The Review of the AR-DRG Classification System Development Process

Department of Health and Ageing

June 2009

PricewaterhouseCoopers

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Definition and use of the System

The development of an Australian hospital inpatient classification system, collectively called 'the System' in this report and spanning:

- the International Statistical Classification of Diseases and related Health Problems, Tenth Revision, Australian Modification' (ICD-10-AM) codes
- the Australian Classification of Health Interventions (ACHI)
- the Australian Coding Standards (ACS)
- Australian Refined Diagnosis Related Groups (AR-DRGs),

by the Australian Government, in collaboration with the Australian health system, over the past 20 years, has been a significant achievement, providing a consistent casemix measure to admitted hospital care which enables the measurement of hospital output.

Australia developed the ICD-10-AM/ACHI/ACS and AR-DRG with the primary intention of developing a health classification system for domestic use and sells the AR-DRG System to a number of international clients through Deeds of Agreement.

The Australian System is considered to be the market leader in international sales (with the widest cross-territory market penetration). Twenty countries have purchased or been given a licence to use the System at some point within the last 10 years.

The System is widely used and relied upon in Australia, for example:

- in national health information, used for coordinating and monitoring admitted acute health information in Australia
- as part of within-state resource allocation to public hospitals, and
- as the basis of private health insurance / private hospital contracting.

Methodology

PricewaterhouseCoopers (PwC) was commissioned by the Commonwealth Department of Health and Ageing (Department) to conduct an end-to-end review of all processes associated with the development cycle of the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) and Australian Refined Diagnosis Related Groups (AR-DRG).

The review was conducted over a period of twelve weeks, in three interdependent workstreams which informed each other:

Stream 1. a process analysis based on document reviews, process mapping and stakeholder consultations with more than one hundred individual stakeholders representing approximately twenty-nine separate organisations, States and Territories, or committees involved in the System development process

Stream 2. an economic analysis, discussed in section 3.1 and Appendix B of the report that follows, assessed the current costs and return on investment of the current System development process

Stream 3. international consultations, national casemix experts from seven countries (Canada, Sweden, Denmark, France, Netherlands, USA, and Germany) participated.

Overall value of the System

There are three primary sources of investment in the maintenance of the coding and classification system. These include:

- Commonwealth Government outlays
- outlays by State and Territory health authorities
- investments by public and private hospitals and private health insurers to enable them to use the System and provide data in line with nationally agreed standards and requirements.
- Together these parties invest approximately $9.6 million annually to maintain and update the System as part of overall national health information. Because the system is such an integral part of health information, it is difficult to identify the direct costs of maintenance.

There is a large return on investment for the ongoing development of the System which depends on the extent to which its 'better' information and capabilities lead to improvements in:

- **the efficiency of funding arrangements for inpatient acute hospital services**, such as the incentives that are provided to contain costs, and to extend or moderate the use of particular interventions by funding outputs rather than inputs
- **healthcare planning and resource allocation** through optimising resources and revenue. This might occur as a result of a data-driven understanding of relative performance, cost growth, and patient demand
- **the quality and safety of health care**, such as through using classification system benchmarks to compare performance on the occurrence of adverse events, and the presence of factors that can affect the safety of the hospital environment
- **clinical research capabilities, and through that, improving the understanding and delivery of health care**. This might be through better understanding of complications, better tracking of the outcomes of care, timelier intervention for emergent diseases, and the ability to identify clusters of diseases that might be traced to environmental or occupational conditions.
- **patient management**, such as through better/more targeted identification of patients in need of ongoing supervision and any impacts on extending the duration and quality of their life.

While not the only factor, AR-DRGs are a substantive contributor to improved hospital performance, for example: a simple model which calculates the incremental savings associated with the reduction in length of stay points to a possible savings in acute bed days nationally of 2 million annually, which represents a cost saving of close to $4 billion.

International comparisons of hospital classification systems

Casemix classification has emerged as the international standard for hospital payment (adopted by 70% of OECD countries[1]) and has been taken up by several jurisdictions and portions of the private hospital sector in Australia.

Good practice alternative features of management models underpinning system development in international jurisdictions were investigated to identify transferable lessons appropriate for the Australian context. Findings were identified in six specific topics of interest:

- **management of the development cycle** - In the majority of countries surveyed, the management of the ongoing development of the national hospital inpatient classification system is under the direction of a central government department or agency.
- **technical updating of the classification system -** The technical update of the classification system (diagnosis, procedure and grouper codes) is more often carried out by one central body, using a core team of internal staff or in some instances supplemented by contractors and other private organisations.
- **cycle timing and implementation -** Annual updates with mandated universal implementation dates are the norm for development cycles.
- **public submissions -** Most countries have some form of a public submission process. In countries where this is not available the classifications are not well accepted by clinicians.
- **intellectual Property ownership and commercial value of the classification system -** The intellectual property (IP) of the grouper and classification system is usually owned by the government and most countries surveyed make this freely accessible.
- **data integrity -** Activities to ensure data integrity appear to be more prevalent in countries where the classification system underpins a funding model.

Overview of the current development process

The update/development process for the System occurs over a two year cycle and involves clinical and technical reviews which are managed by the Department of Health and Ageing (see section 1.3 of the report for details). The other key organisations and committees involved in the development cycle are:

- the National Health Information Standards and Statistics Committee (NHISSC)
- the National Centre for Classification in Health (NCCH)
- the Coding Standards Advisory Committee (CSAC)
- the Australian Institute of Health & Welfare (AIHW)
- the Clinical Casemix Committee of Australia (CCCA) and the Clinical Classification and Coding Groups (CCCGs).

[1] You Get What You Pay For* A Global Look at Balancing Demand, Quality, and Efficiency in Healthcare Payment Reform. PricewaterhouseCoopers' Health Research Institute. June 2008

The Australian Coding Classification (ICD-10-AM/AHCI/ASC) and coding manuals are currently updated biennially under a contract with the National Centre for Classification in Health (NCCH), which forms part of the University of Sydney.

The Department updates the classification and releases a new version of AR-DRG. There are two types of AR-DRG revisions: major or minor. Major revisions involve creating new DRGs, changing DRG names or cost weights. Minor revisions include moving an underlying code from one DRG to another, changing a procedure status or changing a complication and co-morbidity level of a diagnosis. The Department determines if a revision will be major or minor once the revision process is underway. The most recent update of the AR-DRG was a major revision resulting in version 6.0, released in 2008.

Findings and recommendations

This review evaluated the end-to-end development process and identified strengths, weaknesses, risks and possible consequences to the Commonwealth of the existing process. Eight recommendations are summarised below relative to:

- process improvements (that improve efficiency and effectiveness in the wider context of Departmental and Australian Government policies)
- governance (a management model for development in the future)
- improvements geared toward future use of the System.

This set of recommendations build on each other and are suitable for implementation, separately or in combination creating a variety of management options for the long range sustainability of the System.

Recommendation 1: Develop a consolidated approach to planning, communication, and engagement with stakeholders, along with robust and transparent prioritisation mechanisms. Specifically:

a. Develop a consolidated work plan for upcoming revisions.

   - The plan should be managed by the Department and agreed with stakeholders, in advance of research and committee work for upcoming revisions, for both the ICD-10-AM/ACHI/ACS and AR-DRG proposed research agenda. (See Recommendation 6.a. regarding an objective of universal uptake of versions. Gaining agreement with stakeholders should include the use of a nationally agreed version).
   - The plan could be based on policy content for determining priorities for System development.
   - The plan should be transparent; taking a whole of system approach which considers fit with the overall Commonwealth priorities and resources, and foreshadows the quantum of potential change to key stakeholders (e.g. States and Territories).

b. Develop a communications plan, managed by the Department, to enhance the transparency of the development process.

c. Develop a 'balanced scorecard' to assist in prioritising proposed System updates (both ICD-10-AM/ACHI/ACS and AR-DRG). Coordination of the scorecard should be managed by the Department to accompany proposed changes to the System. The balanced scorecard should be based on documentation of:

   - statistical benefits
   - clinical currency imperatives

- fit with Commonwealth health system priorities
- implications for funding mechanisms.

Recommendation 2: Rebalance the inputs/drivers of the System development. Specifically:

a. Reinvigorate robust, systematic, representative clinical input to enable enhanced clinical acceptance/engagement with the System:
    - review the mechanism for gaining clinical input representative of the wider medical community
    - integrate clinical representatives into key committees and process steps.

b. Add private sector (insurance and hospital) representatives to relevant working groups in order to add equitable inputs across the current and future uses of the System.

Recommendation 3: Data quality and consistency should be enhanced by:

a. The Department should set an objective of universal uptake of new System versions.

b. Implement national compliance mechanisms, for example all or a combination of the following activities:
    - conduct statistical analysis of national data sets to identify anomalies and use this as one input to a clinical coding audit sample, e.g. with State or hospital level response to queries
    - set up a national program of clinical coding audits, e.g. these could be undertaken with systematic sampling and peer review measures of inter-rater reliability.

c. Enhance end user support, for example with a centralised mechanism for definitive answers to queries, web-enabled posting of errata and queries' responses.

Recommendation 4: Review the Commonwealth's international sales of the System. Specifically, four key aspects of the management of international sales of the system should be reviewed and re-considered.

a. Re-evaluate the protective legal framework for international contracting.
    - The legal framework needs to take account of the issues and mechanisms needed to enforce the agreements across the range of international implementation stages from trial, through sale and local development.

b. Re-evaluate the pricing model.
    - Consideration and definition needs to be given to the value of the IP and the policy position of the Department regarding its participation in public good initiatives in the health arena, e.g. cost recovery.

c. Re-evaluate communications with international users, with a view to developing a proactive communications plan and re-invigorating sharing of information across jurisdictions. This re-evaluation should consider both operational and developmental aspects of communication, for example:
    - notification of training organisations and software vendors regarding status of international licensed System users

- notification of international users regarding plans for errata to versions licensed and availability of new versions
- provision of end user support via web-enabled submissions and queries
- set up systematic tracking and enforcement of expiration dates and protocol for timely renewal
- a cost-benefit analysis of the input of foreign users to the development of the System, and mechanisms for management of such input.

Recommendation 5. Review the management of software and grouper certification and re-align it with international best practice.

The Department has various options for how to proceed with access of software vendors to grouper specifications, certification of grouper software, and the inter-dependency of these decisions with international licensing of the system. Taken together the following recommendations emerge:

a. Make the AR-DRG grouper specifications available (either free of charge or based on fee) to software vendors upon request (without restriction on number of vendors).

- Vendors who receive the grouper specifications sign an agreement to only sell software products containing the AR-DRG grouper outside Australia where the end user holds a licence for use of the System.
- Vendors with access to grouper specifications also agree that international software licensing expiration will be synchronised with System licensing expiration, i.e. software expiration at the end of a System licence trial or contract period would prevent continued unlicensed use of the System.

b. Two recommendations options are presented below regarding certification of grouper software:

Option A.

- Require that vendors who receive the grouper specifications agree to have their grouper software certified for accuracy prior to sale of products (domestically and/or internationally).
- Charge software vendors for certification of their groupers to offset the costs involved in the certification activity. The pricing model will need to be established and the legal parameters for requiring certification will need to be defined.
- Consider outsourcing the certification of grouper software (see Recommendation 7 re: AR-DRG development).
- As part of the re-alignment of the certification process, consideration should also be given to requiring re-certification with software updates based on errata, to offset the risk of grouper contamination between new code editions.
- Require that both domestic and international users of the System use a certified grouper.

Option B.

- Eliminate the certification process – leaving it to the market and vendors to ensure the accuracy of the grouper.
- In option B. the control the Department has over international use of the System is based on the licensing of the underlying ICD10-AM/ACHI/ACS components.

Recommendation 6: Clarify the roles, decision making authorities, and inter-relationships between organisations in the System development process.

This recommendation assumes that many/most of the management process improvements described in Recommendations 1-5 above are taken up and there is relevant refinement of the roles (and terms of reference) for the key organisations and committees.

a. The Department should table the future work plan and balanced scorecards (see recommendation 1) with National Health Information Standards and Statistics Committee (NHISSC) as part of an objective of engaging with key stakeholders to achieve universal uptake of new versions.

b. As the custodian of the System development the Department should reassess existing working groups, e.g. CSAC, and develop new working groups that draw on the range of cross functional and cross discipline users with the aim of achieving robust stakeholder input into the System development from re-casting inputs. Revision of working groups would be based on the principle that participants should be formally representative of stakeholder groups, i.e.

   - public and private sector users
   - cross jurisdictional policy makers
   - cross discipline: coders, clinicians, statisticians
   - domestic and international users.

c. The work program for working groups should be agreed by the Department in advance of research and committee work for upcoming revisions, consistent with the wider government policy agenda. (See recommendation 1a.)

d. Working groups should contribute to the creation of balanced scorecards on updates as a key process mechanism for re-invigorating greater balance of key stakeholder input.

Recommendation 7: Centralise the development of the System

The management model outlined below is a significant change from the current management model and would require significant transition planning. It assumes that the management process improvements described in Recommendations 1-6 are taken up.

This model is consistent with international good practice where in the majority of countries surveyed, the management of the ongoing development of the national hospital inpatient classification system is under the direction of a central government department or organisation and the technical update of the classification system (diagnosis, procedure and grouper codes) is more often carried out by one central body. This is especially true when the classification system underpins a funding methodology.

a. The Department should outsource production of the AR-DRG algorithm while maintaining a sufficient core set of specialist skills necessary for performance management of the System development.

   - The Department should focus on management activities, e.g. setting policy, consolidation of work program, oversight of preparation of balanced scorecard, coordination of the reinvigoration of the clinical input to System development, and coordination between organisations who conduct development activities.

   - The Department would also continue to manage the international sales of the System based on the business process enhancements discussed above.

b. One organisation should take on the coordination role for all the production aspects of both the ICD-10-AM/ACHI/ACS and the AR-DRG development cycle.

- In this model there is a single point of responsibility for the development activities of the 'whole System', for example: a consolidated work program; System-wide statistical analysis and compliance mechanisms; creation of balanced scorecards across the whole System; and consistent end user support with submission, query processes, and a single web location.
- There are a number of organisational options for a centralised model including: a special unit within the Department, another Commonwealth agency or outsourcing to a third party organisation. It is recommended the Department consider these options in the context of emerging national reforms to implement activity based funding and national performance reporting by hospitals.
- This model consolidates the 'brains trust' / 'corporate knowledge' regarding technical aspects of the System development. Care will be required for successor planning to safeguard the sustainability of the System.

Recommendation 8. Consider implications of increased demands for the System on cycle time and workforce. Specifically:

a. Following implementation of improved management of the System, and based on international norms of an annual cycle for hospital classification systems that underpin a national activity based funding model, a further study should be undertaken regarding the cost:benefit of moving the cycle time for the System update process to an annual update of ICD-10-AM/ACHI/ACS and AR-DRG.

b. Undertake a study of clinical coder and HIM workforce, including:

    - current numbers and distribution of workforce (current supply)
    - impact of graduations from training over the next 3 – 5 years (supply pipeline)
    - needs analysis based on defined objectives, for example nationally consistent data collection by 2013.

Given the System is fundamental infrastructure to understanding hospital activity in Australia and a fundamental building block in activity based funding, it is essential that the development process for the System is as efficient and effective as possible.

The report that follows examines all processes involved in the entire classification, development and management of the System in detail. The findings underpinning each recommendation are presented along with the comparative cost/benefit analysis of implementation.

The review provides the basis on which to move forward in terms of ICD-10-AM/ACHI/ACS and AR-DRG management and outlines business processes for the management of the System for the future.

1 Introduction

1.1 Context

The Commonwealth has made a significant investment over the past twenty years in establishing a world-class hospital classification system. The use of ICD-10-AM/ACHI/ACS and AR-DRGs[2] (collectively known as the System) across all States and Territories in Australia provides a consistent casemix measure to admitted hospital care which enables the measurement of hospital output.

The System is widely used and relied upon in Australia, for example:

- in the National Health Information Agreement in coordinating and monitoring health information
- as part of within-state resource allocation to public hospitals
- as a basis for private health insurance / private hospital contracting.

And internationally - Australia sells the System to a number of international clients through Deeds of Agreement.

The System is a clinically based classification system and provides information on patterns of disease and treatment within a hospital setting. The provision of updated and accurate information is fundamental to understanding the efficient costs of hospital service delivery and improvements in clinical care can be attributed at least in part to the implementation of the AR-DRG classification system which allows performance to be measured and benchmarked to promote best practice.

PricewaterhouseCoopers (PwC) was commissioned by the Commonwealth Department of Health and Ageing (Department) in 2009 to conduct an end-to-end review of all processes associated with the development cycle of the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM/ACHI/ACS) and the Australian Refined Diagnosis Related Groups (AR-DRG) collectively called 'the System'.

This development process occurs over a two year cycle and involves considerable investment of both time and resources. Although previous reviews have taken place to assess the suitability of specific aspects of the System, no comprehensive review of the entire System has taken place.

This report:

- provides a user-friendly description of the end-to-end development process (see Appendix E and F for detail)
- evaluates the end-to-end process and identify strengths, weaknesses, risks and possible consequences to the Commonwealth of the existing process (see section 3. Key Findings and Recommendations)

[2] International Statistical Classification of Diseases and related Health Problems, Tenth Revision, Australian Modification' (ICD-10-AM); Australian Classification of Health Interventions (ACHI); Australian Coding Standards (ACS); Australian Refined Diagnosis Related Groups (AR-DRGs)

- recommends a management model for development in the future that improves efficiency and effectiveness within the wider context of Departmental and Australian Government policies (see section 3. Key Findings and Recommendations)
- includes an economic analysis that considers the current allocation of resources, return on investment; and include a comparative cost/benefit analysis of recommendations, detailing various options which could be implemented (see section 3. Key Findings and Recommendations and Appendix B. Economic Analysis of the System)
- identifies transferable lessons from international jurisdictions who undertake their own classification system development that would be appropriate for the Australian context (see section 3.2 Transferrable lessons from international comparisons of hospital classification systems and Appendix C. Key findings from international comparisons of hospital classification systems).

1.2 Defining 'the System'

Casemix refers to a system which classifies episodes of care into homogeneous groups, according to a clinical coding scheme[3]. In Australia the casemix classification system relevant to hospital activity uses:

- the International Statistical Classification of Diseases and related Health Problems, Tenth Revision, Australian Modification' (ICD-10-AM) codes
- the Australian Classification of Health Interventions (ACHI)
- the Australian Coding Standards (ACS)
- Australian Refined Diagnosis Related Groups (AR-DRGs).

The use of such a classification and grouping mechanism enables the measurement and comparison of activity and costs between providers.

The System development cycle is currently managed through a combination of in-house and outsourced activities. The Department, in collaboration with clinical groups, State/Territory health authorities and the National Centre for Classification in Health (NCCH) have maintained the update and development of the national classification system. These bodies have made a major contribution to the health information infrastructure in Australia and internationally and fostered the development of local skills and software.

In the following report, the AR-DRG and ICD-10-AM/ACHI/ACS are collectively called *'the System'*[4]. More specifically the System is comprised of the following component parts:

1. Australian Coding Classification

a. 'The International Statistical Classification of Diseases and related Health Problems, Tenth Revision, Australian Modification' (ICD-10-AM)

The ICD-10-AM, is the disease classification component which underpins AR-DRGs. It is based on the World Health Organisation (WHO) ICD-10. It uses an alphanumeric coding

[3] Phillips, P. A. (1998). Teaching and research in a casemix funding environment. *Medical Journal Australia, 169*, 53-55.

[4] The System has been defined by the terms of reference in the RFT 079/0809. The definitions for each component of the System have been complied from a combination of reference documents that were reviewed as part of this project.

scheme for diseases structured by body system and aetiology, and comprises three, four and five character categories. The Department holds the WHO licence to create an Australian version of ICD-10,

ICD-10-AM has been developed by the National Centre for Classification in Health (NCCH). The NCCH is responsible for producing and updating ICD-10-AM in Australia under contract from the Department with assistance from clinicians and clinical coders to ensure that the classification is current and appropriate for Australian clinical practice. ICD-10-AM is in its sixth edition, implemented in July 2008.

b. 'The Australian Classification of Health Interventions' (ACHI)

The Australian Classification of Health Interventions (ACHI) is the intervention/procedure component of AR-DRGs. The NCCH is responsible for producing and updating ACHI in Australia under contract from the Department with assistance from specialist clinicians and clinical coders. ACHI was originally based on relevant Medicare Benefits Schedule (MBS) items. The ACHI codes have seven digits. The first five digits align with the MBS item number. The two-digit extension represents specific procedures included in that item. The classification is structured by body system, site and procedure type. Procedures not currently listed in MBS have also been included (e.g. allied health interventions, cosmetic surgery). ACHI is in its sixth edition which was implemented in July 2008.

c. The Australian Coding Standards

The Australian Coding Standards (ACS) are designed to be used in conjunction with the ICD-10-AM and ACHI. They are written with the objective of defining a consistent coding convention for all use of ICD-10-AM and ACHI (e.g. public and private hospitals). The ongoing revision of the Australian Coding Standards ensure that they reflect changes in clinical practice, clinical classification amendments, Australian Refined Diagnosis Related Groups grouper updates and various user requirements of hospital data collections.

2. AR-DRG Classification

a. Australian Refined Diagnosis Related Groups (AR-DRGs) is a patient classification system that provides a clinically meaningful way of relating the number and types of patients treated in a hospital to the resources required by the hospital.

The Australian National Diagnosis Related Groups (AN-DRG) was the first national DRG classification (1992-1997) developed to classify acute admitted patient episodes in public and private hospitals. It was subjected to a major overhaul after it was decided that Australia should adopt the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10), and also a new procedure classification. The end result was the release of the Australian Refined DRG Classification in December 1998. Since 1998 the Australian Refined Diagnosis Related Groups (AR-DRGs) Classification has been revised every two years.

The AR-DRG Classification system is based on an algorithm of hierarchies of diagnoses and procedures distributed between surgical, medical and other partitions. The grouping process includes the following tasks in order:

i. Demographic and clinical edits

ii. Major Diagnostic Category (MDC) assignment

iii. Pre-MDC processing

iv. Adjacent DRG (ADRG) assignment

v. Complication and co-morbidity level (CCL) and patient clinical complexity level (PCCL) assignment

vi. DRG assignment

Grouper software is used to apply the algorithm that classifies individual acute hospital stays based on both clinical information (diagnoses and procedures) and demographic information such as age and sex.

b. Definition Manual

This manual is supplied in hard copy (3 volumes of the AR-DRG Definitions Manual) as well as electronic files of the AR-DRG Classification rules.

1.3 The System updating process overview

The update/development process for the System occurs over a two year cycle and involves clinical and technical reviews which are administered by the Department through a combination of in-house and outsourced activities and in consultation with a range of stakeholders.

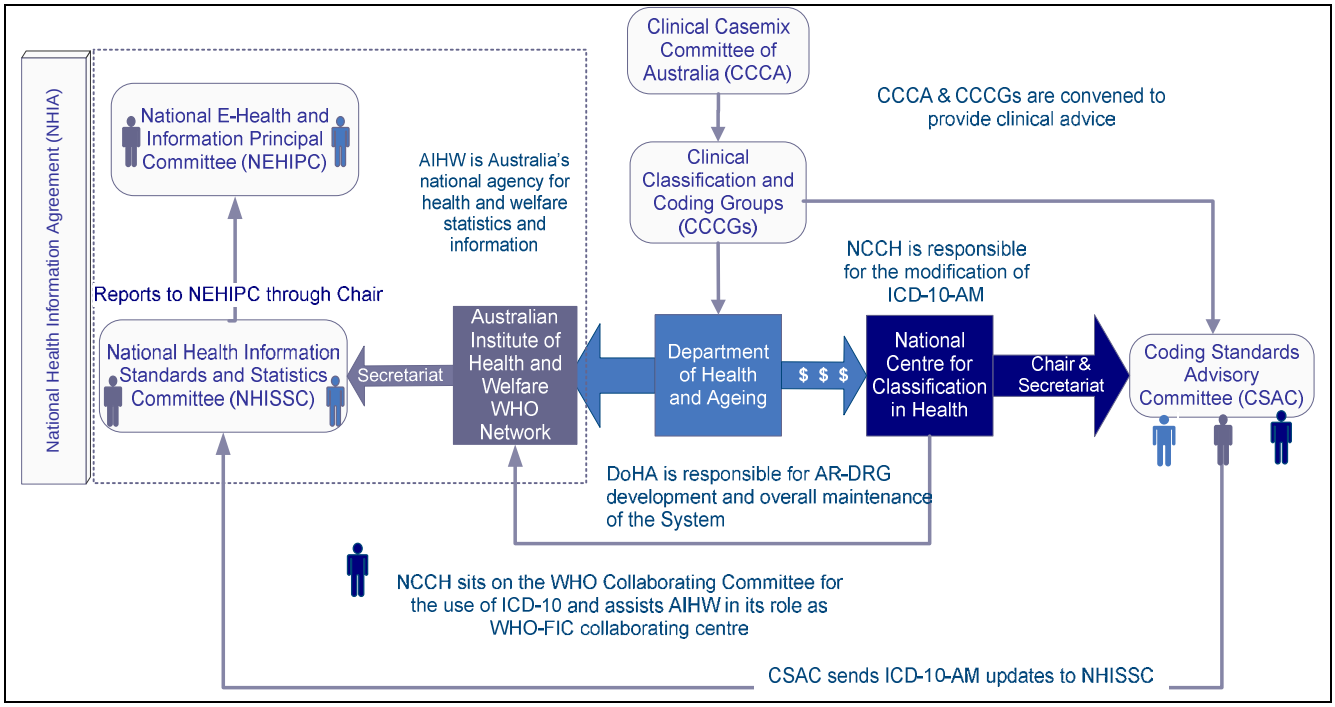
The Australian Coding Classification (ICD-10-AM/AHCI/ASC) and coding manuals are updated biennially under a contract with the National Centre for Classification in Health (NCCH), which forms part of the University of Sydney.

The Department updates the classification and releases a new version of AR-DRG. There are two types of AR-DRG revisions: major or minor. Major revisions involve creating new DRGs, changing DRG names or cost weights. Minor revisions include moving an underlying code from one DRG to another, changing a procedure status or changing a complication and co-morbidity level of a diagnosis. The Department determines if a revision will be major or minor once the revision process is underway. The most recent update of the AR-DRG was a major revision resulting in version 6.0, released in 2008.

Overview of the roles and relationships

The diagram below overviews the roles and relationships of the key organisations responsible for the System development (see Appendix D. Roles and responsibilities of organisations involved in the development cycle for more detail).

Figure 1 Roles and relationships of key organisations responsible for the System Development



The System is managed by **the Department of Health and Ageing** under the Hospital Information and Performance Information Program (HIPIP) which is funded as a Commonwealth Owned Purpose Outlay within the 2003-2008 Australian Health Care Agreements (AHCAs).

The Australian Institute of Health & Welfare (AIHW) is Australia's national agency for health and welfare statistics and information. AIHW is the Australian 'collaborating centre' with the World Health Organisation Family of International Classifications (WHO-FIC). AIHW is an Australian Government statutory authority accountable to Parliament and is also a party to the National Health Information Agreement (NHIA) which was developed under the auspices of the Australian Health Ministers' Advisory Council (AHMAC). AIHW receives some funding from the Department to conduct mortality and morbidity data analysis and reporting. AIHW is the secretariat for NHISSC and as such helps develop agendas and attends all their meetings.

National Health Information Standards and Statistics Committee (NHISSC) is a newly established subcommittee of the National E-Health and Information Principal Committee (NEHIPC) of the AMAHC. NHISSC is responsible for review of the System and providing NEHIPC with advice on national health information needs and priorities.

The Coding Standards Advisory Committee (CSAC) includes representation from the Australian States and jurisdictions and advises NCCH on coding updates. The large majority of CSAC members are clinical coders and Health Information Managers (HIMs). CSAC meets quarterly. The chair and secretariat for CSAC is the **National Centre for Classification in Health (NCCH)** which works under a contract from the Department and sets the CSAC work program. The Department tables CSAC's advice to NHISSC for endorsement of the latest versions of the System for national implementation. NCCH supports the Department in implementing WHO ICD-10 licensing terms.

The Clinical Casemix Committee of Australia (CCCA, formerly CCC) provides clinical input into the AR-DRG development cycle. Membership on the committee has been through ministerial appointment

for AR-DRG development prior to the 6th edition. CCCA meets during the appropriate part of a development cycle and advises the Department on AR-DRG content. This committee is reformed when it is required during the development cycle. The CCCA is managed by the Department and reports its findings back to the Department.

The Clinical Classification and Coding Groups (CCCGs) are subcommittees of the CCCA (made up of clinicians, grouped by speciality) that provide clinical input into the ICD-10-AM/ACHI/ACS and AR-DRG development cycle. The CCCGs only meet in the specialist areas if the CCCA requires further input to a specific issue during the development cycle. The CCCA advises the Department when a CCCG is required. CCCGs are managed by the Department and report findings back to the CCCA.

Overview of the ICD-10-AM/ACHI/ACS and AR-DRG development cycle

Currently the ICD-10-AM/AHCI/ASC and AR-DRG development cycles are managed separately, but are inter-dependent, i.e. ICD-10-AM and AHCI are component parts of the AR-DRG algorithm so that changes in these underlying component parts are integrated into the updating of the AR-DRG. The development processes occur in parallel with separate release dates of new versions, the consequences of which will be discussed in the findings section of this report.

The ICD-10-AM/ACHI/ACS development cycle

The ongoing revision cycle of ICD-10-AM/ACHI/ACS begins with a combination of changes in base classifications and public submissions. More specifically this involves incorporating updates from the following:

- World Health Organisation (WHO) for ICD-10. The WHO developed the original diagnosis codes – ICD – on which the Australian System is based. As part of the WHO network, Australia can feed back into the ICD-10 development process.
- Medicare Benefits Schedule (MBS) which is a listing of Medicare services subsidised by the Australian government. MBS updates are released on a biannual basis. The MBS items correspond with the ACHI codes.
- Australian Dental Association[5]
- public submissions made through the NCCH website and queries from coders, clinicians, research institutes, industry bodies and other end users of the data are also reviewed to further refine the ICD-10-AM/ACHI/ACS.

All users of the classification, including the State/Territory Coding Advisory Committee members on CSAC have the ability to submit proposals for changes to ICD-10-AM/ACHI/ACS via the NCCH public submissions website. The NCCH considers all submissions received and researches and develops the proposals related to each particular public submission for consideration at CSAC. Research involves:

- conducting a literature search
- reviewing other classifications and monitoring national frequencies

[5] National Centre for Classifications in Health Submission

- liaising with clinicians and clinical coders as required.

Each proposed revision to the classifications is considered, and a formal proposal written regarding the impact on the classification. The proposals provide background information, including research undertaken and clinical advice received.

The proposals are tabled at CSAC meetings and members provide input. There may be a number of proposal iterations before final approval for inclusion in ICD-10-AM/ACHI/ACS[6]. Each proposal that is to be included in the new revision must be finalised 12 months before publication[7].

Once the public submissions, queries, updates from the MBS, and updates from the WHO ICD-10 have been analysed, NCCH produces a proposed revised version of the Australian Coding Classification.

The Department submits the NCCH proposed changes to ICD-10-AM/ACHI to NHISSC and NHISSC is asked to approve the development/consultation process as being valid for the release prior to implementation of the new version.

Upon the completion of the ICD-10-AM update by NCCH and endorsement by NHISSC, the ICD-10-AM/ACHI/ACS are supplied to the Department of Heath and Ageing, to feed into the update of the AR-DRG groupers.

Once the ICD-10-AM/ACHI/ACS are distributed to States and Territories for implementation, NCCH provides continuing education courses around the nature of the updates. Health authorities distribute the files to public and private hospitals and Patient Administrative System Vendors and medical record managers obtain resources from NCCH and organise staff training. Coders code medical records using the updated ICD-10-AM/ACHI/ACS version and submit queries to their State/Territory Coding Advisory Committee.

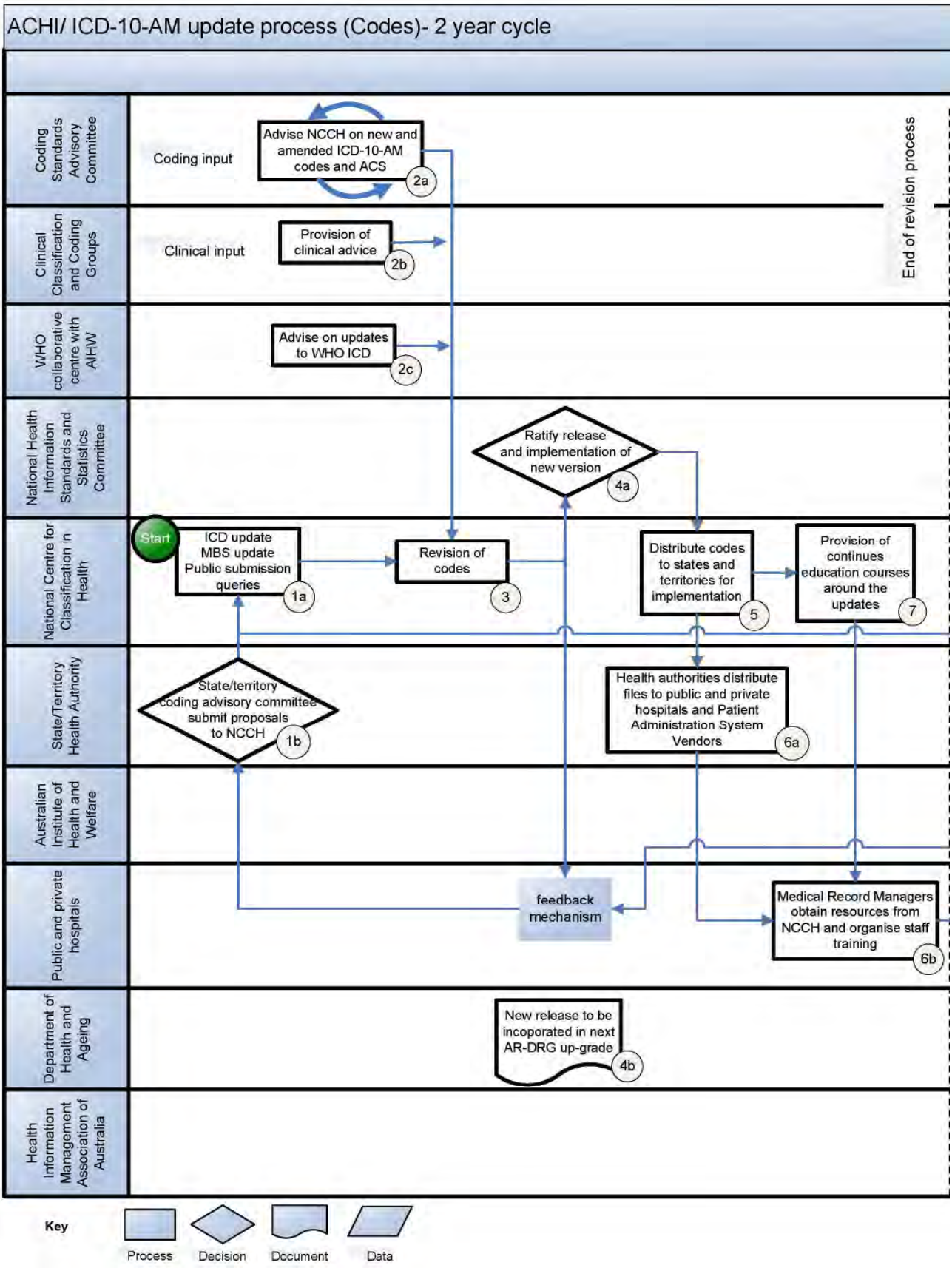
Hospitals submit data to their respective State and Territory Health Departments. State departments submit Admitted Patient Care National Minimum Data Set (APCNMDS) to both the Department and AIHW. Error records picked up in the review of this data are fed back into the development cycle through the public submission process. In between new versions, NCCH releases up to four errata changes per year.

