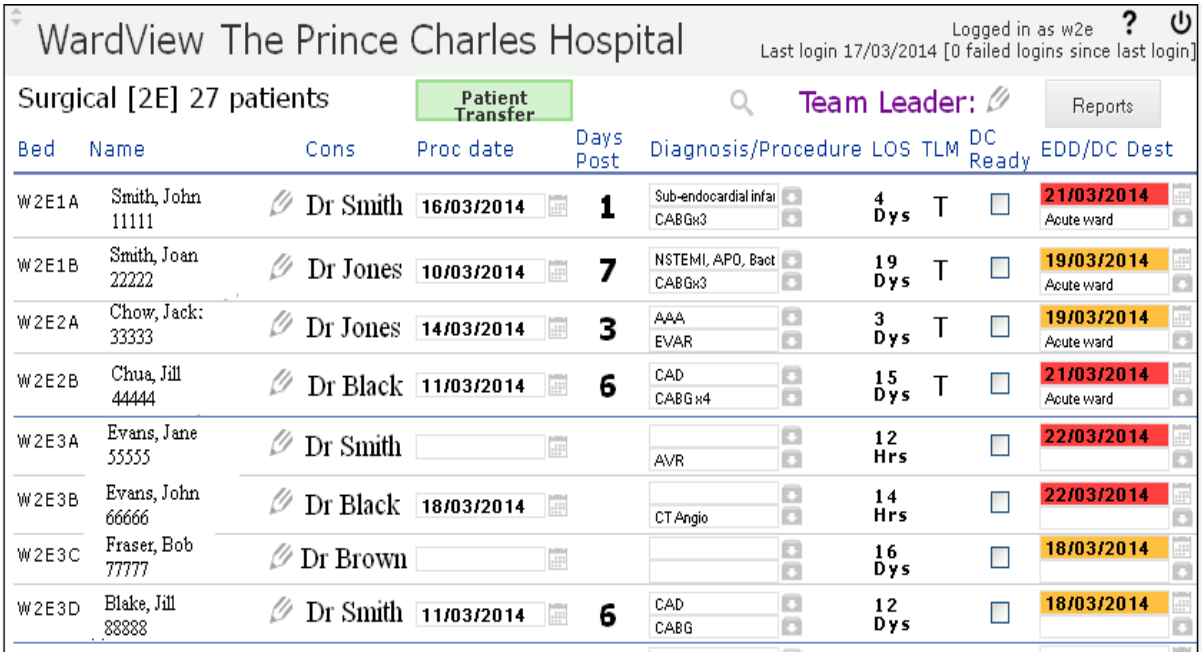

Figure 1 – Patient Electronic Journey Board which lists all the current inpatients for a particular ward. Clicking on the pencil icon allows the user to modify the DCPC page (see Figure 2).

