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Integrating Economic and Clinical Evidence, Guidelines and Equity into National Regulation and Financing:
Reforms for the Australian Health Care Agreements (AHCA): 2009 and Beyond

By

Dr Kathryn Antioch
BA (Hons) MSc (UBC) AFCHSE CHE PhD (Health Economics)

Principal Management Consultant
Health Economics and Funding Reforms
National Health Committee, National Health and Medical Research Council (NHMRC)*
Working Committee, Lead, NHMRC*
Standing Scientific Committee, International Health Economists Association (IHEA)
Board member, Guidelines and Economists Network International (GENI)
Honorary Senior Lecturer, Department of Epidemiology and Preventive
Medicine Monash University.

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The risk adjustment reforms in this paper were presented by Dr Kathryn Antioch as an invited speaker at the International Actuarial Association: Health Section 2007 Colloquium, Cape Town, South Africa, in her paper "*Risk Adjustment in Health Financing Internationally: Implications for Reforms by Australian Federal Governments and State Governments and the Health Industry*". She presented the Evidence Based Medicine work undertaken across six Victorian teaching hospitals in all Australian States and Territories and New Zealand during 2007 in the national seminar series sponsored by the Australian Health Care Association (AHA) and Womens & Childrens' Hospital Australasia in the context of the re-negotiation of the AHCA 2009 "*Lessons in Integrating Economic and Clinical Evidence into Clinical Practice*", in Hungary, Europe as the Pre-Conference Workshop of the European Health Economists Conference (2006), and at the International Health Economists Association (IHEA) conference in Denmark (2007). This consolidated paper was prepared for the European Health Economists Conference, Guidelines and Economists Network International (GENI) Satellite Session (July, 2008), in Italy with the presentation provided to all speakers including World Bank, World Health Organisation and international health economists. It was not finally presented due to inability of the author to attend the Conference in Italy.

Abstract

A reform agenda for the 2009 AHCA re-negotiation involves two areas. Firstly, the integration of economic and clinical evidence and Clinical Practice Guidelines into clinical practice using National Health and Medical Research Council (NHMRC) and international methodology and the introduction of a new national program. Secondly, the reforms can improve the equity of the AHCA formulae and index using risk adjustment to align funding with health need. Both reforms build on successful Victorian initiatives, including risk adjustment reforms of casemix funding and implementation of cost effective evidence based practice across two large hospital networks, Bayside Health and Western Health. The reforms incorporate the views of national and international stakeholders obtained in several forums during 2006, 2007 and 2008. They also address the key imperatives of the National Health and Hospitals Reform Commission identified in 2008 and integrate their performance indicators and benchmarks.

Equity can be achieved through risk (severity) adjustment of the formula and index by using either Diagnostic Cost Group – Hierarchical Condition Categories (DCG-HCC) relative risk scores or Diagnostic Related Group (DRG) cost weights. AHCA formulae changes for State specific or national risk adjusted weighted population factors can assess changes in health status by age and sex over time nationally or by State. Differences between the population weights in the current AHCA and those using risk adjustment, and their impact on funding, can be analysed. One risk adjustment option considers risk adjusting the base year population weights only. The current AHCA only uses the national base year population rates over the life of the AHCA for all States and Territories. Another option would recalculate risk adjusted population rates for agreed time intervals over the life of the AHCA. A risk adjustment factor to the formulae should be used where there are significant changes in health status within and/or between states or nationally over time by age and sex. This would address the States concerns that have been expressed over several AHCA negotiations to more fully align health need to funding levels in the index.

The other reform includes a proposed new program “*Evidence Based Medicine (EBM) and Clinical Practice Guideline implementation*”, which could be implemented by either a new Schedule to the AHCA or could be funded through the new *Health and Hospitals Fund*. This reform would enable the implementation of the recommendations of the 2007 national seminar series “*Lessons on integrating economic and clinical evidence into clinical practice*” to roll out such Victorian methodology Australia-wide. These seminars, in all States and Territories and New Zealand, were sponsored by the Australian Health Care Association and the Womens and Childrens’ Hospital Australasia. Other State reform synergies could also be integrated in the nature of the proposed Centres to be established, such as the *Clinical Network Evidence Based Practice* and *Redesigning Hospital Care* Programs in Victoria.

This new EBM program and the risk adjustment reforms could be more fully considered at the second stage of COAG reform at the December 2008 meeting of the National Healthcare Agreement as part of the broader Specific Purpose Payment (SPP) financial framework. The risk adjustment reforms could be more fully developed by the third stage when the NHHRC report of June 2009 is available and COAG considers additional longer term health reforms to be implemented as either updates in the National Health care agreements or as new National Partnerships (NP) agreements over time.

Introduction

The aim of this paper is to address reforms for the re-negotiation of the Australian Health Care Agreements (AHCA) which have funded the basis of federal government payments to the States over the past twenty years. The reform agenda embraces two important areas of interest to governments in Australia and internationally. This includes risk (severity) adjustment of the AHCA formulae including the index to increase equity and achieve a closer alignment between health need and funding levels. Secondly, the reforms involve the integration of Evidence Based Medicine into clinical practice to improve cost effectiveness of service provision Australia-wide. This reform integrates the National Health and Hospitals Reform Commission's (NHHRC) performance indicators and targets recently prepared for Council of Australian Governments (COAG) (NHHRC, 2008).

The reforms build upon successful implementation of the reforms in Victoria in both of these areas. This includes initiatives at hospital networks to translate economic and clinical evidence into clinical practice guidelines and clinical practice, resulting in significant improvements in quality, health outcomes and efficiencies as measured by reductions in readmissions, deaths, adverse events, length of stay and costs (Antioch, Chapman and Elliot et al 2001, Australian Health Care Association, 2007d, Western Health, 2006, Antioch, Jennings and Botti et al 2002). The Australian Health Care Association (AHA) and Womens and Childrens' Hospital Australasia sponsored national presentations in all Australian States and Territories and New Zealand during 2007 to spearhead the application of the methodology nation-wide in the context of the renegotiations of the AHCA.

The risk adjustment reforms of the AHCA build upon previous financing reforms in Victoria to improve the payment systems used by government funding agencies to fund hospitals using prospective payment formulae while appropriately reflecting variations in costs and severity across hospitals and patients using risk (severity) adjustment of the AR-DRGs. These reforms were spearheaded by the Victorian Government's Risk Adjustment Working Group (RAWG) from 2002 to 2005 involving both government and hospital industry representatives in consultation with international experts (Antioch, Ellis and Gillett et al 2007). The reforms built upon the analyses developed by Antioch and Walsh (2000, 2002, 2004a, 2004b) which were used in negotiations between Bayside Health and the Victorian Department of Human Services for funding under casemix arrangements.

Over the life of the RAWG, which was chaired by Dr Kathryn Antioch, the Victoria government implemented new risk adjustment reforms initiatives into the Training and Development Grant aimed to compensate teaching hospitals for treating more complex patients in selected AR-DRGs (Antioch, Ellis and Gillett et al 2007). The *Victorian Public Hospitals and Mental Health Services Policy and Funding Guidelines 2008-2009* built upon RAWG's work, with a refined AR-DRG complexity formulae for the Training and Development Grants, based on the distribution of the complex Weighted Inlier Equivalent Separations (WIES) across hospitals (Victorian Department of Human Services, 2008)¹. Further, several policy options were formulated by Antioch et al (2007) to impact on negotiations between the Department of Human Services and Victorian Treasury Department for State-wide funding negotiations.

The risk adjustment reforms of the AHCA in this current paper, build upon the work of RAWG and the earlier policy options for the AHCA heralded by Antioch and Walsh (2004 pg 108) and Antioch (2003b) and aim to extend the application of risk adjustment at the national level using either the AR-DRG classification or the Diagnostic Cost Groups–Hierarchical Condition Categories (DCG-HCCs). The DCG-HCCs were calibrated in Victoria as part of the work of the RAWG and demonstrated superior capacity to explain patient severity risk using Australian diagnoses data (Antioch, et al 2007), with potential for calibration Australia-wide.

Section 1 of this paper discusses the work of the National Health and Hospitals Reform Commission including the accountability and performance benchmark purpose of the AHCA and associated principles. Section 2 covers the recent decisions of the COAG meetings during March and July 2008, which impact on the AHCA. Section 3 and 4 discusses the AHCA reforms proposed in this paper relating to the Evidence Based Medicine and Risk Adjustment reforms of the formulae.

¹ See Antioch, Ellis and Gillett et al's (2007, pg 200-201) Policy Funding Option # 3 for calculation of a Risk (Severity) Adjusted Training and Development Grant which was instructive and also the (then) arrangements introduced over the life of RAWG on page 198 of Antioch et al (2007).

Section 3 commences with a discussion of the proposed *Evidence Based Medicine reforms of the AHCA* which build upon the Victorian reforms to translate economic and clinical evidence into clinical practice² and how this could be administratively built into the governance principles of the AHCA. It could involve a similar approach to that in the current AHCA for the “Pathways Home Program” in Schedule B of the AHCA. Alternatively, the newly announced *Health and Hospitals Fund* could be a potential funding mechanism.

It would involve a capital funding and service infrastructure scheme to facilitate improvements in services involved in the translation of economic and clinical evidence and clinical practice guidelines into clinical practice in hospitals and also the broader community, aged care, chronic disease management and general practice. The translation of such evidence into clinical CPGs and clinical practice is a key challenge besetting health systems internationally.

Section 4 addresses the risk adjustment reforms of the AHCA. It provides an overview of the key components of the AHCA and details of how the formulae of the AHCA could be risk adjusted on either a national or state basis. The use of either the DCG-HCC and AR-DRGs classification systems and the associated relative risk and cost weight scores are discussed. The proposed analyses cover the changes in relative health status of the population by state or nationally over time and the implications of these changes for funding levels vis a vis the actual funding under the current AHCA. Such analyses would provide insights into the desirability of integrating the risk adjustment formulae into the AHCA and could be considered within the three stage reform agenda specified by COAG (Rudd, 2008). Given the cost weights are available nationally for the AR-DRG system through the cost weight study, it is envisaged that the analyses could be achievable during the time period; perhaps more quickly than an analyses based on the DCG-HCCs. The national cost data could be used to calibrate the DCG-HCCs and in time for COAG’s third stage of the health funding reform when the NHHRC report of June 2009 is available and COAG will consider additional longer term health reform to be implemented either as updates to the National Health Care Agreement or as new NP agreements over time (Rudd, 2008). We turn to the discussion of the NHHRC.