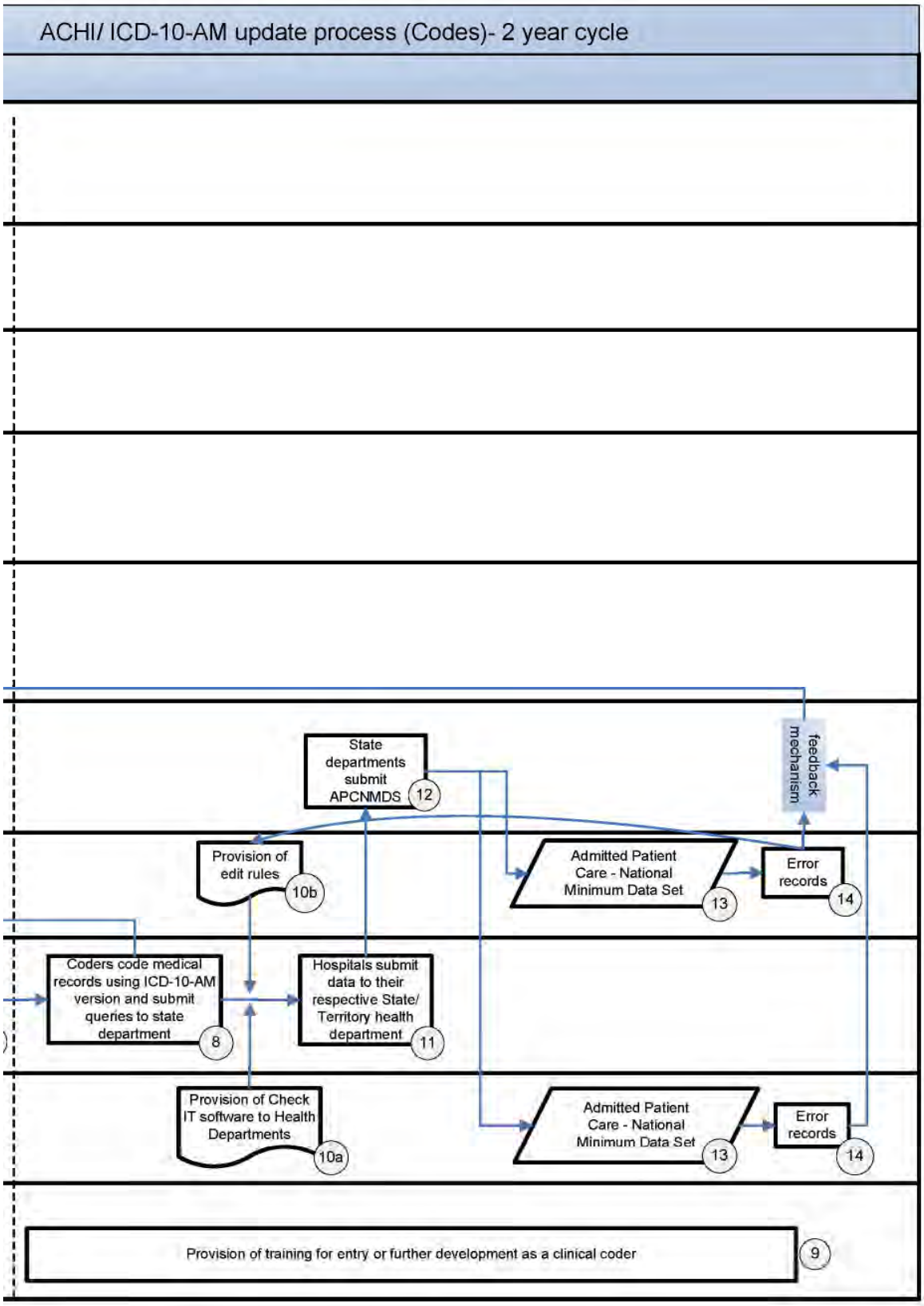
Refer to Figure 2 on the following pages for the swim lane diagram of the ICD-10-AM/ACHI/ACS development cycle.

[6] National Centre for Classifications in Health Submission

[7] National Centre for Classifications in Health Submission

Figure 2 ICD-10-AM/ACHI/ACS development process




ACHI/ ICD-10-AM update process (Codes)- 2 year cycle
State departments submit APCNMDS
12
feedback mechanism
Provision of edit rules
10b
Admitted Patient Care - National Minimum Data Set
13
Error records
14
Coders code medical records using ICD-10-AM version and submit queries to state department
8
Hospitals submit data to their respective State/ Territory health department
11
Provision of Check IT software to Health Departments
10a
Admitted Patient Care - National Minimum Data Set
13
Error records
14
Provision of training for entry or further development as a clinical coder
9

The AR-DRG development cycle

The Department is responsible for the update, development and maintenance of AR-DRGs.

The revision process for AR-DRGs begins immediately after a new release of the AR-DRGs. The AR-DRG revisions address changes requested by users through public submissions and identified through statistical analysis. The public submission form can be downloaded from the Department's website and emailed or posted to the Department.

Each recommendation goes through a process which involves clinical review and data analysis. Clinical advice has been obtained from the clinical committees – Clinical Casemix Committee of Australia (CCCA) and Clinical Classification and Coding Groups (CCCG) which are convened as required.

The Department has created 'Toolkit' software and a 'CRASS' statistical application to develop and test the AR-DRG algorithms and the new editions of ICD-10-AM/ACHI/ACS are incorporated into the AR-DRG development

The Department submits proposed changes to AR-DRG to NHISSC and NHISSC are asked to approve the development/consultation process as being valid for the release prior to implementation of the new version.

Designated software developers then obtain the specifications and manuals for the AR-DRG groupers from the Department under a licence agreement and accordingly develop the new AR-DRG grouper software and integrate it into their products. Software groupers are available on a range of IT platforms. With each new release of the AR-DRG classification system the Department undertakes comprehensive testing of the grouper software to confirm that it correctly implements the classification, and if so issues a Certificate of Acceptance[8]. Currently certification is limited to four software vendors.

State and Territory health authorities purchase the AR-DRG grouper software from the software developers. Some health authorities purchase a State licence and distribute this to all public hospitals.

In States where no State licence is purchased, individual hospitals decide if they will purchase the grouper software and sites with DRG grouper software implement the upgrade.

The NCCH distributes the AR-DRG manuals for the Department. Under current arrangements NCCH retains a share of the revenue from the sale of the AR-DRG manuals. Sites without grouper software can purchase the manuals from NCCH.

It is important to note that while the uptake of the ICD-10-AM/ACHI/ACS is mandated, the uptake of AR-DRG classification is not. As such, each State and Territory and private sector insurer or hospital makes their own decision in regards to whether they will implement the new release of the AR-DRG classification.

States and Territories group the ICD-10-AM/ACHI/ACS data provided by the hospitals with the new grouper. The State health departments identify 'error' DRGs and research these issues with the relevant hospital or raise the issue with the Department grouper developers. States and Territories then submit this minimum dataset – the Admitted Patient Care National Minimum Data Set (APCNMDS) to AIHW and the Department. Any error records that are picked up during data analysis by AIHW and/ or the Department are fed back into the development cycle through the public submission process.

Refer to Figure 3 on the following pages for the swim lane diagram of the AR-DRG development cycle.

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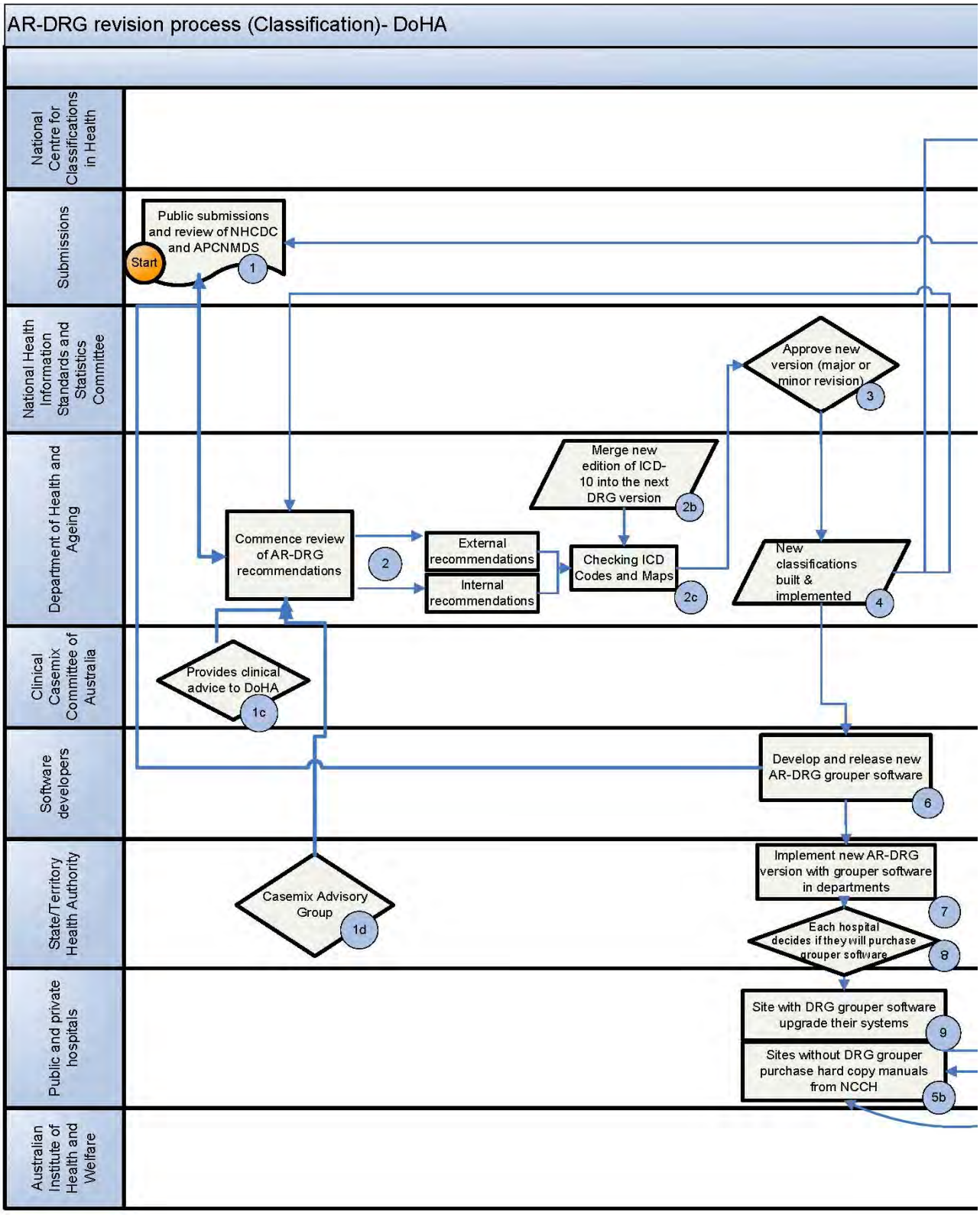
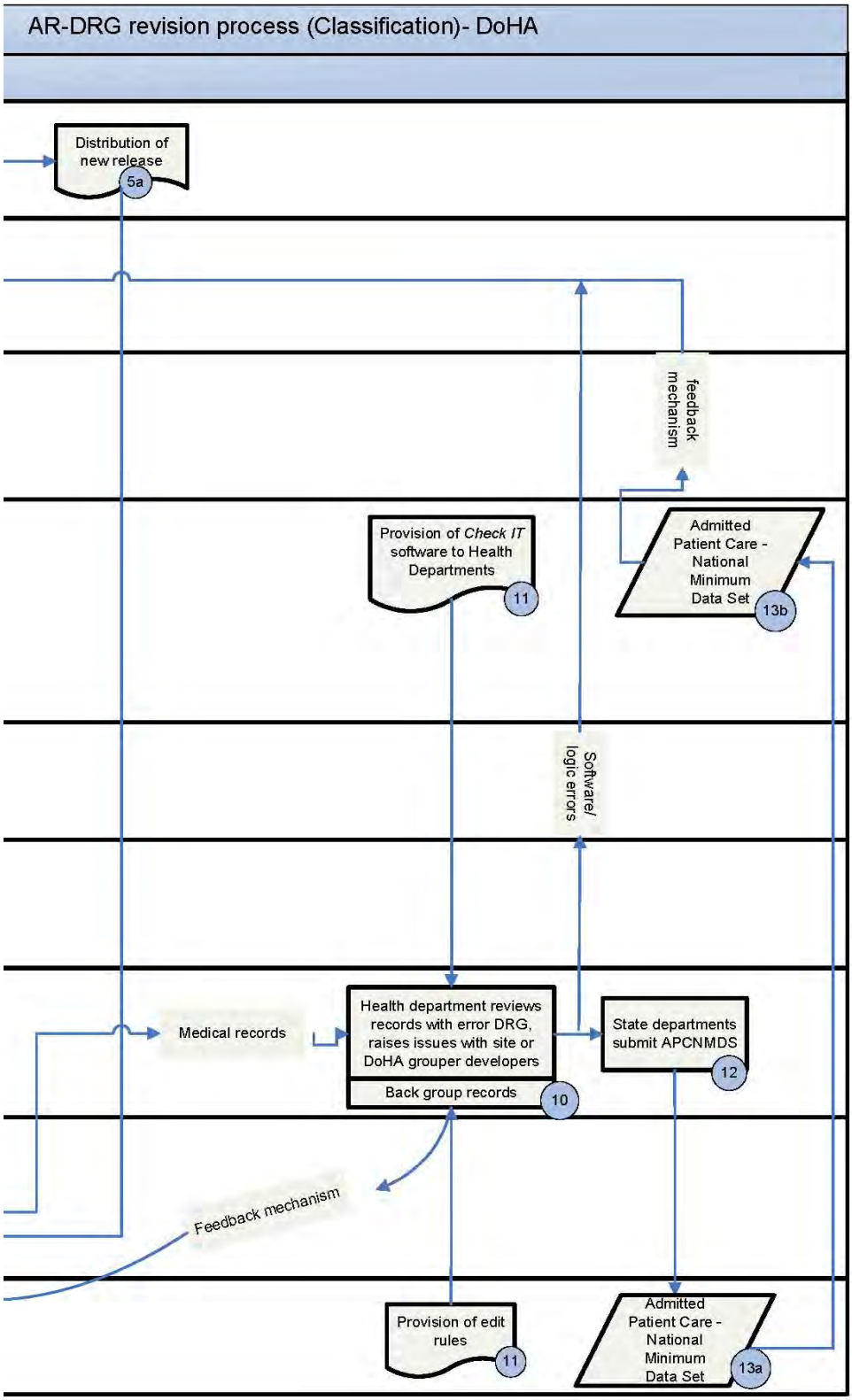
[8] Overview of the Classification System, pg1 (Document supplied by the Department)

Figure 3 AR-DRG classification development process




AR-DRG revision process (Classification)- DoHA
Distribution of new release
5a
feedback mechanism
Provision of Check IT software to Health Departments
11
Admitted Patient Care - National Minimum Data Set
13b
Software/ logic errors
Medical records
Health department reviews records with error DRG, raises issues with site or DoHA grouper developers
Back group records
10
State departments submit APCNMDS
12
Feedback mechanism
Provision of edit rules
11
Admitted Patient Care - National Minimum Data Set
13a

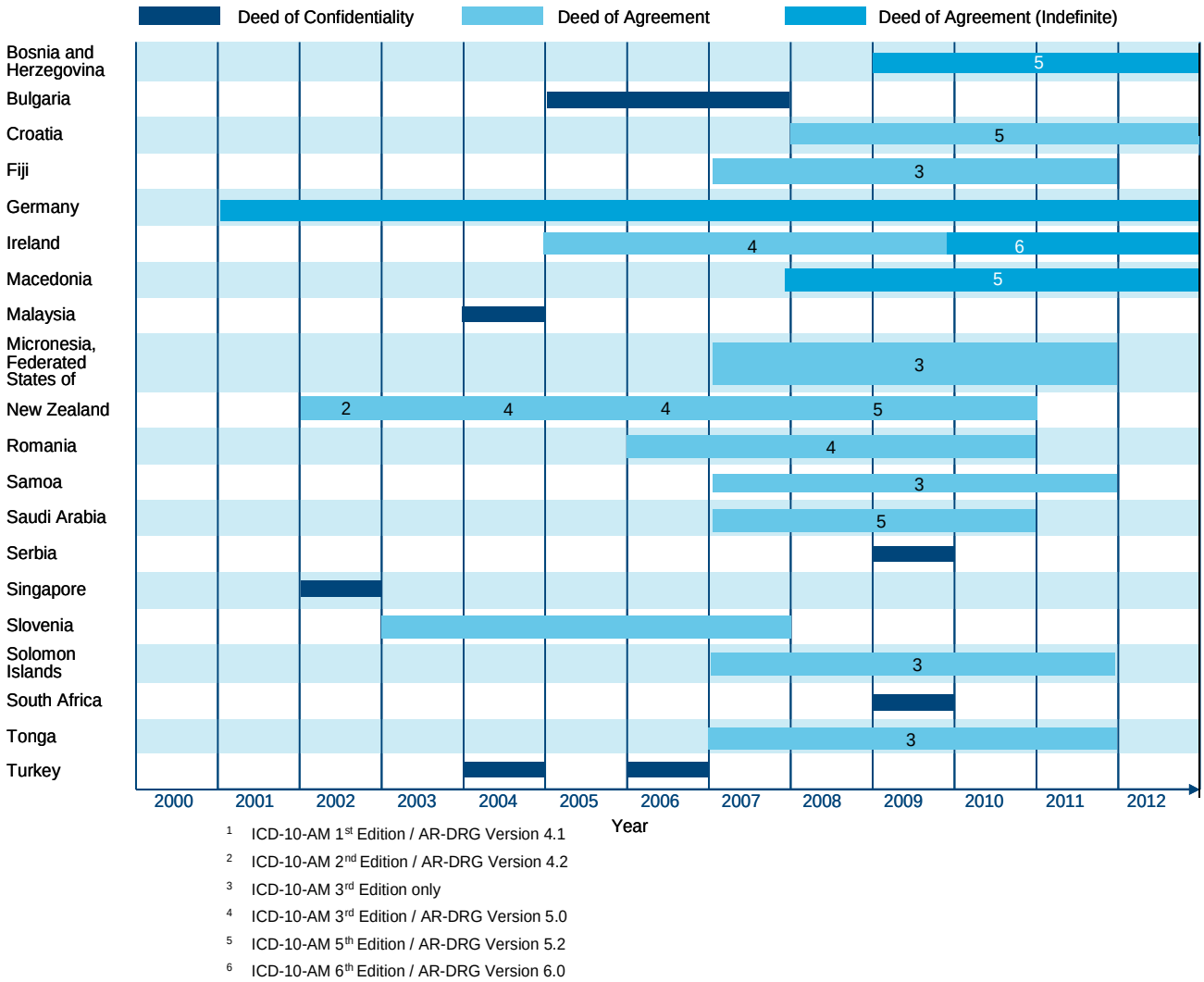
1.4 International use of the System

Australia developed the ICD-10-AM/ACHI/ACS and AR-DRG with the primary intention of developing a health classification system for domestic use and sells the AR-DRG System to a number of international clients through Deeds of Agreement. The sale and licensing of the System internationally is therefore a secondary benefit.

The Australian System is considered to be the market leader in international sales (with the widest cross-territory market penetration). Twenty countries have purchased or been given a licence to use the System at some point within the last 10 years. Payment is determined by a pricing model. To date, Australia receives revenue from international sales of the System (approximately the equivalent of two full time equivalent (FTE) staff per year).

Figure 2. below maps the international licensing history

Figure 4 International licensing history



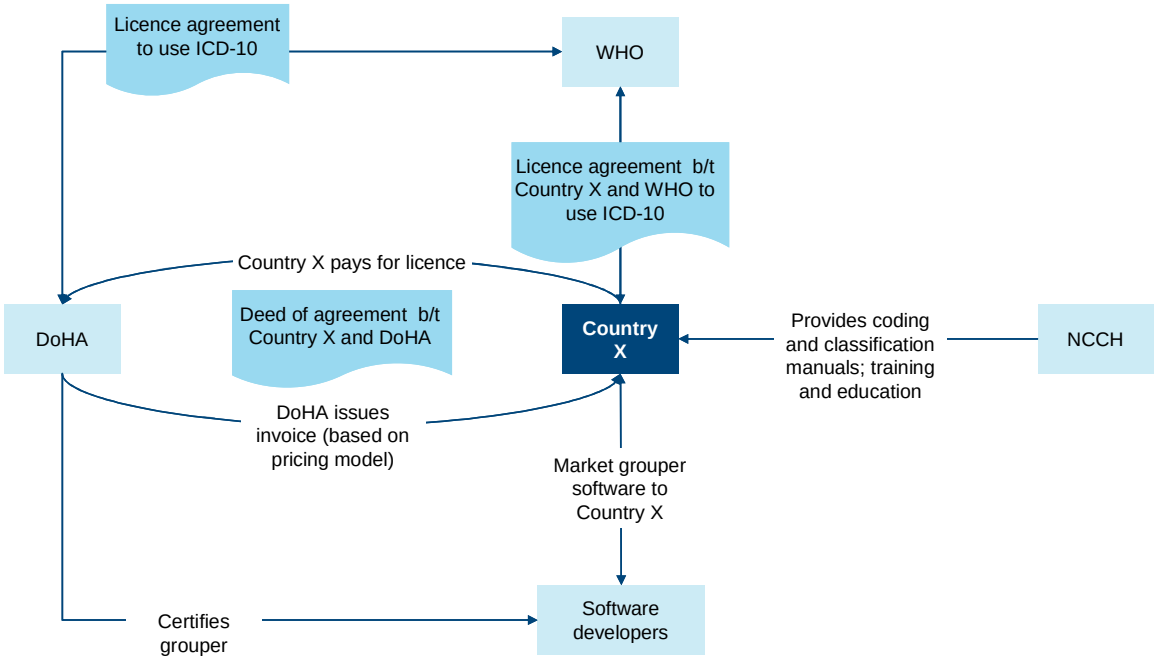
1 ICD-10-AM 1st Edition / AR-DRG Version 4.1
2 ICD-10-AM 2nd Edition / AR-DRG Version 4.2
3 ICD-10-AM 3rd Edition only
4 ICD-10-AM 3rd Edition / AR-DRG Version 5.0
5 ICD-10-AM 5th Edition / AR-DRG Version 5.2
6 ICD-10-AM 6th Edition / AR-DRG Version 6.0

In 2006, the Department undertook a review that examined the issues surrounding the pricing for the international sale/licensing of Australia's ICD-10-AM/ACHI/ACS and AR-DRG system. The review put forward the following objectives for the international sale of the System:

- assisting Australian organisations selling related software (including DRG grouper), consultancy and advisory services overseas as exports
- further enhancing Australia's reputation in this area
- promoting Australian exports more generally
- expanding the number of countries able to report ICD coding and DRG output, particularly on the same or similar basis as Australia, for comparison purposes
- further assisting those countries, neighbours or otherwise, that are in receipt of Australian overseas aid, to improve their health systems
- earning additional revenue to accommodate further investment in casemix
- yielding some contribution to the sunk investment made in the development of casemix through the 1990s as well as the continued maintenance of the System.[9]

Figure 5. below overviews the process for international licensing of the System.

Figure 5 International licensing of ICD-10-AM/ACHI/ACS and AR-DRG – overview of the process



[9] Review of the Pricing for the International Sales of the AR-DRG Classification System. KPMG (April 2006).

1.5 The broader context of the System

Casemix based funding has proven to be the emerging international standard for hospital payment (adopted by 70% of OECD countries)[10] and has been taken up by several jurisdictions and portions of the private hospital sector in Australia. The reasons for this are that activity based funding:

- enables health services to measure and compare activity and costs between hospital providers more effectively than historical based funding mechanisms or fee-for-service private hospital funding models
- encourages more efficient acute hospital treatment, and recognises the costs associated with care of different diagnostic groups
- distributes financial resources based on benchmarks rather than, for instance, fixed percentage changes in allocations.

In recognition of the benefits of activity based funding, the Commonwealth and States and Territories have agreed on key milestones for the implementation of the 26 March 2008 Council of Australian Governments (COAG) commitment:

> *"for jurisdictions, as appropriate, to move to a more nationally-consistent approach to activity based funding for services provided in public hospitals – but one which also reflects the Community Service Obligations required for the maintenance of small and regional hospital services."*

Given that the System is fundamental infrastructure to understanding hospital activity in Australia and a fundamental building block in activity based funding, it is essential that the development process for the System is as efficient and effective as possible.

[10] You Get What You Pay For* A Global Look at Balancing Demand, Quality, and Efficiency in Healthcare Payment Reform. PricewaterhouseCoopers' Health Research Institute. June 2008

2 Methodology

Three streams of work were designed to review the 'as is process', conduct an economic analysis, and provide an international comparison of good practice.

Stream 1: Process analysis

This steam of work was made up of three key activities, a document review, process mapping and stakeholder engagement and consultations.

Document Review

A document review was conducted of key documents supplied to PwC by both the Department and stakeholders. A list of these documents can be found in Appendix H. Document review and submissions.

Process Mapping

A process map for the development cycle was drafted by PwC subject matter experts in consultation with key stakeholders. The initial process map was prepared with information provided by the Department regarding the terms of reference for those organisations directly involved in the System development cycle to produce two swim lane diagrams (see Figured 2 Appendix E and Figure 3 in Appendix F) for the development cycle of ICD-10-AM/ACHI/ACS and one for the development cycle of AR-DRGs.

The swim lane diagrams provided high-level overviews of the key stakeholders, their roles and interaction with other stakeholders across the two year revision cycle. These diagrams were iteratively revised as feedback was provided during stakeholder consultations.

Stakeholder consultation

Stakeholder consultation was a central feature of the process analysis. More than one hundred individual stakeholders representing approximately twenty-nine separate organisations were interviewed, including all organisations involved in the production process and all key end users of the System to provide input on the nature of the revision cycle as it currently exists.

Stakeholder consultations examined how improvements in the development of the System could enhance the value of the System to end users. More specifically, swim lane diagrams were used:

- to provide a visual summary of the System
- as means of clarifying and reconfirming each stakeholder's role and responsibility within the System
- as a value stream mapping tool, to identify existing strengths, risks/ issues in the structure of the current System and possible future enhancements to the efficiency and effectiveness of the System development process.

A standard agenda for the stakeholder consultations was developed and tailored as needed for each consultation. Where possible these consultations were face-to-face; if this was not feasible a teleconference was arranged. The majority of consultations involved several representatives of the relevant organisation.

The table below lists the organisations consulted (see Appendix I. for the individual stakeholders who were consulted within each organisation).

Table 1 Stakeholders consulted

Organisation involved in the production process	End users	Other
National Centre for Classification in Health (NCCH) – Sydney and Queensland (University of Sydney is contracted to do ICD-10-AM/ACHI/ACS updates) **National Health Information Standards and Statistics Committee (NHISSC)** – newly formed AHMAC committee (includes reps from all States/jurisdictions, AIHW, DVA, etc) **Coding Standards Advisory Committee (CSAC)** – coding advisory committee under the direction of NCCH **Department of Health and Ageing** – internal staff **Clinical Casemix Committee of Australia (CCCA)** – previous members in current role with CSAC **Clinical Classification and Coding Groups (CCCGs) –** previous members in current role with CSAC	**Health authorities from all States and Territories** – ACT, NSW, NT, QLD, TAS, Vic, WA, SA **Public Hospitals** **Australian Healthcare and Hospitals Association (AHHA)** **Private Insurance** – Australian Health Insurance Association (AHIA), Australian Health Service Alliance (AHSA), BUPA, HCF, Medibank Private **Private Hospitals** – Healthscope, Catholic Health Australia **Software companies** – Total Care Integrative Health Systems, Visasys, 3M Australia **Department of Veterans' Affairs** **Australian Institute of Health and Welfare (AIHW)** – includes the Australian Collaborating Centre on WHO Family of Health Classifications **Health Information Management Association of Australia (HIMAA)** – coding training organisation	**Academics** – University of Wollongong, Queensland University of Technology **Australian Commission on Safety and Quality in Health Care (ACSQHC)** **Medicare Australia**

Stream 2: Economic analysis

The end-to-end process of updating the System, including classification, development and management, is critical to the delivery of the coding and classification system that is used extensively by the public and private health sectors. The update process itself can be considered as an Australian Government production process, which requires investment, and seeks to achieve the optimal return on this investment.

To assess the return on this investment, this economic analysis examines the business case for the update process, which has involved:

- developing a cost model that captures the range of financial costs that go into maintaining the coding and classification system including outlays from the Commonwealth, State and Territory government health authorities, and the investments by public hospitals to enable them to participate in the update of the System and provide data
- assessing the ways in which the System and the update cycle provide value to various stakeholders in terms of improving the quality, accuracy, and comparability of information, and the way in which that information can be interrogated and presented
- understanding the key benefits for stakeholders of having access to this 'better information' and improved information infrastructure
- exploring the evidence on changes in hospital performance over time, and assessing how the more accurate and comparable data outputs of the System are likely to have contributed to these outcomes
- wherever possible, ascribing values to the positive outcomes that have occurred as a result of the ongoing use, maintenance and updates of an accurate and consistent coding and classification system.

Stream 3: International consultations

Based on the issues that emerged from the process analysis in Stream 1, a questionnaire was developed and distributed to a set of casemix experts from seven countries with their own hospital casemix systems (persons identified by the Department and those in the PwC global health network in Canada, France, US, Germany, Netherlands, Denmark and Sweden). The questionnaire was designed to allow comparisons across the development cycle for each country with the aim of identifying innovations relevant to the Australian context.

A follow up teleconference was conducted with each country to obtain a more detailed understanding of the development process, as well as provide an opportunity to discuss the relevant strengths and weakness of these approaches (for more detail see APPENDIX C. Key findings from international comparisons of hospital classification systems).

The findings of these three streams of work are presented in the following sections of the report.

3 Key findings and recommendations

Below is a discussion of key findings which emerged from the review. These findings have been aggregated into five categories:

- overall value of the System
- transferrable lessons from international comparisons of hospital classification systems
- process improvements
- governance of the System
- improvements geared towards anticipated future use of the System.

Within the process improvement, governance and improvements geared toward future use of the System categories there are eight areas of recommendations:

1. Planning and communication
2. Drivers of System development
3. Data Integrity, quality and consistency
4. Management of international sale and use of the System
5. Management of the software
6. Clarification of roles in the System development process
7. Streamlining and centralising the management of the System development
8. Considerations for future demands on the System

3.1 Overall value of the System

Cost of the current management model

There are three primary sources of investment in the maintenance of the coding and classification system. These include:

- Commonwealth Government outlays
- outlays by State and Territory health authorities
- investments by public and private hospitals and private health insurers to enable them to use the System and provide data in line with nationally agreed standards and requirements.

Together these parties invest approximately $9.6 million annually to maintain and update the System. (Note: the costs discussed herein are annual based on an annual approach to fiscal allocations). These are likely to be 'maximum' costs, given the difficulty in extricating costs associated with the update cycle from other costs. That is, the System provides patient classification information for all admitted patient services in Australia. This information is such an integrated part of the way information about acute admitted patients in Australia is understood that the direct attribution of the costs of System changes, with the exception of the Commonwealth Department of Health's direct investment, is not possible.

As a result, all stakeholders, including the State, Territory and Commonwealth Government agencies that were consulted as part of this review, have been very cooperative and have provided their 'best estimates' of the incremental costs they incur as part of the System update process. It is recognised that the update process is both complex and embedded into the broader work program of agencies, including with respect to elements of training, creating or updating new documentation, implementing upgrades, the provision of national data etc. Therefore it is likely there is an unintended overstatement bias in the

costing provided by stakeholders and/or an unintended overstatement bias in the way the review team has scaled up available cost estimates to provide total nationwide results.

However, this estimate does not include costs incurred by private hospitals and private insurers as there are variable approaches to using the System. It also excludes costs incurred by software vendors to maintain the currency of their product range as well as salary costs for coders in public and private hospitals. These are excluded because it is assumed that the update process is cost neutral compared to other approaches to maintaining or updating health information.

Table 2. below shows the distribution of the estimated total costs incurred for the ongoing development and implementation of the System in Australia. In this, the Commonwealth spends approximately $3.4 million annually in development costs, maintenance (via contract for ICD-10-AM/ACHI/ACS development), refinement, data analysis and distribution and Certificate of Acceptance functions for grouper software. This represents 36% of the total annual costs that are known to be attributable to the update and maintenance of the System.

Table 2 Annual costs of the System

Item	Estimated annual $ cost	% of total
DoHA costs for classification development	866,288	9%
National Centre for Classification in Health (NCCH)	1,557,602	16%
Australian Institute of Health and Welfare (attributable costs)	701,581	7%
Other DoHA costs (Certificate of Acceptance functions)	300,000	3%
Total Commonwealth costs	**3,425,471**	**36%**
Upgrade implementation costs by State and Territory Health Departments	5,791,367	61%
Total State and Territory Health authorities costs	**5,791,367**	**61%**
Upgrade training costs for public hospital coders	351,930	4%
Public hospital costs	**351,930**	**4%**
Total costs	**9,568,768**	**100%**

Return on Investment

All stakeholders consulted for this project recognised the System is fundamental to understanding the Australian health system hospital activity and costs. The success of the Australian System in the international health market also supports that the ICD-10-AM/ACHI/ACS and AR-DRG System is considered a market leader internationally. Some of the key benefits of the System are:

- clinical specificity and clinical currency
- ability to measure hospital activity in a meaningful way
- data comparability when the System is applied consistently
- ability to monitor trends over time
- as the basis of casemix funding
- it provides a key element of infrastructure toward progress in measuring health outcomes.

Table 3 displays the multiple end users of the System and the value that they derive from the System.

Table 3 Value of the System to end users

End user	Primary value
Coders	Specificity of ACHI / ICD10 AM / ACS codes and standards to represent medical record documentation
Clinicians	Validity / reliability of ACHI/ICD10 AM to represent clinical practice
Statisticians	Statistical relevance for time series and trend analysis
Researchers	Ability to support valid / reliable analysis of care patterns, incidence / prevalence over time and between providers
Jurisdictions	Valid / reliable resource for planning, benchmarking, and infrastructure to funding models / resource allocation
Policy makers	Reliably inform policy and enable performance monitoring
Service providers: public and private hospitals	Provide accurate and meaningful representation of activity for benchmarking internally and with peer group
Software vendors	Enable a national standard for grouper applications and infrastructure for other operational applications
Private health insurers	Valid / reliable resource for planning, benchmarking, and infrastructure to funding models / resource allocation

There is a large return on investment for the ongoing development of the System which depends on the extent to which its 'better' information and capabilities lead to improvements in:

- **the efficiency of funding arrangements for inpatient acute hospital services**, such as the incentives that are provided to contain costs, and to extend or moderate the use of particular interventions by funding outputs rather than inputs
- **healthcare planning and resource allocation** through optimising resources and revenue. This might occur as a result of a data-driven understanding of relative performance, cost growth, and patient demand
- **the quality and safety of health care**, such as through using classification system benchmarks to compare performance on the occurrence of adverse events, and the presence of factors that can affect the safety of the hospital environment
- **clinical research capabilities, and through that, improving the understanding and delivery of health care**. This might be through better understanding of complications, better tracking of the outcomes of care, timelier intervention for emergent diseases, and the ability to identify clusters of diseases that might be traced to environmental or occupational conditions.
- **patient management**, such as through better/more targeted identification of patients in need of ongoing supervision and any impacts on extending the duration and quality of their life.

While not the only factor, AR-DRGs are a substantive contributor to improved hospital performance, for example: a simple model which calculates the incremental savings associated with the reduction in length of stay points to a possible savings in acute bed days nationally of 2 million annually, which represents a cost saving of close to $4 billion.

Amongst other things, those savings could be attributed to improved treatment protocols for overnight patients, the substitution of drug treatments for some surgical treatments and better use of anaesthetics, less invasive surgical techniques and the expansion of early discharge programs enabling patients to return to their home to receive follow-up care. All of these improvements in clinical care can be attributed at least in part by the implementation of the AR-DRG Classification system which allows performance to be measured and benchmarked to promote best practice.

See Appendix B. Economic Analysis of the System for further detail.

