Australian diagnosis related groups: Drivers of complexity adjustment

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ABSTRACT

Background: In undertaking a major revision to the Australian Refined Diagnosis Related Group (ARDRG) classification, we set out to contrast Australia's approach to using data on additional (not principal) diagnoses with major international approaches in splitting base or Adjacent Diagnosis Related Groups (ADRGs).

Methods: Comparative policy analysis/narrative review of peer-reviewed and grey literature on international approaches to use of additional (secondary) diagnoses in the development of Australian and international DRG systems.

Analysis: European and US approaches to characterise complexity of inpatient care are well-documented, providing useful points of comparison with Australia's. Australia, with good data sources, has continued to refine its national DRG classification using increasingly sophisticated approaches. Hospital funders in Australia and in other systems are often under pressure from provider groups to expand classifications to reflect clinical complexity. DRG development in most healthcare systems reviewed here reflects four critical factors: these socio-political factors, the quality and depth of the coded data available to characterise the mix of cases in a healthcare system, the size of the underlying population, and the intended scope and use of the classification. Australia's relatively small national population has constrained the size of its DRG classifications, and development has been concentrated on inpatient care in public hospitals.

Discussion and conclusions: Development of casemix classifications in health care is driven by both technical and socio-political factors. Use of additional diagnoses to adjust for patient complexity and cost needs to respond to these in each casemix application.

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1. Background

Development of casemix classifications in health care is driven by both technical and socio-political factors. Each of the inpatient classifications developed to date reflects the unique combination of these in the healthcare system for which it was designed. Three technical factors influence this process: the quality and depth of the coded data available to characterise the mix of cases in a hospital or healthcare system, the underlying population size, and the intended scope and use of the classification (funding or not; inpatient-only vs a broader range of episode types; medical reimbursement vs hospital-only).

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These factors shape the decisions that health systems make about how to construct a casemix classification, and how many end classes best reflect the complexity of treatment in their hospitals. The relative strength of stakeholder groups also influences how these factors are weighted in the casemix design process. Although the choices are often framed as technical ones, they are inevitably reflections of the data capacities and the social and political processes in each health system.

Managers of health systems are frequently met with the claim that 'my patients are different'. Disputes about the degree to which a classification system can be used to fund or manage a hospital or health care system become the basis for resistance to accountability for intra-system variability. There is little consensus about how increased complexity or severity should be measured, whether it is generic or specific to each reason for admission, and whether it should reflect only conditions present on admission, or other drivers of complexity such as the complications of inpatient medical and surgical care. International approaches differ depending on a range of system characteristics and intended uses of the classification [1]. We set out to contrast Australia's approach to using data on additional (or secondary) diagnoses in the Australian Refined Diagnosis Related Group (ARDRG) classification with selected international approaches to splitting base or Adjacent DRGs (ADRGs).

2. Methods

This comparative policy analysis and narrative review was originally commissioned to inform the major revision of ARDRG (Version 8.0). It draws on the peer-reviewed and grey literature on the factors that influence how complication and co-morbidity splits have been used in the development of Australian and selected international Diagnosis Related Group (DRG)-like systems. Systems were selected on the basis that they represent more than a minor revision of other classifications, and illustrate alternative approaches to complexity adjustment.

3. Results

Australia's Independent Hospital Pricing Authority (IHPA) has recently released Version 8.0 of ARDRG [2]. Implemented from July, 2015, this represents a major refinement to the ARDRG classification, and introduces an Episode Clinical Complexity Model, with simplified splitting logic. Details have only recently been released by IHPA, but the refinements have placed greater reliance on patient characteristics, and in particular, associated diagnoses (ADx) [3]. This revision is expected to provide improved performance for the many use cases of ARDRGs, including hospital funding, health system analysis and clinical management.

Australia has a long history of DRG development, beginning with early studies by Palmer [4] and Duckett [5] in the 1980s to determine the extent to which the newly-introduced Health Care Financing Administration (HCFA) DRG system would work to characterise Australian hospital admissions. Australia has long had national agencies

responsible for hospital data. The Australian Institute for Health and Welfare [6] aggregates State level hospital data and issues reports. The National Centre for Classification in Health [7] has historically been responsible for maintenance and training in ICD classifications. The relatively early implementation of casemix or activity-based funding in several Australian states [8] has focused policy attention on classification and costing issues for acute care admissions.

The national Casemix Development Program (1998–2003) funded research and development projects in Australia [8], including the development of the Australian National Diagnosis Related Groups (ANDRG) classification released in July 1992. This classification built on the All-Patients Refined DRGs, using the US version of the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). ICD-9-CM was also used as the basis for subsequent AN-DRG versions 1.0 (1992), 2.0 (1993) and 2.1 (1994). This was then followed by the use of the first and second Australian editions of ICD-9-CM for ANDRG versions 3.0 (1995) and 3.1 (1996), respectively.

Although not publicly released, Australian-Refined DRG V4.0 was the first major revision of ANDRG [9]. It was produced using the Australian ICD-9-CM Second Edition codes as an interim step in the transition to the Australian modification of ICD-10 (ICD-10-AM). This DRG version, which incorporated the use of the newly-developed Australian Classification of Health Interventions (ACHI), provided the foundation for development of ARDRG V4.1, using ICD-10-AM/ACHI First Edition codes.

To improve measurement of case complexity in moving from AN to ARDRGs, the Commonwealth Department of Health undertook a complication and comorbidity refinement project to examine the validity of the Yale APRDRG CC structure using Australian data. The aim of the project was to specify Complication and Comorbidity Levels (CCLs) appropriate for Australian clinical practice and reflecting the complexity added by each specific ADx. It entailed an extensive consultation process with clinicians forming the then Commonwealth Clinical Classification and Coding Group to test the effect of new CCs based on their recommendations. The project marked the transition to Australian ownership and specification of the ARDRG CC list, CCL values and CC exclusion lists.

The CC structure chosen for ARDRG versions was modelled on the APRDRG approach, and thus included diagnosis exclusion lists to disregard diagnoses associated with another diagnosis already used to describe the case, and a generic CC exclusion list of 3215 codes. It also adopted the use of mechanical ventilation as a marker for ICU treatment, and thus complexity, in some 'pre-MDC' classes.

The development project involved a recursive code-level analysis to estimate CCL values through statistical testing and clinical consultation with national medical panels to assign appropriate CCLs (1–4) for those ADx found to significantly increase the ALOS. Analysis was based on LOS data from 1993 to 1994 National Hospital Morbidity (Casemix) Database grouped to ANDRG V3.0, with criteria to limit end classes to those with a substantial number of cases in the national database and significant changes in ALOS. The final classification entailed 768 (non error) DRGs.