1. National Health and Hospitals Reform Commission

In addressing reforms for the new AHCA, the Reform Commission endeavored to identify what changes and investments are required to enhance health promotion and wellness and to make the health care system work better for those who need it. The Commission identified twelve critical challenges. These include closing the gap in indigenous health status, investing in prevention, ensuring a healthy start, redesigning care for those with chronic and complex conditions, recognising the health needs of the whole person, ensuring timely hospital access, caring for and respecting the needs of people at the end of life; promoting improved safety and quality of health care, improving distribution and equitable access to services, ensuring access on the basis of need, not ability to pay, improving and connecting information to support high quality care; ensuring enough, well-trained health professionals and promoting research.

These challenges include many areas not traditionally within the scope of the AHCAs. Reforms require action by Commonwealth and state governments, public and private sectors, hospital and community services, and crossing traditional funding boundaries such as the Pharmaceutical Benefits Scheme (PBS) and Medical Benefits Scheme (MBS). Leaders of reforms should ensure that their proposals are consistent with the proposed reform design and governance principles and will drive improvements that address the critical challenges. The Reform Commission has used these challenges to develop their performance benchmarks (NHHRC, 2008).

Towards clearer accountability by governments for health services

The Reform Commission’s initial task is the development of performance benchmarks for the AHCAs. The Commission believes that the next AHCAs should be about the Commonwealth and states jointly sharing responsibility for the health system. The use of performance benchmarks means that accountability for particular health services must be attributed to either the Commonwealth or state governments, but not both

² There are currently State government initiatives that could be consolidated under these reforms eg in Victoria, the *Clinical Network Evidence Based Practice* initiatives and the *Redesigning Hospital Care Programs* (Victorian DHS, 2008). The further integration of *cost effectiveness evidence* into Clinical Practice Guidelines and clinical practice along the lines of NHMRC’s methodologies (NHMRC, 1999, 2000a, 2000b 2001; Antioch et al 2002), NICS and the broadening of synergies State and Australia-wide could potentially enhance current State level initiatives.

governments. There cannot be financial or political consequences if accountability for non-performance is not able to be attributed.

Meeting benchmarks by both levels of governments will be facilitated if there is greater collaboration and joint planning. The Commission formed preliminary views about the level of government that is best placed to improve performance in particular areas. State governments should have clear responsibility and accountability for public hospital services, mental health, public health, and maternal and child health services. The Commonwealth's accountability should relate to aged care, all primary health care services and prevention. The Commission has assigned responsibility and accountability to the Commonwealth Government for prevention and Indigenous health on the basis of the need for national leadership (NHHRC, 2008).

The Commission is not suggesting an immediate transfer of functions between governments where they currently differ. The accountable government does not have to be directly involved in service delivery and there are likely to be advantages in retaining mixed provision of services by public, private and non-government agencies.

The Commission has signaled the desirable direction of the Commonwealth taking a more active role in primary health in moving beyond general practice to allied health, district nursing, community mental health services and community health services. Investment in primary health care infrastructure is required, with the Commonwealth trying to address this through GP Super Clinic establishment. State governments have established programs such as GP Plus in South Australia, HealthOne in NSW and Primary Care Partnerships in Victoria. However, the Commission notes that there is no integrated plan for the development, resourcing and networking of state-based primary health services, general practice and other private or non-government primary health services.

The Commonwealth Government could lead, and be accountable for, all primary health care services. It is the major funder, including general practice through the Medicare Benefits Scheme (MBS), and of allied health and other community-based ancillary services through the private health insurance rebate. Recently, coverage has been extended to payments under the MBS using the Enhanced Primary Care, to cover almost all registered professionals in caring for chronic and complex disease. The Commission's allocation of accountabilities for other health services is based on factors including the government with existing major responsibility and experience, and/or the need for identified national leadership (NHHRC, 2008).

Commission's Governance principles

The Commission has indicated that the health system should be further planned and monitored to respond to changing demographics and health needs, clinical practices and broad societal influences. There should be effective systems of clinical governance for quality and safety at all levels and a culture that promotes this. There should be open, transparent reporting and an ethical culture in dealing with adverse events, mistakes and near misses. Effective organisational systems are required to achieve these objectives along with public accountability for the whole system.

Resources should flow effectively to the point of care, with accountability requirements efficiently implemented. *'Funding mechanisms should reward best practice models of care, rather than models of care being inappropriately driven by funding mechanisms. Funding systems should promote continuity of care with common eligibility and access requirements to avoid program silos in the system'* (NHHRC, 2008). The use of public and private resources should be balanced and effective. New technologies should be implemented promptly and equitably when found to be cost effective. Access in rural and remote access should be improved on a cost effective basis through improved technologies.

Reform, improvement and innovation are ongoing. The health system should foster innovation, research and sharing of practices shown to be effective to improve specific services along with the health of all Australians. This can be facilitated by audits, quality feedback loops, and 'Plan, Do, Study, Act' cycles, supported by information and communication technologies. The continuum of basic science to clinical and health services research will underpin this and needs to be embedded.

The decisions governments, other funders and providers make in managing our health care system should become more transparent with greater accountability. The responsibilities of the Commonwealth and state governments, private and non-government sectors should all be clearly delineated. When expectations are not met, the accountability should be evident. Accountability extends to individual health services and health

professionals. Australians are entitled to regular reports on the status, quality and performance of the health care system, both public and private, ranging across the spectrum from primary to tertiary care and at local, state and national levels. Public participation is important to ensuring a viable, responsive and effective health care system (NHHRC, 2008).

Context for the AHCA performance benchmark work

There are several bodies in Australia that will have a large influence on the form of the next AHCA. COAG has agreed to consolidate specific purpose payments with the creation of a single national agreement on health, covering Commonwealth health payments to the states. This is likely to result in broad banding into the AHCA of several health agreements such as the Public Health Outcome Funding Agreements (PHOFAs). Performance benchmarks in the next generation of AHCA therefore need to encompass health services beyond public hospitals.

Heads of Treasury are working on National Partnership arrangements that will contain incentives for reform and a set of matching milestones and benchmarks. Performance benchmarks will likely evolve over time to match agreed reform priorities. Health Ministers have agreed on the need for “*reciprocal public performance reporting*”, involving performance measures across the health system such as hospitals, GPs and other health services. Performance benchmarks will therefore need to extend beyond the services that are funded through the new AHCA, such as public hospitals and public health, to other services such as primary care and Indigenous health that are funded outside the AHCA by Commonwealth and state governments, either individually or jointly.

Health Ministers commissioned the Australian Institute of Health and Welfare (AIHW) to advise about indicators for the next AHCA. The Institute was expected to provide its final suite of proposed indicators to Health Ministers by the end of June 2008. The Commission has been working closely with the Institute to ensure that the parallel work on performance benchmarks and indicators is aligned. Rather than focusing on the framework of the existing AHCA, the Commission identified critical principals and the challenges that will need to be resolved. The twelve challenges should be the organizing domains against which performance benchmarks are developed and they should evolve to meet emerging challenges. The Commission has developed guiding criteria that explicitly identify its approach to the development of performance benchmarks and performance benchmarks for intergovernmental discussions on the AHCA.

The Commonwealth’s declining share of public hospital funding has implications for the level at which performance benchmarks can be reasonably set. The states should have the necessary recurrent service provision adequately funded by both the state and Commonwealth governments to meet these benchmarks. Growth of primary care services, complex care and aged care will require an increasing investment to ensure a balance of care across settings, to avoid unnecessary hospitalizations and strengthen ‘person-centered’ care at home or in the local community. An allocation of resources to prevention and wellness activities is also likely to be required (NHHRC, 2008).

Guiding criteria for the development and use of performance benchmarks

The guiding criteria relate primarily to the development of performance benchmarks for governments, given their potential use in the AHCA. Comparable benchmarks should be developed for both public and private hospitals with, accountability in the public sector ‘cascading’ down to individual health service agencies and providers. The criteria that the Reform Commission developed on setting and using performance benchmarks include:

1. Clear distinction between performance indicators, targets and performance benchmarks

The Reform Commission distinguishes between three types of measures:

- Performance indicators that ‘*track*’ changes in health status even if there are not identified targets or clear accountabilities;
- Some performance indicators may have associated *targets* that can measure performance or set quality improvement goals;
- *Benchmarks are a subset of such targets*, where performance against the target has accountability consequences, which are usually financial (NHHRC, 2008).

The current AHCA has performance indicators, such as the share of public hospitals that are accredited or the cost per casemix adjusted separation in public hospitals. The Agreement is essentially silent on the targets, or expected standards of performance against these indicators. For some of the performance indicators it is unclear whether an increase or decrease in the indicator represents improved performance. With regard to the public hospital cost per casemix adjusted separation, should all states be required to reduce their costs to the level of South Australia, which is approximately \$3,300 for each treated public hospital patient? Or, are higher costs such as in NSW at over \$3800 for each public hospital patient preferred? In the absence of targets for the indicators in the current AHCAs, there are also no financial consequences associated with not achieving benchmark levels of performance (NHHRC, 2008).

The Commission believes that there is a clear commitment by all governments to introduce better accountability through greater use of targets and benchmarks across the whole health system, not just public hospitals. The Commission's work will be complemented by the broader range of indicators being developed by the AIHW for Health Ministers by June 2008. There will also be a continuing need for indicators to track performance in depth on particular issues such as efforts in implementing preventive health care, mental health and Indigenous health (NHHRC, 2008).

2. Reciprocal accountabilities and benchmarks on all governments

Under the current AHCA, accountabilities fall only on state governments, with no mutual obligations or responsibilities on the Commonwealth government for the health services it directly funds. Consistent with Health Ministers' decision of 29 February, 2008 the Commission has developed benchmarks involving reciprocity, given they include indicators which measure performance of state public hospital services along with services for which the Commonwealth has principal funding responsibility.

Reciprocal accountabilities impose challenges for an Agreement that principally involves the flow of funds from the Commonwealth to states. Design of financial incentives on the Commonwealth, or accountability consequences for weaker performance, becomes complex. Perhaps consequences are best achieved by the Commonwealth becoming responsible in full for costs, or it may provide additional payments to the states linked to its weaker performance.

Accountability consequences for reduced performance against the benchmarks should be a key agenda item for the negotiation of the next generation of AHCAs. Accountability consequences can be structured in many ways, including financial consequences such as incentives, bonuses or penalties. There are several ways in which incentives could be structured, although the Commission at this stage has not recommended the precise design of how financial incentives might be structured. However, the Commission is clear that *'..the next generation of AHCAs must move well beyond the current situation of indicators that are 'toothless tigers' – lacking genuine accountability, with many not being publicly reported and no consequences (financial or otherwise) for poor performance'* (NHHRC, 2008).