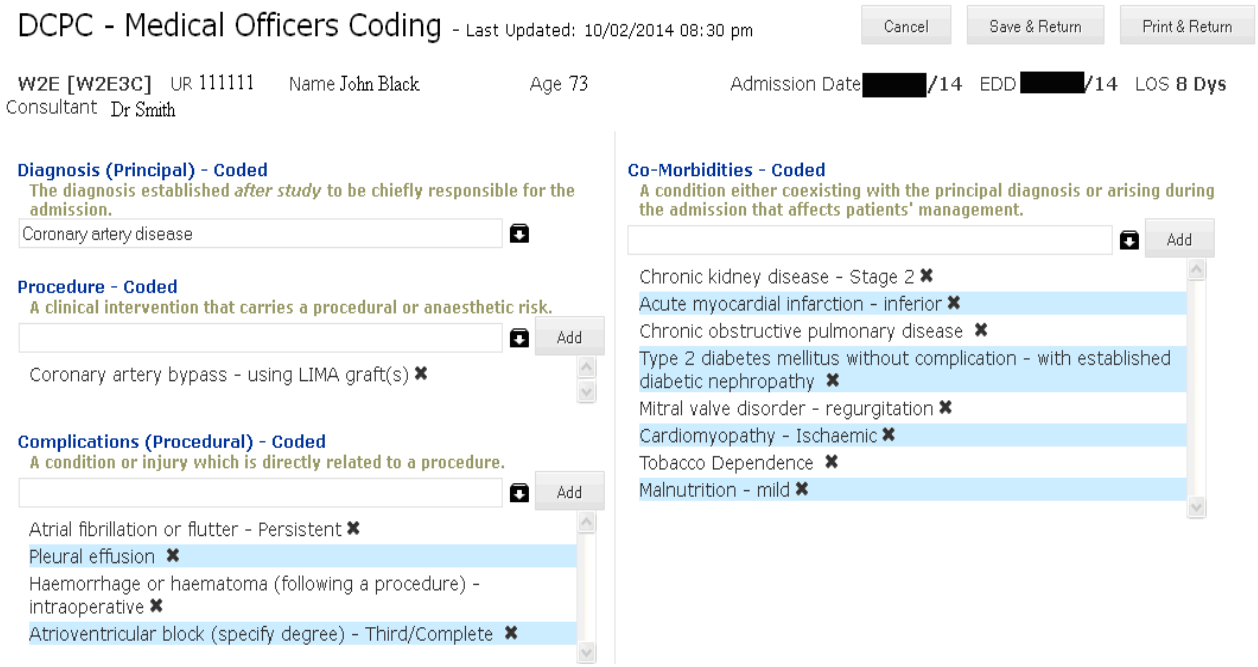

Figure 2 – Clinicians enter the principal diagnosis, comorbidities, procedures and complications for each patient when they are admitted into the hospital and they are updated on a daily basis during the admission. This information is subsequently populated into a document which forms the basis of the medical ward round or admission notes (see Figure 3). The drop down terms are based on correct DRG terminology.

Queensland Government

DCPC Coding Medical Notes

The Prince Charles Hospital

URN [redacted]

[redacted]

DoB [redacted]

Consultant **DR** [redacted] Admit Date **19/May/2014** EDD **21/May/2014** Los **31 hours**

Principal Diagnosis

Urinary tract infection

Procedures

Procedural Complications

Co-Morbidities

DO NOT WRITE IN THIS BINDING MARGIN

DCPC CODING MEDICAL NOTES

Medical notes (free text):

Medical Ward Round for Dr [redacted] - Dr [redacted] and Dr [redacted]

U/S KUB report noted - left kidney significant hydronephrosis/ dilatation increased from 7mm to 20mm
Updated the results to patient and son; they are keen to proceed for surgical intervention
Discussed the above with Dr [redacted] who suggested to contact urologist
Urologist at [redacted] (Dr [redacted]) contacted; history and progress updated - happy to accept patient

Patient reports to be well today; nil objective fevers over the last 12 hours; had a spike to 38C last night at 930pm
BP 99/70; HR 85BPM; SpO2 98% RA
Abdomen soft and non-tender; bowel sounds present

Plan
For transfer to [redacted] Hospital
Discussed with Palliative Care team the management - they are happy and are happy for direct Palliative Care admission following urology review at [redacted] if indicated

Samuel Clan for Dr [redacted]

Signed: [redacted]

Figure 3 – Example of the medical notes that the DCPC program produces. This forms part of the patient medical record. The correct coding terminology, as produced by the DCPC program is at the top of the page and the regular medical documentation is at the bottom.

9. REFERENCES

1. Duckett SJ, Designing incentives for good-quality hospital care. Med J Aust 2012; 196: 678-679.

2. Eagar K. ABF Information Series No 1: What is activity-based funding? Wollongong: Centre for Health Service Development, 2012. http://ahsri.uow.edu.au/chsd/abf/index.html (accessed April 2014).

3. Maurice AP, Chan S, Pollard CW, Kidd RA, Ayre SJ, Ward HE, Walters DL. Improving the quality of hospital discharge summaries utilising an electronic prompting system. British Medical Journal Quality Improvement Reports. In press

COMPETING INTERESTS

None declared

ACKNOWLEDGEMENTS

Nil

SOURCES OF FUNDING

Nil