3.2 Transferrable lessons from international comparisons of hospital classification systems

Valuable alternative features of management models underpinning systems in international jurisdictions are also clear. National casemix experts from seven countries (Canada, Sweden, Denmark, France, Netherlands, USA, and Germany) participated in an exercise to gain an understanding of the development cycle for their respective national inpatient classification systems around the six specific topics of interest as identified in the Australian development process review:

- management of the development cycle
- technical updating of the classification system
- cycle timing and implementation
- public submissions
- IP ownership and commercial value of the classification system
- data integrity.

The key transferable lessons that would be appropriate for the Australian context are summarised in Table 4 below. These are further detailed in Appendix C.

Table 4 Summary of transferrable lessons from system development management models internationally

Summary of key findings from international comparison of inpatient classification systems
1. In the majority of countries surveyed, the management of the ongoing development of the national hospital inpatient classification system is under the direction of a central government department or agency.
2. Two management models were identified for the technical update of the System and its implementation into the health system *Model 1- Centralised development cycle* The technical update of the classification system (diagnosis, procedure and grouper codes) is more often carried out by one central body, using a core team of internal staff or in some instances supplemented by contractors and other private organisations. *Model 2- Decentralised development cycle* The update of the classification system and DRG in some nations is carried out by several entities each responsible for a particular component of the classification system under the management of the central government body.
3. Annual updates with mandated universal implementations dates are the norm for development cycles.
4. Most countries have some form of a public submission process. In countries where this is not available the classifications are not well accepted by clinicians.
5. The intellectual property of the grouper and classification system is usually owned the government and most countries surveyed make this freely accessible and available to providers via the internet.
6. Activities to ensure data integrity appear to be more prevalent in countries where the classification system underpins a funding model.

3.3 Process improvements

Recommendation Area 1: Planning and communication

Key findings:

There is not a shared understanding among stakeholders of the processes that underpin the development of the System currently, in particular:

- how the work plan is developed and coordinated
- how the overall development process operates.

A variety of stakeholders reported they did not perceive a well understood agenda or work plan that drives the development priorities of the System as a whole; and there are conflicting views about who makes decisions and why key decisions are made.

Many stakeholders commented on their perception of a lack of transparency around decision making regarding development priorities for both ICD-10-AM/ACHI/ACS and AR-DRG.

A review of public submissions for both the ICD-10-AM/ACHI/ACS and AR-DRG indicates that they are not representative of the broader population of end users. (See Figures 6 and 7 below).

Two separate submission processes operate:

- the process for submissions to NCCH for ICD-10-AM/ACHI/ACS version updates (See Appenidx G, Additional Process flows)

- the process for submission to the Department for AR-DRG version updates. These submission processes operate independently.

Previously, the NCCH/CSAC process required that submissions be received more than one year before the next ICD-10-AM/ACHI/ACS scheduled version implementation by the States and Territories (e.g. Version 6.0 was implemented on 1 July 2008 and submissions needed to be completed by May 2007). While, NCCH has recently developed an online submission process for ICD-10-AM/ACHI/ACS (from 1 July 2008), and accepts submissions continuously on its website there is still an established cut off date for submissions to be considered in version updates.

The Department provides information about how to make a public submission to the AR-DRG development process on its website. Making a submission involves downloading and filling out a form and mailing or emailing it to the Department.

There were a number of specific issues reported by Stakeholders with the public submission process for both ICD-10-AM/ACHI/ACS and AR-DRG including:

- Some key stakeholders were not aware there is the opportunity to make public submissions or are unclear about the process. In particular, medical peak bodies and private hospitals felt that they were not consulted in the process.

- Whilst all States and Territories indicated they were aware of the submission processes some felt that there was no encouragement to submit.

- There is limited advanced warning about deadlines for making public submissions.

An analysis of public submissions to the Department (for AR-DRG) and NCCH (for ICD-10-AM/ACHI/ACS) indicates that a small cohort of people provide the majority of input. (See Figure 6, below for the breakdown of submissions to NCCH for ICD-10-AM/ACHI/ACS Version 7 submitted online since 1 July 2008). The majority of submissions came from software vendors / developers and clinical coders / HIMs. All software vendor / developer submissions came from one vendor.

Figure 6 Submissions to NCCH for ICD-10-AM/ACHI/ACS version 7: 1 July 08 to Feb 09

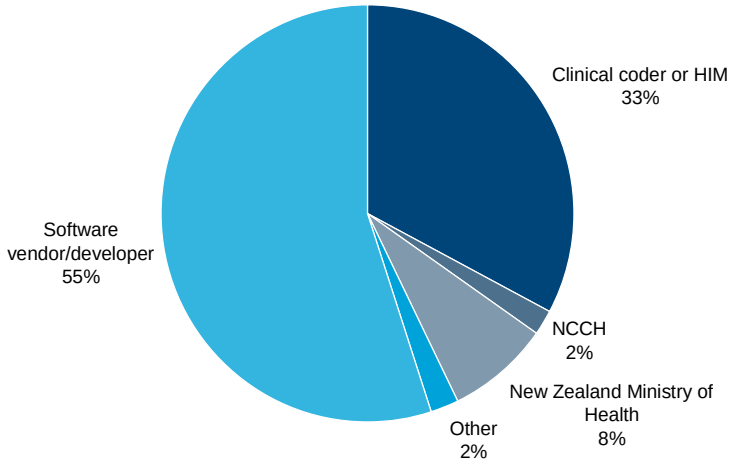
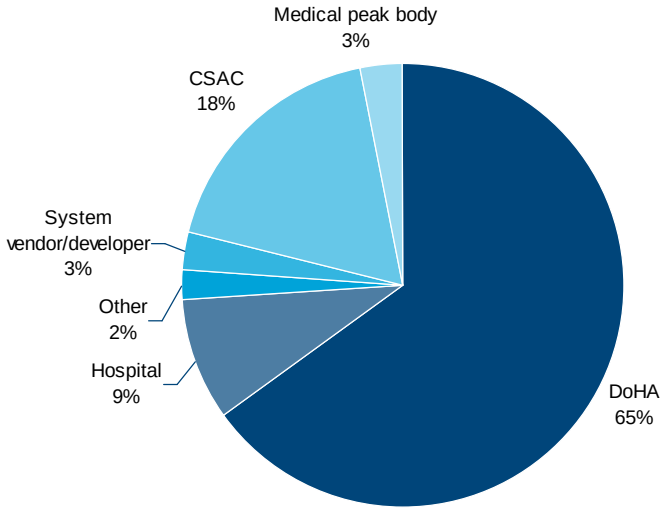


Figure 7 below shows the submissions to the Department included in AR-DRG Version 6.0. The majority of submissions were sourced internally at the Department with CSAC member submissions from two States the next highest.

Figure 7 Submissions to the Department for AR-DRG version 6.0



The international comparison of hospital classification systems, detailed in Appendix C, demonstrate best practice characteristics of public submission processes:

- transparency enhanced acceptance by clinicians and other stakeholders
- review of submissions by key stakeholder committees enhances balance in the drivers of the system development and fit with the strategic aims of use of the classification system.

The case study below was cited by several stakeholders interviewed during this review as illustrative of the nature of the current development process, i.e. a lack of a work plan in advance of technical revisions, setting the strategic development priorities of the System as a whole and agreed by all stakeholder groups / end users.

As a consequence of short term work programs, there appears to be a lack of connectivity between broader Australian health policy objectives and the current updates of the System.

Case Study: The changes in coding of Diabetes over ICD-10-AM/ACHI/ACS versions 1 – 6

Chronic disease is a key driver of costs of health care services and tracking the incidence and clinical outcomes of the management of chronic disease are important measures of the effectiveness of care delivery. Coding standards concerning diabetes (a major chronic disease) have changed in the System in an uncoordinated pattern over time. The consequence of these uncoordinated changes in the coding of diabetes has led to unreliable data for tracking the incidence of diabetes and hospitalisations due to diabetes in Australia.

1st Edition:
There was a requirement for a causal link to be established prior to coding of complications such as cataract, renal complications and neuropathy. In addition, there was no definite notation in the standards as to whether diabetes complied with ACS 0002 (Additional diagnoses). Anecdotally, most coders continued to code diabetes wherever documented. This decision was supported by the example in ACS 0401 regarding a causal relationship with cataract. In the example where there was no causal relationship between the cataract and the diabetes it was advised that coders allocate the following codes: H26.9 – Cataract, unspecified; E1x.xx- Diabetes mellitus.

2nd Edition:
In 2nd Edition, ACS 0401 was substantially expanded. The necessity for a causal relationship between diabetes and its various complications was minimised. Anecdotally, it was in 2nd Edition when the full force of the meaning of ACS 0002 became apparent to coders. A study by the Queensland Health (QH) Statistical Analysis Unit in 2002 indicated that the rate for diabetes as a principal diagnosis remained fairly stable between 1995/96 – 1999/00 and then increased significantly in 2000/01. In addition, diabetes as a secondary condition increased between 1995/96 – 1997/98, and then remained fairly stable over the next two years to decline significantly in 2000/01. This is consistent with anecdotal evidence that the coding of diabetes as an additional diagnosis was affected by ACS0002.

3rd Edition:
In answer to a third edition query in December 2002; it was decided by the NCCH that diabetes (and any relevant complications) would be coded where a single blood sugar level (BSL) was carried out upon the patient.

4th and 5th Edition:
Coders continue to code diabetes where a BSL is carried out. However, there was considerable variation where a diabetic patient was admitted for dialysis as to whether the diabetes would be coded as an additional diagnosis.

There is a key performance indicator (Potentially Preventable Hospitalisations) from the Australian Institute of Health and Welfare (AIHW) which uses diabetes as one of its "flagging" codes. In one instance in QH, analysis indicated that certain hospitals were always coding diabetes (where applicable) as an additional diagnosis in dialysis patients whereas other hospitals were not coding any additional diagnoses at all for dialysis admissions. This difference in coding convention led to certain hospitals flagging statistically high for this particular indicator. This caused significant variation in the indicator by hospital and, indeed, by State.

6th Edition:
The NCCH rescinded previous advice that diabetes should be coded where a single BSL was carried out. This advice affected the numbers of episodes where diabetes was coded. A comparison of July-December 2007 – July-December 2008 was carried out. In 2007/08 there were 7.2 percent of episodes with at least one diabetes code. For the same period in 2008/09, there were 4.6 percent of episodes with at least one diabetes code.

Taken together, these findings identify a need for a consolidated work plan, with clear prioritisation mechanisms, to ensure the updates made to the System are in line with broader health policy objectives and take into account the needs of all the end users that derive value from the System.

International comparisons indicate this is possible through use of transparent planning processes and opportunities for feedback loops via submissions and representative input from stakeholders (which will be further discussed in the following recommendation regarding drivers of System development).

Recommendation 1: Develop a consolidated approach to planning, communication, and engagement with stakeholders, along with robust and transparent prioritisation mechanisms. Specifically:

a. Develop a consolidated work plan for upcoming revisions.

- The plan should be managed by the Department and agreed with stakeholders, in advance of research and committee work for upcoming revisions, for both the ICD-10-AM/ACHI/ACS and AR-DRG proposed research agenda. (See Recommendation 6.a. regarding an objective of universal uptake of versions. Gaining agreement with stakeholders should include the use of a nationally agreed version).
- The plan could be based on policy content for determining priorities for System development.
- The plan should be transparent; taking a whole of system approach which considers fit with the overall Commonwealth priorities and resources, and foreshadows the quantum of potential change to key stakeholders (e.g. States and Territories).

b. Develop a communications plan, managed by the Department, to enhance the transparency of the development process.

c. Develop a 'balanced scorecard' to assist in prioritising proposed System updates (both ICD-10-AM/ACHI/ACS and AR-DRG). Coordination of the scorecard should be managed by the Department to accompany proposed changes to the System. The balanced scorecard should be based on documentation of:

- statistical benefits
- clinical currency imperatives
- fit with Commonwealth health system priorities
- implications for funding mechanisms.

Comparative cost/benefit analysis:

This planning, communications, and engagement recommendation will enhance the effectiveness of the System development process. The additional cost of adding these activities to the Department's current workload can not be quantified without a detailed implementation plan and may be offset when taken in combination with other recommendations herein.

Recommendation Area 2 – Drivers of System development

Key findings:

At present there is a complex array of organisations and committees participating in the development cycle of the System which has implications both for the effectiveness of the processes and for the management structure (discussed in recommendation 6).

Unintended imbalance of key stakeholders' input has evolved; in particular the process of gaining clinical input has diminished and there is a lack of input from the private sector.

There was confusion expressed among stakeholders regarding the process of periodic engagement with the Clinical Casemix Committee of Australia (CCCA), who have provided clinical advice to the Department regarding AR-DRG development, and the Clinical Classification and Coding Groups (CCCGs), who have provided clinical coding advice in relation to proposed changes to ICD-10-AM/ACHI/ACS. Historically,

- membership on these clinical committees has come through individual expression of interest (it is unclear if/how CCCG members represent the wider views of their respective medical specialty)
- the CCCA meets as required during the AR-DRG development cycle and the CCCGs were not formally convened, but acted as specialist input to the wider CCCA.

Stakeholder feedback suggests:

- representative clinical input can be obtained systematically within defined timeframes
- a clinical consultative process can be run successfully.

The following case study illustrates the approach of the Department's Medicare Branch to development of the Medicare Benefits Schedule (MBS). It is important to note the stakeholder landscape and classification itself is considerably less complex than the System being reviewed, nevertheless the case study provides a model for how systematic clinical input can be managed in revision of a classification system.

The case study also demonstrates the impact on streamlining of processes when funding decisions are directly connected to system changes, i.e. changes in the MBS schedule relate directly to Commonwealth payments becoming available for a new item. The approval is a funding approval rather than a service classification approval, whereas changes to AR-DRG are currently primarily for clinical and statistical purposes and are adapted for funding arrangements in some jurisdictions.

Case Study: Clinical input to update of the Medical Benefits Schedule (MBS)

- *Updates to MBS are managed through the Medical Services Advisory Committee (MSAC) and can take 18 months to assess prior to going to the Minister and a further 6-12 months for the development of the recommendation through to implementation.*
- *MSAC is managed by the Department and consults with relevant State medical boards and colleges.*
- *Changes are being assessed on an ongoing basis. Historically updates have been made twice yearly.*
- *Software providers are given approximately a month's advance notice of changes and the Medicare Branch puts out a quarterly magazine to providers with information regarding changes.*
- *Production aspects of the updates are outsourced by the Department.*
- *MSAC also reviews the cost effectiveness of medical procedures through the following steps:*

1 *Eligibility - The first stage of the process involves consideration of the application by the Department of Health and Ageing to determine its eligibility for assessment. The principal eligibility criterion is whether the service meets the conditions for funding under Medicare Benefits Schedule (MBS) arrangements. To meet this criterion, the proposed service must constitute a clinically relevant professional service within the meaning of the Health Insurance Act 1973. Any relevant approval from the Therapeutic Goods Administration (TGA) is also confirmed at this stage.*

2 *Assessment - If an application is considered eligible, and an assessment by MSAC is determined to constitute an efficient and effective use of Commonwealth resources, it moves to the assessment stage. The Department then contracts the services of an independent evaluator to conduct an evidence-based assessment. The evaluators initially develop an evaluation protocol and then prepare a report assessing the evidence of the safety, effectiveness and cost-effectiveness of the new technology or procedure. MSAC appoints an expert Advisory Panel to ensure that the assessment draws valid conclusions from the available evidence. Members of the Advisory Panel are drawn from relevant medical colleges and other bodies with expertise relevant to the technology being assessed. The applicant is invited to comment on the draft assessment protocol and draft report prior to consideration by MSAC.*

3 *Advice to the Minister - In formulating advice to the Minister, MSAC considers a wide range of information, including the report assessing the evidence, any feedback on the report provided by the applicant or other relevant parties, as well as drawing on the individual expertise of MSAC members. MSAC then prepares advice to the Minister on the strength of the evidence in relation to the safety, effectiveness and cost-effectiveness of the new technology or procedure and on the circumstances under which public funding should be supported. Where the evidence is inconclusive, but MSAC concludes that the service is likely to be safer, more effective, and more cost-effective than currently funded services, MSAC may advise the Minister that interim funding to enable data collection and further evaluation may be appropriate.*

4 *Decision - The Minister for Health and Ageing notes MSAC's advice and authorises the Department to conduct further consultation leading to policy advice on which the Minister may make a fully informed decision in relation to public funding.*

5 *Implementation - Once a Government decision has been made to provide public funding to a new service, the necessary changes are made to the Medicare Benefits Schedule that describe the service and the fee on which Medicare benefits will be based.*

Throughout the assessment process, applications status can be tracked on the MSAC website.

While the private sector is an important end-user of the System, with considerable operational experience and expertise of the System, and in particular experience in using the System as a basis for funding, the current development cycles for both AR-DRG and ICD-10-AM/ACHI/ACS do not receive representative input from the private sector (hospitals or insurers).

Taken together, these findings identified the development process is undermined without balanced inputs and there is a need to revise the processes for effective input from two key stakeholder groups:

- **ongoing clinical input throughout the development cycle for both the ICD-10-AM/ACHI/ACS and AR-DRG (This is essential both for efficient access to clinical information and for clinical acceptance)**
- **representative input from the private sector (private hospitals and private insurers) for the development cycle for both the ICD-10-AM/ACHI/ACS and AR-DRG.**

Recommendation 2: Rebalance the inputs/drivers of the System development. Specifically:

a. Reinvigorate robust, systematic, representative clinical input to enable enhanced clinical acceptance/engagement with the System:
    - review the mechanism for gaining clinical input representative of the wider medical community
    - integrate clinical representatives into key committees and process steps.

b. Add private sector (insurance and hospital) representatives to relevant working groups in order to add equitable inputs across the current and future uses of the System.

Comparative cost/benefit analysis:

This process change may result in modest increases in costs related to the additional ongoing participation of clinical representatives and private sector representatives (or these may be in kind contributions as with public sector participants in the development process) and the recommendations above (re: rebalancing the inputs/drivers of the System development) and will significantly enhance the effectiveness of the System development process.

Recommendation area 3: Data integrity, quality and consistency

Key findings:

There are two specific national data sets related to the use of the System in Australia:

- All States and Territories report ICD-10-AM/ACHI and AR-DRG data to AIHW as part of the Admitted Patient Care National Minimum Data Set (APCNMDS). They also report this data to the Department under the Australian Health Care Agreements (AHCAs). The National Health Information Agreement (NHIA), an agreement between the Australian Government and State/Territory government health authorities, the Australian Bureau of Statistics, the Australian Institute of Health and Welfare (AIHW), the Health Insurance Commission (now Medicare Australia), and the Department of Veterans' Affairs, and which was established to coordinate the development, collection and dissemination of health information in Australia.
- The National Hospital Cost Data Collection (NHCDC) established in 1996-97, reports annually on all public and private hospitals with more than 200 acute separations in the financial year. The data is used for outcomes measurement, performance information and policy development. It provides the healthcare industry with a nationally consistent method of classifying all types of patients, their treatment and associated costs using the AR-DRG.

Through these data collections, the System enables national benchmarking of hospitals, statistical analysis, research, and are used to support policy development in relation to access and equity issues and market assessment.

The picture regarding national use of System versions is mixed:

There is universal uptake of the latest version of ICD-10-AM/ACHI/ACS.

The key driver for uptake of the latest version is external, NHISSC endorsement and agreement is the driver for States and Territories to update to the latest ICD-10-AM/ACHI/ACS version. Stakeholders also report another incentive to uptake of ICD-10-AM/ACHI/ACS is to maintain clinical currency.

In contrast, uptake of the latest version of AR-DRG is voluntary and variable. AR-DRG Version 6.0 was released in November 2008. Currently States and Territories are reporting in AR-DRG Version 5.2 although they stated that they will begin reporting in AR-DRG Version 6.0 from 1 July 2009.

Even if uptake were universal, there is a lag time of 6 months to one year between implementation of the latest version of ICD-10-AM/ ACHI/ACS and the subsequent version of the AR-DRG, requiring 'back mapping' from the latest version of ICD-10-AM/ACHI/ACS and AR-DRG, to the previous version of AR-DRG during the transition period.

For public hospitals:

States and Territories implement the latest version of ICD-10-AM/ACHI/ACS from 1 July of the release year. Currently all hospitals and jurisdictions consulted for this review indicate that they are using ICD-10-AM/ACHI/ACS 6th edition which was implemented on 1 July 2008.

States and Territories routinely re-group ICD-10-AM/ACHI/ACS codes into the most current AR- DRG version prior to national submission of data using 'forward mapping'.

Public hospitals have variable uptake of the latest version of the AR-DRG and many indicate that they are still using Version 5.0, i.e. they have not implemented versions 5.1 or 5.2.

For private hospitals:

Private hospitals use the most recent version of ICD-10-AM/ACHI/ACS (currently version 6.0); whereas private hospitals' use of AR-DRGs is driven by hospital contracts with private health funds.

A material portion of private health funds hospital claims payments are based on an AR-DRG casemix funding methodology (estimates vary from 50 to 60% of claims).

Private hospitals and health funds make a business decision, based on costs and benefits, about going to later versions of AR-DRG or cost weights. The majority of health funds who pay by DRGs are currently using version 4.2 of the AR-DRG grouper because this is the most recent version for which private hospital cost weight data is available, requiring considerable back mapping from the current version of ICD-10-AM/ACHI/ACS.

Use of the System across jurisdictions for funding purposes:

Use of the System as a basis for funding varies across jurisdictions, with corresponding variation in data requirements:

The following States report they are using the System in funding public hospitals (although the actual funding methodologies vary): Victoria, Queensland, South Australia, and Western Australia. New South Wales released a policy effective 1 July 2008 regarding a three year transition to implementation of casemix funding for public hospitals.

Victoria has developed some of its own modifications to the AR-DRG classification which do not appear in the national version; this development reflects an appetite for refining the system where it is used for funding.

See Figure 6 below for an overview of current AR-DRG versions in use.

Figure 8 AR-DRG version in use

	AR-DRG Version	4.1	4.2	5.0	5.1	5.2	6.0
QLD	State					✓ ----→	
	Public Hospitals			✓			
	Private Hospitals		varies between hospitals, report in versions as old as 4.2				
NSW	State					✓ ----→	
	Public Hospitals		varies between hospitals				
	Private Hospitals		varies between hospitals, report in versions as old as 4.2				
ACT	State				✓*		
	Public Hospitals				✓		
	Private Hospitals		varies between hospitals, report in versions as old as 4.2				
VIC	State					✓ ----→	
	Public Hospitals					✓	
	Private Hospitals		varies between hospitals, report in versions as old as 4.2				
TAS	State					✓	
	Public Hospitals					✓	
	Private Hospitals		varies between hospitals, report in versions as old as 4.2				
SA	State					✓	
	Public Hospitals					✓	
	Private Hospitals		varies between hospitals, report in versions as old as 4.2				
WA	State					✓ ----→	
	Public Hospitals					✓ ----→	
	Private Hospitals		varies between hospitals, report in versions as old as 4.2				
NT	State				✓		
	Public Hospitals				✓		
	Private Hospitals		varies between hospitals, report in versions as old as 4.2				

upgrade for 09-10 data ----→
* have the capacity to map up to 5.2 but use 5.1 in general reporting

For statistical collections/reporting, mapping between versions:

To maintain statistical relevance for time series and trend analysis, statisticians and researchers must map to one version to create a uniform dataset. Clinical mapping tables for ICD-10-AM/ACHI/ACS are provided by NCCH and logical mapping tables for AR-DRG are provided by the Department. Mapping tables are also built into the grouper software by the software vendors.

Researchers report they need to be expert in the history of changes between versions and in back mapping and forward mapping between versions in order to complete valid and reliable time series analysis.

Mapping between various versions can create error records where codes did not exist in previous versions or the AR-DRG algorithm has changed. This in turn affects data quality consistency and comparability.

Given the variable uptake of the latest version of AR-DRG, particularly by service providers, hospital ICD-10-AM/ACHI/ACS data is ‘back mapped’ or ‘forward mapped’ to the current AR-DRG version for State/ Territory reporting requirements.

For States that have implemented casemix funding, the most recent cost weights for public hospitals are available for AR-DRG Version 5.0. Backward and forward mapping is required as funding is based on Version 5.0 but States and Territories are reporting in Version 5.2 (sometimes also retrospectively in Version 5.1) and will be reporting in Version 6.0 from 1 July 2009.

Hospital ICD-10-AM/ACHI/ACS data is regrouped by the State/ Territory for national reporting purposes. Some States and Territories using different grouper software indicate that grouping results can vary between the software programs.

AIHW conducts its own grouping process for data integrity. Hence, when hospital data is reported to AIHW it is re-grouped. AIHW does not report State/Territory AR-DRG data, rather it reports the findings of its own AR-DRG grouping process.

Private health funds must submit one dataset at the State level and also Hospital Casemix Protocol (HCP)[11] data, a legislated collection in the *Private Health Insurance Act 2007*, at the Commonwealth level within 6 weeks of month-end.

While private health funds receive HCP data from public hospitals for private patients who are treated there, the majority of the ICD-10-AM/ACHI codes are reported to be missing from this data based on a lag in coding timeliness in public hospitals. Also the data is generally received after the claim has been paid, undermining the ability for timely compliance checks.

Compliance/data quality mechanisms

This review found that with several organisations involved in providing support, clarification and approved changes, there is some confusion among end users of how to best obtain valid technical support, i.e. what is the nationally consistent / definitive source for response to queries.

There are national coding standards, but there is no quality assurance of clinical coding that is set at the national level (e.g. some States/Territories, public and private hospitals and private insurance funders conduct clinical audits, but this is not mandated by the Commonwealth or nationally consistent).

Stakeholders report that results from clinical coding audits vary, with error rates of up to 30% at the ICD-10-AM/ACHI level and 15% at the AR-DRG level.

There is broad consensus domestically and internationally that, where the System is used as the basis of funding, data quality becomes a bigger focus, i.e. there are more implemented compliance mechanisms, for example the State of Victoria, which has implemented casemix funding, has committed to a coding audit program because they believe it improves the quality of coding.

It is believed that electronic data submission will improve data quality. One private health fund reported they found that when they accepted morbidity data electronically, the error rate was 4-5% whereas the error rate for manual entry was 10-15%.

[11] The HCP collection includes clinical, demographic and financial information for privately insured admitted patient services. The collection has episodic, benefit and charge data for privately insured admitted patient episodes nationally from 1996/97. The collection is unique and is a valuable tool for services evaluation and research for both industry and Government.

In summary, the variable reporting regimens across the public and private hospital sectors and the variable uptake of AR-DRG versions create inefficiencies in use of the System.

These inefficiencies result in:

- **the need to backward and forward map data in use of the System**
- **limits to the comparability of data across public and private hospitals**
- **and creates some data quality issues.**

Data quality and comparability is further exacerbated by lack of national compliance mechanisms (as illustrated in the previous diabetes case study).

Recommendation 3: Data quality and consistency should be enhanced by:

a. The Department should set an objective of universal uptake of new System versions.

b. Implementation of national compliance mechanisms, for example all or a combination of the following activities:

   - conduct statistical analysis of national data sets to identify anomalies and use this as one input to a clinical coding audit sample, e.g. with State or hospital level response to queries
   - set up a national program of clinical coding audits, e.g. these could be undertaken with systematic sampling and peer review measures of inter-rater reliability.

c. Enhance end user support, for example with a centralised mechanism for definitive answers to queries, web-enabled posting of errata and queries' responses.

Comparative cost/benefit analysis:

Implementation of compliance mechanisms and enhanced end user support will require additional management resources and add cost (which will likely impact both the Commonwealth and States/Territories). The quantum of additional cost depends on the specific mechanisms chosen.

International comparisons indicate key benefits of enhancements to data integrity are realised in the use of a hospital classification system as infrastructure to activity based funding. Therefore, the implementation of a national compliance program is interdependent with the larger Commonwealth agenda for use of the System as infrastructure in activity based funding.

Recommendation Area 4: Management of international sale and use of the system

Key findings:

Australia developed the ICD-10-AM/ACHI/ACS and AR-DRG with the primary intention of developing a health classification system for domestic use. The sale and licensing of the System internationally is seen as a secondary benefit.

The Australian System is considered to be the market leader in international sales (with the widest cross-territory market penetration of any hospital classification system). Twenty countries have purchased a licence to use the System within the last ten years.

The motivations for international licensing are summarised in Table 5 below.

Table 5 The motivations for international licensing

Motivations for international licensing
Assisting Australian organisations selling related software (including DRG grouper), consultancy and advisory services overseas as exports.
Further enhancing Australia's reputation in healthcare classification systems.
Promoting Australian exports more generally.
Expanding the number of countries able to report diagnosis coding and hospital casemix adjusted activity, particularly on the same or similar basis as Australia, for comparison purposes.
Further assisting those countries, neighbours or otherwise, that are in receipt of Australian overseas aid, to improve their health systems.
Earning additional revenue to accommodate further investment in casemix.
Yielding some contribution to the sunk investment made in the development of casemix through the 1990s as well as the continued maintenance of the System[12].

Legal Framework

The Department is currently providing a licence for a particular version of the system with the licence fee paid up-front to mitigate some of the contract risks.

International requests to the Department usually come from the potential international 'end user' of the System rather than at a government to government level which is the level with which the Department for Affairs and Trade (DFAT) rules require the legal arrangement be made. Licence deeds between the Department and other international jurisdictions have non-treaty status and there are questions about these being legally binding in international law or in Australian domestic law.

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[12] Review of the Pricing for the International Sales of the AR-DRG Classification System. KPMG (April 2006).

The legal framework for international sales has not in the past adequately protected Australia's investment in the development of the ICD-10-AM/ACHI/ACS and AR-DRG. The international licence deeds for use of the System have been difficult to enforce for a variety of reasons:

- A country may undertake a trial of the System for a default period of six months. A Deed of Confidentiality is signed for this purpose but it is difficult to enforce the time limit to protect the IP and ensure that the System is only used within defined/agreed parameters.
- When a country decides to purchase the licence, they sign a Deed of Agreement with the Department. Previously the preferred contract term was for a one time licence for a defined version with no annual updates or ongoing licences updates included. Relevant stakeholders reported that payment of ongoing annual fees was difficult to follow-up and enforce.
- Licensing deeds are not synchronised to the commercial terms of software licences (e.g. the time period of the System licence may not correspond to the software licence and use of the System can not effectively be terminated as with expiration of a software licence).
- There are no built in controls to enforce time-limited licences and ensure the IP is not modified or copied.
- The countries that buy the rights to develop their own version, using the Australian ICD-10-AM/ACHI/ACS material as a basis, are required under the terms and conditions of their contracts to provide details of any development back to Australia. This contractual requirement is in place to allow lessons learnt from overseas modifications to be considered in the Australian version. However, this is difficult to enforce as the countries need to provide the information under their own volition and often the proposed development may or may not occur as planned. There is currently no effective process in place to follow up this content and then assess it's suitability to the Australian context.

If a country wishes to move to a later version at any stage during an existing contract then a new contract will be negotiated.

Intellectual Property

The System represents significant Intellectual Property (IP); yet ambiguity remains around the value and the extent of the IP.

The WHO develops and owns the ICD-10, which Australia like other jurisdictions uses by licence agreement. The Department owns the IP for the System (ICD-10-AM /ACHI/ACS and AR-DRG).

Third party marketing of the System by the software vendors and NCCH and HIMAA (through their educational product sales) is driving the uptake of the System internationally. Software and educational vendors cannot sell their products to countries until the country has a licence with WHO (for use of ICD-10) and the Department representing the Commonwealth of Australia for the System:

- NCCH sells the coding and classification manuals internationally countries who are already licensed by the Department to use the System and responds to queries regarding coding.
- The Health Information Management Association of Australia (HIMAA) provides training to international users for the range of versions in use internationally.
- Software companies market their grouper and additional software internationally and technical support is often provided as part of the contract.

Pricing

International payment for a licence to use the System is determined by a pricing model. The pricing model does not take into account a valuation of the IP.

While the System may have been valued in the past for the annual audited financial statements as an intangible asset, the Intellectual Property (IP) of the System has not undergone a full financial 'valuation' by the Commonwealth. (Note: This is beyond the scope of the current review).

As the primary purpose/benefit of the System is for the domestic market, revenues from international sales make a contribution toward development costs (over the past ten years Australia has earned revenue equivalent to two full time staff salaries per year).

Administrative burden

The sale of the System internationally creates additional demands for consistent, coordinated, international end user support over the range of versions still in use internationally.

It is unclear if foreign countries should input into the ICD-10-AM/ACHI/ACS and AR-DRG revision process and if so how. Stakeholders have indicated that international input should only be considered if it is relevant to the Australian situation. (Currently only New Zealand inputs into the ICD-10-AM/ACHI/ACS process through membership on CSAC and public submissions).

Taken together, these findings indicate the quality of the Australian System has propelled it to a market leadership position in international sales and market penetration has been accelerated by third party marketing of the System.

Rapid growth of international use of the System has outpaced refinement of some of the necessary key elements of policy infrastructure, namely those around IP, pricing, protective legal framework and international information sharing.

Recommendation 4: Review the Commonwealth's international sales of the System. Specifically, four key aspects of the management of international sales of the system should be reviewed and re-considered.

a. Re-evaluate the protective legal framework for international contracting.

- The legal framework needs to take account of the issues and mechanisms needed to enforce the agreements across the range of international implementation stages from trial, through sale and local development.

b. Re-evaluate the pricing model.

- Consideration and definition needs to be given to the value of the IP and the policy position of the Department regarding its participation in public good initiatives in the health arena, e.g. cost recovery.

c. Re-evaluate communications with international users, with a view to developing a proactive communications plan and re-invigorating sharing of information across jurisdictions. This re-evaluation should consider both operational and developmental aspects of communication, for example:

- notification of training and software vendors regarding status of international licensed System users
- notification of international users regarding plans for errata to versions licensed and availability of new versions
- provision of end user support via web-enabled submissions and queries
- set up systematic tracking and enforcement of expiration dates and protocol for timely renewal
- a cost-benefit analysis of the input of foreign users to the development of the System, and mechanisms for management of such input.

See further discussion in recommendation 5 regarding international sale of System grouper software.

Comparative cost/benefit analysis:

Developing a new legal framework and a new pricing model could involve additional cost which would vary based on the scope of the tasks and whether the work is undertaken in house or outsourced.

The communications plan would be part of in house management of the System (see further discussion in Management Structure recommendations below).

The cost of these activities could be offset by revenues for sale of the System internationally.

Recommendation Area 5: Management of software

A restricted market of four software vendors develop and market AR-DRG grouper software for both the domestic and international markets based on the AR-DRG specifications provided by the Department at no charge. (This number of vendors was arrived at historically through a procurement process; there are currently ongoing requests by international software vendors for access to the AR-DRG specifications).

The current restriction on market entry for software vendors appears the risk of loss of control of use, if the AR-DRG specifications are made freely available.

Vendors market and sell AR-DRG grouper software domestically and internationally (to those countries that hold a licence with the Department representing the Commonwealth of Australia for the System). Approximately 90% of the market share for grouper software is held by one company.

To maintain consistency of the grouper software across multiple vendors and platforms, the Department certifies the accuracy of the grouper software at no charge to vendors. Notably, only new AR-DRG version groupers have required certification but no certification is required when new code editions and associated code mapping tables are added to existing groupers, or when errata are released.

The Australian based software vendors report that the certified grouper is the core of their offering (other applications have been built around it) and they have made a substantive investment in the development of their offerings related to the System grouper. Certification by the Department is a key plank of the software vendors' marketing strategy internationally and confers commercial benefit to the software companies at no charge. Some software developers noted that the grouper as a stand-alone product is not a high revenue-earner[13]; rather it is the complementary applications and continuing support required which are commercial motivations.

International comparisons indicate the intellectual property of the grouper specifications and classification system is usually owned by the government and most countries surveyed make this freely accessible and available in the market. It is then the responsibility of software vendors and users to ensure accuracy of the grouper with classification specifications. (See Appendix C. Key findings from international comparisons of hospital classification systems)

Taken together, there findings indicate the current market restriction on access to the grouper specification is historical and while the certification process for the grouper software provides some level assurance to the users, the revenue benefits of certification accrue to the software vendors who receive the certification at no charge.