3. Indicators that are 'fit for purpose' and suit the audience

Indicators can be used for either performance accountability, with associated targets and financial bonuses or penalties, or for quality improvement where the focus is on increasing reporting. Attaching performance benchmarks to some quality improvement indicators, however, can have perverse incentives such as under-reporting of complaints.

4. Access to regular public reporting on performance of health services and health status

State governments would be responsible for regular reporting against agreed 'performance indicators (or tracking indicators)' for public hospitals, including at a whole of state level, geographic area, individual hospitals, and for specific populations. The Commonwealth would be responsible for reporting against its accountabilities, including state, local, agency and specific populations. Hence, indicators, and some benchmarks, could be disaggregated to show performance for particular populations such as Indigenous, rural and remote, low socioeconomic status, and in specific facilities such as waiting time in hospitals.

5. *Other important criteria*

Other criteria identified by the Commission include the careful selection of a high-value set of performance indicators and benchmarks; the value of patient-level data in measuring the patient journey; performance benchmarks and indicators that evolve over time and benchmarks set at levels to encourage real improvement

Proposed performance benchmarks

The summary table in Appendix 1 identifies the Commission's proposed performance indicators and benchmarks and is organized around the twelve challenges. For each challenge the Commission identified indicators and, in around one quarter of them, the associated benchmarks at the Commission's Appendix C. Each benchmark would have accountability consequences, which for most would be financial. The renegotiation of AHCA's would specify the financial consequence. The benchmarks are generally well-established historically. Some, such as an agreed national survey of patient experience and health literacy, need to be developed. The emphasis on performance against benchmarks presupposes a capacity to track and adjust policies and strategies in the light of feedback. Information technology and inter-operable systems will be important. These benchmarks and performance indicators are included in the following proposed reform agenda (NHHRC, 2008).

2. Council of Australian Governments (COAG) imperatives for the AHCA and reform

2.1 COAG's reform agenda on health and hospitals:

The Commonwealth agreed, on health and hospitals, at the 21st meeting of COAG in Adelaide on 26 March, 2008 to commit \$1 billion to relieve pressure for 2008-09 on public hospitals. This \$1 billion is made up of the indexation of the previous Commonwealth allocation for 2007-08 plus a further \$500 million in additional new money. Overall this means an increase in Commonwealth funding for public hospitals for 2008-09 of 10.2 per cent. This decision reverses the national trend of Commonwealth cutbacks to hospital funding over the past five years. COAG also agreed:

- that in developing the new health care agreement there would be a review of the indexation formulas for the years ahead. COAG also agreed that the new Australian Health Agreement should move to a proper long-term share of Commonwealth funding for the public hospital system.
- that the new health care agreement would be signed in December 2008 with a commencement date for the new funding arrangements of 1 July 2009.
- for jurisdictions 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.
- to the introduction of a national registration and accreditation system for health professionals and steps to address health workforce skills shortages (Rudd, 2008).

2.2 The new reform framework

COAG agreed on the key elements of new Intergovernmental Agreement on Commonwealth-State financial arrangements, which will be finalised by the end of 2008 following extensive work on outputs, outcomes, reforms, performance indicators and funding arrangements.

The new framework involves significant rationalization of SPPs, mainly through combining many into a smaller number of new national SPP agreements, without a reduction in total Commonwealth funding. This will reduce 92 SPPs to five or six new national agreements for delivery of core government services including health, affordable housing, early childhood and schools, vocational education and training, and disability services (Rudd, 2008).

For all new arrangements, a new performance and assessment framework will be developed to support public reporting against performance measures and milestones. Funding for, and the details of, the new agreements will be negotiated over the year, with the final Intergovernmental Agreement to be considered by COAG in December 2008.

To enhance accountability and promote reform, COAG agreed to a new and expanded role for the COAG Reform Council (CRC). When requested by COAG, the CRC will report to the Prime Minister on the publication of nationally-comparable performance information for all jurisdictions in relation to individual national SPPs and the independent assessment of predetermined milestones and performance benchmarks under the proposed NP arrangements. It will also be responsible for monitoring the aggregate pace of activity in COAG's agreed reform agenda.

2.3 Implementing commitments and driving further reforms

COAG also agreed to the implementation of health reform in three stages.

- The first stage involves immediate action on Health Workforce Registration and transitional arrangements for the current healthcare agreement. These lay the foundation for longer term reform of the health system.
- The second stage involves COAG consideration at the December 2008 meeting of the new National Healthcare Agreement as part of the broader SPP Financial Framework. There will also be potential NP payments for medium-term health reform from July 2009.
- In the third stage, when the National Health and Hospitals Reform Commission (NHHRC) report of June 2009 is available, COAG will consider additional longer term health reform to be implemented either as updates to the National Healthcare Agreement or as new NP agreements over time (Rudd, 2008).

2.4 COAG meeting of July 2008

The COAG meeting of 3 July 2008, discussed the major reform of hospitals including the primary care interface and activity based funding (COAG, 2008). These reforms will be further developed at the COAG 2 October 2008 meeting. The July 2008 meeting noted the preliminary statements of objectives, outcomes, outputs and performance measures for the new funding agreements prepared for Health and Ageing and other portfolios. In October 2008 COAG will be considering the proposed approach for the new COAG Intergovernmental agreement on financial relations together with a draft for each SPP and proposals for new Partnership payments. In December 2008 COAG will finalise funding arrangements as part of setting the new intergovernmental agreement on financial relations.

COAG also agreed to the new performance and reporting framework developed by the Ministerial Council for Commonwealth-State Financial relations to enhance the public accountability of governments within the funding arrangements. The new national health care agreements will allow jurisdictions to move to a nationally consistent approach for activity based funding for services provided in public hospitals (COAG, 2008).

COAG will be assisted by the NHHRC on performance benchmarks and a longer term health reform plan with long term views due by June 2009. The government will establish a Health and Hospitals Fund for investment on health facilities, including renewal and refurbishment of hospitals, medical technology, equipment and major medical research facilities and projects. Initial government contributions will be \$10b from the 2007-08 and 2008-09 budget surpluses once realized. Capital and earnings of the fund will be fully drawn down over time, once specific projects are identified. Drawdowns from the fund will not occur before 2009-10 (Australian Government, 2008a).

Where funds are used to finance capital projects with the states through the *Health and Hospitals Funds* they will be funded through a new COAG Reform fund. This reform fund will also distribute funding provided in future budgets to States for recurrent expenditure in areas of COAG reforms through the New National Partnerships Payments (Australian Government, 2008b)

The reforms outlined below can be easily integrated into these reform stages and associated time lines and integrate the performance indicators and benchmarks already identified by the NHHRC (2008). Such benchmarks are particularly relevant to the reforms on implementing Evidence Based Medicine below. The risk adjustment methodology impacting on the formulae and index can be considered during the second stage and also, if necessary, during the third stage as a potential longer term health reform given they can potentially involve updates to the formulae.

3. **AHCA Reforms: Implementing cost effective Evidence Based Medicine and a formula with equity**

3.1 Overview

There are two key reforms included in this paper which also link to the governance principles highlighted by the Reform Commission. They relate to a new, improved risk (or severity) adjusted formula that includes greater transparency in funding allocations to the States, with funding linked more fully to health need Australia-wide. This would hold significant implications for the index in the AHCA and impact on the changes of allocation over time, along with inter-state variations based on the health need of the populations they service.

The reforms also relate to the new arrangements that address funding mechanisms that encourage best practice models of care utilizing both economic and clinical evidence, together with Clinical Practice Guidelines (CPGs). Attempts in Australia have successfully incorporated such evidence into CPGs and into clinical practice in Victorian hospital networks including Bayside Health and Western Health involving six hospitals; the Alfred, Sandringham, Caulfield, Western, Sunshine and Williamstown (Antioch et al 2002, Antioch et al 2001, Alfred Medical Research and Education Precinct (AMREP) 2003 and 2004, Antioch and Walsh, 2007, Australian Health Care Association, 2007d, pg 7, The Alfred, 2000, 2001, 2002). An overview is outlined below.

3.2 **Evidence Based Medicine and Clinical Practice Guideline implementation: Applying National Health and Medical Research Council (NHMRC) methodology**

The approach used at the six hospitals of Bayside Health and Western Health in Victoria, identified elements of best practice in applying economic and clinical evidence and clinical guidelines and change management issues. It is based on the excellent toolkits on Clinical Practice Guideline (CPG) development, implementation and evaluation by the NHMRC (1999, 2000a, 2000b, 2001), along with methodological insights gleaned from an international study tour to the Institute of Medical Technology Assessment (IMTA) at Erasmus University, The Netherlands (The Alfred, 1999). A key imperative of the strategic plan of the NHMRC is the need to facilitate the effective translation of best practice evidence into clinical practice.

The reform work has been further facilitated by the international collaboration, including, *inter alia*, a collaborative of health economists world-wide, called the Guidelines and Economists Network International (GENI) which was established to work with hospitals, governments, hospital associations and other peak bodies such as the OECD, WHO and World Bank in this area. Details of the Terms of Reference for GENI are outlined in Guidelines and Economists Network International (2008)³.

The work in Victoria has been presented nationally in 2007 by Antioch (2007a) via half day seminars in every State and Territory sponsored by the Australian Health Care Association and the Womens' & Childrens' Hospital Australasia in the context of the Renegotiation of the AHCA (Australian Health Care Association, 2007a, 2007b, 2007c, 2007d; Womens Hospital Australasia, 2007, Royal College of Nursing Australia, 2007).

The work that extended over a ten year period has been associated with significant improvements in quality outcomes and improved efficiency as reflected in reductions in per patient cost by DRG, reduction in readmissions, adverse events length of stay and deaths.

The Australian Health Care Association highlighted that this topic is highly relevant to the clinical and business programs of all health facilities in both public and private sectors. Several stakeholders have identified this as a critical issue in the lead-up to the re-negotiation of the Australian Health Care Agreements. Integrating economic and clinical evidence into Clinical Practice Guidelines and clinical practice entails major change management processes. Directing key committees, encouraging local ownership of the process, training and involving staff in the methodological approach and evaluating the process are central (Australian Health Care Association, 2007a, 2007b and 2007d)

The national seminars sponsored by the Australian Health Care Association and the Womens & Childrens' Hospital Australasia reported on the Australian experience from two major hospital networks (health services) in Victoria, Australia. This includes six hospitals and has covered a broad range of over 34 surgical, medical and rehabilitation CPGs. A similar international seminar was spearheaded in Europe at the European Health Economists Conference, 2006 (Antioch, 2006) prior to the Australian and New Zealand national presentations.

³ http://www.echeroma2008.eu/pre-conference/guidelines_au1_1.php

A synthesis of the results of the National seminars, along with the Victorian work was presented at the International Health Economists Association Conference in Denmark (Antioch and Walsh, 2007).

The national seminars covered the methodological issues in applying health economics and clinical effectiveness evidence in developing and implementing clinical practice guidelines in hospitals through clinical pathways, protocols (ie algorithms) and management plans. They also addressed change management and clinical governance processes used successfully within complex organizations such as hospitals and with the medical profession. The advantages of various types of clinical governance models implemented across six hospitals were explored along with the establishment of the Guidelines and Economists Network International (GENI) (Royal College of Nursing Australia, 2007)

The national Australian and New Zealand seminars were evaluated by participants, with over 70% of attendees grading the seminars as excellent or good (Womens Hospitals Australasia, 2007, pg 14)

One recommendation that emerged from the national seminars was the key imperative to roll out the methodology and approach Australia wide (Australian Health Care Association, 2007d pg7). The new AHCA could provide the ideal opportunity and framework by which appropriate governance models, staffing and capital developments could be encouraged and which could effectively build on the work underway in each state.

The proposed AHCA reform initiative is designed to be synergistic and would not duplicate the current initiatives. Rather, it would provide the impetus to rapidly enable the development and implementation of the key principles articulated by the Reform Commission.

The initiative involves a key funding mechanism that would reward best practice models of care and promote continuity of care, and facilitate the prompt introduction of new technologies when found to be cost-effective.

It also addresses the safety and quality features of the clinical governance and the promotion of an effective culture that would be more open and transparent, reporting and dealing with adverse events, mistakes and near misses. It would assist work at the State level by bodies such as the Victorian Quality Council, NSW Clinical Excellence Council, and nationally the NICS of NHMRC

It includes clear accountability to health services and health professional and facilitates the regular reporting of health status, quality and performance of the health care system.

The clinical governance approach and methodology is outlined in Antioch, et al (2002). The various Toolkits of the National Health and Medical Research Council (NHMRC, 1999, 2000a, 2000b, 2001) formed the basis of the translational approach to evidence based medicine across the six teaching hospitals. The evaluation results implicitly provide insights into the impact of using the NHMRC toolkits for implementation. This is discussed below.

(a) Bayside Health

In collaboration with major partners of the Alfred Medical Research and Education Precinct (AMREP), and staff of the hospitals of Bayside Health (The Alfred, Caulfield and Sandringham hospitals), Dr Antioch led change management for service redevelopment, resources and implemented translational research involving the integration of economic and clinical evidence into Clinical Practice Guidelines (CPGs) and clinical practice across 28 areas of medicine and surgery including cardiology, respiratory, rehabilitation, emergency department, surgery, renal, psychiatry, Orthopaedics, vascular, bioterrorism preparedness and cancer services. Achievements involved service model/patient care redevelopment for 14 areas within these priority areas through the development and implementation of Clinical Pathways, Protocols and Management Plans (Antioch and Walsh 2007). Key achievements were reductions in length of stay, readmissions, deaths and costs for some DRGs evaluated (Antioch, Chapman and Elliot et al 2001). Importantly, the uptake of Clinical Pathways increased significantly. The 2003 Alfred Medical Research and Education Precinct (AMREP) Research Report (AMREP 2004) states that during much of 2003-04 there were approximately 749 patients on clinical pathways Bayside Health wide, which had increased by an astounding 451% relative to 2000-01 (AMREP, 2004). Details of the methodology for the EBM translational process and clinical governance and change management approach is outlined in Antioch, Jennings and Botti, et al (2002) and Antioch (2003a). Very challenging methodology used for Bioterrorism Preparedness at Bayside Health have been considered nationally and internationally (Antioch, 2007c).

There was a structure of clinical teams and Evidence Based Medicine committees for each area of medicine and surgery that reported to three steering committees of each hospital campus of Bayside Health. There were two sub-committees in 2003 that reported to the Alfred steering Committee including the Clinical Pathway Development and Clinical Pathways Evaluation sub-committees. They were combined in 2004 to expedite synergies. The Alfred Steering Committee linked to the broader co-ordination processes undertaken by the Bayside Steering Committee. The reporting lines were then to the Quality Committees of each campus, to the CEO of Bayside Health with the final reporting to the Board Quality Committee of Bayside Health. There were 28 clinical teams and another 28 Evidence Based Medicine Committees that were operational at The Alfred since inception (Alfred Medical Research and Education Precinct, 2004).

Casemix adjusted analyses by DRG for 2002-03 found that the coronary artery bypass surgery pathway patients at the Alfred when compared to non pathway patients accrued \$1.8m in cost savings. LOS and readmissions were also generally lower (AMREP, 2004). The Steering Committee overseeing the work and chaired by Antioch (Antioch et al, 2002), addressed the crucial issues of risk adjusting evaluations of clinical pathways at The Alfred. They controlled for casemix differences within a pathway by undertaking analyses by DRG whereby 'pathway' patients are compared with a control group of non-pathway patients (Antioch et al 2001; Antioch and Walsh, 2007).

The Bayside Health work also included variables that may be inter-related such as length of stay, costs, readmissions and mortality. They evaluated four pathways that were in use at the time of the evaluation including stroke, chronic heart failure, total hip replacement and fractured neck of femur – over the period from July 1999 to June 2000. Our study design involves NHMRC Level 111-2 of evidence; that is, evidence obtained from a non-randomized comparative study with a concurrent control group (NHMRC, 2000, Antioch et al 2001).

Orthopedic pathways had the highest uptake – as high as 40% for fractured neck of femur under DRG 409 (Hip and Femur procedures excluding major joint > 54 without CCs). Uptake for total hip replacement was 34% for DRG 404 (Hip Replacement with CCs). These analyses are hospital-wide and by DRG (which can include many principal diagnoses) and therefore in some cases underestimate the actual pathway uptake in particular wards using the pathways.

The Fractured Neck of Femur pathway was analyzed using mainly AN-DRG 408, AN-409 and AN-DRG 404. For AN-DRG 408 (Hip and Femur procedures except major joint with CCs) the 15 patients (22% uptake) on this pathway cost on average \$3231 lower than 'non pathway' and had ALOS at 4.71 days lower.

The readmission rate of 7% was lower than for 'non-pathway' (11%). There were no deaths for 'pathways' compared to 8% for 'non-pathways'.

The results were reversed for those on the same pathway in DRG 409 where an additional 15 pathway patients (39% uptake) cost on average \$2,182 more and had an ALOS 3.37 days longer, but with no readmissions for pathways compared to 9% readmission rate for non-pathway patients within this DRG. There were no deaths for either the 'pathway' or the 'non-pathway' groups (Antioch et al 2001). Hence, the casemix adjusted analyses for some procedures revealed that some DRGs had longer length of stay relative to non-pathway group facilitated improved quality outcomes such as lower readmission rates. The same outcome was reported for the DRG below where the proportion of readmissions reduced was considerable.

There were another 13 pathway patients grouping to DRG 404 (Hip Replacement with CCs) representing 22% uptake and costing on average \$2,274 more than 'non pathway' patients. Pathway patients had a longer ALOS by 9 days but a much lower readmission rate of 8% versus 42% for 'non-pathway' patients. Mortality rate was 8% versus 4% in the non-pathway group.

For the total hip replacement pathway, the highest uptake was for DRG 404 (Hip Replacement with CCs). The 20 patients cost on average \$2,861 less than 'non pathways', with a lower ALOS by 3 days. 'Pathway' had a 50% readmission rate compared to 42% for non-pathways in this DRG. There were no deaths for the pathway group, but the mortality rate for the 'non-pathway' group was 4%. The Alfred also analyzed and prepared computerized variance reports. They generated tables for each pathway showing the proportion of patients that experienced a specified variance at least once during their hospitalization (Antioch, Chapman and Elliot et al 2001). Clinically meaningful variance codes were developed for these reports, in close consultation with senior clinical staff.

The variance codes are shown separately for clinical, community, patient/family, practitioner and system variances. When analyzed over time, one would expect that the proportion of variances to decline as feedback is provided to clinical staff and as the pathways facilitate a better-integrated system of care. These data can therefore provide an important input into the evaluation of pathways in addition to alerting clinical staff of major problems in system issues. Results of the evaluations of costs, utilization, outcomes and variance for The Alfred's pathways were disseminated hospital-wide and presented to key clinical teams to facilitate clinical practice change and revisions of pathways (Antioch, et al 2001; Antioch and Walsh, 2007).

(b) Western Health

Similar change management processes were undertaken at Western Health for service redevelopment and implement translational research over the period 2005 to 2006 involving the integration of economic and clinical evidence into Clinical Practice Guidelines and clinical practice across 14 areas of medicine and surgery. Areas included Head and Neck Cancer, Cardiology, ICU, Neurology, Renal, Medical Divisions, Obstetrics, Surgery, Orthopaedics, Emergency Department. The work was undertaken over an 18 months period with Western Health, including Western (Footscray), Sunshine and Williamstown Hospitals, Victoria. The work encourages local ownership of the change management process by nursing, allied health, physician and surgeon opinion leaders through the deliberations of clinical teams. Their work is further assisted by Evidence Based Medicine Teams, Clinical Development Committees, Clinical Pathway/Guideline Co-ordinator Sub-Committees in each Division and a Clinical Pathways Evaluation Sub-committee. The Evidence Based Medicine work has involved fourteen areas of medicine and surgery including Stroke, Chronic Heart Failure, Nephritis, Cellulitis, Seizures, Cardiac Pacemaker Implantation, Pre-eclampsia, ST elevation Acute Myocardial Infarction, Non-ST elevation Acute Coronary Syndromes (Unstable Angina), Neck Dissection, Laryngectomy, Parotidectomy, Gastric lap Banding (Bariatric Surgery) and Fractured Neck of Femur (Western Health, 2006).

Key achievements involved significant service redevelopment in target areas, with implementation of clinical Pathways, Protocols and Management Plans in all 14 areas achieved with notional savings of \$5.1m over 12 months, with notable reductions in Length of Stay, adverse events and deaths in several Divisions involved in the process. The evaluations were casemix adjusted by Diagnosis Related Group for the areas of translational research (Western Health, 2006).

An evaluation of the work to date capturing changes in utilization, costs and patient outcomes between the period before and after the initiatives commenced, was casemix adjusted by Diagnostic Related Groups (DRGs), and found notional cost savings of \$5.1m based on reductions in length of stay and reductions in adverse events across Divisions of Surgery, Medicine, COGS, Aged Care and Rehabilitation, Intensive Care Unit and CCVT, Women's and Children.