[13] As part of the certification process, software developers must agree to offer the grouper as a stand-alone product.

Recommendation 5. Review the management of software and grouper certification and re-align it with international best practice.

The Department has various options for how to proceed with access of software vendors to grouper specifications, certification of grouper software, and the inter-dependency of these decisions with international licensing of the system. Taken together the following recommendations emerge:

a. Make the AR-DRG grouper specifications available (either free of charge or based on fee) to software vendors upon request (without restriction on number of vendors).

- Vendors who receive the grouper specifications sign an agreement to only sell software products containing the AR-DRG grouper outside Australia where the end user holds a licence for use of the System.
- Vendors with access to grouper specifications also agree that international software licensing expiration will be synchronised with System licensing expiration, i.e. software expiration at the end of a System licence trial or contract period would prevent continued unlicensed use of the System.

b. Two recommendations options are presented below regarding certification of grouper software:

Option A.

- Require that vendors who receive the grouper specifications agree to have their grouper software certified for accuracy prior to sale of products (domestically and/or internationally).
- Charge software vendors for certification of their groupers to offset the costs involved in the certification activity. The pricing model will need to be established and the legal parameters for requiring certification will need to be defined.
- Consider outsourcing the certification of grouper software (see Recommendation 7 re: AR-DRG development).
- As part of the re-alignment of the certification process, consideration should also be given to requiring re-certification with software updates based on errata, to offset the risk of grouper contamination between new code editions.
- Require that both domestic and international users of the System use a certified grouper.

Option B.

- Eliminate the certification process – leaving it to the market and vendors to ensure the accuracy of the grouper.
- In option B. the control the Department has over international use of the System is based on the licensing of the underlying ICD10-AM/ACHI/ACS components.

Comparative cost/benefit analysis:

In the current management model, cost is incurred by the Department for development of the specification which is freely given to software vendors and cost is incurred for the certification of the software groupers, but the commercial benefit of sale of the grouper and spin off software applications accrues solely to the four selected software grouper vendors.

In the recommended model, the market for software companies to develop groupers for the AR-DRG domestically and internationally is expanded. The expansion of the software market to meet the expansion of the System's use nationally and internationally recognises the international benefits / 'public good' by making the System available and is likely to increase certification costs. The cost of the certification process could be offset, by cost recovery arrangements in line with national guidelines.

3.4 Governance of the System

Recommendation Area 6: Clarification of roles in the System development process

Key findings:

This recommendation takes up the structural implications of the complex array of organisations and committees participating in the development cycle of the System.

Key stakeholders are unclear about the roles / terms of reference and approval / decision making responsibilities / authorities for key organisations in the development of the System.

Inter-dependencies between roles are seen as leading to conflicting agendas and drivers in the System.

- While the contract between NCCH and the Department states that CSAC "ratifies coding from the NCCH", it is unclear to stakeholders if CSAC is a decision-making or advisory body. It is also unclear if the work program is being set by CSAC members or NCCH, given that the CSAC agenda is set by NCCH and committee meetings are chaired by NCCH.
- The technical expertise and production of the AR-DRG development sits within the Department and some stakeholders questioned whether this is the best role for a government department, i.e. a production role in the System development versus a management focus on policy, oversight and performance management.
- While AIHW is the 'collaborating centre' with WHO for use of ICD-10, currently NCCH has ongoing interaction with the WHO because they lead the modification to ICD-10-AM.

Taken together, these findings indicate that the roles and responsibilities as allocated in the current structure are not clear to stakeholders and end users of the System.

Recommendation 6: Clarify the roles, decision making authorities, and inter-relationships between organisations in the System development process.

This recommendation assumes that many/most of the management process improvements described in Recommendations 1-5 above are taken up and there is relevant refinement of the roles (and terms of reference) for the key organisations and committees.

a. The Department should table the future work plan and balanced scorecards (see recommendation 1) with National Health Information Standards and Statistics Committee (NHISSC) as part of an objective of engaging with key stakeholders to achieve universal uptake of new versions.

b. As the custodian of the System development the Department should reassess existing, e.g. CSAC, and develop new working groups that draw on the range of cross functional and cross discipline users with the aim of achieving robust stakeholder input into the System development from re-casting inputs. Revision of working groups would be based on the principle that participants should be formally representative of stakeholder groups, i.e.

   - public and private sector users
   - cross jurisdictional policy makers
   - cross discipline: coders, clinicians, statisticians
   - domestic and international users

c. The work program for working groups should be agreed by the Department in advance of research and committee work for upcoming revisions, consistent with the wider government policy agenda. (See recommendation 1a.)

d. Working groups should contribute to the creation of balanced scorecards on updates as a key process mechanism for re-invigorating greater balance of key stakeholder input.

Comparative cost/benefit analysis:

Recommendation 6 principally clarifies roles consistent with process improvements and does not have any significant cost implications, but should substantively improve the effectiveness of the System development process.

Recommendation area 7: Streamlining and centralising the management of the System development

Key findings:

Management of a classification requires a diverse set of skills as a well as knowledge of each of the classifications requirements for each of the functions supported by the classification. The System development and revision process requires specialised expertise in IT, statistics, clinical coding and Health Information Management (HIM).

This range of skills is rarely present in a single individual; consultative arrangements and clear responsibilities are important elements of governing the System.

The majority of stakeholders consulted agreed that the historic 'brains trust' in Australia regarding casemix classification systems consists of a limited number of people in the Australian market and maintaining this core competency is at risk for a variety of reasons:

- the people with various skill sets required are unique and difficult to develop, maintain and retain
- currently much of the knowledge is concentrated within a small, core group of people
- the fragmentation of required skill sets between multiple organisations leads to small separate teams without a peer group cohort and fewer resources for support such as training programs to maintain skills currency, provide career development opportunities
- there is a lack of continuity, while staff turnover for this 'brains trust' puts the sustainability of the System at risk
- the cyclic term of a contestable contract with the Department for outsourced services can lead to uncertainty of funding and undermine long term planning and continuity.

Review of international experience indicated that the technical update of the classification system (diagnosis, procedure and grouper codes) is most often carried out by one organisation, using a core team of internal staff. The specific nature of responsible entities varies across countries, but they appear to have the following common characteristics:

- government funded and at arms length from the government health body
- responsible for the monitoring and reporting of the national hospital data
- the organisation carrying out the centralised classification update is often also the national collaborating centre with the WHO-FIC-Network.

It is also worth noting that all seven countries surveyed use their classification system to underpin a hospital funding model. (See Appendix C. Key findings from international comparisons of hospital classification systems, for more detail).

Taken together these findings suggest that System development, particularly where it underpins funding arrangements, benefits from the combined impact of some key features. Previous recommendations have taken up several of these key features, e.g.

- **consistent management of the development cycles (taken up in Recommendation 1)**
- **transparent public submissions (taken up in Recommendation 2).**

A best practice, evidenced in international systems, is a centralised approach to the development. There is a need to consider how to operationalise a centralised management model in the Australian context.

Recommendation 7: Centralise the development of the System

The management model outlined below is a significant change from the current management model and would require significant transition planning. It assumes that the management process improvements described in Recommendations 1-6 are taken up.

This model is consistent with international good practice where in the majority of countries surveyed, the management of the ongoing development of the national hospital inpatient classification system is under the direction of a central government department or organisation and the technical update of the classification system (diagnosis, procedure and grouper codes) is more often carried out by one central body. This is especially true when the classification system underpins a funding methodology.

a. The Department should outsource production of the AR-DRG algorithm while maintaining a sufficient core set of specialist skills necessary for performance management of the System development

   - The Department should focus on management activities, e.g. setting policy, consolidation of work program, oversight of preparation of balanced scorecard, coordination of the reinvigoration of the clinical input to System development, and coordination between organisations who conduct development activities.
   - The Department would also continue to manage the international sales of the System based on the business process enhancements discussed above.

b. One organisation should take on the coordination role for all the production aspects of both the ICD-10-AM/ACHI/ACS and the AR-DRG development cycle.

   - In this model there is a single point of responsibility for the development activities of the 'whole System', for example: a consolidated work program; System-wide statistical analysis and compliance mechanisms; creation of balanced scorecards across the whole System; and consistent end user support with submission, query processes, and a single web location.
   - There are a number of organisational options for a centralised model including: a special unit within the Department, another Commonwealth agency or outsourcing to a third party organisation. It is recommended the Department consider these options in the context of emerging national reforms to implement activity based funding and national performance reporting by hospitals.
   - This model consolidates the 'brains trust' / 'corporate knowledge' regarding technical aspects of the System development. Care will be required for successor planning to safeguard the sustainability of the System.

Comparative cost/benefit analysis:

Recommendation 7 is a centralised management model which would consolidate roles and associated costs. A detailed transition plan and budget would need to be developed once the specifics of the scope of work were agreed as the basis of revised funding allocations.

There is some additional scope of work implied in the centralisation and business process improvements recommended herein, for example:

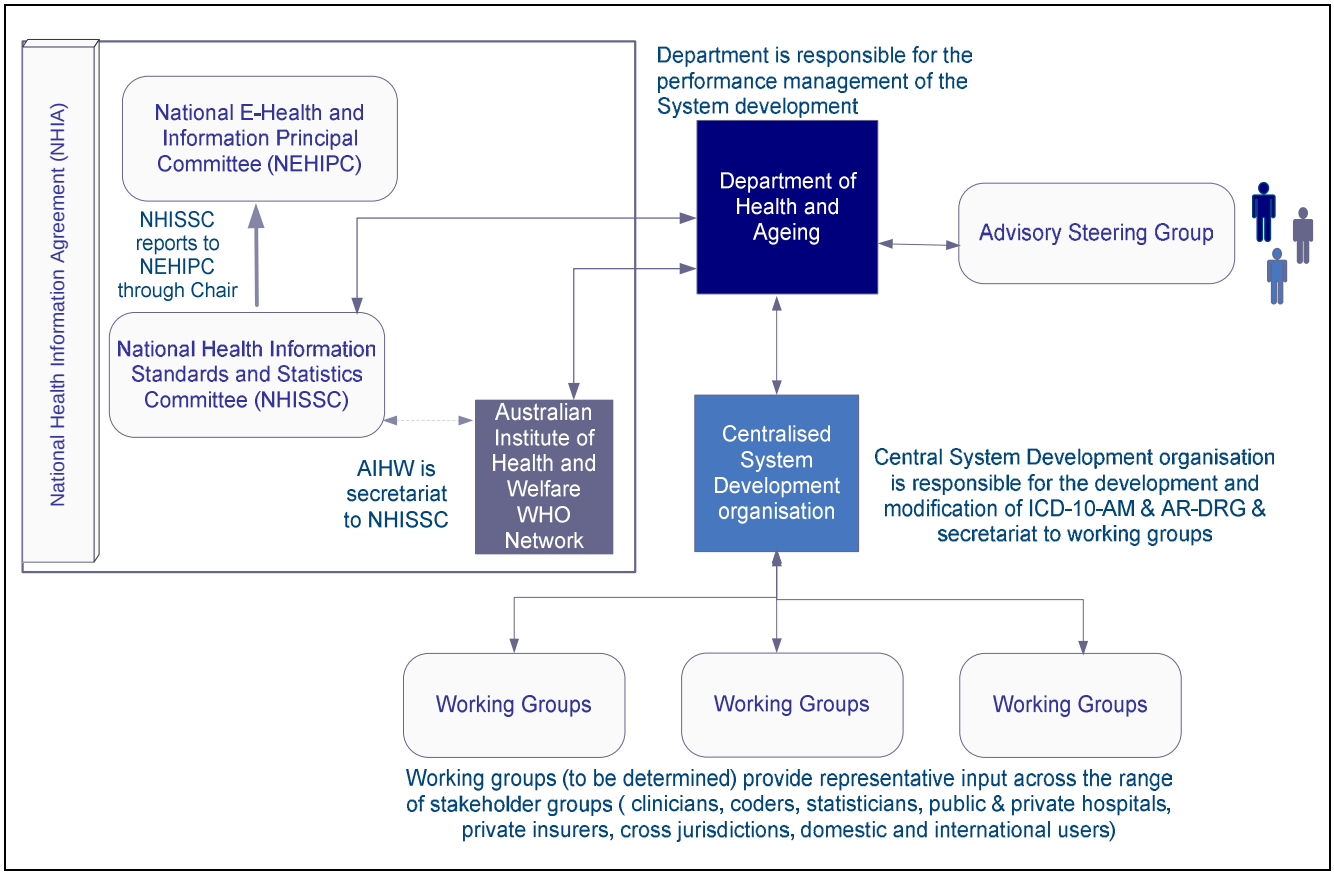
- creation of future work program and balanced scorecards
- implementation of compliance mechanisms
- the Department can not cost shift all current AR-DRG responsibilities and associated costs as it will need to maintain sufficient expertise for overarching System and performance management
- there will be some set up costs in implementing the change.

The benefits of moving to a centralised management model include, but are not limited to:

- the consolidation of the 'brains trust'
- more efficient and effective integration and coordination between the production of the separate components of the System (ICD-10 and AR-DRG)
- the ability to drive forward the management process improvements discussed herein as essential infrastructure for the long term sustainability of the System.

The figure below illustrates the new management model described in Recommendation 7 above.

Figure 9 New management model for the System development



In this diagram the Department takes a lead role in the management of the System development:

- contracting for development of the ICD-10-AM/AHCI/ACS and AR-DRG
- balancing inputs from stakeholders via representative participation on working groups and steering group
- overseeing development of the System work plan and tabling the work plan with NHISSC
- managing the international sale of the System.

Production of both ICD-10-AM/AHCI/ACS and AR-DRG is outsourced to one centralised System development organisation which is also the secretariat for CSAC and collaborates with AIHW as the WHO-FIC collaborating centre for use of ICD-10.

NHISSC agrees the work plan for the System development and gains agreement among members/key stakeholders for consistent national take up of the System.

3.5 Improvements geared towards anticipated future use of the System

Recommendation area 8: Considerations for future demands on the System

Key findings:

The review identified areas where stakeholders suggested that significant changes in future demands on the System would be likely in several areas.

Changes in future demands on the System are primarily seen as emerging from the movement towards a nationally consistent framework for activity based funding. (The COAG Agreements and the National Health and Hospitals Reform Commission both strongly signal the momentum of using the AR-DRG system as a basis for hospital funding in the national arena).

Development cycle timing

The production of updates to the AR-DRG algorithm is completely inter-dependent with updates to the ICD-10-AM/ACHI/ACS as ICD-10-AM and ACHI are component parts of the AR-DRG algorithm.

Currently, updates to the Australian System occur every two years. Stakeholders generally agreed that given the current levels of effort / cost required to update the System, a two year cycle is currently acceptable.

Specifically, the current ICD-10-AM/ACHI/ACS cycle is acceptable. End users in Australia balance the desire to maintain clinical currency with the significant costs involved with updating to the newest version of ICD-10-AM/ACHI/ACS. However, generally speaking, stakeholders report only major revisions to AR-DRG are deemed to warrant the cost of implementation by States and Territories. A business case regarding the cost of implementing updates is submitted to NHISSC when new versions are submitted for ratification. The costs considered are end users costs in purchasing software updates, training for all coders, and purchase of new reference manuals.

Notably, the Australian System is out of step with most comparable international jurisdictions which revise their diagnosis and procedure codes on a shorter cycle, e.g. on an annual basis.

Other considerations for the cycle time include:

- the relationship with software developers/ vendors. The timeframe for incorporating coding changes into software can be very tight (less than 6 months)
- end users want more advance notice regarding changes, the quantum of change, and better explanations of the content of changes when they arrive.

The effort and cost of implementation are a driving concern when considering the timing of the development cycle of the System. The cycle time arrangements have significant and demonstrable downstream implications for the clinical currency of the System and incentives to integrate clinical innovations into care delivery (particularly where funding arrangements are based on the System). The case study below illustrates this.

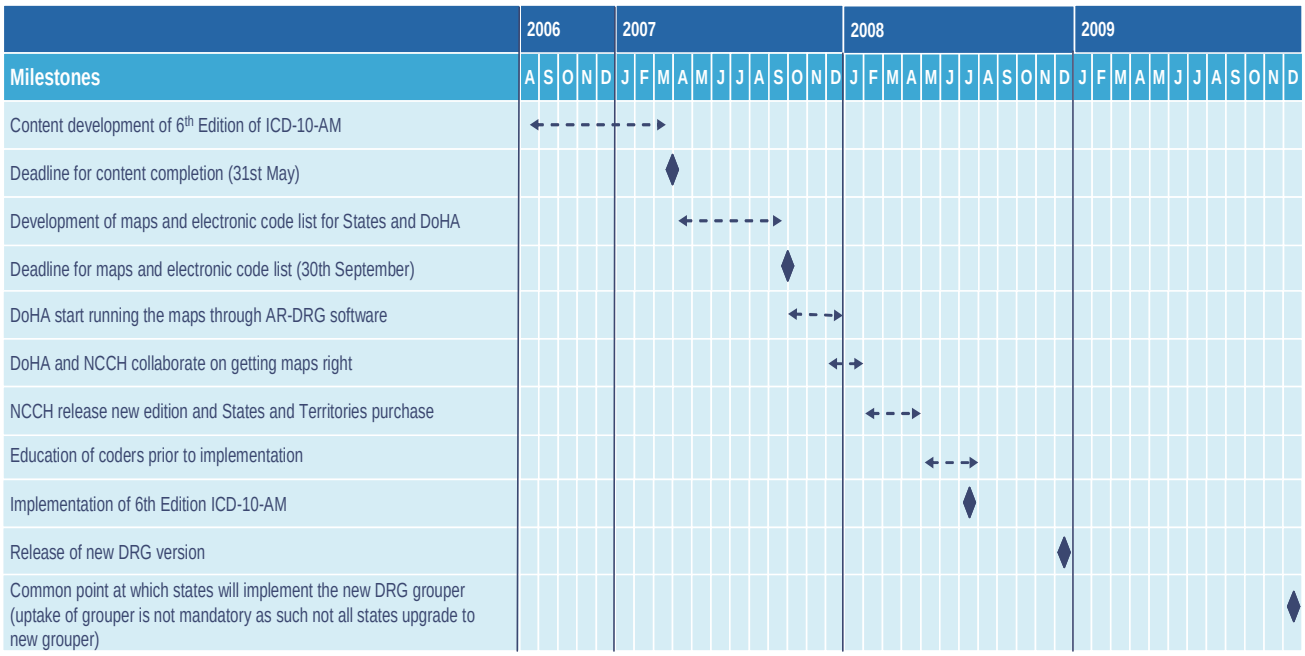
Case Study: Timing for new clinical practice integration into the System

- *Cerebrovascular Evaluation (CVE) is an expensive life-saving clinical procedure which became widely available in NSW hospitals in 2003. The State has been funding the procedure under State-wide Specialist Service and wanted to have a separate procedure code to monitor the level of activity from main stream data collection (Admitted Patient Data Collection) instead of relying on ad hoc information supplied by the hospitals.*

  A public submission was made in July 2006 for this procedure to be incorporated into the ICD-10-AM/ACHI/ACS classifications. While there was good agreement regarding putting the submission forward, MBS item numbers was already available and there was wide clinician acceptance, the submission process was cumbersome and delayed the submission being accepted for consideration.
- *The submission was accepted for consideration after the content for Edition 5.0 had been finalised and therefore needed to be carried forward and considered for the Edition 6.0 of the ICD-10-AM/ACHI/ACS. i.e. it took four years for the application to make it onto the CSAC agenda and be integrated into the version update.*
- *Costing data for the AR-DRG revision will be collected in 2008-09 and, as there is currently a two year lag for impact on funding, this new clinical intervention will have an impact on cost weights in 2010-11.*

In the current update cycle it takes many years to integrate a new clinical practice into the System See Figure 10 below for the cycle time between implementation of ICD-10-AM/ACHI/ACS and AR-DRG. This diagram does not take into account the timing for inclusion in national data collections or the additional time required for review by governance structures like NHISSC which were outside the scope of this review.

Figure 10 Efficiency – cycle time example



Stakeholders agree that annual updates of the ICD-10/ACHI/ACS enable ongoing clinical currency and faster uptake of innovative and cost effective technologies which are deemed priorities in the health agenda.

Based on international comparisons, once a classification system is the basis of national activity based funding, annual updates are the norm. As Australia moves to a nationally consistent funding model for public hospitals, it is likely there will increased demands for a faster System (AR-DRG) development cycle time.

Workforce

The availability of an adequately trained technical workforce of coders and Health Information Managers (HIM) is essential to System data integrity.

It is a commonly held view, and often reported as part of this review, that there is a national shortage of clinical coder and HIM staff - exacerbated by the recent closure of university programs in this field.

Currently we are unaware of any objective data to validate these observations. On the other hand, if current policy ambitions are fully realised, and nationally consistent activity based fudning is implemented in all States and Territories, increased demands on coder and HIM workforce are plausible.

Taken together these findings suggest that with improved management of the System, against a backdrop of increasing demands on the System, a range of refinements to the operation of the System warrant further consideration.

Recommendation 8. Consider implications of increased demands for the System on cycle time and workforce. Specifically:

a. Following implementation of improved management of the System, and based on international norms of an annual cycle for hospital classification systems that underpin a national activity based funding model, a further study should be undertaken regarding the cost:benefit of moving the cycle time for the System update process to an annual update of ICD-10-AM/ACHI/ACS and AR-DRG.

b. Undertake a study of clinical coder and HIM workforce, including:

- current numbers and distribution of workforce (current supply)
- impact of graduations from training over the next 3 – 5 years (supply pipeline)
- needs analysis based on defined objectives, for example nationally consistent data collection by 2013.

Comparative cost/benefit analysis:

Moving to an annual update would not necessarily increase the Department costs over the current cost model.

The additional annual cost of speeding up the cycle time of the System updates will be born primarily by States and Territories and private insurance (which is mandated to report in the most current ICD-10-AM versions).

Based on the current costs in Table 2 Annual costs of the System, the additional cost to States and Territories will extend into the millions of dollars.

Benefits of a more frequent cycle are qualitative (enhanced clinical currency) and quantitative (in timely updates that drive activity based funding cost weights) and can be better quantified as part of the balanced scorecard approach.

3.6 Blueprint for action

In conclusion, Figure 11 below depicts a scenario for the sequential implementation of the eight areas of recommendation discussed in the preceding sections of this report. This scenario is based on assumptions about ease to implement and the impact of changes.

Figure 11. illustrates that a number of the recommendations in this review are interdependent and references the number of the recommendations found in the earlier section of this report.

The definition of short, medium and longer term will be dependent on the Department's capacity to take on the additional workload and manage multiple change initiatives simultaneously.

Short term actions

In the short term, actions which are assumed to be relatively easier to implement and impactful are:

- Develop a communications plan, managed by the Department, to enhance the transparency of the development process. And related to enhanced communications with end user:
    - Enhance end user support, for example with a centralised mechanism for definitive answers to queries, web-enabled posting of queries' responses and errata.
- The Department should outsource production of the AR-DRG algorithm while maintaining a sufficient core set of specialist skills necessary for performance management of the System development. And subsequently:
    - One organisation should take on the coordination role for all the production aspects of both the ICD-10-AM/ACHI/ACS and the AR-DRG development cycle.
- Develop a 'balanced scorecard' to assist in prioritising proposed System updates (both ICD-10-AM/ACHI/ACS and AR-DRG).
    - Working groups should contribute to the creation of balanced scorecards on updates as a key process mechanism for re-invigorating greater balance of key stakeholder input.
- Reinvigorate robust, systematic, representative clinical input to enable enhanced clinical acceptance/engagement with the System; and add private sector (insurance and hospital) representatives to relevant working groups in order to add equitable inputs across the current and future uses of the System.
    - The Department should reassess existing and develop new working groups that draw on the range of cross functional and cross discipline users with the aim of achieving robust stakeholder input into the System development from re-casting inputs.
- Make the AR-DRG grouper specifications available (either free of charge or based on fee) to software vendors upon request (without restriction on number of vendors).
    - Implement new software grouper terms regarding vendor international sales.
    - Decide the future model for certification of grouper software (see Options A and B in report).

Medium term actions

These activities are assumed to either sequentially follow the actions above or require a greater level of effort and time to implement.

- Develop a consolidated work plan for upcoming revisions of both ICD-10-AM/ACHI/ACS and AR-DRG.
- Re-evaluate communications with international users, with a view to developing a proactive communications plan and re-invigorating sharing of information across jurisdictions.
- Re-evaluate the protective legal framework for international contracting.
- Implementation of national compliance mechanisms.
- Undertake a study of clinical coder and HIM workforce.

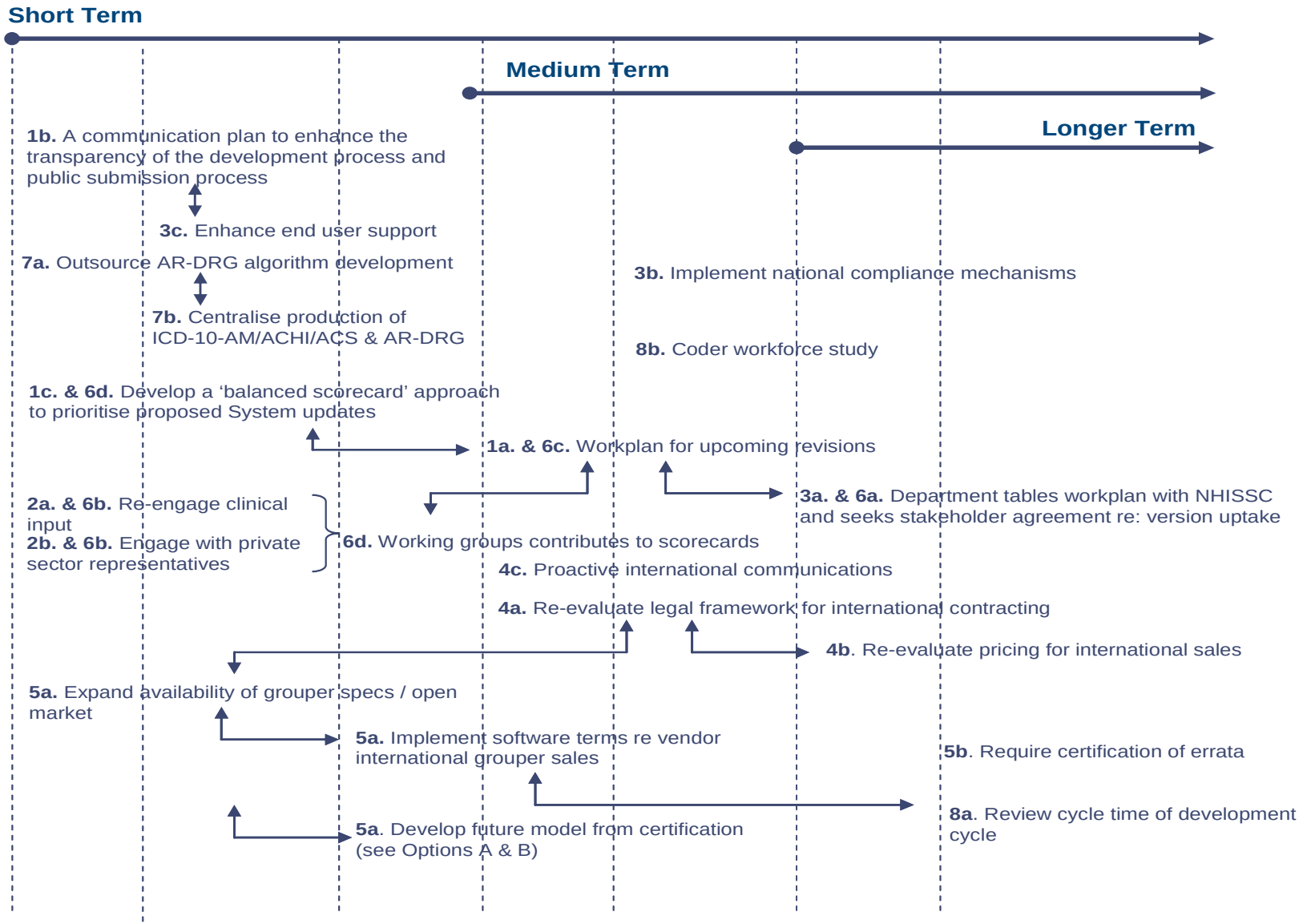
Longer term actions

Finally, these actions are assumed to either sequentially follow the actions above or require a longer lead time to implement to those above.

- The Department should set an objective of universal uptake of new System versions. The Department should table the future work plan and balanced scorecards with National Health Information Standards and Statistics Committee (NHISSC) as part of an objective of engaging with key stakeholders to achieve universal uptake of new versions.
- Following implementation of improved management of the System, and based on international norms of an annual cycle for hospital classification systems that underpin a national activity based funding model, a further study should be undertaken regarding the cost:benefit of moving the cycle time for the System update process to an annual update of ICD-10-AM/ACHI/ACS and AR-DRG.
- Re-evaluate the international pricing model in conjunction with other decisions re: legal framework.
- As part of the re-alignment of the certification process, consideration should also be given to requiring re-certification with software updates based on errata, to offset the risk of grouper contamination between new code editions.

Actioning the recommendations in this report will be important to realising the future needs of the Australian health system and maintaining the world class status of the Australian System.

Figure 11 Priorities and timeframe for implementing recommendations



APPENDIX A. List of Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Clinical Casemix Committee
ACHE	Australian Centre for Hospital Encoding
ACHI	The Australian Classification of Health Interventions
ACHS	Australian Council on Healthcare Standards
ACS	Australian Coding Standards
ACSQHC	Australian Commission on Safety and Quality in Health Care
ACT	Australian Capital Territory
ADRG	Adjacent DRG
AHCA	Australian Health Care Agreement
AHHA	Australian Healthcare and Hospital Association
AHIC	Australian Health Information Council
AHIA	Australian Health Insurance Association
AHIG	Australian Health Information Group
AHMAC	Australian Health Ministers' Advisory Committee
AHMC	Australian Health Ministers' Conference
AHSA	Australian Health Service Alliance
AIHW	Australian Institute of Health & Welfare
AMA	Australian Medical Association
AN-DRGs	Australian National Diagnosis Related Groups
AN-SNAP	Australian National Sub Acute & Non Acute Patient Classification
APC	Australian Procedure Classification for ICD-10
APCNMDS	Admitted Patient Care National Minimum Data Set
APDRG	All Patient Diagnosis Related Groups
AR-DRGs	Australian Refined Diagnosis Related Groups
ATIH	National *Technical Hospitalisation Information Agency*
CCCA	Clinical Casemix Committee of Australia
CCCG	Clinical Classification Coding Groups
CCI	Canadian Classification of Health Interventions
CCL	Complication and Comorbidity Level
CCSA	Clinical Coders Society of Australia
CSAC	Coding Standards Advisory Committee
CCG	Clinical Casemix Group
CDP	Casemix Development Program
CIHI	Canadian Institute for Health Information
CMBS	Commonwealth Medical Benefits Scheme
CMS	Centers for Medicare and Medicaid Services
CMG	Case Mix Group
COAG	Council of Australian Governments

CRAFT	Casemix Rehabilitation and Funding Tree
CSD	Classification Support and Development team (within the NCCH)
CVE	Cerebrovascular Evaluation
DACS	Development Ambulatory Classification System
DAD	Discharge Abstract Database
Department	Department of Health and Ageing
DFAT	Department for Foreign Affairs and Trade
DIMDI	Deutsches Institut fur Medizinische Dokumentation und Information
DkDRG	Danish Diagnosis Related Groups
DoHA	Department of Health and Ageing
DRGs	Diagnosis Related Groups
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders
DVA	Department of Veterans' Affairs
ECL	Electronic Code Lists
GDP	Gross Domestic Product
G-DRG	German Diagnosis Related Groups
HCP	Hospital Casemix Protocol
HDSC	Health Data Standards Committee
EHR	Electronic Health Records
HIC	Health Insurance Commission
HIMAA	Health Information Management Association of Australia
HIM	Health Information Management
HIPIP	Hospital Information and Performance Information Program
ICD	International Classification of Diseases
ICD-O	Classification of Diseases for Oncology
ICD-9	The International Statistical Classification of Diseases and Related Health problems, Ninth Revision
ICD-9-CM	International Classification of Diseases, Ninth Revision, Clinical Modification
ICD-10-AM	The International Classification of Diseases, Tenth Revision, Australian Modifications
ICD-10-CA	The International Statistical Classification of Diseases and Related Health problems, Tenth Revision, Canadian Enhancement
ICD-10-GM	The International Statistical Classification of Diseases and Related Health problems, Tenth Revision, German Modification
ICTSC	Information Communications and Technology Steering Committee
InEK GmbH	Institute for the Hospital Remuneration System
IP	Intellectual Property
IR-DRGs	International Refined Diagnosis Related Groups
KPI	Key Performance Indicator
MBS	Medical Benefits Schedule
MDK	Medical Services of the German Statutory Sickness Insurance Bodies
MDS	Major Diagnostic Category

MH-CASC	Mental Health Classification and Service Costs
MSAC	Medical Services Advisory Committee
NACRS	National Ambulatory Care Reporting System
NAHCC	National Allied Health Casemix Committee
NCCH	National Centre for Classification in Health
NEHIPC	National E-Health Information Principal Committee
NHCDC	National Hospital Cost Data Collection
NHDD	National Health Data Dictionary
NHISSC	National Health Information Standards and Statistics Committee
NHIA	National Health Information Agreement
NHPC	National Health Performance Committee
NMDS	National Minimum Dataset
NSW	New South Wales
NT	Northern Territory
NZA	Dutch Healthcare Authority (NZa)
OECD	Organisations for Economic Co-operation and Development
PAS	Patient Administration System
PCCL	Patient Clinical Complexity Level
PwC	PricewaterhouseCoopers
QLD	Queensland
RAC	Recovery Audit Contractors
SA	South Australia
SIMC	Statistical Information Management Committee
SNAP	Sub Acute and Non-Acute Patient
SR-DRG	Severity Refined Diagnosis Related Groups
The System	The *Australian Coding Classification* which include ICD-10-AM, ACHI and ACS along with the *AR-DRG Classifications* are collectively called the System
TAS	Tasmania
TGA	Therapeutic Goods Administration
VIC	Victoria
WA	Western Australia
WHO	World Health Organisation
WHO-FIC	World Health Organisation Family of International Classifications

APPENDIX B. Economic Analysis

Approximately $9.6 million is spent annually by the Commonwealth, State/Territory health authorities, and public hospitals to develop, update and maintain the coding and classification system that now covers most of the admitted patient episodes (see Table 2). In addition, approximately $76 million is spent annually on salary costs for clinical coders and Health Information Managers (HIM) in public hospitals.

Over time, the System has established superior health information infrastructure, which allows for classification development, statistical analysis, and coding by end users. This infrastructure enables new data to be collected and reported on a range of indicators, such as:

- hospital costs and activities by DRG
- the utilisation of DRG by demographic and geographic grouping;
- national cost weight data
- benchmark data on hospital performance.

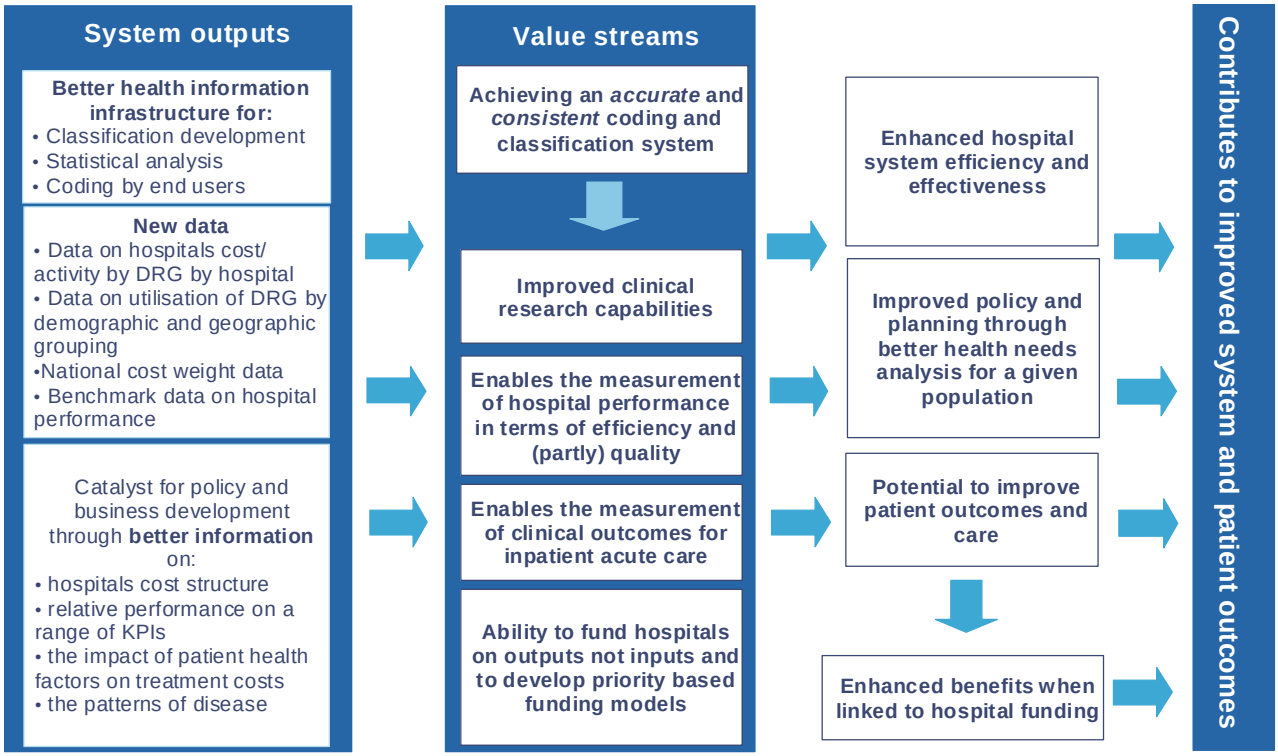
By providing information such as this, the System also acts as a catalyst for policy and business development by providing information on a hospital's cost structure, performance on a range of key performance indicators (KPIs) relative to other hospitals, the impact of patient health factors on treatment costs, and providing information on the patterns of disease in the hospital setting.

These outputs or products of the System are very important and their most comprehensive value is in their ability to enable changes in behaviours and decisions that affect various aspects of the health system. An important factor in determining the 'value potential' of the System is its success in creating an accurate and consistent coding and classification system that is superior to that which would exist in its absence.

The return on the investment of the upgrade of the System depends on the extent to which its 'better' information and capabilities lead to improvements in:

- **the efficiency of funding arrangements for acute hospital services**, such as the incentives that are provided to contain costs, and to extend or moderate the use of particular interventions by funding outputs rather than inputs
- **healthcare planning and resource allocation** through optimising resources and revenue. This might occur as a result of a data-driven understanding of relative performance, cost growth, and patient demand
- **the quality and safety of health care**, such as through using classification system benchmarks to compare performance on the occurrence of adverse events, and the presence of factors that can affect the safety of the hospital environment
- **clinical research capabilities, and through that, improving the understanding and delivery of health care**. This might be through better understanding of complications, better tracking of the outcomes of care, timelier intervention for emergent diseases, and the ability to identify clusters of diseases that might be traced to environmental or occupational conditions
- **patient management**, such as through better/more targeted identification of patients in need of ongoing supervision and any impacts on extending the duration and quality of their life.

Figure 12 Ways in which the System contributes to improved system and patient outcomes



To assess the tangible value of the System compared to its costs, the analysis which follows:

- develops a cost model that captures the range of financial costs that go into maintaining the coding and classification system
- explores the evidence on changes in hospital performance over time, and assesses the likely impact of the System in contributing to these outcomes
- wherever possible, ascribes values to the positive outcomes that have occurred as a result of the ongoing use and maintenance of an accurate and consistent coding and classification system.

The cost model: estimating the substantial investment in health information infrastructure and allocation of resources

There are three primary sources of investment in the maintenance of the coding and classification system. These include:

- Commonwealth Government outlays
- outlays by State and Territory Government health authorities
- investments by public hospitals to enable them to participate in the System and provide data.

Together these parties invest approximately $9.6 million annually to maintain and update the System.

This estimate is probably conservative given that it excludes costs incurred by private hospitals or private insurers due to variable approaches to using the System and data limitations. It also excludes costs incurred by software vendors to maintain the currency of their product range as well as salary costs for coders in public and private hospitals. These are excluded because it is assumed that the update process is cost neutral compared to other approaches to maintaining or updating health information, which it would be in most cases.

Conversely, the costs that are counted are likely to be ‘maximum’ costs, given the difficulty in extricating costs associated with the update cycle from other business costs. The State and Commonwealth Government agencies that were consulted as part of this review have been very cooperative to this review and have provided their ‘best estimates’ of the incremental costs they incur as part of the update process.

However, it is recognised that the update process is both complex and embedded into the broader work program of agencies, including with respect to elements of training, creating or updating new documentation, implementing upgrades, etc. Therefore it is likely that there is an unintended overstatement bias in the costings provided by stakeholders and/or an unintended overstatement bias in the way that the review team has scaled up available cost estimates to provide total Nation-wide results.

Table 1 below shows the distribution of total estimated costs incurred for the ongoing development and implementation of the System in Australia.

Table 1 Annual costs of the System

Item	Estimated annual $ cost	% of total
DoHA costs for classification development	866,288	9%
National Centre for Classification in Health (NCCH)	1,557,602	16%
Australian Institute of Health and Welfare (attributable costs)	701,581	7%
Other DoHA costs (Certificate of Acceptance functions)	300,000	3%
Total Commonwealth costs	**3,425,471**	**36%**
Upgrade implementation costs by State and Territory Health Departments	5,791,367	61%
Total State and Territory Health authorities costs	**5,791,367**	**61%**
Upgrade training costs for public hospital coders	351,930	4%
Public hospital costs	**351,930**	**4%**
Total costs	**9,568,768**	**100%**

Commonwealth Government outlays

The Commonwealth Government spends around $3.4 million annually in development costs, maintenance (via NCCH for ICD-10-AM/ACHI/ACS), refinement, data analysis and distribution, Certificate of Acceptance functions for grouper software, and the Clinical Casemix Committee of Australia. This represents 36% of total annual costs incurred by the classification system.

Department salary and design/ printing costs for classification development - Costs incurred by the Department for AR-DRG classification development for 2008-09 are $866,288. This includes salary costs of $842,324 for relevant Department staff as well as IT and legal costs which are obtained from all areas of the Department using a cost recovery model. The graphic design and printing of AR-DRG manuals makes up the remainder at $23,964.

National Centre for Classification in Health - NCCH, under contract with the Department, produces the Coding Classification and undertakes the ongoing maintenance of the I ICD-10-AM/ACHI/ACS. The NCCH total contracted amount is $1,557,602.

Clinical Casemix Committee of Australia (CCCA) - The Clinical Casemix Committee of Australia comprises clinicians from various specialties, to provide clinical input into the development of the AR-DRGs. This clinical input ensures that the correct procedure and diagnosis codes are placed in the most appropriate DRG and that the DRGs are clinically correct. The CCCA advises on modifications to the AR-DRG classification by providing clinical input and feedback on proposed variations suggested by other clinicians. It also advises on developmental work on modifications to other casemix classification systems and delivers clinical input into definitional work undertaken by the National Health Data

Committee. Historically there was an annual budget allocation of $250,000 to support the work of the CCCA (see discussion in the findings about the current status of the CCCA).

Certificate of acceptance function (grouper software) - Classification of an episode of acute hospital care to a specific AR-DRG is accomplished with 'grouper' software used to group medical records for acute hospital stays into Diagnostic Related Groups (DRGs) and Major Diagnostic Categories (MDCs) for casemix purposes. The development companies build their software under a licence arrangement with the Australian Government and the grouping is based on both clinical information (diagnoses and procedures) and demographic information such as age and sex. The clinical information is coded in ICD-10-AM/ACHI/ACS. Before any grouper software can be marketed the Department evaluates the grouping function and issues a certificate of acceptance. The costs of administering this function are around $50,000 annually.

Australian Institute of Health and Welfare (AIHW) - The AIHW is a Commonwealth-funded end user of the classifications which sit underneath much of its statistical work, such as Australian Hospital Statistics, Mental Health Services in Australia and the National Hospital Morbidity Databases. Table 6 below describes broadly the AIHW activities and associated costs which refine the System's data sets. It spends around $700,000 annually to validate data and develop and maintain the data tools that are required to enable effective use of the System's outputs.

Table 6 AIHW activities and costs attributable to its use of the System

Output	Description of work	Costs
Hospitals unit	• Receipt and validation of admitted patient care data • Australian hospital statistics • Australia's health • Development of annual data cubes • Development of internet tables • Ad-hoc requests • Liaison with Coding Standards Advisory Group (CSAC)	$111,381
Expenditure and economics unit	Reports on health expenditure on diseases, indigenous health expenditure and related data analyses	$324,000
Mental Health services unit	Development of Mental Health interventions classification and reports	$266,200
Total all costs		**$701,581**

Outlays by State and Territory Government health authorities

State and Territory health authorities make a comparable investment in the System as the Commonwealth Government, reflecting the ongoing costs they incur to implement upgrades through software developers' payments, cost weight adjustments, and grouper changes.

There are also ad hoc costs incurred, such as those associated with implementing Australian Coding Standard changes such as the 'condition onset flag' which required that all State and Territory health authorities add a data element to the Admitted Patient Care National Minimum Data Set (APCNMDS) from July 2008. Based on the business cases submitted by the States and Territories, the input model captures the extra cost incurred by upgrades such as these, excluding set up costs.[14]

In total, State and Territory health authorities were estimated to spend $5.8 million each year to maintain their systems and implement system upgrades, which represents 61% of total annual cost of the System. However, the estimated annual investment of $5.8 million is considered as an upper bound. All stakeholders were eager to provide information but also recognised the difficulty, complexity, and sometimes inability to extricate costs around the update cycle from other costs incurred by the System that are not related to the update cycle.

Salary and training costs for hospital coders

The most significant expense incurred to maintain the System is the employment of coders in hospitals. For public hospitals alone, Australian States and Territories are estimated to spend $76.2 million annually on coder salary and training costs. If included in the overall cost of the System it would represent 89.2% of total annual costs that can be estimated for use of the classification system in Australia. However, assuming the salary costs would be incurred in another approach to collecting health information in hospitals, the annual training costs for coders in public hospitals only is estimated at $351,930 or 4% of annual costs to upgrade the System.

These estimates are based on the expected employment patterns of principal referral, large, medium and small public hospitals across Australia, at an estimated average annual salary cost of around $60,000 plus superannuation. Training costs are based on the estimated number of coders and the costs of training per coder ($535 including 1.5 days of training every two years and teaching materials). Table 7 below details each State's and Territory's estimated coders' costs.

Table 7 Estimated public hospital coders' costs by State and Territory ('000)

Salary and training costs	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	Total
Total	25,941	17,300	13,736	7,468	7,346	2,124	781	1,550	76,246

[14] Set-up costs are excluded to avoid including 'lumpy' non recurring costs from the annual estimates, and because they are not incurred by all jurisdictions due to differences in existing system capacities.

There are also costs incurred by private hospitals, private insurers, and software developers for participating in the System to provide required data and keep up to date with the System's ongoing refinements and iterations.

Private hospital costs are excluded from this estimate due to information gaps and differences in funding arrangements used in the private hospital sector. This is despite their intensive use of the System (around 50% of private hospital funding is based on casemix) and sizeable (possibly comparable) investments in coders, systems, and upgrades. Private insurers are another user group that would incur costs to participate in the System, which is used as a critical input to contracting decisions. However, their different patterns of use make industry wide investment costs difficult to determine.

Return on investment

The key return on Australia's investment in maintaining and upgrading the AR-DRG System is the ability of our health system, including payers and providers, public and private, to use this coding and classification system to make comparisons across jurisdictions and hospitals on a wide range of performance indicators. A major part of the value of the System lies in the ability to monitor what is actually happening in the hospital sector and to support payment systems and performance regimes which improve hospital performance in relation to both cost and quality.

While these indicators serve a myriad of purposes, those that have a particular impact on reducing hospital costs and helping to allocate scarce hospital resources include information on:

- unplanned re-admission rates
- cost per casemix-adjusted separation
- length of stay
- the number of same day separations.

Figure 13 below shows a broad overview of the uses of AR-DRGs and ICD-10-AM/ACHI/ACS in measuring hospital performance. The use of a nationally standardised hospital classification system of AR-DRGs allows hospitals' performance measurement to be standardised on the basis of casemix acuity so that valid benchmarking comparisons can be made between hospitals and appropriate accountability, payment and performance regimes implemented.

It is widely accepted that the availability of comparative information on these indicators has been an important factor in changing hospital management practices to improve resource allocation and improve efficiency. However, the incremental value of the System can depend on the quality and comparability of the data outputs.

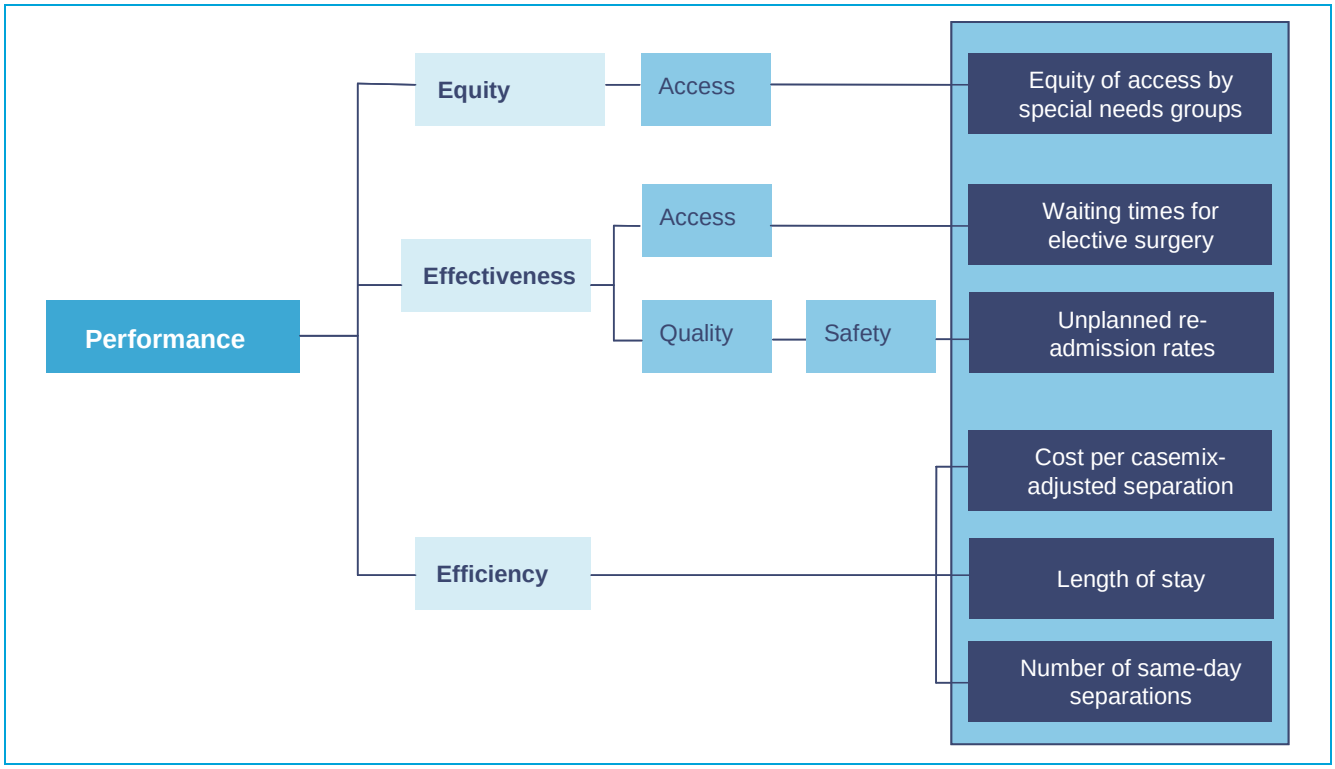
While the data sets go a long way to providing comparable information, some qualifications should be applied due to:

- differences in counting rules, which result in different treatment of expenditure items, such as superannuation and the allocation of overhead costs
- some jurisdictions may admit patients who may be treated as non-admitted patients in other jurisdictions
- the ways in which periods of hospitalisation are split into episodes of care, e.g. newborn care can and do vary
- where there is a clear delineation in funding arrangements between acute and non-acute services, splitting episodes into acute and other components may be different from where there is no such funding delineation

- there are differences in the extent to which each jurisdiction's psychiatric care services are integrated into its public hospital system. For instance, in Victoria, almost all public psychiatric hospitals are mainstreamed into acute hospital services, and psychiatric patient data are therefore included in the acute hospital reports.

These factors can reduce the comparability of the data and therefore take away part of its value in being able to compare the performance of hospitals.

Figure 13 Overview of performance indicators for public hospitals



These factors aside, the availability of systems and data outputs which support benchmarking and comparative performance measurement have contributed to genuine improvements in hospital management and the cost effectiveness of health care delivery.

Key performance outcome is that all jurisdictions have reduced length of stay

The System has produced information on the average length of stay for the past 10 years. Over this period, the average length of stay in public hospitals nationally has decreased by 19.6% from 4.6 days to 3.7 days. Over the same period, the average length of stay in private hospitals nationally has decreased by 32.4% from 3.7 days to 2.5 days.

Figure 14 Average Length of Stay – Public Hospitals

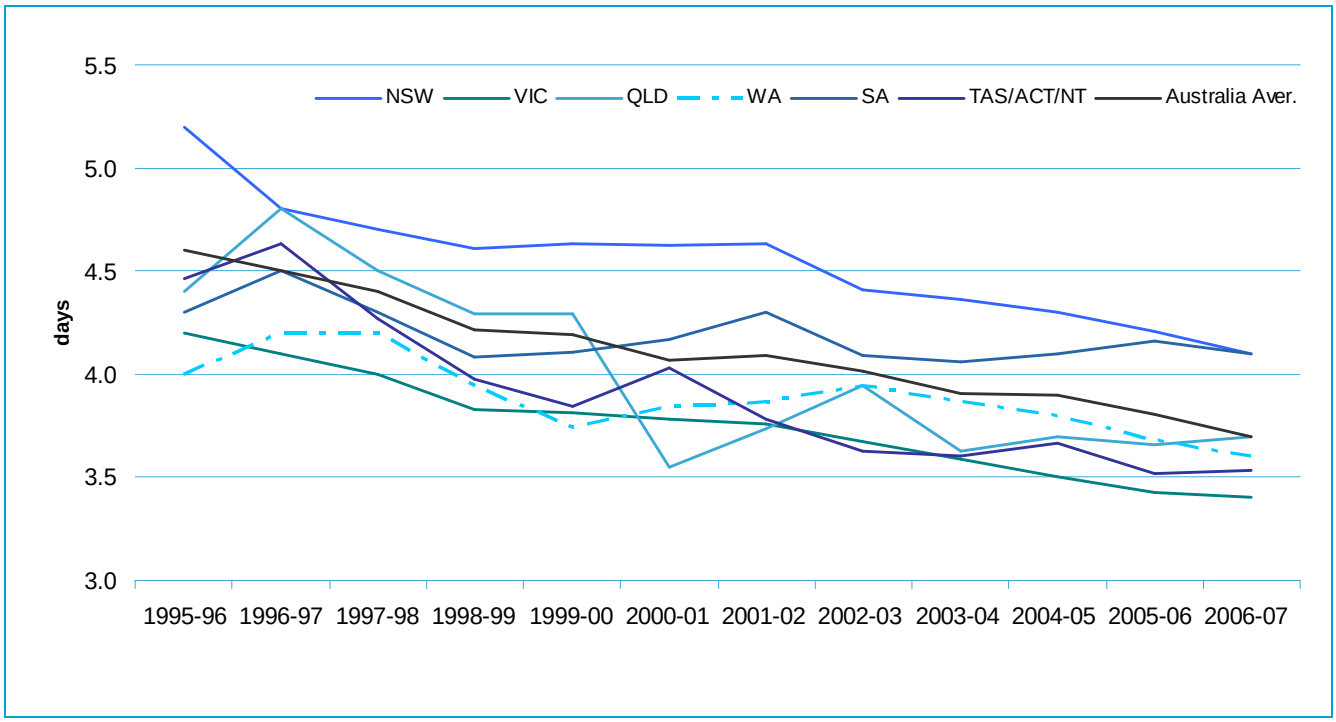
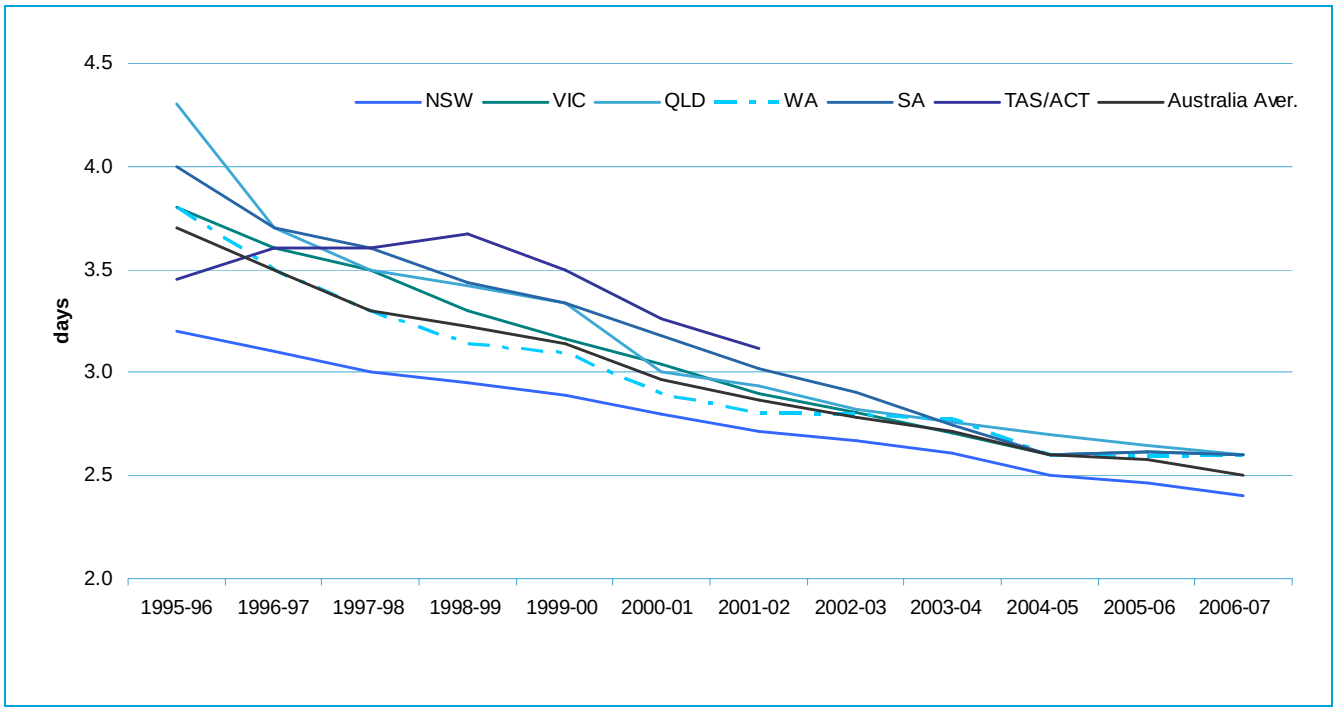


Figure 15 Average Length of Stay – Private hospitals



Source: Australian Institute of Health and Welfare (AIHW)

A comparison of public and private hospital performance on average length of stay shows that private hospitals experienced stronger periods of decreasing length of stay initially (1995/96 to 2000/01) while public hospitals decreased more constantly over the period.

It is widely observed that availability of case weighted assessments of individual hospitals' lengths of stay compared to national trends created strong drivers for both public hospital authorities and private health insurers to seek improved performance from hospitals on this parameter, using both funding incentives and performance criteria. The availability of national weighted benchmarks also created strong drivers for hospital providers to demonstrate performance consistent with national benchmarks.

Table 8 Average length of stay growth by State and Territory – Public hospitals

ALOS	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	Total
Growth 1995/96 to 2000/01	-11.1%	-9.9%	-19.4%	-3.9%	-3.1%	-0.8%	-14.0%	-17.7%	-11.6%
Growth 2001/02 to 2006/07	-11.5%	-9.5%	-0.9%	-6.8%	-4.7%	-7.7%	-4.1%	-7.6%	-9.6%

Source: Australian Institute of Health and Welfare (AIHW)

Table 9 Average length of stay growth by State and Territory – Private hospitals

ALOS	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	Total
Growth 1995/96 to 2000/01	-12.6%	-9.9%	-30.1%	-23.8%	-20.5%	-6.7%	-4.1%	n/a	-19.8%
Growth 2001/02 to 2006/07	-11.5%	-9.5%	-11.4%	-7.2%	-13.9%	n/a	n/a	n/a	-12.7%

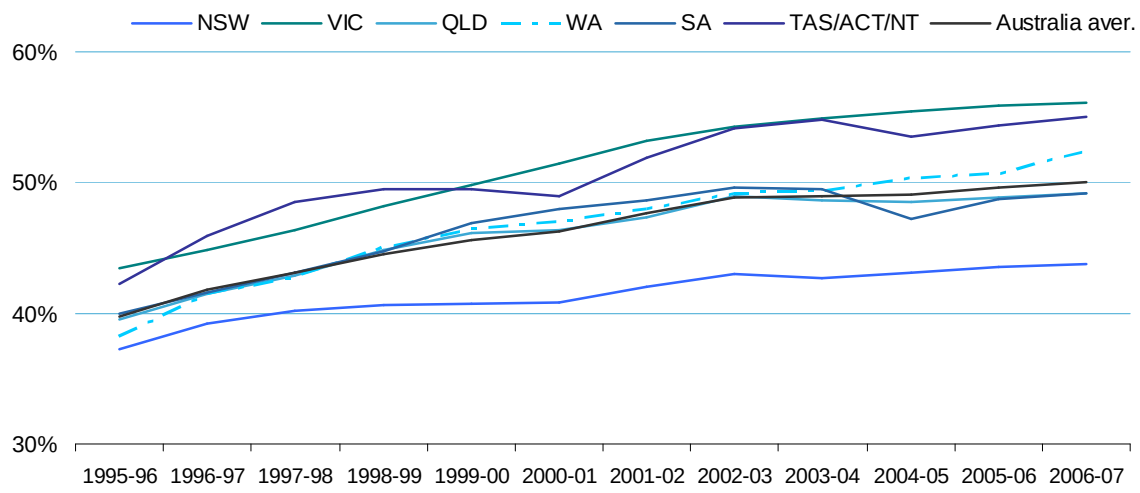
Source: Australian Institute of Health and Welfare (AIHW)

All jurisdictions have experienced an increase in same day separations

Where separations can be transferred from an overnight separation to a same day separation without compromising the quality of care, there is an obvious positive benefit to containing recurrent expenditure. Information on the share of same day separations was studied on the period 1995/96 to 2006/07.

Over this time, the proportion of same-day separations in public hospitals increased between 1995/96 (40%) and 2006/07 (50%) with all jurisdictions showing an increase in same-day separations as a percentage of total since 1995/96.[15]

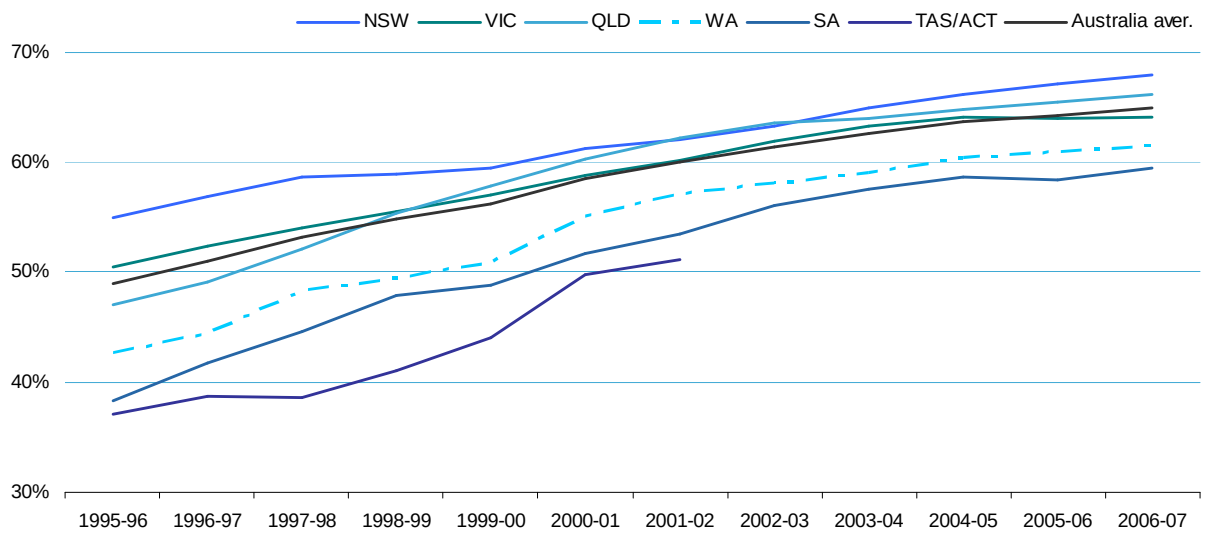
Figure 16 Same-day separations – Public hospitals



Source: Australian Institute of Health and Welfare (AIHW)

[15] A same-day separation results when an inpatient is admitted and separated on the same calendar day. It includes inpatients that are transferred to another hospital or inpatients that have died.

Figure 17 Same-day separations – Private hospitals



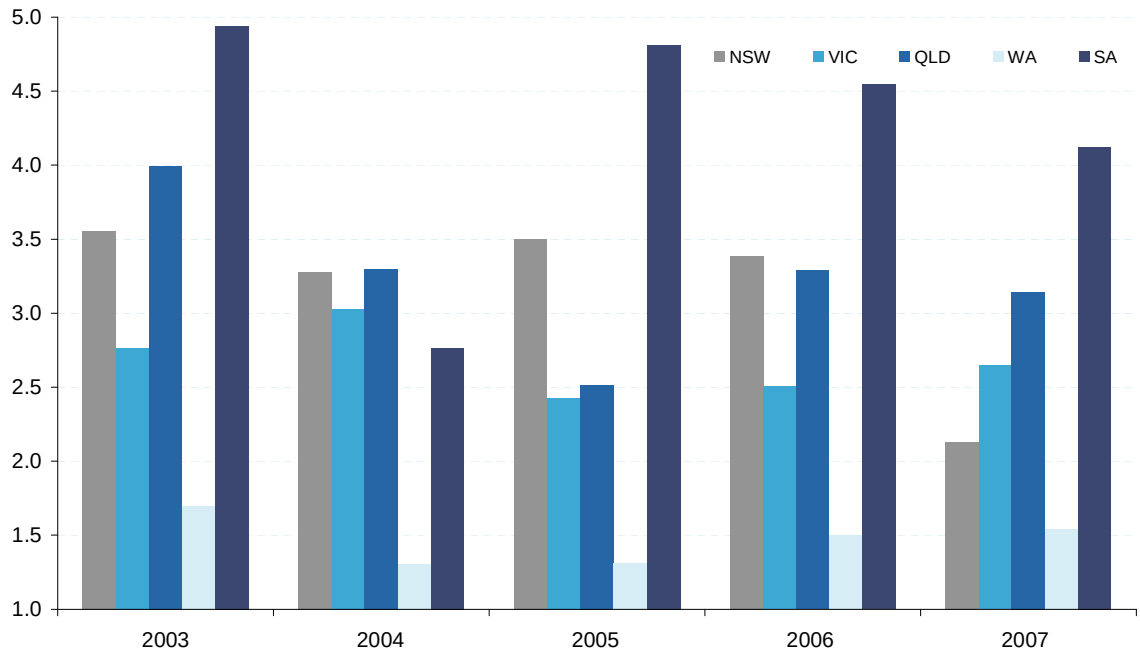
Source: Australian Institute of Health and Welfare (AIHW)

All jurisdictions have experienced a decrease in unplanned re-admissions

Decreasing rates of unplanned readmissions is an important issue for all hospitals. These adverse events can result in serious consequences for individual patients, and the associated costs can be considerable. The aim of this indicator is therefore to measure unintentional additional hospital care.

Rates of unplanned readmissions in public hospitals have been decreasing for all jurisdictions between 2003 and 2007, and the ability to track performance on unplanned re-admissions on a case-weighted basis would be a key factor in precipitating this change.

Figure 18 Rate of unplanned readmissions – Public hospitals



Source: Productivity Commission, Report on Government Services 2009.

Note: no data available for NT, and for TAS and ACT.

The value of comparing hospital costs

One of the major value streams of the System is the ability to compare the cost of treating a particular diagnosis or performing a procedure across hospitals.

AR-DRGs identify groups of diagnoses that require a similar level of resources to treat a patient, which makes it possible to compare treatment costs across hospitals.

In the absence of the System, such a comparison would have been undermined by the ability of hospitals to claim that their casemix contained diagnoses that required more intensive use of resources, justifying higher costs and increased budgets. The cost weights that are produced through use of the System take these differences into account, by assigning diagnoses that have a higher resource utilisation with a higher cost weighting. In this way, AR-DRGs are able to standardise for differences in the casemix of hospitals and allow comparisons of hospital costs.

The application of cost weights encompasses all hospital inpatient conditions. This means that a hospital that concentrates on high technology specialties and expensive cases can still be compared with a typical community hospital which undertakes a wide range of general surgery and less demanding medical cases.

Improved outcomes for patients

There is considerable scope for the System to be used to improve outcomes for patients as a result of improved analysis of more accurate classifications data. Quantifying these impacts is again difficult and attribution to the System is variable and complex. For instance, the classifications provide information on patterns of disease and treatment within a hospital setting but not across care settings.

Many of the trends identified above in hospital performance work together to help better allocate scarce hospital resources. For instance, the increase in same day separations has helped drive the decrease in length of stay and helped moderate cost growth.

A simple model has been developed to calculate the incremental savings associated with the reduction in length of stay that has occurred since 1995/96 when data was first published. This points to possible savings in acute bed days nationally of 2 million annually, which represents a cost saving of close to $4 billion. The annual costs for ongoing development and implementation of the System are estimated at $9.6 million (see Table 1.)

Hence, even a small contribution by the System to the achievement of this reduction would indicate a positive rate of return. For example, to break even, the investment in the maintenance of the System would only need to generate a 0.24% reduction in average length of stay.

Stakeholder consultations undertaken as part of this review indicate that the provision of updated and accurate information is fundamental to understanding the efficient costs of hospital service delivery. Therefore it is reasonable to expect that the rate of return received from the investment in ongoing data accuracy is considerable.

Amongst other things, those savings could be attributed to improved treatment protocols for overnight patients, the substitution of drug treatments for some surgical treatments and better use of anaesthetics, less invasive surgical techniques and the expansion of early discharge programs enabling patients to return to their home to receive follow-up care. All of these improvements in clinical care can be attributed at least in part by the implementation of the AR-DRG Classification System which allows performance to be measured and benchmarked to promote best practice.

Overall assessment

It is important for Governments to assess whether their investments in the System have been warranted. This analysis highlights a number of areas where the upgrade of the System is expected to have made a positive contribution to hospital performance and System effectiveness.

While the data and its applications has its limitations, the value of health system improvements is of an order of magnitude that even modest contributions to achieving them produce gains likely to be well in excess of the investment cost.

APPENDIX C. Key findings from international comparisons of hospital classification systems

National casemix experts from seven countries were asked to complete a questionnaire and participate in a follow-up teleconference. These activities were carried out in order to gain an understanding of the development cycle for their respective national hospital classification systems. The aim was to identify transferable lessons that would be appropriate for the Australian context, i.e. this is not a comprehensive analysis of each country's development cycle.