There were 84 fewer adverse events in 2005-06 relative to 2004-05 across these Divisions. Death rates also declined in several divisions. These outstanding results are likely to be the result of several change management processes that have occurred at Western Health over the same period, and which have acted in concert with the Evidence Based Medicine achievements in these targeted areas. Some of the other initiatives that may have impacted on the results include increased access to the Cath Lab for Cardiology, patients being seen earlier in the Emergency Department in response to Victorian Government's Hospital Demand Management Initiative program (Western Health, 2006 pg 3).

(c) Evidence Based Medicine reforms for the AHCA

The logistical and funding framework can be included in the AHCA to enable national roll out of initiatives similar to, but not necessarily restricted to, those of Antioch et al (2002); Antioch et al (2001); Antioch and Walsh (2007) and (AMREP 2004). The reforms agenda could also build upon other State level reforms in the area. In Victoria, for example, the reforms could encompass and expand successful frameworks implemented under the *Clinical Network Evidence Based Practice*, and *Redesigning Hospital Care Programs* (Victorian Department of Human Services, 2008).

The AHCA funding streams could build in appropriate incentives with links to the performance indicators developed by the Reform Commission and AIHW and could involve the performance indicators and benchmarks. Conceptually the funding stream could be similar and modeled on the approach used in the current AHCA for "pathways home program".

The Commonwealth could provide a one off program “*Evidence Based Medicine and Clinical Practice Guideline implementation*” to assist with implementing the approach nationally, through the proposed funding stream options in the AHCA including either a new Schedule or via the deliberations of the newly established *Health and Hospitals Fund* discussed in the 2008 Australian Government Budget Speech.

The reforms would involve both recurrent and capital funding and provide important links to the performance indicators and benchmarks by the Reform Commission.

The Reform Commission has identified a number of performance indicators and benchmarks that embrace areas beyond the hospital sector. To achieve improvements in these areas, the translation of economic and clinical evidence, clinical practice guidelines into clinical practice will be a key imperative.

These will assist in the formulation of local quality instruments, which are required by reforms to the MBS such as management plans. Underpinning improvements in these areas will be the basic requirement, which is currently unmet in achieving national up to date Clinical Practice Guidelines in Australia for a broad gamut of health conditions. This will assist in the use of protocols, clinical pathways and management plans.

The proposed state level organizations to be funded by the program “*Evidence Based Medicine and clinical practice guideline implementation*” will have the potential to facilitate information transfer between sectors of the health system within a state and also to provide feedback into the federal level and could embrace initiative for all sectors, not only the hospital sector. These, in turn, would work with national and international developments in the field such as the NHMRC and its National Institute of Clinical Studies (NICS), and organizations such as the Clinical Excellence Commission in NSW and various state and national quality councils. Internationally, these imperatives can link to the type of deliberations included in the Terms of Reference of the Guidelines and Economists Network International (GENI) (Guidelines and Economists Network International GENI, 2008).

With regard to broader Chronic Disease Management (CDM), community, GP initiatives, Bielby (2007) highlights that the complete model of care that is required in addition to new MBS items are mechanisms to integrate Evidence Based Medicine and best practice into clinical decision making via clinical information systems that measure quality of care activity. Also required are decision support and guidelines, ongoing information management and data exchange, integrated chronic condition self management program; finance systems; community based teams and consumer linkages.

The proposed centres could facilitate the further integrated development of these aspects at the state level. The links between EBM, protocols and management plans in the new arrangements (MBS) needs urgent attention and these agreement could facilitate these processes given the Reform Commission has emphasized that the Ministers have agreed on reciprocal public performance reporting to embrace more than hospital and public health to primary care and indigenous health.

The importance of Evidence Based Medicine techniques has been shown to reduce length of stay, adverse events, readmissions and costs. Hence these initiatives may also be expected to drive greater quality and efficiencies at the point of care across a broad gamut of performance indicators, albeit in the longer term.

(d) Implementing economic and clinical evidence and guidelines into practice: Features of Regulation

The inclusion of this concept in Commonwealth-State funding mechanisms could be similar to the current approach used in the AHCA for "Pathways Home Program" which is mainly related to rehabilitation (currently Schedule B of the AHCA). The other approach could involve funding through the recently established *Health and Hospitals Fund*. The details of how the Health and Hospitals Fund will operate are yet to be further developed by national policy makers. The suggested inclusions in the negotiations of the AHCA through a possible new Schedule, along the lines of the ‘Pathways Home Program’ is outlined below in the style of the current Agreements. This may facilitate the implementation of the reform agenda through either reform option as the associated regulatory and reporting requirements are identified.

The initiative involving a new Schedule to the form of the current AHCA. could involve a one-off payment for *Evidence Based Medicine and Clinical Practice Guideline (CPG) Implementation* to assist the move nationally to a greater focus on the translation of economic and clinical evidence and CPGs into clinical practice in hospitals and also the broader community, aged care, Chronic Disease Management (CDM) and General Practice. Details of how this would be operationalised into the AHCA are outlined below.

In summary, the required capital and service infrastructure will be provided to states to enable the creation of centres involving Technology solutions, change management techniques (organisational change), and clinical and EBM experience in various sectors of the health industry. The State level organizations should also build into their plans the capacity to link across the comparable organization in other States and internationally. Importantly, the state organizations could enable expert staff to work collaboratively with institutions such as hospitals, aged care facilities and CDM and other community health organizations to implement best practice medicine at the point of care. There would be considerable synergies and economies of scale whereby the Centres can consolidate information regarding the evidence based, Information Technology solutions such as the *Map of Medicine* and very promising NSW IT systems for hospitals, Clinical Practice Guidelines, EBM translational techniques using NHMRC and other international methodology and organization change, and training capacity in one center with outreach across the system in each State.

There would be important linkages within each state to the various quality organizations such as Quality Councils and nationally possibly through the deliberations of the NICS of NHMRC and the National Quality Commission. Expertise of staff at each state organization would involve health economics, economic evaluation, Evidence Based Medicine, health administration, clinical evaluation, Information Technology, health services research and links to international organisations such as the Guidelines and Economists Network International (GENI).

Importantly, the Centres would build upon the State level health reforms developed in each state, such as the Victorian Health Reform Package underway to enable synergies across all health services (hospital networks) to leverage off the Victorian and other reforms such as the *Redesigning Hospital Care Program* and the *Clinical Network Evidence Based Practice* initiatives being undertaken in 2008-09 (Victorian Department of Human Services, 2008). The clinical network programs in Victoria currently only relate to renal, maternity, emergency services, cancer and stroke. The proposed centres will be all encompassing to move beyond these state initiatives to enable a more international focus. The suggested inclusions in the new AHCA Schedule, which assume some similarity with the form of the current agreements, are outlined below. Clearly, the final form of the regulatory provisions will depend on the final decisions of COAG. The concepts below could potentially be considered within the framework of funding streams via the newly established *Health and Hospitals Fund*. The suggested wording for a new schedule for the AHCA is outlined below.

SCHEDULE B - EVIDENCE BASED MEDICINE AND CLINICAL PRACTICE GUIDELINE IMPLEMENTATION

1. The Commonwealth is providing a one-off program for "*Evidence Based Medicine & Clinical Practice Guideline Implementation*" to assist the move nationally to a greater focus on the translation of clinical and economic evidence into clinical practice to support improved efficiency and patient outcomes. This will enable a greater focus on the care and services provided to support the transition and services provided from hospital admission through inpatient to discharge home.
2. Through the development of the Evidence Based Medicine and CPG implementation program the Commonwealth and Victoria will:
 - a. aim to improve quality and maximize quality of life by reducing adverse events, deaths, readmissions,
 - b. improve efficiency by reducing costs and average length of stay (ALOS) in hospitals.
 - c. Increase throughput by greater streamlining of services and improve discharge planning to reduce waiting lists.
 - d. strengthen capacity for service provision.
 - e. foster a culture of responding to needs of patients,
 - f. improve the measurement of performance in this area.

Definitions

3. Within this schedule, the following definitions apply

"plan" is a document that is to be developed by Victoria and agreed to by the Commonwealth outlining how funds will be spent by Victoria.

Terms and conditions for accessing funds

4. One off funding of \$23,000,000 [exact amount yet to be determined] will be available to Victoria over the next 5 years for the "*Evidence Based Medicine & Clinical Practice Guideline Implementation*" program in accordance with the terms and conditions outlined in this schedule.

Requirements for State plans

5. In order to access available funds, Victoria will be required to submit a 5 year plan outlining how funds will be spent over the 5 years in line with Clause 7 of this schedule. The plan could be discussed with the Commonwealth ahead of the final decisions. Funds will only be provided for projects or programs conducted during the period of this Agreement, and once the Commonwealth Minister agreed to this plan. The Commonwealth will respond within three months of receipt of a plan from Victoria.

6. Any funding in 2009-10, 2010-11 and 2011-12 grant years will be conditional on Victoria meeting reporting performance reporting requirements as outlined in clause 13 and 14 of this schedule.

7. The plan will need to propose expenditure by year that increases the uptake of *Evidence Based Medicine & Clinical Practice Guidelines Implementation program* and falls into one or more of the following categories:

(a) upgrading, modifying, relocating or refurbishing existing facilities in order to provide new change management services across the State.

(b) construction of purpose built facilities, especially with a view to share facilities and EBM staff expertise across hospital networks in the state.

(c) investment in service infrastructure such as information systems, assessment tools, clinical practice guidelines, organization and services re-engineering/ change management committees.

(d) dedicated staffing to lead the Evidence Based Medicine translation process or service management with capacity for skills consolidation and sharing between hospitals and area health services (hospital networks).

(e) time limited training and recruitment strategies to increase skills and availability in the relevant part of the workforce, and/or

(f) one off expenditure, which will be consistent with the objective of increasing transition services from admission through to discharge and home.

8. In putting forward these State plans, Victoria should make clear the relationship (if any) to Commonwealth/State programs such as those in the Home and Community Care, National Institute for Clinical Studies (NHMRC) Victorian Quality Council (and in the case of NSW the Clinical Excellence Commission) to ensure there is complementary roles rather than overlap.

9. The criteria outlined in clause 7 of this schedule would enable Victoria to develop proposals in line with State specific needs and infrastructure. For example, Victoria could target its proposals towards certain diseases depending on the disease profiles and needs of specific areas in line with criteria outlined in clause 7 of this schedule.

10. Victoria would be able to amend the plan to meet emerging needs over the period of the Agreement, as required, in line with the requirements for use of these funds as outlined in clause 7 of this schedule. Any amended plan would need to be approved by the Commonwealth Minister. The Commonwealth will respond within three months of receipt of any proposal for amendment for Victoria.