Management of the development cycle

In the majority of countries surveyed, the management of the ongoing development of the national hospital inpatient classification system is under the direction of a central government department or agency. Government departments/agencies that direct the hospital inpatient classification development, in the respective countries are as follows:

- **Canada**: The Canadian Institute for Health Information (CIHI) manages the development of the Case Mix Group (CMG)[16].
- **Sweden**: The National Board for Healthcare and Welfare directs the development of the DRG system.
- **Denmark:** Danish National Board of Health manages the development of the DkDRG classification system.
- **France:** The Hospital National Committee (Conseil de l'Hospitalisation)
- **Netherlands:** The Ministerie van VWS Authorities sets the work plan in consultation with a university affiliated private organisation for the DBC classification system. The Nederlandse Zorgautoriteit (NZA) has final responsibility of what DBC-Onderhoud develops. The NZA is the official Dutch Healthcare Authority funded by the government.
- **USA:** The Medicare DRG system is managed by Centers for Medicare and Medicaid Services (CMS).

Exception:

- **Germany**: Institut fuer das Entgeltsystem im Krankenhaus (InEK GmbH) is responsible for the update of the classification system. This is a government contracted organisation which is funded by key players in the health system, including insurance companies and hospitals. Procedure and diagnosis codes are updated by another organisation – Deutsches Institut fur Medizinische Dokumentation und Information (DIMDI) – which is funded by the government.

[16] CMG is analogous to DRGs when referring to the Canadian system.

Technical updating of the classification system

Below is a brief description of the key organisations that do the technical update of the classification system by respective country.

- **Canada:** Canada has a centralised technical update of their classification system. *The Canadian Institute for Health Information* (CIHI) governs the work plan and sets the future agenda for Canada's health classification system. CIHI is an independent, not-for-profit organisation that provides essential data and analysis of Canada's health system. As part of their mandate they are also charged with developing and maintaining the coding standard and the grouper that underpin the national health data sets.

- **Sweden:** Sweden has a centralised technical update of their classification system. *The National Board for Healthcare and Welfare* is the government agency responsible for the update of the Swedish classification system. They are a member of the WHO-FIC-Network, having been given the task of collaborating with WHO in the development, dissemination, maintenance and use of the WHO Family of International Classifications to support national and international health information systems, statistics and evidence. The National Board of Healthcare and Welfare are part of the government administration and at arms length from the government health department body. They decide when to update the classification; this update is carried out by internal staff. Depending on the level of technical support required in the update, contractors and private organisations may also be involved in the update.

  The DRG-systems in the Nordic countries are coordinated through an organisation called Nord-DRG, the official name of this administrative center is, "Nordisk senter for klassifikasjoner i helsetjenesten".

- **Denmark:** Two separate departments within the *Danish National Board of Health* (part of the Ministry of Health and Prevention) carry out the technical updates; one is responsible for the DkDRG classification including procedure codes, while the other is responsible for the DkDRG grouper. These updates are predominantly carried out by in-house experts, with private contractors' brought in as required.

- **France:** France has a centralised technical update of their classification system. The National *Technical Hospitalisation Information Agency (ATIH)* is responsible for the technical developments of the French hospital classification system. ATIH is funded by the French government, and is a not for profit organisation. ATIH is also responsible for the update and development of the grouper and sells licences of the grouper to private software companies. Every public and private hospital reports anonymous inpatient data to ATIH, on a mandatory basis. ATIH also conducts an annual voluntary hospital national cost survey.

- **Netherlands:** The Netherlands *Stichting DBC-Onderhoud Institute* has centralised responsibility to develop and maintain the classification system and provides support for its implementation in the health sector. Stichting DBC-Onderhoud is also responsible for the monitoring and reporting of hospital inpatient data and the calculations on cost weights.

- **USA:** The USA has a decentralised technical update of their classification system. The National Center for Health Statistics is responsible for the update of the classifications of diagnoses; the Centers for Medicare and Medicaid Services (CMS) co-ordinate the update of the DRG algorithm.

- **Germany:** Germany has a decentralised model for technical updates to their classification system. The Institut fuer das Entgeltsystem im Krankenhaus (InEK GmbH) is responsible for the update of the classification system. This is a government contracted/funded organisation. The InEK is also responsible for reporting and monitoring on the hospital inpatient data at the national level.

Procedure and diagnosis codes are updated by another organisation – Deutsches Institut fur Medizinische Dokumentation und Information (DIMDI) – which is funded by the government.

Cycle timing and implementation

Annual updates with mandated implementations dates are the norm.

- Updates to the classification system are most commonly carried out annually. This is primarily driven by the update of cost weights (all countries reviewed are using their classification system to fund inpatient hospital activity).
- The updates most often have national implementation dates as to when they become effective.

Several counties have mechanisms through which they can communicate live updates (errata) to the classifications systems throughout the year. The manner in which the classification systems are implementation into the broader health system is summarised below.

- **Canada:** Mandated, simultaneous implementation of procedure, diagnosis, CMG and cost weights, takes place. There is a high compliance rate, as it is fundamental to the funding hospitals receive. CIHI actively communicates 'ICD-10-CA/CCI Alert', as to when updates will take place and when the next release will be. Further, to ensure consistent application of the standards, CIHI provides an online coding query service which helps registered users find answers to their ICD-10-CA/CCI coding questions. The service is available to all who have purchased the ICD-10-CA/CCI CD-ROM.

- **Sweden:** The Swedish classification system is updated annually. The national implementation date is on the 1st of January. The various software companies implement the DRG grouper into the hospital system.

- **USA:** The updates to the classification system are produced annually. The national implementation date is on October 1st. Uptake is mandatory, and there is a high compliance rate, as it is fundamental to the reimbursements hospitals receive. Relative weights are attached to new DRG's and simultaneously released. The National Center for Health Statistics provides email updates on changes to the classifications through the year.

- **Denmark:** DkDRG are updated annually. This is a mandated implementation. The formula for the DkDRG is publicly available on the website. Contractors of Patient Administrative Systems, implement the DkDRG's into the hospitals. The classification system (operations, diagnoses and procedures codes etc.) are normally updated every quarter and the updates are announced on the web 14 days before coming into operation. This includes new codes, cancellation of old codes and text adjustment. The Danish National Board of Health send out the classifications update file to the hospitals.

- **France:** The primary classification (CIM10, and CCAM, diagnosis and procedure codes) is updated on an annual basis at the international and national levels. The secondary classification, GHM (DRG adopted from the USA) is subject to minor evolutions on an annual basis but major updates are less frequent, for instance the last major update prior to the 2008-09 was in 2004-05.

- **Netherlands:** The classification system (ICD 9) is updated annually. Update of the classification is mandatory as of the 1st of July each year. Communication regarding the updates is primarily done through the hospital committee, mailings and the website where the latest version of the classification/product structure can be found. The mapping tables available on the website indicate what codes are valid before and after the implementation date.

- **Germany:** The diagnosis codes ICD-10-GM (German modification) and procedure codes - Operationen- und Prozedurenschlüssel (OPS) – are updated annually by DIMDI. The classification

system G-DRG is also updated annually but by another organisation – InEK GmbH. Implementation is mandated by the government, and the current version is required for reimbursement of inpatient hospital care. There are different update timeframes in Germany. Both, the G-DRG-system as well as the diagnosis and procedure codes are updated annually, published in autumn and are obligatory effective for the following year.

Public submissions

Most countries have some form of a public submission process. The degree of transparency in the update process and the opportunity to provide input into the development of the classification system varies across countries.

- **Canada:** The technical update of the classification system is carried out by CIHI. The ICD-10-CA/CCI National Coding Advisory Committee provides CIHI with advice on the development and ongoing enhancement of coding standards. Standards are only incorporated into the Canadian Coding Standards for ICD-10-CA and Canadian Classification of Health Interventions (CCI) if they are applicable to all provinces and territories. Membership includes one external representative from each province and territory and internal support from Discharge Abstract Database (DAD), National Ambulatory Care Reporting System (NACRS) for outpatient data and Case Mix and Health Indicators. External members are appointed by the respective provincial/territorial Coding Quality Committee, where one exists, or by the ministry of health.

  CIHI has an open a public submission process to allow users of the classifications (ICD-10-CA and CCI) and the health data an opportunity to input in the maintenance and enhancement cycle. The public submissions have a published closing date; i.e. submissions received prior to June 29, 2007 were considered for inclusion in the 2009/2010 version of the classifications.

- **Sweden:** Input into the update of the classification comes through specific mandatory registers of information on certain diagnose groups, such as the national register for heart diseases. *The National Board for Healthcare and Welfare* receives these and analyse the benefits of these suggestions and decide whether to update based on these or not.

- **USA:** *The Coordination and Maintenance Committee* was created as a forum for proposals to update ICD-9-CM. A representative from the National Center for Health Statistics and one from the Centers for Medicare and Medicaid Services co-chair the ICD-9-CM Coordination and Maintenance Committee meetings.

  Although the ICD-9-CM Coordination and Maintenance Committee is a Federal Committee, suggestions for modifications come from both the public and private sectors. Interested parties are asked to submit recommendations for modification prior to a scheduled meeting. Proposals for a new code include a description of the code being requested, and rationale for why the new code is needed. Supporting references and literature may also be submitted.

  These meetings are open to the public; comments are encouraged both at the meetings and in writing. Recommendations and comments are reviewed and evaluated before any final decisions are made. No decisions are made at the meetings. The ICD-9-CM Coordination and Maintenance Committee's role is advisory. All final decisions are made by the Director of NCHS and the Administrator of CMS. Final decisions are made after the December meeting and become effective October 1 of the following year.

- **Denmark:** Clinical societies, hospitals and doctors can make formal requests in regards to updates to the classification. They are required to comment on why they find it necessary to make a new procedure code or proposed amendment. Physicians and doctors part of the department at the National Board of Health, then look into this and approve it in order for a new procedure/ group to

be developed. This is a dynamic process with the aim of making the classifications as reliable and precise as possible.

- **Netherlands:** The Ministerie van VWS authorises and funds, Stichting DBC-Onderhoud Institute, develop and maintain the classification system/product structure. Input is fed into the update procedure primarily through the through Steering Committees per healthcare specialisation and public submissions from organisations or professional associations.

- **France:** The update of the classification is a government led process. Input into the update of the classification is predominately driven through statistical data analysis. Professional associations and learned societies make lobbying actions to influence the evolution of the classification; however there is no official public submission process. The classifications are harshly criticized by clinicians in France with clinicians having very minimal power to play a role in the update process.

- **Germany:** Individuals and organisation or professional associations can make public submissions. For G-DRG development, the InEK ultimately determines which submissions are incorporated into the next version.

Intellectual property ownership and commercial value of the classification system

The intellectual property of the grouper and classification system is usually owned the government and most countries surveyed make this freely accessible and available. A summary of mechanisms by which several of the countries surveyed make their classification systems publicly available follows.

- **Canada:** The CIHI owns the Intellectual Property (IP) related to the classification system and they do not receive a commercial benefit from the use/ sale of IP for the classification system. Further, CIHI provide the ICD-10-CA and CCI tabular list and alphabetical index in downloadable, printable PDF on their website.

- **Denmark:** The government owns the intellectual property for the DkDRG grouper and the DkDRG specifications are publicly available on the web for all to access. This provides doctors with the ability to look up different diagnosis and procedures and see which DRG group they will fall into.[17]

- **France:** The technical hospitalisation information agency (ATIH) develops the core program and sells licences of the grouper software[18] to private software companies and collects royalties from every hospital.

  Hospitals access the grouper function through their Health Information System provided by private software companies. The classification itself is public (published in the "official bulletin") but the grouper software is propriety of the ATIH.

- **USA:** The National Center for Health Statistics provides the ICD-9 guidelines, conversion tables and addenda free of charge on their website. Further, they provide registration service to receive email updates on changes to the classifications.

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[17] The link to the web based tool: http://drgservice.sst.dk/grouper/

[18] ATIH sells the source code of the grouping algorithm, which is then integrated by the software companies in their grouper module.

- **Germany:** Inek owns the IP related to the classification system. Inek certifies software developers to develop the G-DRG grouper software. Diagnosis (ICD-10-GM) and procedure (OPS) codes can be downloaded for free from the DIMDI website.

Data integrity

In countries where the classification system is tied to funding, a broad range of the compliance activities are carried out, including:

- audits of clinical coding
- audits of software
- audits of IT systems
- statistical analysis of data outputs
- education and training in the use of the classification system.

Several countries made note that because the classification system is tied to funding, the classification system is applied uniformly and data integrity is maintained. For example:

- **Germany:** In Germany the "Medical Services of the German Statutory Sickness Insurance Bodies" (MDK), is a non-profit medical consulting organisation, funded by insurance companies, serving the German Healthcare Insurance System. They are responsible for data integrity over coding and conducting coding audits.

- **USA:** In the USA Medicare conducts data analysis of DRGs claims through the Recovery Audit Contractors (RAC audits) to identify when overpaymayment has been made. These audits include selected record reviews for coding accuracy. The RAC program is currently being rolled out to all States in a scheduled basis. This program identifies overpayments to the facilities with funds being taken back if overpayment has been found.

The key transferable lessons that would be appropriate for the Australian context are summarised in Table 4 below.

Table 4 Summary of transferable lessons from system development management models internationally

Summary of key findings from international comparison of hospital classification systems
1. In the majority of countries surveyed, the management of the ongoing development of the national hospital inpatient classification system is under the direction of a government department or agency.
2. Two management models were identified for the technical update of the System and its implementation into the health system *Model 1- Centralised development cycle* The technical update of the classification system (diagnosis, procedure and grouper codes) is more often carried out by one organisation, using a core team of internal staff or in some instances supplemented by contractors and other private organisations. *Model 2- Decentralised development cycle* The update of the classification system and DRG in some nations is carried out by several entities each responsible for a particular component of the classification system under the management of the government department or agency.
3. Annual updates with mandated universal implementations dates are the norm for development cycles.
4. Most countries have some form of a public submission process.
5. The intellectual property of the grouper and classification system is usually owned the government and most countries surveyed make this freely accessible and available.
6. Activities to ensure data integrity appear to be more prevalent in countries where the classification system underpins a funding model.

APPENDIX D. Roles and responsibilities of organisations involved in the development cycle

The tables below provide a reference index on the roles and responsibilities of the key stakeholders involved in the development cycle of the System.

The following descriptions present the mandated roles and responsibilities for each stakeholder as detailed in their terms of reference or contractual obligations as they relate to the System development cycle. The information for each organisation was obtained from publicly available information such as their website, as well as terms of reference, contracts or other documents which were supplied in-confidence for this project by either the organisation or the Department of Health and Ageing.

This stakeholder index has been organised alphabetically as follows:

- Australian Institute of Health and Welfare (AIHW)
- Clinical Casemix Committee of Australia (CCCA)
- Clinical Classification and Coding Groups (CCCGs)
- Coding Standards Advisory Committee (CSAC)
- Department of Health and Ageing (Department)
- Health Information Management Association of Australia (HIMAA)
- National Centre for Classification in Health (NCCH)
- National E-Health Information Principal Committee (NEHIPC)
- National Health Information and Statistics Committee (NHISSC)
- Software developers
- State and Territory Coding Advisory Committees
- WHO-FIC Network

Table 10 Stakeholder reference index

1. Australian Institute of Health and Welfare (AIHW)

The Australian Institute of Health and Welfare (AIHW) is Australia's national agency for health and welfare statistics and information. AIHW is an Australian Government statutory authority accountable to Parliament and operates under the provisions of the Australian Institute of Health and Welfare Act 1987. The Institute is defined as a body corporate subject to the *Commonwealth Authorities and Companies Act 1997*. They work closely with all State, Territory and Australian Government health, housing and community services agencies in collecting, analysing and disseminating data.[19]

AIHW is funded through appropriations as well as through contracts with the Department, and others, such as the Australian Health Ministers' Advisory Council (AHMAC). AIHW is a party to the National Health Information Agreement (NHIA), which was developed under the auspices of AHMAC. As part of this agreement, the AIHW are responsible for:

- in consultation with the ABS, developing specialised statistical standards and classifications relevant to health and health services
- providing information and specialist advice on activities and collections for which it has responsibility
- ensuring that information collected, maintained and collated by the AIHW is consistent with the national protocols, definitions and standards contained in the National Health Data Dictionary and other guidelines endorsed by the AHMAC
- maintaining the information collected by the AIHW under the aegis of the Agreement in such a way that it can be readily made available to approved individuals, groups and authorities for purposes which require access to national health information kept under the terms of the Agreement
- ensuring that information held by the AIHW is maintained in such a way as to ensure that the privacy provisions of the Agreement are observed;
- undertaking specific research, using national data, to improve the efficiency and effectiveness of the health care system
- assisting other Parties to the Agreement in using and interpreting national health information
- ensuring that the National Health Data Dictionary and other quality control standards to encourage accuracy and consistency in the collection and reporting of health information are maintained and enhanced as agreed by the AHMAC.[20]

The Australian Institute of Health and Welfare is also an end user of the System. Patient data coded at the hospitals in ICD-10-AM is passed on to AIHW for collation into a national data set – Admitted Patient Care National Minimum Data Set (APCNDS), from which the AIHW annually publish Australian Hospital Statistics.

[19] http://www.aihw.gov.au/aboutus.cfm

[20] National Health Information Agreement 2004 – 2009.

1. Australian Institute of Health and Welfare (AIHW)

In reviewing and collating the data the AIHW are able to make public submissions into the revision cycle of both the ICD-10-AM/ACHI/ACS and the AR-DRGs.

The AIHW is also a World Health Organisation (WHO) Collaborating Centre for the Family of International Classifications (WHO-FIC). Their terms of reference in this role (as per the WHO-FIC Network October 2003 document) are:

1. To promote the development and use of the WHO family of international classifications (WHO-FIC) including:

    a) the International Statistical Classification of Diseases & Related Health Problems (ICD and its Australian Modification) for mortality statistics, hospital morbidity statistics and hospital medical record indexing and contribute to its improvement in light of practical experience

    b) the International Classification of Functioning Disabilities & Health (ICF) and contribute to its improvement in light of practical experience

    c) other related or derived members of the WHO-FIC, including, as appropriate, national modifications in their specific areas of application and contribute to their improvement in light of practical experience.

2. To promote quality use of WHO-FIC Classifications in data collections and data analysis by participating in quality assurance procedures regarding norms for use, training and data collection and application rules.

3. To prepare teaching materials and organizing and conducting training courses on the implementation and use of members of the WHO-FIC in Australia and WHO regions. Also, to contribute to the development of common international training tools and Internet-based applications by preparing translations and adaptations of the tools.

4. To improve member classifications, both locally and through WHO structures by studying aspects related to the structure, interpretation and application of members of the WHO-FIC including those concerning taxonomy, linguistics, terminology and nomenclature.

5. To contribute to the development of methodologies for the use of the WHO-FIC to facilitate the measurement of health status, interventions and outcomes on a sufficiently consistent and reliable basis to permit comparisons within countries over time and within and between countries at the same point in time. This includes the creation of comparable lists, correspondence tables and comparability studies.

6. To develop the family of health classifications, its scope and criteria for membership and including new members such as health interventions, external causes of injury and primary care.

7. To support the work of the WHO-FIC committees and reference groups established to assist WHO in the development, testing, implementation, use, improvement, updating and revision of members

[21] The WHO-FIC Network, October 2003.

1. Australian Institute of Health and Welfare (AIHW)

of the WHO-FIC including:

a) Committees (Planning Committee of WHO-FIC; Family Development Committee; Update Reference Committee Education Committee; Implementation Committee; and Electronic Tools Committee) Reference Groups (Mortality, Morbidity and Functioning and Disability).

8. To establish networks with current and potential users with the WHO-FIC and act as a reference centre (e.g. clearinghouse for good practice guidelines and the resolution of problems) for information about the WHO-FIC and other health-related classifications including: a) the availability, suitability and applicability of the classifications for different purposes; b) coding practices; c) availability of tools for implementation; and d) data analysis and interpretation.

9. To assist WHO HQ and the Regional Offices in the preparation of members of the WHO-FIC and other relevant materials in the English language and to act as a reference centre for that language on all matters related to the WHO-FIC.

10. To support existing and potential users of the WHO-FIC by establishing Memoranda of Understanding with WHO Regional Offices to assist the implementation of WHO-FIC classifications throughout the Region (e.g. WPRO, SEARO and AFRO).

11. To establish agreements with other Members States, e.g. New Zealand, to assist the work of the Australian Centre.

12. To present periodic reports of the centre's activities to the annual meetings of Heads of WHO-CCs for the WHO Family of International Classifications.

13. To provide chairmanship for the WHO-FIC committees.[21]

2. Clinical Casemix Committee of Australia (CCCA)

The role of the Clinical Casemix Committee of Australia (CCCA) is to provide clinical advice to the Department of Health and Ageing. The members are appointed on the basis of clinical expertise, rather than affiliations with a particular College or organisation and are under the direction of the Department.

The CCC (originally established in 1990 as the Australian Casemix Clinical Committee (ACCC) and then became the Clinical Casemix Committee of Australia in 2000.

The CCCA is convened by the Department as required, i.e. was scheduled to meet biennially as per Variation 1 (effective date 30 Nov 2004) of the contract between Commonwealth/ DoHA and University of Sydney/ NCCH; and the CCCA was scheduled to meet ‘as required’ as per variation 3 (effective date 30 June 2008) of the contract between Commonwealth/ DoHA and University of Sydney/ NCCH.[22]

[22] Contract for Services between Commonwealth of Australia and The University of Sydney for Services provided through the National Centre for Classifications in Health in relation to ICD-10-AM clinical classification and related terminologies.

2. Clinical Casemix Committee of Australia (CCCA)

When matters arise which require particular or additional expertise, the CCCA consults Clinical Classification and Coding Groups. Members of these are also appointed on the basis of individual expertise and are individuals who are prepared to be consulted on casemix or classification issues in their speciality areas.

The CCCA receives funding through the HIPIP budget allocation. The terms of reference for the CCCA include:

1. To make recommendations to DoHA on modifications to Australian casemix classifications (such as AR-DRGs). Such recommendations are to be based on clinical evaluation following consideration by the clinical professions.

2. To provide clinical input and make recommendations to DoHA concerning developmental work on modifications to casemix classification systems (such as ambulatory, sub/ non-acute and mental health classifications).

3. To provide feedback to clinical professions on Australian casemix classifications (such as the AR-DRG and ambulatory classifications), and the reasons for inclusion or exclusion of recommended changes or adoption of particular classifications or strategies.

4. To provide critical input to the Department when differing clinical views arise, and the final clinical review of casemix issues is required by DoHA.

5. To advise DoHA about representatives of particular specialties (e.g. from the CCCGs or Colleges) who act as advisers on matters of detail.

6. To liaise with, and provide clinical advice on casemix matters to State/ Territory health authorities, public and private hospitals, hospital associations, the health insurance industry, and others as requested by DoHA.

7. To undertake and advise DoHA on clinical casemix education.

8. To advise DoHA on the development and implementation of casemix measures in regard to quality of health care, by developing close liaison with the Australian Council for Safety and Quality in Health Care (ACQHC).

9. To provide clinical representation and input to other casemix activities as required.[23]

[23] Clinical Casemix Committee of Australia terms of reference.

3. Clinical Classification and Coding Groups (CCCGs)

The Clinical Classification and Coding Groups (CCCGs) are subcommittees of the CCCA in 23 speciality areas ranging from Anaesthesia to Plastic Surgery and Respiratory. Members of these subcommittees are also appointed on the basis of individual expertise and are individuals who are prepared to be consulted on casemix or classification issues in their speciality areas. CCCGs are under the direction of the Department. Clinical concerns with casemix matters are raised to the CCCA rather than directed to CCCG members (as per Department of Health and Ageing website). The CCCGs are scheduled to meet 'as required' according to the contract between Commonwealth/ DoHA and University of Sydney/ NCCH from 30 June 2004 and all subsequent variations through 30 June 2008.[24] The CCCGs receive funding through the HIPIP budget allocation. No terms of reference for CCCGs were supplied as part of this review.

NCCH also relies on CCCG members to provide clinical coding advice in relation to proposed changes to ICD-10-AM/ACHI/ACS and providing advice on definitions of particular diseases and where a particular disease should be placed within the classification.

The NCCH relies on CCCG members in the following ways:

1. Providing clinical and coding advice in relation to:
    - Proposed changes to ICD-10-AM/ACHI/ACS
    - Special projects such as:
        - Casemix and coding specialty book series
        - Mental health subset of ICD-10-AM/ACHI/ACS for community-based health services
        - Early parenting classification
        - Classification Update Forums on health priority areas.
2. Providing advice on definitions of particular diseases and where a particular disease should be placed within the classification.
3. Providing advice on interactions between diseases particularly in regard to whether a condition can be regarded as a complication or co morbidity in certain contexts.
4. Providing advice about how a procedure was performed and establishing which components of a procedure should be overtly displayed in the code structure
5. Providing information about specific issues relating to coding queries such as how a procedure is performed or a disease process.
6. Providing education for clinicians and coders such as conference presentations, video education

[24] Contract for Services between Commonwealth of Australia and The University of Sydney for Services provided through the National Centre for Classifications in Health in relation to ICD-10-AM clinical classification and related terminologies.

3. Clinical Classification and Coding Groups (CCCGs)

and educational material.

7. Providing advice which reflects a national perspective rather than an individual one.

8. Educating colleagues about changes to classification and coding standards. This assists coders in implementing and conveying the intent of the changes and helps to disseminate national policy to clinicians in the workplace.

9. Provision of cross-group discussions such as resolving issues which involve more than one specialty and consequently more than one CCCG.

10. Assistance in meetings of CCCGs such as providing venues, minute taking, facilitation and chairing.

11. Source of information from colleagues as appropriate.[25]

4. Coding Standards Advisory Committee (CSAC)

The primary role of the Coding Standards Advisory Committee (CSAC) is to advise the NCCH on the implementation and publication of new and amended ICD-10-AM and ACHI codes and Australian Coding Standards (ACS). This includes reviewing addenda proposals for changes to the classifications, seeking and receiving feedback from users of coded data on the impact of standards and codes on the current data collection, ensuring that standards of definitions and conventions are maintained when ratifying changes to ICD-10-AM/ACHI/ACS.CSAC also provides coding advice to the National Health Data Committee on definitions relating to relevant classification items in the National Health Data Dictionary.

CSAC is chaired by the Director of NCCH, and the NCCH provides the Secretariat. Membership includes clinical coders and HIMs from each State and Territory health authority in Australia, as well as representatives from the National Health Statistics and Standards Committee, Clinical Casemix Committee of Australia, the Department of health and ageing (DoHA), the Australian Institute of Health and Welfare (AIHW), Health Information Management Association of Australia (HIMAA), Australian Private Hospitals Association (APHA), Clinical Coders' Society of Australia (CCSA) and the New Zealand Ministry of Health.

CSAC meets quarterly.

1. CSAC's terms of reference are:

2. Advise the NCCH on the implementation and publication of new and amended ICD-10-AM/ACHI codes and ACS.

3. Advise the NCCH on activities and products relating to coding and coding quality measures.

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[25] Overview of NCCH Committees and terms of reference.

4. Coding Standards Advisory Committee (CSAC)

4. Report to and from organisations/ jurisdictions represented on this committee.
5. Ensure that standards of definition and convention are maintained when ratifying changes to ICD-10-AM/ACHI/ACS
6. Review public submissions for changes to ICD-10-AM/ACHI/ACS.
7. Receive feedback from users of coded data on the impact of standards and codes on current data collections.
8. Ratify coding advice from the NCCH prior to publication in Coding Matters.
9. Recommend to DoHA, future changes to the Australian Refined Diagnosis Related Groups classification system as they relate to coding.
10. Recommend to the National Health Statistics and Standards Committee the national adoption of each new edition of ICD-10-AM/ACHI/ACS
11. Provide input to relevant authorities on morbidity and mortality coding related issues such as data edits, coding quality measurement, design of data collection systems.
12. Provide coding advice to the National Health Statistics and Standards Committee on definitions relating to relevant classification items in the National Health Data Dictionary.
13. Provide advice on other relevant health classification systems.[26]

5. Department of Health and Ageing

The Department owns the intellectual property of the AR-DRG and ICD-10-AM/ACHI/ACS and is responsible for their update and development. It is managed under the Hospital Information and Performance Information Program (HIPIP) which develops and maintains nationally consistent public and private acute care sector information. The HIPIP is funded as a Commonwealth Owned Purpose Outlay within the 2003-2008 Australian Health Care Agreements (AHCAs) (as extended to 30 June 2009 following the election of the new Commonwealth government).

The technical expertise for the AR-DRG development rests in-house - the Department has created 'Toolkit' software and a 'CRASS' statistical application to develop and test AR-DRG algorithms. The Department also certifies software companies to develop grouper software from the specifications that the Department develops. As owner of the intellectual property of the System, the Department co-ordinates and issues the international licensing of the System.

The Department outsourced the development of ICD-10-AM/ACHI/ACS to the National Centre for Classification in Health (NCCH) for 2003-2009.

[26] Overview of NCCH Committees and terms of reference.

6. Health Information Management Association of Australia (HIMAA)

HIMAA Ltd. Is a private organisation that offers a range of independent study courses by distance education for individuals wishing to develop or enhance their skills in clinical coding for ICD-10-AM, ACHI and ACS. These courses are:

- Comprehensive Medical Terminology
- Introductory ICD-10-AM, ACHI and ACS Clinical Coding
- Intermediate ICD-10-AM, ACHI and ACS Clinical Coding
- Advanced ICD-10-AM, ACHI and ACS Clinical Coding[27]

[27] http://www.himaa.org.au/education.html#CLINICAL%20CODING%20COURSES%20OVERVIEW-%20updated%2018%20December%202007

7. National Centre for Classification in Health (NCCH)

The National Centre for Classification in Health (NCCH) is a joint venture between the University of Sydney and the Queensland University of Technology (QUT). NCCH develops and maintains the health classifications and standards that uniformly describe disease, injuries, other health conditions and interventions under contract to the Department of Health and Ageing. The core health classifications that they are responsible for under this contract are:

- ICD-10-AM- the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification*- disease classification
- ACHI- the *Australian Classification of Health Interventions*- a procedure and intervention classification
- ACS- *the Australian Coding Standards- guidelines for the consistent assignment of codes for health concepts.*

ICD-10-AM, ACHI and ACS make up the clinical classifications that are mandated for use in all acute hospital health care settings in Australia. These classifications form the basis for morbidity data collection in Australia.

As per the contract between the Commonwealth as represented by the Department and the University of Sydney for services provided by NCCH over the period 1 July 2004 to 30 June 2009, the services to be provided by NCCH include:

- update the ICD-10-AM/ ACHI/ ACS every two years. This process includes the following services:
- public submission process, whereby submissions for changes to ICD-10-AM/ACHI/ACS can be submitted to NCCH, analysed and updates developed for the codes/standards affected. Since July, 2008, submissions can be lodged at any time; however the two year cycle for classification update still applies. Consultation with clinicians; clinical coders, data users, State and Territory health authorities, professional organisations, the private health sector and other stakeholders to evaluate proposed changes for each edition
- conduct research relating to proposed changes to ensure that sufficient evidence of need is associated with submissions
- work with the Medicare Benefits Branch of the Department to ensure MBS codes are included in ACHI
- submit recommendations to the NCCH Coding Standards Advisory Committee (CSAC) for ratification prior to submission to the National Health Information Standards and Statistics Committee (NHISSC)
- all changes to the classifications are formally adopted through the NHISSC
- development and provision of an electronic code list comprising each code with long and short descriptors and age and sex edits
- provision of mapping tables between codes in each edition for distribution nationally
- development and provision of a narrative description in the ‘Chronicle’, of each change made in an edition and why the change was made
- publish materials relating to ICD-10-AM/ACHI/ACS in hard and electronic copies
- provide associated publications. This includes distributing the AR-DRG manuals on behalf of the Department of Health and Ageing. 50% of the income received through sales of AR-DRG

7. National Centre for Classification in Health (NCCH)

manuals to be returned to the Department and reported via quarterly progress reports.

- maintain each edition of ICD-10-AM/ACHI/ACS, including:
  - Errata to notify users of errors in each edition. Errata to be made available in hard copy and electronically on a quarterly basis
  - Queries: collate, analyse and respond to queries for each State and Territory coding committee and other appropriate organisations or individuals
  - Provide education on changes in each edition of ICD-10-AM/ACHI/ACS
  - Prepare and present education material on changes in each edition of ICD-10-AM/ACHI/ACS in the six months prior to implementation.
- prepare and conduct continuing education workshops in the year after implementation of each edition
- assist the Department in the development of specifications for new versions of the AR-DRG grouper
- assist AIHW in its capacity as WHO Collaborating Centre for the Family of International Classifications
- provide advice to relevant committees and organisations nationally and internationally
- maintain effective functionality of NCCH-administered systems.[28]

As mentioned in the contract, NCCH plays a role assisting the Australian Collaborating Centre for the WHO (i.e. AIHW). The Director of NCCH chairs the Family Development Committee and is a member of the ICD Revision Steering Group. NCCH staff also play an role in the Morbidity Reference Group, the Mortality Reference Group, the Education Committee and the Update and Revision Committee.[29]

As a separate enterprise which is not funded by the contract with the Department, NCCH has developed two quality tools including the Australian Coding Benchmark Audit (ACBA) and Performance Indicators for Coding Quality (PICQ). ACBA was developed as a coding audit tool which helps coding managers and coding auditors distinguish between ‘coder’ and ‘system’ errors. PICQ allows hospital coders to run their coded records against a set of standard indicators of coding quality. Victoria, WA and Tasmania have a State-wide licence for PICQ.[30]

[28] Contract for Services between Commonwealth of Australia and The University of Sydney for Services provided through the National Centre for Classifications in Health in relation to ICD-10-AM clinical classification and related terminologies.

[29] Submission from NCCH.

[30] Submission from NCCH.

8. National E-Health Information Principal Committee (NEHIPC)

The National E-Health Information Principal Committee (NEHIPC) has ultimate responsibility for information management in health services. Established under the National Health Information Agreement (NHIA) to oversee implementation of the Agreement.

The NEHIPC includes representatives from:

- Australian Government Department of Health and Ageing
- all State and Territory health departments responsible for health services
- the New Zealand Ministry of Health
- the National Health Information Standards and Statistics Committee Chair;
- the National Health Chief Information Officers Forum Chair
- the National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data Chair

and Observers from:

- Australian Bureau of Statistics
- Australian Commission on Safety and Quality in Healthcare
- Australian Government Department of Veterans' Affairs
- Australian Institute of Health and Welfare
- the National E-Health Transition Authority.

It has a standing committee that provides specialist advice with regard to health metadata standards: the National Health Information Standards and Statistics Committee (NHISSC).[31]

9. National Health Information Standards and Statistics Committee (NHISSC)

The National Health Information Standards and Statistics Committee (NHISSC), is a standing subcommittee of the National E-Health and Information Principal Committee (NEHIPC). NHISSC is responsible for providing NEHIPC with strategic advice on national health information needs and priorities.

The National Health Information Standards and Statistics Committee assumed the function of the Health Data Standards Committee (HDSC), the Statistical Information Management Committee (SIMC) and the National Health Performance Committee (NHPC) on 1 July 2008.

The draft terms of reference suggest that NHISSC acts as the Registration Authority for all national health metadata standards. These standards require endorsement from NHISSC in order to be included as standards in METeOR and the National Health Data Dictionary (NHDD). NHISSC's draft terms of

[31] Overview of the National Health Information Standards and Statistics Committee and the Health Sector approval process.

9. National Health Information Standards and Statistics Committee (NHISSC)

reference also indicate that NHISSC, in conjunction with the Australian Collaborating Centre for the WHO Family of International Classifications (which is AIHW), advises NEHIPC on the development, implementation and maintenance of the Australian Family of Health and related classifications (including endorsing classifications for inclusion in the family) and endorsing maps to classifications to be used for statistical reporting on national health information.

The committee may meet up to six times per year. Members are appointed by NEHIPC and include representation from AIHW, the Australian Bureau of Statistics (ABS), the Department of Veterans' Affairs (DVA) and Medicare Australia. Membership of the NHISSC also includes signatories to the National Health Information Agreement or the successor document. The Chair is a member of NEHIPC and is approved by AHMAC on a recommendation from NEHIPC. AIHW is the Secretariat of NHISSC. NHISSC can appoint working groups as necessary. The draft terms of reference indicate that NHISSC is responsible for: Providing NEHIPC with strategic advice on national health information needs and priorities in relation to:

- consideration of the implications for the statistical system of new and emerging health information issues, including e-health and interactions and interfaces between current national health information standards and the content of standards being developed to support the e-health agenda. NHISSC would also provide advice on the issues for e-health arising from the evolving national heath information system
- endorsing data standards for inclusion in the National Health Data Dictionary; endorsing National Minimum Data sets for national implementation, and endorsing best practice Data Set Specifications (including datasets for clinical and primary care) for inclusion in the National Health Data Dictionary
- stewardship of the national health performance framework on behalf of AHMAC and advising NEHIPC of recommended changes to both the framework and its indicators
- in conjunction with the Australian Collaborating Centre for the WHO Family of International Classifications, advising NEHIPC on the development, implementation and maintenance of the Australian Family of Health and related classifications (including endorsing classifications for inclusion in the family) and endorsing maps to classifications to be used for statistical reporting on national health information
- Developing advice for NEHIPC on national statistical protocols and standards such as data linkage, geocoding and data anonymisation protocols
- Continuing to monitor and seek opportunities to improve the identification of Indigenous status and Indigenous issues in national data collections and reporting.[32]

[32] National Health Information Standards and Statistics Committee DRAFT Terms of Reference and Business Rules, July 2008.

10. Software developers

An AR-DRG Grouper is specially designed computer software that assigns patient episodes of care to DRGs. The software development companies build their software under licence agreements with the Australian Government as represented by the Department of Health and Ageing. The software products incorporate the Australian Government's intellectual property, i.e. the grouping logic that is contained in AR-DRG specifications. With each new release of the AR-DRG Classification System, the Department of Health and Ageing undertakes comprehensive testing of the grouper software to confirm that it correctly implements the classification. If all requirements are met, the Australian Government issues a Certificate of Acceptance[33]. At present, certification is limited to four software development companies:

- 3M Australia Pty Ltd
- Laeta Pty Ltd
- Total Care Integrative Health Systems Pty Ltd
- Visasys Pty Ltd.

The software companies develop other products which complement and build upon the grouper software. One example is "encoder" software which is a coding and grouping tool that incorporates the grouper software. Encoder software is also updated to include ICD-10-AM/ACHI/ACS code changes (new versions and errata changes), coding pathway fixes or enhancements, etc.[34]

The software companies can feedback into the development of future AR-DRG and ICD-10-AM/ACHI/ACS versions through public submissions and queries.

11. State and Territory Coding Advisory Committees

The State and Territory Coding Advisory Committees are chaired by clinical information specialists and represent the views of their members (clinical coders and HIMs in public and private hospitals) in the revision and update of the System. When coders have queries or submissions they would like to make in regards to ICD-10-AM/ACHI/ACS Classifications they raise these at their respective State/Territory Coding Advisory Committee meetings. The State/Territory Coding Advisory Committee then discusses whether the submission is valid or the query can be resolved or whether they require a proposal to be put forward to the NCCH for a revision or development of a new ICD-10-AM/ACHI/ACS code. In these circumstances the State/Territory Coding Advisory Committee Chair submits proposals to the NCCH through their online submission process on behalf of the coders at the hospital level.

[33] Overview of Casemix in Australia (Document supplied by the Department)

[34] Submission from 3M Health Information Systems, Inc.

12. WHO-FIC Network

Since 1970, the WHO has designated a number of collaborating centres to work with it in the development, dissemination, maintenance and use of the WHO Family of International Classifications (WHO-FIC) to support national and international health information systems, statistics and evidence[35]. The WHO and collaborating centres work together as a collaborative network (WHO-FIC Network).

The Network is governed through the annual meeting of collaborating centres with WHO headquarters and regional offices where members discuss matters of mutual interest and advise the WHO. Work is progressed through a number of WHO-FIC committees, which conduct their business outside the annual Network meeting. These committees report to the annual Network meeting.

The Australian centre is located in the Australian Institute of Health and Welfare (AIHW). Updates and amendments that WHO makes to the ICD-10 are considered in the revision cycle for the Australian modification of ICD-10-AM.

[35] The WHO-FIC Network, October 2003. And new

APPENDIX E. Mapping of the ICD-10-AM / ACHI / ACS development cycle

Overview of the ICD-10-AM/ACHI/ACS development cycle

The following is an overview description of the ICD-10-AM/ACHI/ACS development cycle, refer to Figure 2, the corresponding 'swim lane diagram'.

The ongoing revision cycle of ICD-10-AM/ACHI/ACS begins with a combination of changes in base classifications and public submissions. More specifically this involves incorporating updates from the following:

- World Health Organisation (WHO) for ICD-10, ICD-O. The WHO developed the original diagnosis codes – ICD – on which the Australian System is based. As part of the WHO network, Australia can feed back into the ICD-10 development process.
- Medicare Benefits Schedule (MBS) which is a listing of Medicare services subsidised by the Australian government. MBS updates are released on a biannual basis. The MBS items correspond with the ACHI codes.
- Australian Dental Association[36]
- public submissions made through the NCCH website and queries from coders, clinicians, research institutes, industry bodies and other end users of the data are also reviewed to further refine the ICD-10-AM/ACHI/ACS.

All users of the classification, including the State/Territory Coding Advisory Committee members on CSAC have the ability to submit proposals for changes to ICD-10-AM/ACHI/ACS via the NCCH public submissions website. The NCCH considers all submissions received and researches and develops the proposals related to each particular public submission for consideration at CSAC. Research involves:

- conducting a literature search
- reviewing other classifications and monitoring national frequencies
- liaising with clinicians and clinical coders as required.

Each proposed revision to the classifications is considered, and a formal proposal written regarding the impact on the classification. The proposals provide background information, including research undertaken and clinical advice received.

The proposals are tabled at CSAC meetings and members provide input. There may be a number of proposal iterations before final approval for inclusion in ICD-10-AM/ACHI/ACS[37]. Each proposal that is to be included in the new revision must be finalised 12 months before publication[38].

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[36] National Centre for Classifications in Health Submission

[37] National Centre for Classifications in Health Submission

[38] National Centre for Classifications in Health Submission

Once the public submissions, queries, updates from the MBS, and updates from the WHO ICD-10 have been analysed, NCCH produces a proposed revised version of the Australian Coding Classification.

The Department submits the NCCH proposed changes to ICD-10-AM/ ACHI to NHISSC and NHISSC is asked to approve the development/consultation process as being valid for the release prior to implementation of the new version.

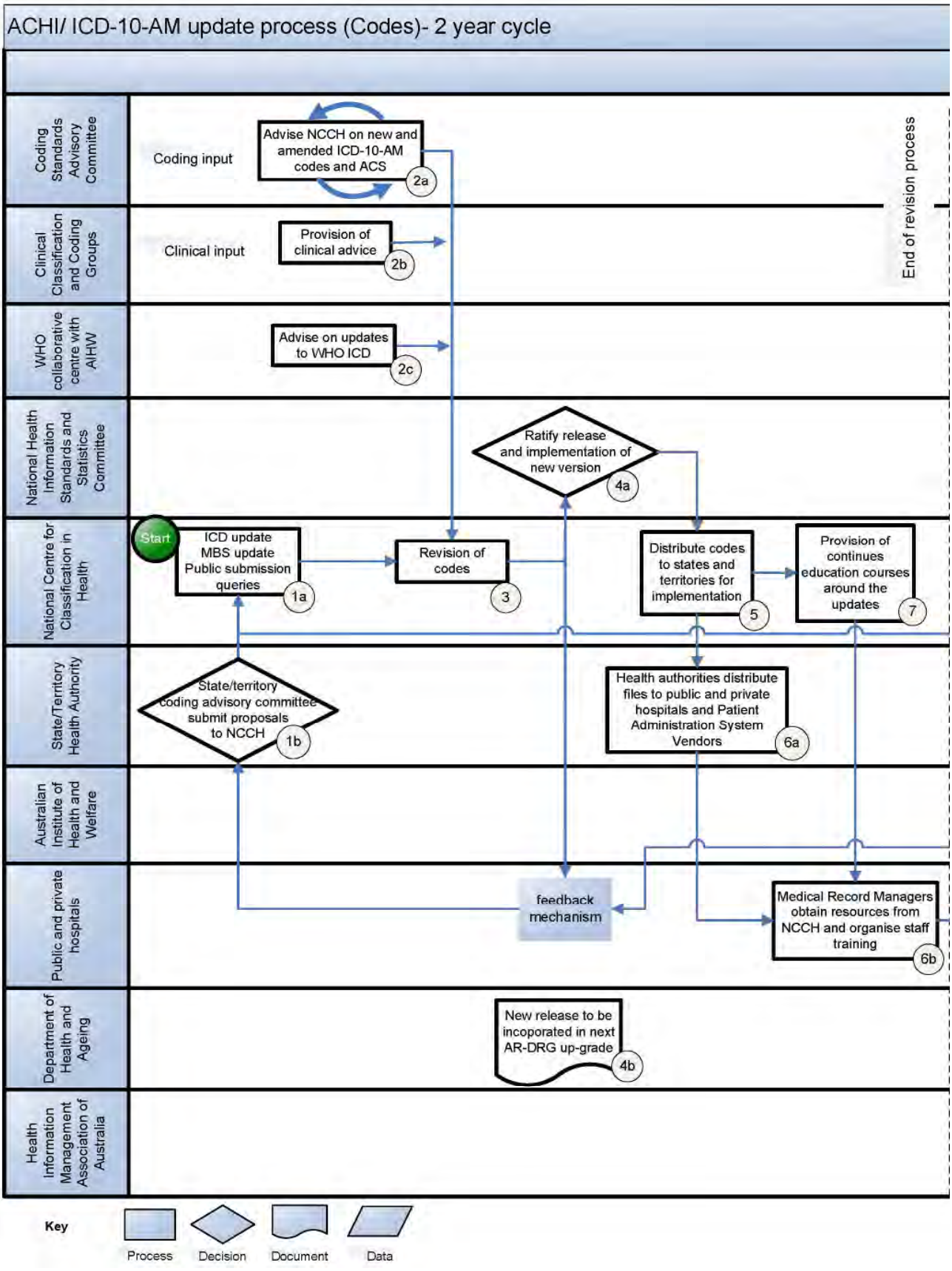
Upon the completion of the ICD-10-AM update by NCCH and endorsement by NHISSC, the ACHI/ ICD-10-AM and ACS are supplied to the Department of Heath and Ageing, to feed into the update of the AR-DRG groupers.

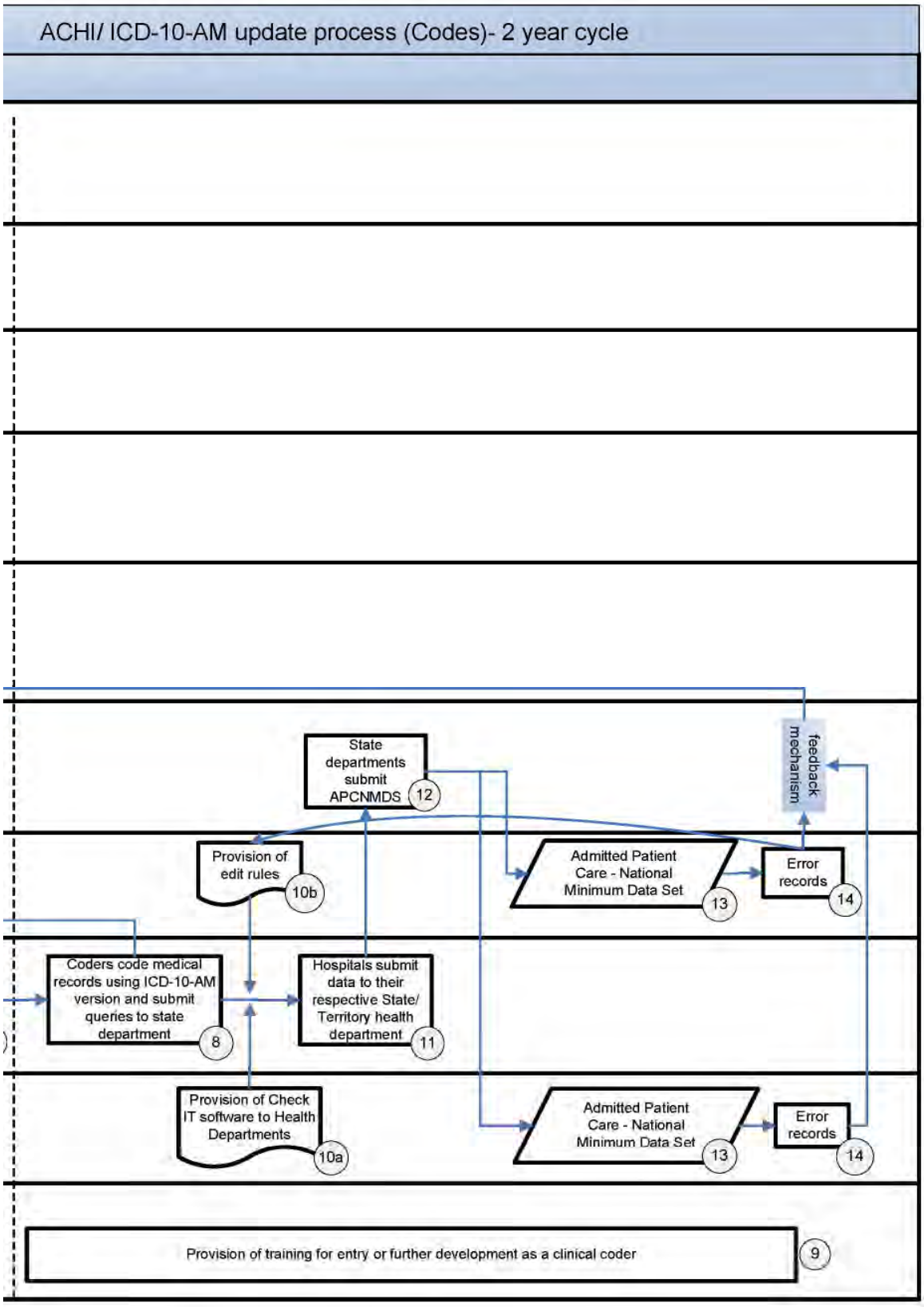
It is important to note that the AR-DRG revision process occurs in parallel with the ICD-10-AM/ACHI/ACS update. The new edition of ICD-10-AM/ACHI/ACS is incorporated into the update of the AR-DRG classification.

Once the ICD-10-AM/ACHI/ACS are distributed to States and Territories for implementation, NCCH provides continuing education courses around the nature of the updates. Health authorities distribute the files to public and private hospitals and Patient Administrative System Vendors and medical record managers obtain resources from NCCH and organise staff training. Coders code medical records using the updated ICD-10-AM/ACHI/ACS version and submit queries to their State/Territory Coding Advisory Committee.

Hospitals submit data to their respective State and Territory Health Departments. State departments submit Admitted Patient Care National Minimum Data Set (APCNMDS) to both the Department and AIHW. Error records picked up in the review of this data are fed back into the development cycle through the public submission process. In between new versions, NCCH releases up to four errata changes per year. Refer to Figure 2 on the following page for the swim lane diagram of the ICD-10-AM/ACHI/ACS development cycle.

Figure 2 ICD-10-AM/ACHI/ACS development process




ACHI/ ICD-10-AM update process (Codes)- 2 year cycle
State departments submit APCNMDS
12
feedback mechanism
Provision of edit rules
10b
Admitted Patient Care - National Minimum Data Set
13
Error records
14
Coders code medical records using ICD-10-AM version and submit queries to state department
8
Hospitals submit data to their respective State/ Territory health department
11
Provision of Check IT software to Health Departments
10a
Admitted Patient Care - National Minimum Data Set
13
Error records
14
Provision of training for entry or further development as a clinical coder
9

The following tables provide detailed explanations of the ICD-10-AM/ACHI/ACS development and update process. The information below is referenced to each step in the 'swim lane' diagram Figure 17. Note that the information presented below represents the 'as is' process which is mandated by terms of reference, contracts.

1A ICD update, MBS update, public submission and queries

NCCH, National Centre for Classification in Health

The National Centre for Classification in Health (NCCH) maintains the development of health classifications, clinical terminologies and standards that uniformly describe disease, injuries, other health conditions and interventions. They *are responsible for*:

- *ICD-10-AM-* the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification- disease classification
- *ACHI-* the Australian Classification of Health Interventions- a procedure and intervention classification
- *ACS-* the Australian Coding Standards- guidelines for the consistent assignment of codes for health concepts.

The ongoing revision cycle is kicked-off by a combination of changes in base classifications and public submissions, which NCCH review to further refine the ICD-10-AM/ACHI/ACS. More specifically this involves incorporating updates from the following:

- World Health Organisation (WHO) for ICD-10, ICD-O. The WHO developed the original diagnosis codes- ICD – on which the Australian System is based. As part of the WHO network, Australia can feed back into the ICD-10 development process
- Medicare Benefits Schedule (MBS) which is a listing of Medicare services subsidised by the Australian government. MBS updates are released on a biannual basis. The MBS items correspond with the ACHI codes
- Australian Dental Association[39]
- Public submissions and queries from coders, clinicians, research institutes, industry bodies, education program feedback and other end users of the data on suggestions for changes. These submissions are made to NCCH directly through the public submissions link on their website or through the relevant State and Territory Coding Advisory Committee who then submit online.

[39] National Centre for Classifications in Health Submission

1B State/Territory Coding Advisory Committee submits proposals to NCCH

State/Territory Health Authorities

The State and Territory Coding Advisory Committees are chaired by clinical information specialists and represent the views of their members, clinical coders and Health Information Managers (HIMs) in public and private hospitals, in the revision and update of the System. When coders have queries or submissions they would like to make in regards to ICD-10-AM/ACHI/ACS Classifications they raise these at their respective State/Territory Coding Advisory Committee meetings. The State/Territory Coding Advisory Committees discuss whether the query can be resolved or whether it requires a proposal to be put forward to the NCCH for a revision or development of a new ICD code. In these circumstances the State/Territory Coding Advisory Committee Chair submits proposals to the NCCH through their online submission process on behalf of the coders at the hospital level.

2A Advise NCCH on new and amended ICD-10 AM codes and ACS

CSAC, Coding Standards Advisory Committee

The primary role of this committee is to advise the NCCH on the implementation and publication of new and amended ICD-10-AM/ ACHI codes and Australian Coding Standards. This involves:

- reviewing public submissions for changes to ICD-10-AM/ACHI/ACS
- receiving feedback from users of coded data on the impact of standards and codes on current data collection
- ensuring that standards of definitions and conventions are maintained when ratifying changes to ICD-10-AM/ACHI and the Australian Coding Standards.

More specifically:

- all State/Territory Coding Advisory Committees are represented on CSAC, as are other organisations and committees such as NHISSC, HIMAA, CCCA, AIHW, APHA, DoHA and New Zealand
- CSAC members (via email at this stage) comment on each proposal prior to the face-to-face meetings
- CSAC comments are considered by NCCH and amendments are made to proposals, as required
- ultimately CSAC recommends proposed changes to the ICD-10-AM/ACHI/ACS to NHISSC for endorsement.

This committee has a clinical representative from the Clinical Casemix Committee of Australia (CCCA) as well as clinical coder/ HIM representatives from each of the State and Territory level jurisdictions and New Zealand. The over-arching function of this committee relates to providing advice on classification development and standards for coding of diseases and interventions for morbidity and mortality reporting[40]. This committee is convened by the NCCH who is Chair and Secretariat and meets quarterly (as a minimum).

[40] National Centre for Classifications in Health Submission

2B Provision of clinical advice

CCCGs, Clinical Classification and Coding Groups

The Clinical Casemix Committee of Australia (CCCA) has established 23 Clinical Classification and Coding Groups (CCCGs) across a range of speciality areas ranging from Anaesthesia to Plastic Surgery and Respiratory. Clinical concerns with casemix matters are raised to the CCCA rather than directed to CCCG members.

Broadly speaking NCCH relies on CCCG members to provide clinical coding advice in relation to proposed changes to ICD-10-AM/ACHI/ACS and more specifically to provide advice on definitions of particular diseases and where a particular disease should be placed within the classification.

The CCCGs meet 'as required'.

2C Advise on updates to WHO, ICD

The Australian Collaborating Centre on WHO Family of International Classifications (WHO-FIC)

The Network of WHO Collaborating Centres meets annually to further the development, implementation and maintenance of the WHO Family of International Classifications (WHO-FIC). The WHO has designated a number of collaborating centres to work with it in the development, dissemination, maintenance and use of the WHO Family of International Classifications to support national and international health information systems, statistics and evidence[41]. The Australian centre is located at the Australian Institute for Health and Welfare (AIHW). NCCH assists AIHW in its role as a collaborating centre and sits on a number of the WHO classification committees.

Updates and amendments that the WHO makes to the ICD are considered in the revision cycle for the Australian modification ICD-10-AM/ACHI/ACS. The nature and timing of such considerations is as follows:

- recommendations for change to ICD-10 are submitted to the WHO Update and Revision Committee (URC) every March, via a web platform
- online discussion and voting process occurs from March to September – over 100 proposals are considered
- final decision on changes is made during URC sessions at the annual WHO-FIC meeting in October,

NCCH actively participates in these meetings and incorporates all approved changes into ICD-10-AM. WHO-FIC has decided that updating of ICD-10 should continue. Major updates occur each 3 years, the most recent being published in January 2008[42].

A more comprehensive revision process is planned which will result in the development of ICD-11 (scheduled for endorsement in 2014).

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[41] Overview of The WHO-FIC Network (Document supplied by the Department)

[42] National Centre for Classifications in Health Submission

3 Revision of codes

NCCH, National Centre for Classification in Health

The National Centre for Classification in Health (NCCH) maintains the development of health classifications, clinical terminologies and standards that uniformly describe disease, injuries, other health conditions and interventions. They are responsible for:

- *ICD-10-AM-* the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification- disease classification
- *ACHI-* the Australian Classification of Health Interventions- a procedure and intervention classification
- *Australian Coding Standards (ACS) -* guidelines for the consistent assignment of codes for health concepts.

The public submissions and queries made to the NCCH are researched; this involves:

- conducting a literature search
- reviewing other classifications and monitoring national frequencies
- liaison with clinicians and clinical coders as required.

Each proposed revision to the classifications is considered, and a formal proposal written regarding the impact on the classification. The proposals provide background information, including research undertaken and clinical advice received. CSAC members also provide input on these proposals which again may require a number of drafts before final approval for inclusion in ICD-10-AM/ACHI/ACS [43]. Each proposal that is to be included in the new revision must be finalised 12 months before publication[44].

Once the public submissions, queries, updates from the MBS, and updates from the ICD have been analysed, the NCCH produce a proposed revised version of the Australian Coding Classification.

[43] National Centre for Classifications in Health Submission and support documentation

[44] National Centre for Classifications in Health Submission and support documentation

4A Endorse release and implementation of new version

NHISSC, National Health Information Standards and Statistics Committee

The National Health Information Standards and Statistics Committee (NHISSC), is a subcommittee of the National E-Health and Information Principal Committee (NEHIPC). NHISSC is responsible for providing NEHIPC with strategic advice on national health information needs and priorities.

NHISSC assumed the function of the Health Data Standards Committee (HDSC), the Statistical Information Management Committee (SIMC) and the National Health Performance Committee (NHPC) on 1 July 2008. The draft terms of reference indicate that NHISSC advises NEHIPC on the development, implementation and maintenance of the Australian Family of Health and related classifications (including endorsing classifications for inclusion in the family) and endorsing maps to classifications to be used for statistical reporting on national health information.

In 2008 the Department submitted the NCCH proposed changes to ICD-10-AM/ACHI/ACS for the 6th Edition to NHISSC and NHISSC was asked to approve the development/consultation process as being valid for the release prior to implementation of the new version. With previous editions NCCH wrote to the previous equivalent committee to NHISSC regarding the proposed changes.

4B New release to be incorporated in the next AR-DRG upgrade

DoHA, Department of Health and Ageing

Upon the completion of the ICD-10-AM/ACHI/ACS update by NCCH and the endorsement by NHISSC, the ICD-10-AM/ACHI/ACS classification is supplied to the Department of Heath and Ageing to feed into the update of the AR-DRG groupers.

It is important to note that this does not commence the revision process of the AR-DRGs. The new edition of ICD-10 is incorporated at the same time but at present the release of new versions is managed separately.

5 Distribute codes to States and Territories for implementation

NCCH, National Centre for Classification in Health

NCCH release the new edition of ICD-10-AM/ACHI/ACS and the States and Territories purchase it. This includes the release of ICD-10-AM, ACHI, ACS and the electronic e-book.

6A Health authorities distribute files to public and private hospitals and Patient Administration System (PAS) Vendors

Health State/Territory Health Authority

Patient Administration System (PAS) vendors program new data fields into their host interface and/or functional commands associated with each new grouper and new ICD-10-AM/ACHI/ACS code edition.

Public and private hospitals update their systems.

6B Medical Record managers obtain resources from NCCH and organise staff training

Public and Private Hospitals

Medical record managers or the respective HIMs liaise with NCCH to organise the staff training workshops that accompany the release of the latest ICD-10-AM/ACHI/ACS version.

7 Provision of continuing education courses around the updates

NCCH, National Centre for Classification in Health

The NCCH provides education to users of ICD-10-AM, ACHI and ACS relating to the changes made to create the new edition of the classifications[45]. This involves the following:

- upon the release of a new edition, NCCH travels to each of the various jurisdictions and conducts workshops educating coders on the nature of the revisions in the new edition
- in between editions, continuing education material is developed for delivery mid-year after edition implementation
- the function of these face-to-face national workshops is to address key areas of coding following edition implementation.

Feedback on these workshops is obtained from State/Territory representatives on CSAC. A new web-based platform is currently being developed to replace the national pre-edition education workshops.[46]

[45] It is important to note that NCCH does not provide training courses in certifying clinical coders.

[46] National Centre for Classifications in Health Submission and support documentation

8 Coders code medical records using ICD-10-AM/ACHI/ACS version and submit queries to State department

Public and Private Hospitals

Clinical coders begin to code medical records separated as of 1 July using the newly released ICD-10-AM/ACHI/ACS classification. Queries that arise during coding are taken to the State/Territory Coding Advisory Committee meetings (see step 1b).

This is the end of the formal development cycle of the ICD-10-AM/ACHI/ACS. The following steps illustrate:

- how the data collected through the development of the classification is fed into national data repositories
- the interactions that the end users have with the development cycle.

9 Provision of training for entry or further development as clinical coders

HIMAA, Health Information Management Association of Australia

HIMAA Ltd. offers a range of independent study courses by distance education for individuals wishing to develop or enhance their skills in clinical coding for ICD-10-AM, ACHI and ACS. These courses are provided continually throughout the year.

10A Provision of edit rules

AIHW, Australian Institute of Health and Welfare

These edit rules verify that State/Territory data conforms to the specification for data supply.

10B Provision of Check IT software to Health Departments

Department of Health and Ageing

Check IT software verifies that State/Territory data conforms to the specification for data supply. It incorporates the relevant ICD-10 and AR-DRG look-up tables but it is mainly a tool to assist the annual data supply.[47]

[47] Feedback received from the Department of Health and Ageing

11 Hospitals submit data to their respective State/Territory health departments

Public and Private hospitals

Hospitals are only required to supply their respective State or Territory health department with ICD-10-AM/ACHI/ACS data in the most recent version.

12 State departments submit APCNMDS (Admitted Patient Care National Minimum Data Set)

Health State/Territory Health Authority

State and Territory health departments then feed the ICD-10-AM/ACHI/ACS data received from hospitals into their AR-DRG grouper software for analysis (this may or may not involve forward and backward mapping).

13 Admitted Patient Care National Minimum Data Set

DoHA, Department of Health and Ageing and AIHW, Australian Institute of Health and Welfare

The data is passed on to the Australian Institute of Health and Welfare (AIHW) for collation into a national data set (APCNMDS) from which AIHW annually publishes the Australian Hospital Statistics.

The data is also provided to the Department of Health and Ageing pursuant to the Australian Health Care Agreements (AHCAs). The data set is used in many other national reports, notably the State of our Public Hospitals, published annually under the AHCAs.[48]

14 Error records set

DoHA, Department of Health and Ageing and AIHW, Australian Institute of Health and Welfare

Error records noticed by either the Department or AIHW can often be used to feed into public submissions and queries that are to be considered in the next revision cycle.

[48] National Centre for Classifications in Health Submission

APPENDIX F. Mapping of the AR-DRG development cycle

Overview of the AR-DRG development cycle

The following is an overview description of the AR-DRG development cycle, refer for, Figure 3, the corresponding swim lane diagram.

The Department is responsible for the update, development and maintenance of AR-DRGs.

The revision process for AR-DRGs begins immediately after a new release of the AR-DRGs. The DRG revisions mainly address changes requested by users through public submissions and identified through statistical analysis. The public submission form can be downloaded from the Department's website and emailed or posted to the Department.

Each recommendation goes through a process which involves clinical review and data analysis. Clinical advice is obtained from the clinical committees – Clinical Casemix Committee of Australia (CCCA) and Clinical Classification and Coding Groups (CCCG).

The Department has created 'Toolkit' software and a 'CRASS' statistical application to develop and test the AR-DRG algorithms. For each recommendation, the data analysis includes the following steps:

i. Creating a 'Toolkit' chart and implementing the changes in the chart
ii. Generating statistical reports from CRASS or Toolkit and interpreting the results
iii. Writing up the Commonwealth's proposal on whether to accept or reject the recommendation (based on clinical review and data analysis).

The new editions of ICD-10-AM/ACHI/ACS are then incorporated into the AR-DRG development and the Department runs a series of programs which perform the following:

- check the ICD ASCII and Mapping files (supplied by NCCH)
- build ICD Description Files
- build ICD Mapping Files used for Toolkit Update
- build ICD (multi-version) Mapping Files
- update ICD (25 character) Short Description Files
- review and Update X05PGP and X05DGP Files
- build ICD Formats
- compare NCCH ASCII Files and NCCH Final Supply[xlix]

The Department submits proposed changes to AR-DRG to NHISSC and NHISSC are asked to approve the development/consultation process as being valid for the release prior to implementation of the new version.

Designated software developers then obtain the specifications and manuals for the AR-DRG groupers from the Department under a licence agreement and accordingly develop the new AR-DRG grouper software and integrate it into their products. With each new release of the AR-DRG classification system

[xlix] AR-DRG v6.0 Classification Development Documentation (Document supplied by the Department)

the Department undertakes comprehensive testing of the grouper software to confirm that it correctly implements the classification, and if so issues a Certificate of Acceptance[l]. Currently certification is limited to four software vendors.

State and Territory health authorities purchase the AR-DRG grouper software from the software developers. Some health authorities purchase a State licence and distribute this to all public hospitals.

It is important to note that while the uptake of the ICD-10-AM/ACHI/ACS is mandated, the uptake of AR-DRG classification is not. As such, each State and Territory and private sector insurer or hospital makes their own decision in regards to whether they will implement the new release of the AR-DRG classification.

In States where no State licence is purchased, individual hospitals decide if they will purchase the grouper software. Sites with DRG grouper software upgrade their IT systems. Sites without grouper software purchase the manuals from NCCH.

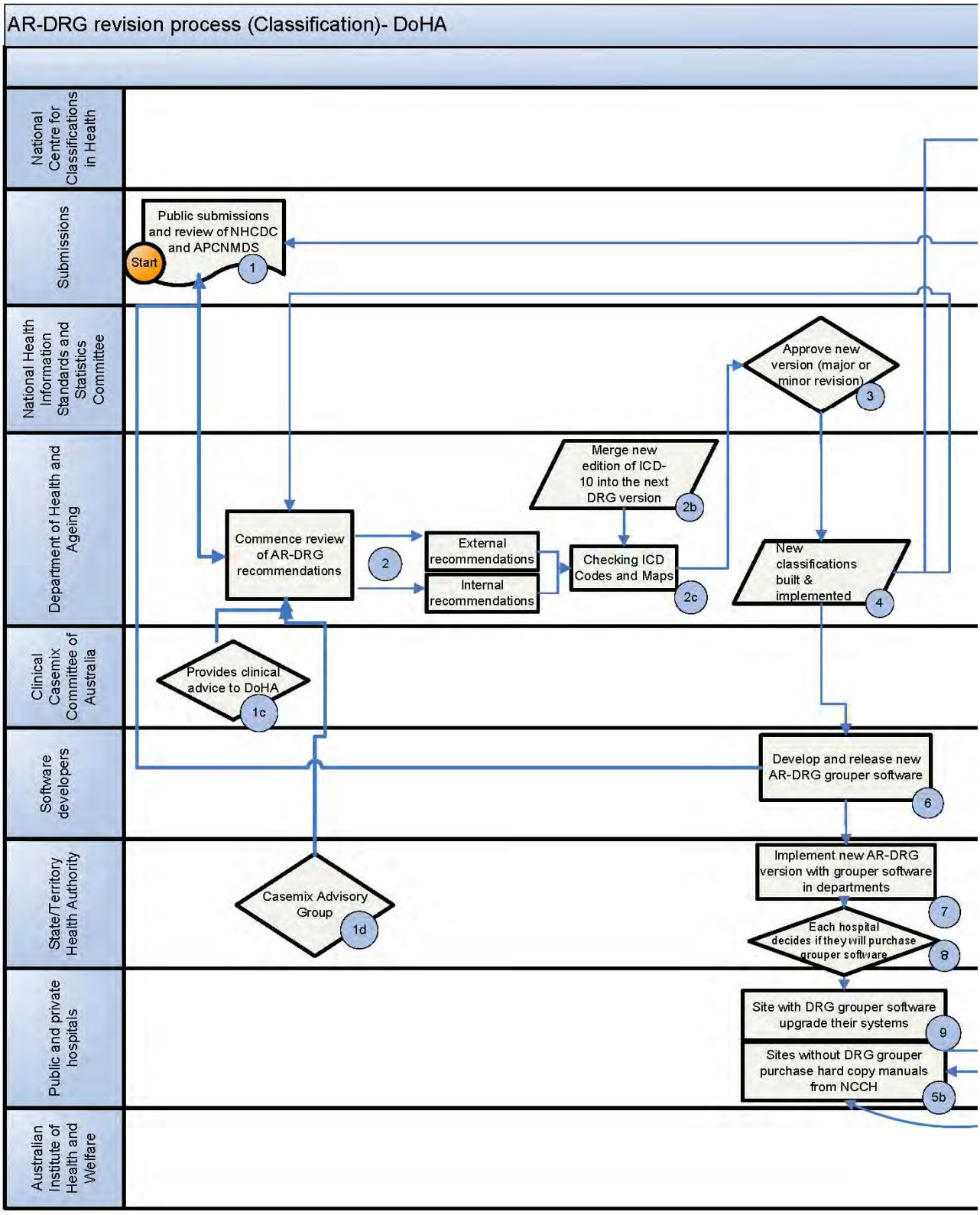
The NCCH distributes the AR-DRG manuals for the Department. Under current arrangements NCCH retains a shareof the revenue from the sale of the AR-DRG manuals.