11. Victoria is responsible for ensuring that funding for the "*Evidence Based Medicine & Clinical Practice Guideline Implementation*" program will be expended by 30 June 2014. The Commonwealth reserves the right to withhold funding where the Commonwealth Minister is satisfied that funding is not in line with the agreed plan. Victoria agrees to repay the Commonwealth any funding for projects or programs not conducted during the period of this Agreement.

12. Victoria will continue to be responsible for the provision of recurrent funding to support the services for which one off funding has been provided under the "*Evidence Based Medicine & Clinical Practice Guideline Implementation*" program in line with clauses 1 and 7 of this schedule.

13. Victoria will also be required to commit to meet the performance reporting requirements of the Program in order to receive the maximum funding available for Victoria. This includes the requirement to commit to participate in the development and implementation of national performance indicators as outlined in clause 14 of this schedule.

Performance indicators and Benchmark development and monitoring

14. An incremental approach will be adopted to develop nationally consistent performance indicators for the "EBM and Clinical Practice Guideline Implementation" Program

(a) States and the Commonwealth reporting on the (relevant) schedule for Performance indicators of relevance to this program include those indicators in Appendix 1 of the Reform Commission including:

Indicator 4 *Redesigning care for those with chronic and complex conditions* 4.3, 4.4, 4.5 (States); 4.1, 4.2, 4.6, 4.7, 4.8, 4.9 (Commonwealth)

Indicator 6 *Ensuring timely hospital access.* 6.1, 6.2 (States)

Indicator 7 *Caring for and respecting the needs of people at the end of life* 7.1, 7.2 (States)

Indicator 8 *Promoting improved safety and quality of health care* for states: 8.1 (States); 8.2 and 8.3 (Commonwealth).

Indicator 11 *Improving and connecting information to support high quality care* 11.1 (Commonwealth and States). 11.2 (States); 11.3 (Commonwealth). (See Appendix 1 to this report).

(b) In accordance with the recommendations of the Reform Commission, the State government would be responsible for regular reporting against these agreed performance indicators for public hospitals including a whole of state level geographical area level and individual hospital and showing outcomes for particular populations.

(c) The Commonwealth along with the states to develop outstanding national performance indicators and benchmarks for use in 2009-10 or 2010-2011, depending on national progress.

(d) Evidence based medicine and CPG implementation program funds being tied to submission of data against the indicators 2009-2010 and 2010-11 depending on the development progress.

(e) Evidence Based Medicine and CPG implementation program funds being tied to greater accountability provisions by states meeting the *benchmarks specified for Benchmarks, 6.1 (including 6.1.1 to 6.1.3) and 6.2 (including 6.2.1 to 6.2.5) and 8.1. Accountability consequences for these benchmarks will involve the payment of bonus payments where the benchmarks are met.*⁴

4. Improving equity for the AHCA: Risk (severity) adjusting the formulae.

This reform recommends risk adjustment policy options to refine the AHCA growth index, related to health need and changed conditions across the systems using Diagnostic Cost Groups-Hierarchical Condition Categories (DCG-HCC) or the AR-DRG classification system. These classification systems enable the calculation of measures of risk (severity), or health need including relative risk scores in the case of DCG-HCCs and, to some extent, cost weights for AR-DRGs. Whilst some of the detailed methodology in this paper refers to the DCG-HCC relative risk scores, the use of the cost weights for DRGs are similar and could also be

⁴ See NHHRC, 2008 Appendix C for full listing of these benchmarks.

[http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/504AD1E61C23F15ECA2574430000E2B4/\\$File/BeyondTheBlameGame.pdf](http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/504AD1E61C23F15ECA2574430000E2B4/$File/BeyondTheBlameGame.pdf)

considered as feasible. Indeed their use in the reform would be consistent with the COAG reform directions that facilitate the use of nationally consistent activity based funding concepts using DRGs nation-wide through AHCA mechanisms. The DCG-HCC reforms are outlined given they can also be used in a variety of ways to integrate health need concepts into the index in related ways and *are a more precise measure of patient severity and risk*.

4.1 Australian Health Care Agreements (AHCA) and risk adjustment

The system of AHCA has been in place for over 20 years, establishing the level of Federal grants given to the States and Territories for funding public hospitals. Australian States and Territories emphasized during the re-negotiation of the 2003-08 AHCA that the system was under extreme pressure. During April 2002 health Ministers convened nine expert reference groups, who recommended several policy reforms. Once a sustainable funding base has been established, the States argued that the total 2003-08 AHCA grants should be properly indexed to reflect growth in demand and escalation in costs. The index should comprise prices, wages, and measures to identify need such as demographic effect and population growth and aging and factors unrelated to demography such as technology. They estimated a total index of 7.96% in the first year. However, this is unlikely to increase as estimates are upgraded to reflect changed conditions (Australian States and Territories, 2002). COAG has recently identified the index growth factor for the 2009 re-negotiation of the AHCA as a high priority (Rudd, 2008).

It is in relationship to this index for growth, related to health need and ‘changed conditions’ across the system that the use of risk (severity) adjustment of the AHCA formulae has good potential application nationally and achieve great alignment between health need and funding levels over time and between states (Antioch and Walsh, 2004, Antioch, 2003b, Antioch 2007b).

Other key issues raised during the re-negotiation of the 2003-08 AHCA, in addition to the quantum of Commonwealth Grants, were linkages to primary care providers and aged care facilities, the dominance of inpatient work, workforce planning and public/private sector relationships (Deeble, 2002; Thwaites, 2002; Davison 2002; Dwyer, 2002; Duckett 2002; Cormack 2002). Similar issues have been raised again by the National Hospitals and Health Reform Commission (2008), along with a greater focus on quality assurance mechanisms and the use of benchmarks and performance indicators to impact on State and Commonwealth level performance.

Some of the reforms advanced for the previous 2003-08 AHCA re-negotiation represents ‘big bang’ reform associated with political and administrative complexities. There were suggestions for example, to change the basis of funding of hospital inpatient services from a grant to the States, to a casemix weighted payment for public patients treated and payable via the Health Insurance Commission direct to health services on the basis of achieved activity. This would also imply that inpatient arrangements could be excluded from Grants Commission equalization and that outpatient services should be funded directly (Duckett, 2002). The Reports of the Reference groups and other commentators were delivered to the Health Ministers. However the reports had no discernable impact on the 2003-2008 Agreements (Commonwealth of Australia, 2003 and Duckett 2004).

Duckett (2004, pg 1) argues that the 2003-2008 AHCA were signed after “*vituperative debate and intransigence from the Commonwealth government that vitiated the negotiation process*”. The new AHCA were not as generous as the previous AHCA and served to increase accountability on the states. They required States to match increases in Commonwealth funding and “*de-emphasis the prospects for further reform in the Commonwealth-State relations during the course of the Agreements*” (Duckett, 2004 pg 1).

Some elements of the final AHCA 2003-08 include:

- A base grant which is increased for weighted population increases, a further 1.7% increase for utilization drift and indexation for wage movements
- A withheld amount of 4% of the grant paid on compliance with reporting schedules and funding growth matching requirements
- A *capital funding and service infrastructure scheme* to facilitate improvements in services involved in the transition from hospital to home (Pathways Home Program). This program had a focus on rehabilitation and aimed to strengthen the capacity for service provision, maximize the quality of life and independence following hospital care, improve performance in the area and foster a culture of responding to patient need, especially the elderly.

- Funding for palliative care, mental health and safety and quality initiatives (Commonwealth of Australia, 2003; Duckett, 2004).

The most contentious difference between the 1998-2003 and the 2003-2008 Agreements related to the indexation provisions. Each of the previous Agreements provided indexation formulae for growth and aging of the population. The 1998-2003 Agreements also recognized further 'utilization drift' occurring in hospitals above that explained by population growth and aging, partly due to new technologies and shifts in treatment to same day hospital admissions away from general practitioners rooms and other ambulatory settings (Duckett, 2004). These Agreements provided a 2.1% per annum escalation factor beyond population growth. The 2003-2008 Agreements reduced the utilization drift factor to 1.7% and narrowed the applicable components of the grant, saving the Commonwealth \$1billion from that provided in the forward estimates (Duckett, 2004).

The Commonwealth Government (2003) AHCA's Schedule G 1(a) makes provision for a 1.7% utilization growth rate nationally, which is applied to 75% of the Health Care Grants. This utilization growth factor was agreed and incorporated into the indexation growth factor at the time of the signing of the 2003-08 AHCA (Racic, 2005). This is applied to the general component of the Base Health Care Grant (See *Equation 1*). The formulae is further adjusted by the 'weighted population' weighted in accordance with Schedule F (See Appendix 2). The weighted population is also used in Schedule G 1(b), 3(a) and 25. Schedule G 1(a) is the general component of the Base Health Care Grant. Schedule G 1(b) relates to the palliative care component and 3(a) to mental health funding. Section 25 of Schedule G provides funding to the 'National Programs' of Hospital Information and Performance Information Program; mental health reform and palliative care. There are also adjustments for the Commonwealth's Wage Cost Index in Schedule G (1a), 1(b), 3(a) and 25 (Commonwealth of Australia, 2003).

The general component in Schedule G 1(a) is calculated in accordance with the following formulae, in the case of Victoria:

Equation 1

$$(G-1) * [0.75 * 1.107 * \frac{WPOP}{WPOP-1} * WCI-I] + (0.25 * \frac{WPOP}{WPOP-1} * WCI-I)$$

Where:

G-1 is the final grant entitlement for the general component for the previous year, and in respect of the 2002-03 grant year is \$1,670,479,776;

WPOP is the weighted population for the relevant year, and is an estimate of Victoria's population as at 31 December of the relevant grant year provided by the Australian Bureau of Statistics, weighted in accordance with Schedule F (See appendix 2);

WPOP-1 is the weighted population for the previous grant year, and

WCI-I is the Commonwealth's Wage Cost Index 1.

The population weights in Schedule F of the AHCA were derived by applying the estimated resident Australian population as at 31 December 2000 to hospital separation data for public and private hospitals for 2000-01 national morbidity casemix data base (Commonwealth of Australia, 2003). This was the most complete data available at the time of the finalization of the 2003-08 AHCA

The hospital separations were disaggregated by age groups as represented in schedule F for the AHCA. Australian Bureau of Statistics (ABS) population data for 2000-01 was divided into the respective total number of separations for each age cohort to obtain weighted separations per head of population. This was multiplied by 1000 to obtain the weighted separations per 1000 population for each age cohort. The weighting for each age cohort was obtained by dividing separations per 1000 population for each age group by national weighted separation rate (male and female) per 1000 population. The national weighted separation rate was calculated as follows:

Total separations (male and female) for 2000-01 were 6,018,377.1

Total Australian population was 19,265,104

Therefore weighted separations per 1000 people nationally was 312.398
 $(6,018,377.1/19,265,104) * 1,000 = 312.398$

Each age cohort weighted separations per 1000 population was divided by this figure to obtain the weightings in Schedule F.

The same weights by age and sex applied are across all States. Nationally weighted data are used rather than separate state and territory data in order to account for cross border influences, which for the ACT are considerable. A high proportion of separations for ACT hospitals are attributable to NSW residents. Also, some high cost, specialized procedures such as paediatric heart and liver transplants, are performed at limited sites in Australia, meaning some patients must travel interstate to access these services (Racic, 2005).

The current proposal represents the next step in further developing the proposed Federal government reforms for the AHCA. Australian States have argued for many years that the AHCA grants should be properly indexed to reflect growth in demand and cost escalation. More recently, COAG has also indicated the need for reform of the growth index as a very high priority for the 2009 re-negotiation (Rudd, 2008)

The index for growth, which should better reflect health status, need and changed conditions can be achieved via the use of DCG-HCCs which can calculate relative risk scores based on the diagnoses of the patient (Antioch and Walsh, 2004; Antioch 2007b). Cost weights derived from the AR-DRG system could also be applied as an alternative.

These can be used to modify the population weights in Schedule F of the AHCA, which in turn impacts on Schedule G 1(a), 1(b), 3(a) and 25. These areas relate to general hospital funding along with mental health and palliative care. The relative risk scores derived from the DCG-HCCs could be applied by age and sex on either a State specific (Option 1) or national (Option 2) basis. Under the current AHCA, population weights in schedule F are national and are not updated over the life of the agreement. Another classification system that could be used as an alternative is the AR-DRG which can be used to derive average cost weight measures by age and sex for Option 1 (State Specific) or Option 2 (National).

The advantage of using the DCG-HCC relative risk scores is that they are based on a large severity adjustment tool that only uses patient diagnoses and not procedures and hence more accurately measures patient need. The AR-DRG system on the other hand does include procedures in the calibration process and implicitly may include discretionary practice patterns in surgery and the choice of procedures, with a somewhat less direct link to the health need of the patient (Antioch 2007b).

The methodology outlined below relates to DCG-HCC and DRGs. Conceptually the average relative risk score of DCG-HCC by age and sex is analogous to the concept of the average AR-DRG cost weight by age and sex, although the DCGs more accurately reflect patient need, risk (or severity) and can align with costs. The AR-DRG cost weight measure the relative resource intensity of care and relative potential costs, but also include procedures in their definitions.

4.2 DCG-HCC classification system for risk adjustment

The Health Care Financing Administration (HCFA) in the USA, recently renamed Centre for Medicare and Medicaid (CMS) uses a DCG based model to set capitation rates for Medicare plus choice plans. The original model introduced in 2000 used principal in-patient DCGs and was transitional to full encounter risk adjustment by HCFA in 2004. The DCG hierarchical condition category (HCC) using multiple conditions over full encounters was chosen by CMS. The DCG-HCC classification system uses diagnoses generated during patient encounters to infer medical problems. Diagnostic profiles and patient demographics predict costs. The system of Condition Categories (CC) hierarchies captures both chronic and serious acute disease manifestations and expected costs. Each CC co-efficient reflects the increment to expected costs that is independently associated with the condition. DCGs identify the person's full range of medical conditions over time from inpatient, ambulatory, and multi-sites (Pope et al 2004). For health plans that lack reliable all encounter claims data, a risk model using both pharmacy (RxGroups) and inpatient diagnoses may be best (Zhao et al 2001).

Whilst DCG-HCCs have been used for capitation funding where linked data are available, they have also been used in the USA using hospital episodic (unlinked) data by the private sector (Pope, 2005).

The Victorian Department of Human Services (DHS)'s Risk Adjustment Working Group (RAWG) successfully used episodic data for calibrating DCG-HCCs using episodic (unlinked) data, obtaining R of 44% for DxGroups and R2 of 36% for HCCs. Data using a unique patient identifier to group multiple separations together found R2 of 55%, a very good outcome. This preliminary work was undertaken for the deliberations of the Victorian Government (Department of Human Services - DHS) committee the Risk Adjustment Working Group (RAWG) chaired by Dr. Antioch (Antioch, Ellis and Gillett et al 2007). Given the relatively high R2, DCG-HCCs hold promise and could be effectively calibrated nationally for use in the proposed ACHA reforms.

Data compiled on an episodic basis is politically, legally and logistically easier to obtain and analyze than linked data in Australia. Mechanisms to effectively link even only hospital inpatient data would require a long time horizon to achieve as a unique patient ID is required. Whilst it may be possible to use the Medicare Number with age and sex, the questionable quality of such data by some hospitals in some States has been raised. Mechanisms to risk adjust the AHCA can effectively use DCG-HCC based on hospital episode data. The advantage of using such a risk adjustment system is that it is based only the diagnoses, reflecting the patient's health status and does not include procedures. Hence there is far less potential for confounding by the impact of discretionary practice in the choice of surgical procedures, compared to the DRG system which is based on both procedures and diagnoses.

4.3 Methodology

There are essentially two options depending on whether the reforms involve changes to the formulae for *state specific* or *national* risk adjusted weighted population factors. The initial analysis would be based on historical data to determine the potential impact of using the proposed risk adjustment formulae on the overall funding levels vis a vis actual levels over some years of the current AHCA. It would also assess the changes within and between states in health status, as reflected in analyses of the relative risk scores by age and sex over time. It could also assess the changes in health status for the aggregated national data over time.

Option 1 involves the modification of schedule F to develop State specific, risk adjusted weighted population factors. The reforms could determine average DCG- HCC Relative Risk (or average DRG cost weights) by State (and Territory) by age and sex and analyze the impact for the period 1998-99 to 2006-07⁵. Changes to Schedule F will impact on the formulas in schedule G 1(a), 1(b), 3(a) and 25. The DCG- HCC RR scores (or DRG cost weights) by age and sex will vary between the States. Hence the weighted population factors will vary between the states and represents a significant departure from the current approach in the AHCA's, which use national population weights only.

Option 2 involves the modification of schedule F to develop National, risk adjusted weighted population factors. The reforms could determine DCG-HCCs relative risk scores (or DRG cost weights) for national 'all States and Territories' by age and sex and analyze impact for the period 1998-99 to 2006-07. This will also impact on the formulae in schedule G 1(a) 1(b), 3(a) and 25, since the population weights are applied in those schedules of the Agreements. The HCC RR scores (or DRG cost weights) will not vary by State. They will be uniform nationally for each age and sex group. The approach of using national weighted population factors, that are uniform across all States and territories in option 2 is consistent with the current Agreements, given the current weighted population figures are national. Option 1 represents a significant departure from the approach for the current arrangements given relative risk scores, and the calculated weighted population ratios will vary between States. Details of the types of analyses for option 1 are included in Exhibit 1 below (Antioch 2007b).

Exhibit 1: Summary of methodology

Option 1:

Modification of schedule F to develop State specific, risk adjusted weighted population factors

- 1 Calibration of DCG-HCC (or DRGs) separately for each State and Territory using national morbidity data for public and private hospitals 1998-99 to 2006-07 (results of regression analyses).
2. Calculation of the average DCG-HCC Relative Risk scores (or DRG cost weights) for each State and Territory, each age/sex group⁶ each year 1998-99 to 2006-07. This will result in 8 separate calibration results for each year.

⁵ The rationale for analyzing data from 1998-99 to 2006-07 is to determine changes in health status over time. DoHA has national data for these years.

⁶ Age groups are 0-4, 5-14, 15-19, 20-39, 40-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+

3. Calculation of the new State specific population weights in schedule F by age and sex for the current AHCA (ie DCG-HCC RR scores or DRG cost weights multiplied by the factors used in the current methodology for schedule F) and its flow on effects on the other parts of the schedule. Since the current AHCA is based on 2000-01 morbidity and population data, apply the calibrated DCG-HCC or AR-DRG 2000-01 data by State.
4. Calculation of the new risk adjusted levels of the AHCA payments to each State using the States HCC Relative Risk score or DRG cost weights (ie application of the DCG RR scores or DRG cost weights across the entire agreement).
5. Comparison of the actual levels of State funding by the AHCA vis a vis the new risk adjusted AHCA levels. This assumes only modifying the base year weights, with no further adjustment for the life of the Agreement. Results of ANOVA in step 6 will assist to determine if additional adjustment should be made over time
6. Undertake a Four Way Analysis of Variance (ANOVA) of the DCG-HCC Relative Risk scores or DRG cost weights within States from 1998-99 to 2006-07 and between States each year and over that time period to assess the extent of any changes in health status within and between States. Independent variables include: State; years; age and sex. Dependent variable is RR score (ie health status) or DRG cost weights. Patient level data will be used. It will be based on the RR scores or cost weights prepared for step # 2.
7. Analysis of the differences between the population weights in the current AHCA and those calculated using the risk adjusted population weights by State and their impact on the funding allocations.
8. Recommendations of the political and administrative feasibility of using DCG-HCCs or DRGs in the AHCA and any involvement of the Australian Health Ministers Advisory Council (AHMAC) and COAG (Antioch 2007b).

The methodology outlined above for Option 1 would be similar for Option 2 (National) analyses with the key difference in approach relating at Steps 1 to 4 which would be based on aggregated state (national) data rather than state specific. Step 6 would involve a 3 Way Analysis of Variance (ANOVA) given the independent variables would only include years, age and sex.

If either of option 1 (State) or 2 (National) is considered feasible, policy options could be identified for the next AHCA commencing in 2009. DCG-HCCs or AR-DRGs could be applied, for example in one of two ways:

- Option A Base year on which the next AHCA will be based, as is the current policy, for applying the population weights and DCG RR scores or DRG cost weights which are not re-calculated for each year of the AHCA.
- Option B Recalculate the population weights (with adjustments by DCG RR scores or DRG cost weights), and hence the AHCA, every year of the agreement (or some other agreed specified time interval).

The key output from the proposed analysis in Exhibit 1 relates to Option A above, which compares the actual level of State funding by the current AHCA with the new risk adjusted AHCA levels under Option 1 (State). In this regard, Exhibit 1 step 5 involves modifying the base year weights only, with no further adjustment for the life of the Agreements. It compares the actual levels of state funding by the AHCA vis a vis the new risk adjustment AHCA levels. The base year population weights are only modified using risk adjustment in this step, since it is based on the current policy of not recalculating population weights each year of the Agreement. Similar methodology relates to Option 2 (national analyses).