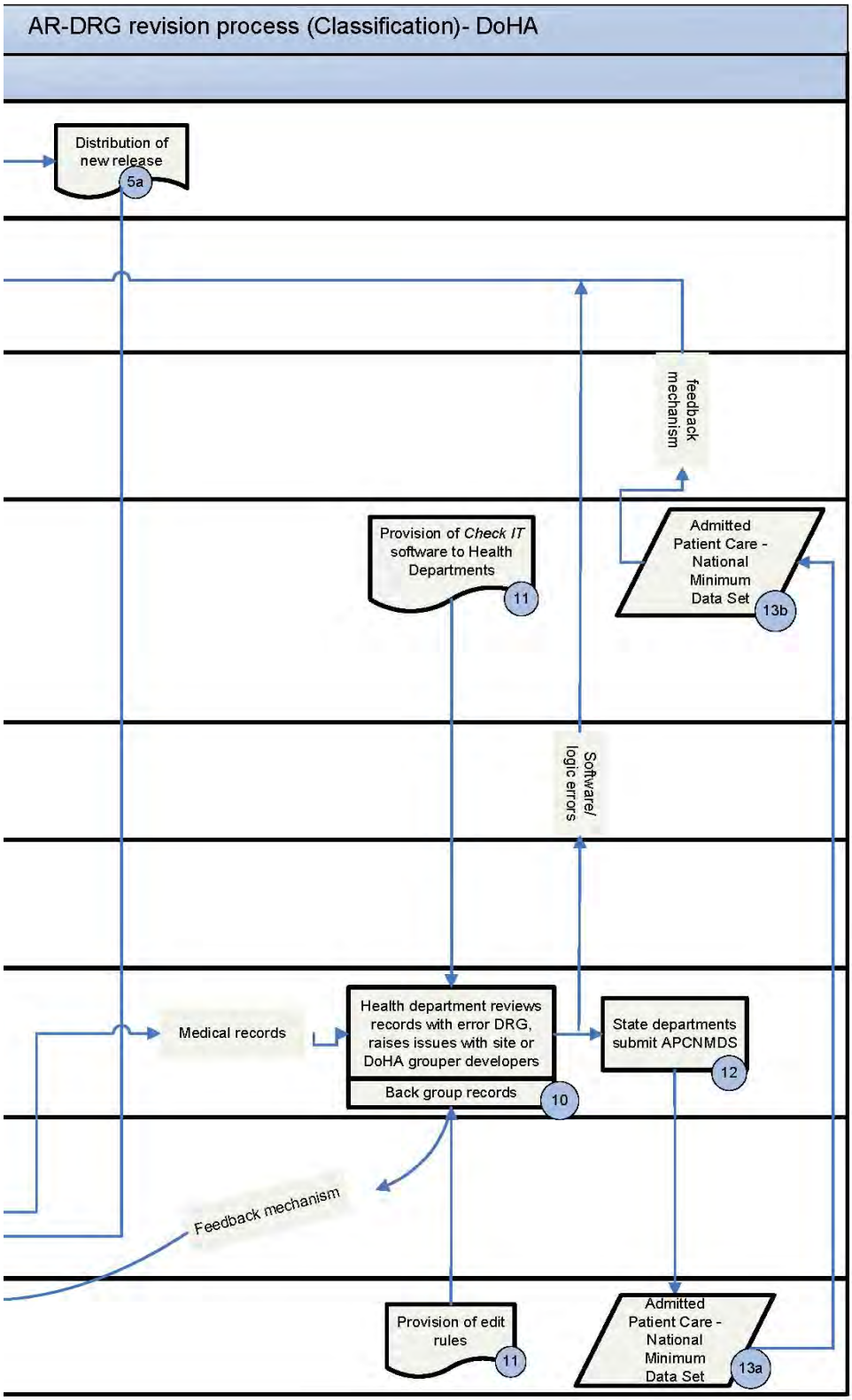
States and Territories group the ICD-10-AM/ACHI/ACS data provided by the hospitals with the new grouper. The State health departments identify ‘error’ DRGs and research these issues with the relevant hospital or raise the issue with the Department grouper developers. States and Territories then submit this minimum dataset – the Admitted Patient Care National Minimum Data Set (APCNMDS) to AIHW and the Department. Any error records that are picked up during data analysis by AIHW and/ or the Department are fed back into the development cycle through the public submission process.

Refer to Figure 3 on the following page for the swim lane diagram of the AR-DRG development cycle.

[l] Overview of the Classification System, pg1 (Document supplied by the Department)

Figure 3 AR-DRG classification development process




AR-DRG revision process (Classification)- DoHA
Distribution of new release
5a
feedback mechanism
Provision of Check IT software to Health Departments
11
Admitted Patient Care - National Minimum Data Set
13b
Software/ logic errors
Medical records
Health department reviews records with error DRG, raises issues with site or DoHA grouper developers
Back group records
10
State departments submit APCNMDS
12
Feedback mechanism
Provision of edit rules
11
Admitted Patient Care - National Minimum Data Set
13a

The following tables provide detailed explanations of the AR-DRG development and update process. The information below is referenced to each step in the 'swim lane' diagram, Figure 3. Note that the information presented below represents the 'as is' process which is mandated by terms of reference, contracts, etc.

1 Public submissions and review of NHCDC and APCNMDS

DoHA, Department of Health and Ageing

The revision process for AR-DRGs begins immediately after a new release of the AR-DRGs. DRG revisions mainly address changes requested by users through public submissions and identified through statistical analysis.[51] The AR-DRG public submission form can be downloaded from the Department's website and emailed or posted to the Department.

1A Provides clinical advice to DoHA

CCCA, Clinical Casemix Committee of Australia and CCCGs, Clinical Classification and Coding Groups

The role of the Clinical Casemix Committee of Australia (CCCA) is to provide clinical advice to the Department. The members are appointed on the basis of clinical expertise and are available to provide clinical input into the development process of the AR-DRGs. The CCCA has established 23 Clinical Classification and Coding Groups (CCCGs) across a range of speciality areas ranging from Anaesthesia to Plastic Surgery and Respiratory. When matters arise which require particular or additional expertise, the CCCA consults the Clinical Classification and Coding Groups (CCCGs).

1B Casemix Advisory Group

State/Territory Health Authorities

Consultations with stakeholders reveal that the Casemix Advisory Committee is a collection of State and Territory representatives that are reconvened in Canberra in an ad-hoc manner to provide feedback and comments on the development of the AR-DRGs.

[51] From feedback regarding the process diagram, Department of Health and Ageing

2 Commence review of internal and external AR-DRG recommendations

Department of Health and Ageing

Each recommendation goes through a process which involves clinical review and data analysis. Preferably, clinical advice is obtained first to give direction; this is then followed up by data analysis to test the advised changes. More often, clinical advice is not available and data analysis is done first for the proposed changes. The effects from the changes are then presented to clinicians to comment on. [52]

For each recommendation, the data analysis includes the following steps:

- creating a Toolkit chart and implementing the changes in the chart
- generating statistical reports and interpreting the results
- writing up the Commonwealth's proposal whether to accept or reject the recommendation (based on clinical review and data analysis). [53]

It is important to note that around 35% of the recommendations reviewed come from external sources (public submissions) while the remainder are generated by Department staff.

2B Merge new edition of ICD-10 into the next DRG version

Department of Health and Ageing

The AR-DRG development work is undertaken on a two year cycle which aligns with the revision of ICD diagnosis and procedures codes. For AR-DRG v6.0, the whole development period was from October 2006 to September 2008. Within this period, the recommendation analysis period available was from October 2006 to March 2008, as the new DRG classification was built and implemented from April 2008 to September 2008.

The NCCH publishes the new edition ICD codes in the ICD-10-AM manuals. These files are commonly referred to as the ASCII files. Experience shows there are differences between the final supply of ICD code files from the NCCH to the Department and the ASCII files published by the NCCH. These differences need to be analysed to determine the impact on the AR-DRG new version Classification e.g. Toolkit, ICD files and formats used for reporting. If possible, this checking should be done earlier in the classification development, so these differences can be incorporated into the developer contract materials and the definitions manuals[54].

[52] AR-DRG v6.0 Classification Development Documentation, pg 9 (Document supplied by the Department)

[53] AR-DRG v6.0 Classification Development Documentation, pg 10 (Document supplied by the Department)

[54] AR-DRG v6.0 Classification Development Documentation.

2C Checking ICD Codes and Maps

Department of Health and Ageing

The Department has a series of programs to perform the following:

- check the ICD ASCII[55] and Mapping files (supplied by NCCH)
- build ICD Description Files
- build ICD Mapping Files used for Toolkit Update
- build ICD (multi-version) Mapping Files
- update ICD (25 character) Short Description Files
- review and Update X05PGP and X05DGP Files
- build ICD Formats
- compare NCCH ASCII Files and NCCH Final Supply.[56]

3 Approve new version (major or minor revision)

NHISSC, National Health Information Standards and Statistics Committee

NHISSC is a newly formed committee which is an amalgamation of three previous committees; its terms of reference are yet to be confirmed. The draft terms of reference indicate that NHISSC advises NEHIPC on the development, implementation and maintenance of the Australian Family of Health and related classifications (including endorsing classifications for inclusion in the family) and endorsing maps to classifications to be used for statistical reporting on national health information. The Department submits proposed changes to AR-DRG to NHISSC and NHISSC are asked to approve the development/ consultation process as being valid for the release prior to implementation of the new version.[57]

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[55] The NCCH publishes the new edition ICD codes in the ICD-10-AM manuals. These files are commonly referred to as the ASCII files.

[56] AR-DRG v6.0 Classification Development Documentation (Document supplied by the Department)

[57] Documentation of approval process by NHISSC is based on discussions with stakeholders.

4 New classifications built and implemented

Department of Health and Ageing

The AR-DRG Classification Development Toolkit is an integral part of the DRG development process. The Toolkit system performs 5 major AR-DRG classification development tasks:

- *Charter Builder*- build and maintain AR-DRG classification rules and ICD code table definitions and specifications
- *Mapping*- map an existing AR-DRG classification to a new ICD-10 edition
- *Documentation*- produce detailed documentation associated with each set of classification definitions developed
- *Analysis*- analyse proposed modifications to the classification (Analysis)
- *SAS*- produce the SAS program to group data to an AR-DRG classification.[58]

5A Distribution of new release

NCCH, National Centre for Classification in Health

NCCH functions as a distribution centre for the AR-DRG manuals; under current arrangements NCCH retain 50% of the revenue from the sale of the manuals. The AR-DRG Classification consists of:

- the AR-DRG Classification (DRG classification rules in electronic format)
- the AR-DRG Definition Manual (DRGs Classification in hard copy format, three volumes).[59]

6 Develop and release new AR-DRG grouper software

Software developers

Software developers obtain the specifications and manuals for the AR-DRG groupers from the Department under a licence agreement and accordingly develop the new AR-DRG grouper software and integrate it into their product range. With each new release of the AR-DRG Classification System the Department of Health and Ageing undertakes comprehensive testing of the grouper software to confirm that it correctly implements the Classification, and if so issues a Certificate of Acceptance[60]. .For more detail on the Software development process see, 0: Additional process flows, Figure 19.

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[58] AR-DRG v6.0 Classification Development Documentation.

[59] Overview of the Classification System, pg1 (Document supplied by the Department)

[60] Overview of Casemix in Australia (Document supplied by the Department)

7 Implementation of new AR-DRG version with grouper software

State/Territory Health Authority

State and Territory health authorities purchase the AR-DRG grouper software from the software developers. While the uptake of the ICD-10-AM/ACHI/ACS is mandated, the uptake of AR-DRG classification is not. As such, each State and Territory makes their own decision in regards to weather they will in fact implement the new release of the AR-DRG classification.

Software developers supply their products to State and Territory health authorities, and separately to private and public hospitals and insurance funds.

8 Each hospital decides if they will purchase grouper software

Public and Private Hospitals

Hospitals are not required by legislation to use the AR-DRG groupers. Some hospitals however value the insights that the availability of this data provide. Virtually all hospitals have a Patient Administration System (PAS) which gets updated for new editions of ICD-10-AM/ACHI/ACS but may or may not need updating for AR-DRG depending on whether the software provides DRG functionality[61]. As such, each hospital makes their own decision as to whether they will purchase the AR-DRG grouper.

9 Sites with DRG grouper software upgrade their systems

Public and Private Hospitals

Sites that have grouper software in place contact their software vendor and arrange an update.

9B Sites without code finders purchase hard copy of manuals from NCCH

Public and Private Hospitals

Small private organisations, e.g. day facilities, probably have more basic PAS with neither ICD-10 nor AR-DRG but instead may have a Medicare Benefits Schedule (MBS) focus. In these cases the ICD-10 coding will be done manually by administrative staff when making the health fund claim.

[61] 3M's *Codefinder* product provides this functionality, at present it is estimated that 3M service 80% of the market

10 Health department reviews records with error DRGs, raises issues with site or DoHA grouper developers, back grouping of records usually takes place at this point in time

Public and Private Hospitals

Hospitals are only required to supply their respective State or Territory health department with ICD-10-AM/ACHI/ACS data in the most recent version. State and Territory health departments then feed this data into their AR-DRG grouper software for analysis.

The extent to which each State and Territory health department utilises this AR-DRG data varies depending on the relative emphasise they place on casemix funding.

The remaining steps 11-13 are identical in description to those discussed for the ICD-10-AM/ACHI/ACS revision process above.

APPENDIX G. Additional process flows

This appendix contains extended process flows. In particular of:

- the NCCH public submission
- the NCCH query process for ICD-10-AM/ACHI/ACS
- a more detailed account of the software development process.

Figure 19 Public Submission Process for ICD-10-AM/ACHI/ACS

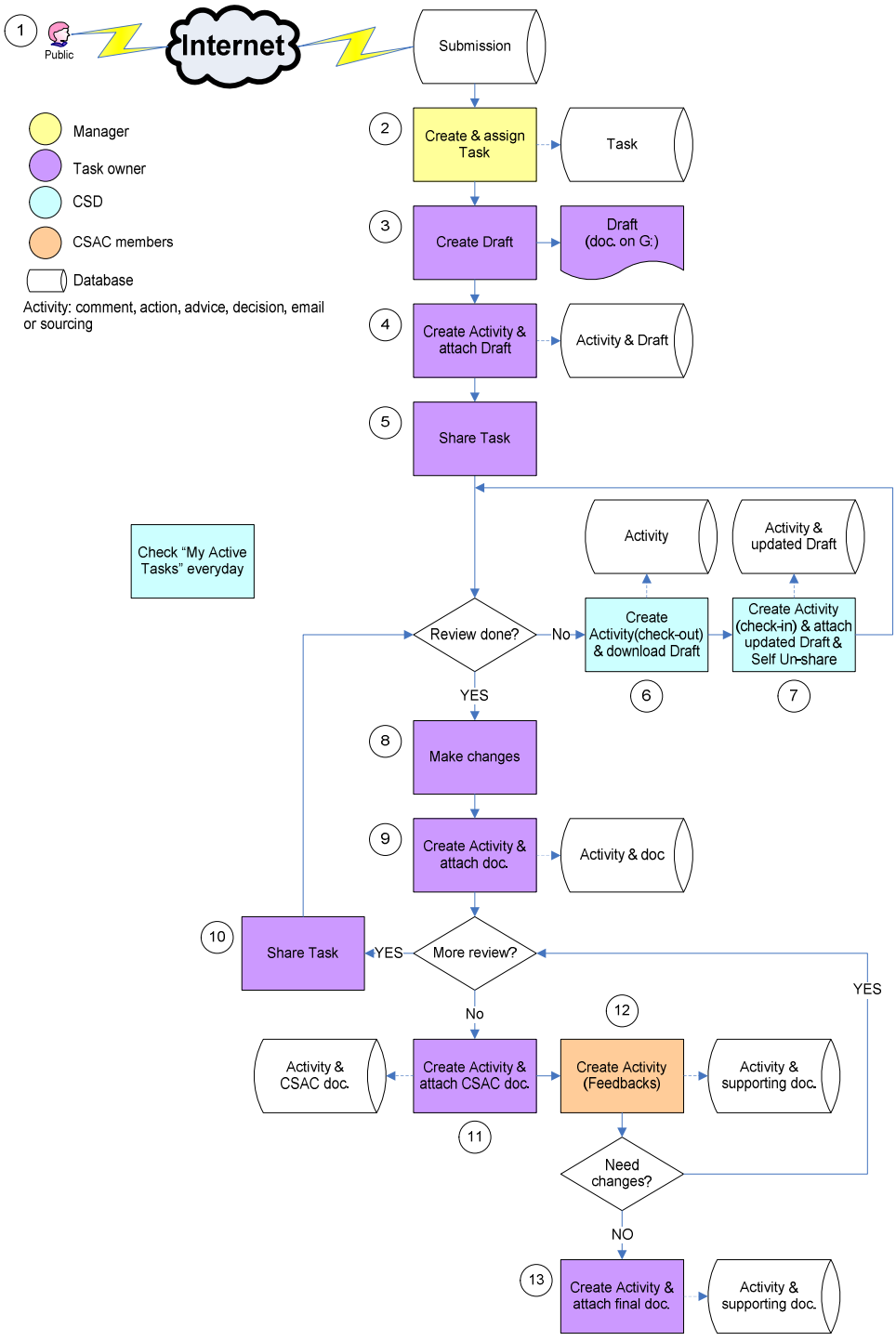


Figure 20 NCCH Query Process for ICD-10-AM/ACHI/ACS

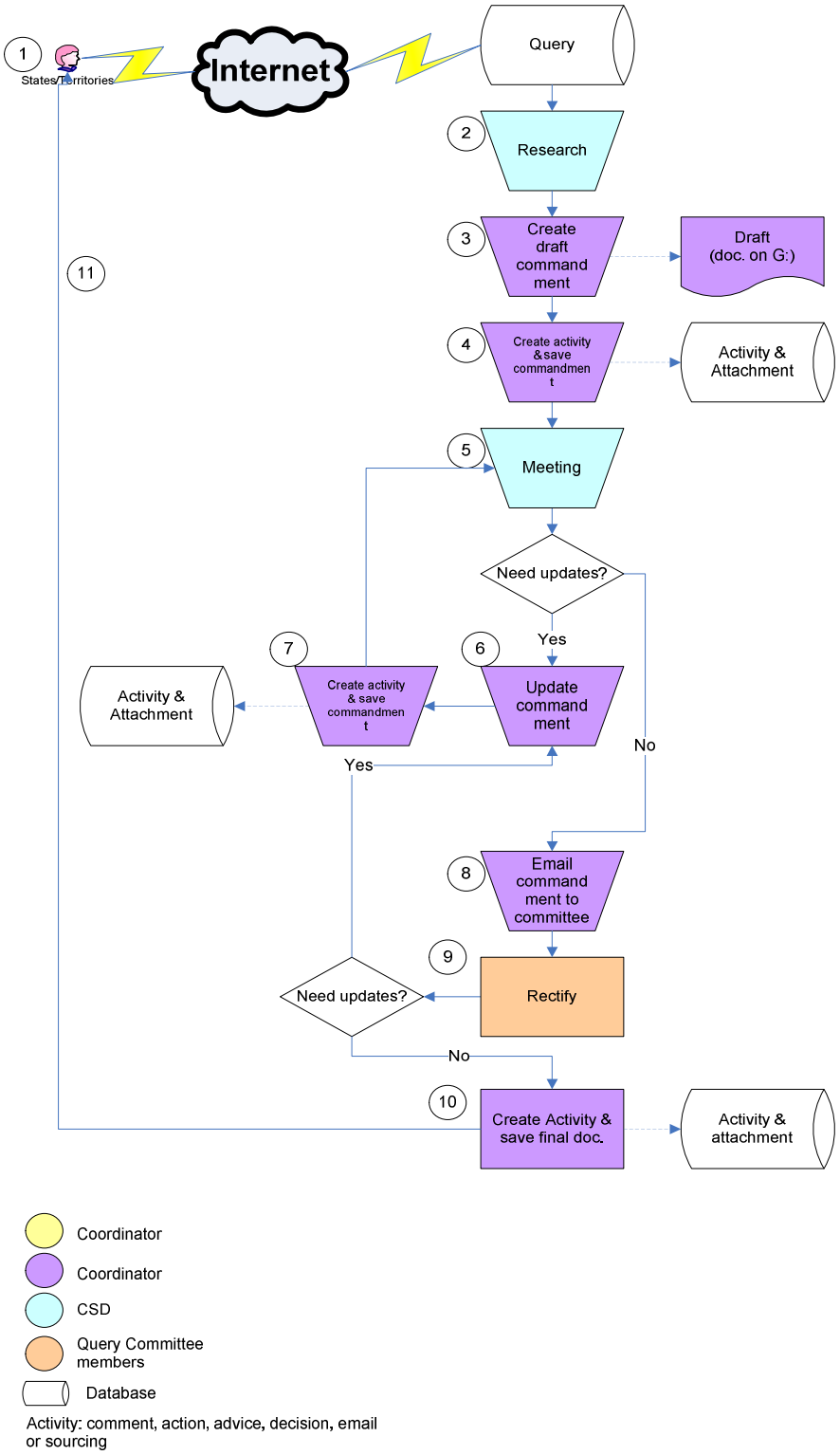
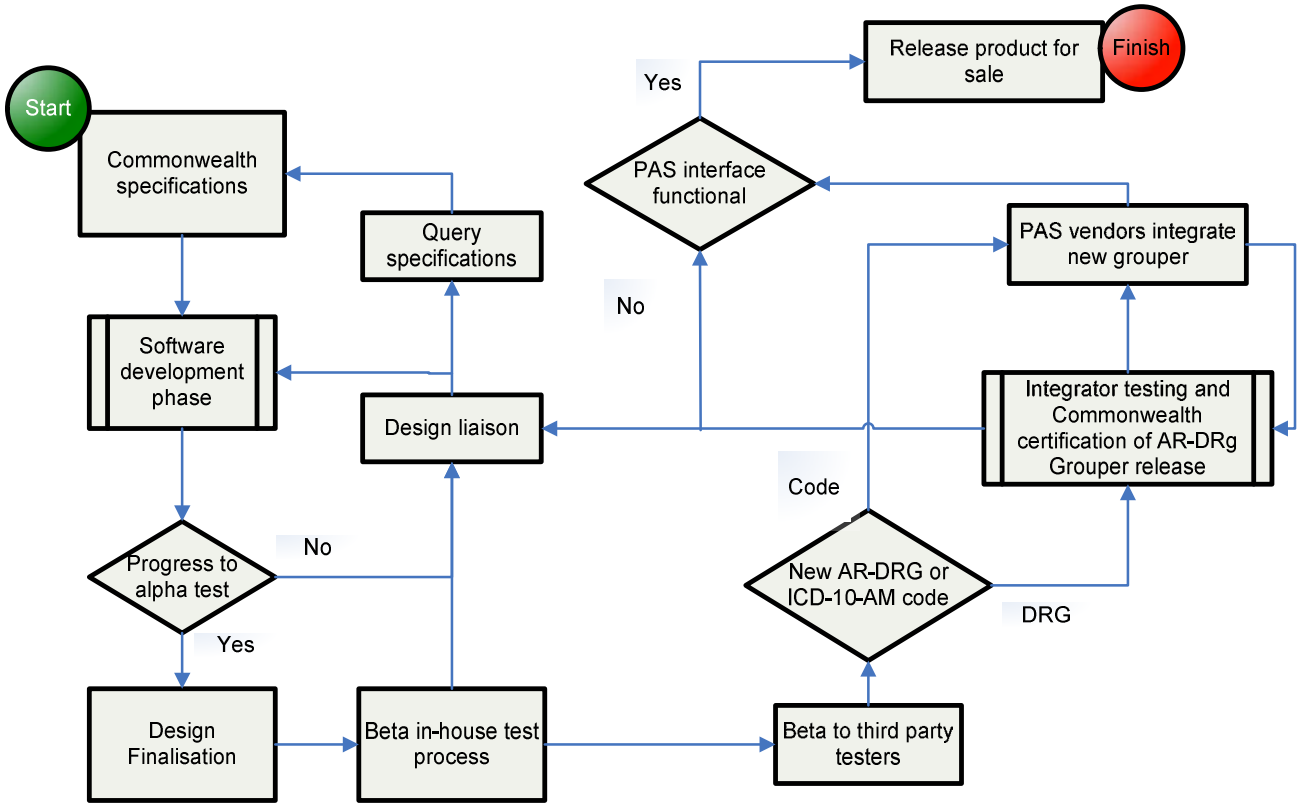


Figure 21 Software development process



APPENDIX H. Document review and submissions

Documents supplied by the Department

- Overview of Casemix in Australia
- Overview of the Classification System
- Clinical Casemix Committee of Australia terms of reference and overview of the Clinical Classification and Coding Groups
- Overview of NCCH Committees and terms of reference
- The WHO-FIC Network, October 2003
- Management of International Sales of the AR-DRG Classification System, October 2008, Version 1.0
- Review of Pricing for the International Sale of the AR-DRG Classification System. April 2006. Prepared by KPMG in association with SAC Pty Ltd.
- Sample Licence Deed for Purchase of the AR-DRG Classification System
- Council of Australian Governments Meeting, Canberra, 29th November 2008, Communiqué
- Overview of the National Health Information Standards and Statistics Committee and the Health Sector approval process
- National Health Information Standards and Statistics Committee DRAFT Terms of Reference and Business Rules, July 2008.
- Evaluation of Hospital Information and Performance Information Program. Final Report 7th November 2008. Prepared for the Department of Health and Ageing Commonwealth Government. Fresbout Consulting.
- Contract for Services between Commonwealth of Australia and The University of Sydney for Services provided through the National Centre for Classifications in Health in relation to ICD-10-AM/ACHI/ACS clinical classification and related terminologies
- Deed of Variation: AR-DRG Grouper Software and Classifications
- Department presentation presented on the 13th January 2009 at the project kick-off-meeting
- Department of Health and Ageing Organisational Charts
- AR-DRG v6.0 Classification Development Documentation
- AR-DRG Classification Development Toolkit
- Details on International Licensing Arrangements and Sales Table
- Sample Authorisation of ICD-10

Submissions received

- National Centre for Classifications in Health
- 3M Health Information Systems, Inc.
- Queensland Health
- Australian Institute of Health and Welfare, Julie Roediger
- Department of Health and Ageing

Feedback regarding the process diagram was received from:

- Professor Kathy Eagar
- Australian Bureau of Statistics, Sally Goodspeed
- Australian Institute of Health and Welfare, Julie Roediger
- 3M Health Information Systems, Inc.
- National Centre for Classification in Health
- Department of Health and Ageing

Additional information was supplied by:

- National Health Information Standards and Statistics Committee: Template and Case Study example of a Business Case supplied by the States
- NSW Health, provided additional information regarding the Cerebrovascular Evaluation case study
- Queensland Health, provided additional information regarding the Diabetes Case Study

Additional publicly available documents:

- National Health Information Agreement 2004 – 2009
- Department of Veterans' Affairs 2007-2008 Annual Report. Accessed via http://www.dva.gov.au/media/aboutus/annrep08/index.htm

APPENDIX I. Stakeholders consulted

The following is a list of stakeholders consulted as part of this review. Stakeholders are broadly organised into the following categories: Organisations involved in the System development production process, End users of the System and Other. Stakeholder names are organised alphabetically by organisation within each relevant category.

Organisations involved in the production process

Clinical Casemix Committee of Australia (CCCA)/ Clinical Classification and Coding Group (CCCG)

- Dr Terry Finnegan, Senior Staff Specialist Geriatrician, Royal North Shore Hospital. Also a CSAC member

Coding Standards Advisory Committee (CSAC)

Note that the following people were consulted as a group during the 20 February 2009 CSAC meeting. The majority of the members were also consulted as part of the interview process and their names and titles are listed again in the relevant stakeholder sections.

- Mr George Bodilsen, AIHW
- Ms Kay Bonello, (Private)
- Ms Jillian Burgoyne, NT
- Ms Karyn Chen NCCH
- Ms Megan Cumerlato, NCCH
- Ms Vera Dimitropoulos, NCCH
- Ms Kerri Doyle, NCCH
- Ms Anne Elsworthy, NCCH
- Dr Terry Finnegan, CCC
- Ms Sharon Gibbons, ACT
- Ms Bronwyn Graham, NCCH
- Ms Andrea Groom, CCSA
- Professor Richard Madden, NCCH
- Ms Corrie Martin, Qld
- Ms Kirstie Mountain, Tas
- Ms Narelle Portakiewicz, SA
- Ms Jennie Shepheard, Vic
- Ms Lyn Williams, HIMAA
- Ms Mary-Ellen Wetherspoon, NZ

Department of Health and Ageing (DoHA)

- Mr Peter Callanan, Director of Private Health Services Branch
- Ms Chulee Chantree, Project Officer, Hospitals Section, Private Health Insurance Branch
- Ms Karen Chudleigh, Director, Casemix and Reporting
- Mr William Crawford, Classification Development Section, Acute Care Division
- Ms Jaki Forbes, Assistant Director, Hospitals Section, Private Health Insurance Branch
- Mr David Hennessy, Director of the Medicare Specialist Services Review Section, Medicare Benefits Branch, Medical Benefits Division
- Mr Kelvin King, Director of the Classification Development Section, Acute Care Division
- Mr Caleb Leung, Classification Development Section, Acute Care Division
- Mr Nathan Maslen, Senior Legal Officer, Information Law Section, Legal Services Branch
- Ms Robyn Milthorpe, Mental Health Reform Branch
- Mr Christoper Mount, Primary and Ambulatory Care Division
- Ms Mila Nastachevskaia, Classification Development Section, Acute Care Division
- Ms Jodee Ogbonna, Costing and Casemix Section, CSAC member
- Mr Fred Van Dijk, Senior Legal Officer, Information Law Section, Legal Services Branch

National Centre for Classification in Health (NCCH)

- Mr Rodney Bernard, Publications Manager
- Ms Megan Cumerlato, Education Coordinator
- Ms Vera Dimitropoulos, Classification Support Manager
- Professor Richard Madden, Director of NCCH and Chair of CSAC
- Dr Kirsten McKenzie, Research Fellow, NCCH, School of Public Health, Queensland University of Technology
- Ms Tina Stanhope, Office Manager
- Mr Young Tjoa, Systems Manager
- Ms Sue Walker, Associate Director, NCCH, School of Public Health, Queensland University of Technology

Health Information Management Association of Australia (HIMAA)

- Mr Bob Blue, Executive Officer
- Ms Ragni Lal, Educator Clinical Coding
- Ms Lyn Williams, Team Leader Education Services

End users

Australian Institute of Health and Welfare (AIHW)

- Dr Penny Allbon, Director. Also a member of NHISSC
- Mr George Bodilsen, Head, Hospitals Unit
- Ms Julie Roediger, Deputy Director
- Mr Gordon Tomes, Information and Strategy Group

Department of Veterans' Affairs

- Mr Richard Bartlett, Primary Care Policy Group. Also a member of NHISSC

Software companies

- Mr Michael J Burdon, 3M Australia Pty Ltd
- Ms Katrina Gins, 3M Australia Pty Ltd
- Mr Douglas Henry, Total Care Integrative Health Systems Pty Ltd
- Mr Alan Hodkinson, Visasys Pty Ltd
- Mr Bruce Roberts, 3M Australia Pty Ltd

Private insurance

Australian Health Insurance Association

- Mr Wayne Adams, Chief Information Officer (CIO)

Australian Health Service Alliance

- Dr Brian Hanning, Medical Director
- Ms Nicole Predl, Health Information Manager (HIM)

BUPA

- Mr Robert Nikolovski, Policy Operations Manager

HCF

- Dr Andrew Cottrill, Medical Director

Medibank Private

- Mr David Macqueen, Manager of Benefit Analytics

Private hospitals

Catholic Health Australia

- Mr Patrick Tobin, Senior Policy Advisor

Healthscope

- Ms Michelle Dixon, Health Information Manager
- Ms Sarah Harrop, Health Information Manager
- Ms Margot McCarthy, Health Fund Contract Manager / Analyst
- Ms Judith Wenborn, Health Fund Contract Manager
- Australian Private Hospital Association – declined to participate

State and Territory health authorities and public hospitals

Australian Healthcare & Hospitals Association (AHHA)

- Dr Paul Tridgell

Australian Capital Territory (ACT)

- Ms Jane Boke, Senior Policy Officer, Health Economics Unit, ACT Health
- Ms Jacinta George, Manager, Health Services Planning, ACT Health
- Mr Phil Ghirardello, Manager, Health Performance Unit, ACT Health
- Ms Sharon Gibbons, Clinical Coding & Casemix Manager, The Canberra Hospital. Also a CSAC member
- Ms Myra Navarro, Manager, Health Economics Unit, Government Relations & Planning Division, ACT Health

New South Wales (NSW)

- Mr Peter Brandt, Acting Director, Data Collections and Reporting, Demand and Performance Evaluation Branch, NSW Health. Also a member of NHISSC
- Ms Amelia Chee, Clinical Information Specialist, Data Collections and Reporting, NSW Health
- Ms Eui-Soo Choi, Manager, Data Collection and Quality, NSW Health
- Mr Vineet Makhija, NSW Clinical Costing Coordinator, Casemix Policy Unit, NSW Health
- Ms Elvira Zykov, Policy Analyst, Casemix Policy Unit, NSW Health

Northern Territory (NT)

- Ms Jillian Burgoyne, Health Information Manager, Alice Springs Hospital. Also a CSAC member
- Ms Nicola Ganley, Hospital Information Systems, NT Health
- Mr Robert Hendriks, Hospital Information Systems, NT Health
- Mr Gary Inglis, Reporting Unit, NT Health
- Ms Kristine Luke, Senior Business Analyst, Acute Care Information Services. Also a member of NHISSC

- Ms Mary McKay, Coding Gove District Hospital, NT Health
- Mr Joseph Solly, Data Warehouse, NT Health

Queensland (Qld)

- Ms Sue Cornes, Senior Director, Health Statistics Centre, Centre for Healthcare Improvement, Qld Health. Also a member of NHISSC
- Ms Corrie Martin, Assistant Manager, Statistical Data Standards, Statistical Standards Unit, Qld Health. Also a Queensland Coding Committee (QCC) member and CSAC member
- Ms Sandra Martin, Statistical Standards Unit, Qld Health

Tasmania (Tas)

- Mr Kevin Ratcliffe, Health and Human Services

South Australia (SA)

- Dr David Filby, Executive Director, Policy and Intergovernment Relations Division, SA Health. Also Chair of NHISSC
- Ms Rhonda Pfeiffer, Medical Record Advisory Division, SA Health. Also a CSAC member
- Mr Kym Piper, Director Health Intelligence, SA Health

Victoria (Vic)

- Ms Julie Brophy, Manager, Funding Models Unit, Metropolitan Health and Aged Care Services, Department of Human Services (Vic)
- Mr Mark Gill, Assistant Director, Health Information, Metropolitan Health and Aged Care Services, Department of Human Services (Vic). Also a member of NHISSC
- Ms Jennie Shepheard, Senior Health Information Manager Advisor, Health Data Acquisition, Health Information Funding and Health Information Policy, Metropolitan Health and Aged Care Services, Department of Human Services (Vic). Also a CSAC member

Western Australia (WA)

- Mr Gerard Montague, Acting Director Health Finance Business & Financial Modelling, WA Health
- Ms Elisabeth Sallur, Program Manager, Data Collections and Analysis Information Management & Reporting Directorate, WA Health
- Mr Tony Satti, Program Manager, Health Data Collections Information Management & Reporting Directorate, WA Health
- Ms Lucelle Veneros, Acting Director of Information Management & Reporting Directorate, WA Health. Also a member of NHISSC

Other

Academics

- Professor Kathy Eagar, Director, University of Wollongong, Centre for Health Service Development
- Associate Professor MaryLou Fleming, Head, School of Public Health at Queensland University of Technology (QUT)
- Mr Alan Owen, Senior Research Fellow, University of Wollongong, Centre for Health Service Development

Australian Commission on Safety and Quality in Health Care (ACSQHC)

- Professor Chris Baggoley, Chief Executive ACSQHC

Medicare Australia

- Mr Rory King, Manager, Information Strategy & Delivery
- Mr Peter Thomson, Manager, Legal, Privacy & Information Services. Also a member of NHISSC

International consultations

Canada

- Mr Robert Varga, PricewaterhouseCoopers, Canada
- Mr Jeff Hatcher, Canadian Institute for Health Information

France

- Mr Olivier Paul, PricewaterhouseCoopers, France
- Ms Ariane Piana-Rogez, PricewaterhouseCoopers, France

United States of America

- Ms Marge Jones, PricewaterhouseCoopers, United States of America

Germany

- Mr Andreas Tiete, PricewaterhouseCoopers, Germany

Netherlands

- Mr Martijn Roos, PricewaterhouseCoopers, Netherlands

Denmark

- Mr Jesper Tüchsen, PricewaterhouseCoopers, Denmark
- Mr Kell Andersen, National Board of Health

Sweden

- Mr Carl-Åke Elmersjö, PricewaterhouseCoopers, Sweden
- Mr Olafr Steinum, Expert Adviser Nordic Centre for Classifications in Health Care WHO-FIC Collaborating Centre in the Nordic Countries

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