To explore option B above, which involves the recalculation of the population, DCG relative risk scores or DRG cost weights over the life of the Agreements, then the results of the ANOVA in Step 6 will assist to determine if risk adjustments should be made over time, since it includes time as an independent variable.

Should these historical analyses find significant changes in health status by age and sex through analysis of the relative risk scores or the DRG cost weights, then the formulae could include an adjustment factor for the 2009 renegotiations guided by the extent of change identified to date. There may be potential to revise the index over time depending on new analyses of DCG-HCC scores/ or DRG cost weights or a political decision would be taken to use the changes found by historical analyses to inform a prospective/ forecasted index.

National morbidity and costing data by State for the period 1998-99 to 2006-07 held by Federal Department of Health and Ageing for hospitals could be used. Such data is currently used to develop cost weights for DRGs. It could be used to develop relative risk scores for the DCG-HCCs on an episodic basis. The technique will

involve, as was done for the Victorian DHS exercise, regressing hospital costs on an array of all the DxGroups and also the DCG-HCC binary variable. The DCG-HCC binary variables are the key output of interest (Antioch, 2007b).

5. Conclusion

A reform agenda for the 2009 re-negotiation of the AHCA has considered the integration of economic and clinical evidence and clinical practice guidelines into clinical practice and also mechanisms to improve equity to the formulae and AHCA index using risk adjustment concepts to more accurately measure health need. These reforms build upon successful reforms in Victoria in the areas of risk adjustment of Casemix funding arrangements and also the implementation of best practice across two large hospital networks involving six major hospitals, over a decade.

Equity can be achieved through risk (severity) adjustment of the AHCA formula and index to achieve greater alignment between health need and funding levels Australia-wide. The risk adjustment formulae can use either relative risk scores of the DCG-HCC or the cost weights of Australian DRGs. Changes to the formulae for state specific and also national risk adjusted weighted population factors are considered and can assess changes in health status by age and sex over time using Analysis of variance (ANOVA) statistical techniques. Analyses of differences between the population weights in the current AHCA and those using the risk adjustment rates of either DCGs or DRGs can be considered along with their impact on funding allocations.

State and/or national risk adjustment options are also considered with regard to whether the base year weights are only used (as is done for the current AHCA), or whether the risk adjusted population weights using either DCGs or DRGs would be recalculated for every year of the AHCA (or for some agreed time interval).

Should historical analyses reveal significant changes in health status within and/or between states over time by age and sex, or for the national analysis over time by age and sex, then the formulae and index could include a risk adjustment factor in the 2009 re-negotiations.

The other reform addresses integrating Evidence Based Medicine and Clinical Practice Guidelines into clinical practice using NHMRC methodologies which have been successfully used in Victoria's reforms by Bayside Health and Western Health. The reform can also potentially embrace other current State level reforms across Australia eg in the case of Victoria - reforms such as the *Redesigning Hospital Care Program* and *Clinical Network Evidence Based Practice* initiatives in 2008-09 budget. The work by Bayside and Western Health were discussed nationally and in New Zealand by Antioch with sponsorship by the Australian Health care and Hospitals Association and Womens & Childrens' Hospital Australasia with a key recommendation by national participants to roll out such methodology Australia-wide.

The proposed AHCA reform in this area of translation evidence into clinical practice would achieve the implementation of the recommendations of the Australian Health Care Association sponsored seminars and further integrate the Performance Indicators and benchmarks developed by the Reform Commission to achieve greater accountability Australia-wide.

They will also stimulate greater synergy within and between Australian States and internationally. The Federal government, via the AHCA, could provide a program "*Evidence Based Medicine and Clinical Practice Guideline implementation*" which can be funded and regulated by either a new schedule to the current form of the AHCA or alternatively, as an important initiative of the newly established *Health and Hospitals Fund* announced in the 2008 budget speech. The final form that such reforms would take would clearly depend upon the deliberations of COAG, which are underway and not final at this time. The current reform options provide some input for key stakeholders to consider as the COAG reform agenda moves forward. They integrate the feedback from national and international audiences in the area, with the risk adjustment reforms being previously presented to an international forum of health actuaries at the international conference in 2007 (Antioch 2007b). The reform and agenda on the Evidence Based Medicine and Clinical Practice Guideline implementation could be considered within the second stage of COAG at the December 2008 meeting of the National Healthcare Agreement as part of the broader SPP. The financial and regulatory frameworks for the risk adjustment reforms might also be best considered at the second stage of COAG's reform stages but with implementation concepts being more fully developed by the third stage when the NHHRC report of June 2009 is available and COAG will consider additional longer term health reforms to be implemented as either updates in the National Health care agreements or as new NP agreements over time.

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APPENDIX 1

(Source NHHRC, 2008)

Health challenge	Performance benchmark (or tracking indicators) and accountability
1. Closing the gap in Indigenous health status	1.1 Comparative life expectancy at birth: Commonwealth <i>1.2 Birth weight</i> <i>1.3 Rates of rheumatic heart disease</i>
2. Investing in prevention	2.1 Potentially preventable hospital admissions per 1000 population: Commonwealth 2.2 Immunisation rates for vaccines in the national schedule: Commonwealth 2.3 Proportion of women in 50-69 year aged group who have had breast screen in last two years: Commonwealth 2.4 Proportion of babies who are low birth weight: Commonwealth <i>2.5 Proportion of adults and children overweight or obese</i> <i>2.6 Proportion of people who are daily smokers</i>
3. Ensuring a healthy start	3.1 Proportion of children who have received all developmental health checks: State 3.2 Proportion of pregnancies with an antenatal contact in the first trimester: State <i>3.3 Proportion of women who consume alcohol during pregnancy</i> <i>3.4 Proportion of women who smoke during pregnancy</i> <i>3.5 For children with a suspected disability or developmental delay, waiting time at 90th percentile from referral to diagnosis and/or treatment/intervention</i>
4. Redesigning care for those with chronic and complex conditions	4.1 Waiting time at 90 th percentile from referral to aged care assessment: Commonwealth 4.2 Number of nursing home type bed days per 1000 population > 70: Commonwealth 4.3 Waiting time at 90 th percentile for access to subacute inpatient care: State 4.4 Proportion of patients aged 65 years and over (55 for ATSI) who are discharged from an emergency department to home/nursing home who have evidence of communication back to relevant primary health care service: State 4.5 Patients with psychosis seen by a community mental health professional within 7 days following discharge from a public mental health service provider: State 4.6 Waiting time at 90 th percentile from referral for radiation oncology to first treatment: Commonwealth 4.7 Primary care patients seen in emergency departments per 1000 population: Commonwealth 4.8 Proportion of people with asthma with a written asthma plan: Commonwealth 4.9 Proportion of people with diabetes mellitus who have received an annual cycle of care within general practice and proportion with a glycosolated haemoglobin (HbA1c) below 7: Commonwealth
5. Recognising the health needs of the whole person	5.1 Waiting time for admission to a supported mental health place in community: State 5.2 Waiting time for admission to a supported drug and alcohol place in community: State 5.3 Waiting time for mental health emergency community support: State 5.4 Patient experience with being treated with dignity: Jurisdiction relevant to service 5.5 Waiting time for access to public dental health services: State
6. Ensuring timely hospital access	6.1 Elective surgery: State 6.1.1 Waiting time at 90th percentile for cardio-thoracic and cancer surgery 6.1.2 Median waiting time for all other surgery 6.1.3 Waiting time at 90th percentile for all other surgery

Health challenge	Performance benchmark (or tracking indicators) and accountability
	6.2 Emergency access waiting times for emergency patients by triage categories: State 6.2.1 Category 1 6.2.2 Category 2 at 80th percentile 6.2.3 Category 3 at 75th percentile 6.2.4 Category 4 at 70th percentile 6.2.5 Category 5 at 70th percentile
7. Caring for and respecting the needs of people at the end of life	7.1 Family experience with care process: State 7.2 Number of emergency department visits and hospital days in last 30 days of life per person: State
8. Promoting improved safety and quality of health care	8.1 Investigation of hospital separations with a diagnosis from agreed national list of complications: State 8.2 Appropriate prescription of antibiotics by GPs for upper respiratory tract infections: Commonwealth 8.3 Appropriate safety and quality measures for primary and community care: Commonwealth
9. Improving distribution and equitable access to services	9.1 Indigenous rate relative to the non-Indigenous rate (each indicator) 9.2 Rate in lowest quintile by socio-economic status of area relative to highest quintile rate (each indicator) 9.3 Rural and remote rates relative to the metropolitan rate (each indicator)
10. Ensuring access on the basis of need, not ability to pay	10.1 Patients reporting deferring needed treatment because of financial barriers: Commonwealth 10.2 Proportion of general practice services bulk billed: Commonwealth
11. Improving and connecting information to support high quality care	11.1 Patient experience with being provided with adequate information: Jurisdiction relevant to service 11.2 Proportion of hospital discharge summaries that are provided electronically to the patient-identified general practitioner or other health service: State 11.3 Proportion of referrals made to specialists that are undertaken electronically: Commonwealth
12. <i>Ensuring enough, well-trained health professionals and promoting research</i>	12.1 Number of graduating students in health professions relative to requirements: Commonwealth 12.2 Number of new graduates employed in their field of training, immediately post-graduation: State 12.3 Number of accredited and filled clinical training positions for all professions: State 12.4 Number of undergraduate placement weeks for medicine, nursing and other health service professions per 1000 population relative to national average: State 12.5 Research performance: Commonwealth

APPENDIX 2:

Schedule F: Population weights in 2003-2008 AHCA

The following weights are used to calculate “weighted population” wherever required within the Agreements

Males

<i>Age</i>	<i>Weight</i>
0-4	0.915729
5-14	0.225421
15-19	0.348312
20-39	0.443065
40-59	0.829932
60-64	1.783737
65-69	2.458605
70-74	3.303467
75-79	4.441940
80-84	5.283180
85+	5.715956

Females

<i>Age</i>	<i>Weight</i>
0-4	0.733850
5-14	0.179159
15-19	0.420619
20-39	0.857098
40-59	0.843405
60-64	1.430257
65-69	1.846244
70-74	2.520058
75-79	3.277013
80-84	4.121366
85+	4.762230

Note: These weights have been derived by applying the estimated resident Australian population as at 31 December 2000 to hospital separation data for public and private hospitals from the 200-01 National Morbidity (Casemix) Data base.

Source: Commonwealth of Australia (2003), page 33