



Delivering a **Healthy WA**

METROPOLITAN CLINICAL SERVICES MASTERPLAN

NEUROSURGERY SERVICES

WORKING GROUP

Department of Health
November 2005

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SECTION 1: WHOLE OF SYSTEM PLANNING PRINCIPLES

1. Principles That Underpin Clinical Service Planning

The Reid report highlighted the need for change in the public health system due to:

- An ageing and growing population,
- Widening gaps in the health status between the wealthy and the poor,
- Escalating demands for emergency care and hospital beds,
- An emphasis on tertiary hospital care,
- Projected workforce shortages,
- Rapidly changing demographics in the metropolitan areas,
- Significant increases in demand for mental health, aged care and rehabilitation services, and
- Increasing difficulty in continuing to fund the escalating costs of health care.

In order to address these issues the Reid Report made a significant number of recommendations to improve health services¹ as well as highlighting measures for achieving financial sustainability, including the need for:

- initiatives to keep people out of hospital through improved health promotion, prevention and community based care,
- shifting the balance from high cost tertiary care to either secondary based care or more significantly to primary / community care,
- improving clinical practices in hospitals - focusing on reducing length of stay, increasing day of surgery admissions, increasing day procedures and improved utilisation reviews,
- achieving greater efficiencies in support services, and
- improving the revenue base.

The assessment of the implications of these reform recommendations are reflected in the assumptions and demand projections that underpin the Clinical Services Framework 2005-2015 (CSF) - refer to the HRIT web link for this document. Consequently, in order to deliver the outcomes identified in the Reid report and the subsequent CSF, it is important that:

- a) the reform principles are clearly articulated and
- b) the financial parameters are well understood by all stakeholders

The information in the following table summarises the key principles and parameters that will be used to guide the development of the clinical services planning going forward.

¹ The Health Reform Implementation Taskforce is currently implementing these reforms (refer to www.health.wa.gov.au/HRIT/home/ for details)

Major Services Reform Principles	Objectives
<p>Primary and community care service strategies shall complement and where necessary integrate with Hospital Emergency and Ambulatory Care functions to avoid unnecessary hospital admissions.</p>	<p>To reduce the demand for hospital beds / care by ensuring patients are actively assessed, managed/treated prior to entry into a hospital inpatient setting.</p>
<p>Average length of stay within the acute hospital setting shall be reduced to applicable interstate / international best practice benchmarks.</p>	<p>To implement strategies such as clinical guidelines, early discharge and home support that will result in the patient minimising his / her time in an acute hospital bed.</p> <p>Concentration on ambulatory models of care to significantly increase the proportion of same day patient treatment (less than 23 hours).</p>
<p>Health care shall be provided in the most appropriate setting.</p>	<p>To reduce the current over emphasis or reliance on the acute care environment by maximizing the use of:</p> <ul style="list-style-type: none"> • ambulatory care, • sub-acute care, • patient hotel or • other transitional care settings. <p>To reduce emphasis on treatment in tertiary hospitals by treating patients closer to their homes in general and secondary hospitals.</p>
<p>New models of care are to be developed using an evidence based and patient centric approach.</p>	<p>Clinical pathways to be developed that:</p> <ul style="list-style-type: none"> • integrate across specialties / sub-specialties, • promote the whole continuum of care, and <p>are standardized for common disorders</p>
<p>Ensure patient safety and quality control principles underpin all new models of care.</p>	<p>New models of care and clinical pathways must continue to improve upon patient safety and the quality of health services provided to patients.</p>
System Management Principles	Objectives
<p>All quaternary and nominated tertiary services, shall be planned and coordinated on a State-Wide basis</p>	<p>It is essential that unnecessary duplication of services in each area is avoided and that unique services are integrated via pathways that span the north, south and where appropriate</p>

	<p>women, children and regional.</p> <p>Where necessary joint appointments or area based credentialing shall facilitate the provision of staff to complement this integrated clinical approach.</p>
All other tertiary and secondary services are to be planned and coordinated on an area basis.	Achievement of effective role delineation between the respective tertiary hospitals and their secondary counterparts within each area.
Acknowledge future workforce limitations and structure the clinical service plans to take into consideration these workforce realities.	Develop new workforce roles and organisational structures that will help address workforce issues (e.g. multi skilling).
Acknowledge the importance of workforce training.	Develop workforce training initiatives that make better use of the limited clinical training positions and resources (e.g. virtual training, mock wards, trainee staff rotation etc)
Acknowledge the importance of forward planning and the impact that technology and changing work practices may have on the delivery of health services in the future.	Develop clear strategic directions for each clinical service (to the extent possible) that take account of the recognised technology and trends.
Health Infrastructure to help facilitate the change process.	<p>Health buildings / infrastructure to be developed to facilitate new models of care.</p> <p>Understand the impact and advantages that can be gained from technology investment including electronic patient records and other ICT initiatives.</p>
Optimise the role of private sector.	Where health care and / or financial benefits can be demonstrated, the role of the private sector should be optimised.
Funding Parameters	Implication
Recurrent Budget	Reforms must be implemented to achieve a growth rate of no more than 5.5% pa over the next 10 years.
Capital Budget	<p>The overall capital budget as agreed by Government is fixed.</p> <p>As no additional capital funding is available it is essential that should additional functional areas / facilities be required that these are offset by complementary reductions elsewhere in the infrastructure plan or individual project plan.</p>

SECTION 2: CURRENT STATUS OF NEUROSURGERY SERVICES

2.1 Service Definition

In terms of the information datasets routinely available to the Department of Health, **Neurosurgery Services** are defined by the Service Related Group (SRG) Neurosurgery, which is comprised of the following sub groups:

- Craniotomy
- Head injuries
- Other neurosurgery.

Neurosurgery services include all acute surgical procedures for the treatment of disorders and diseases of the brain, spinal cord and peripheral nervous system.

The primary focus of the following data analysis is with respect to hospital based inpatient services – ambulatory and multi day stay in the public hospital sector.

2.2 Activity/Utilisation Trends

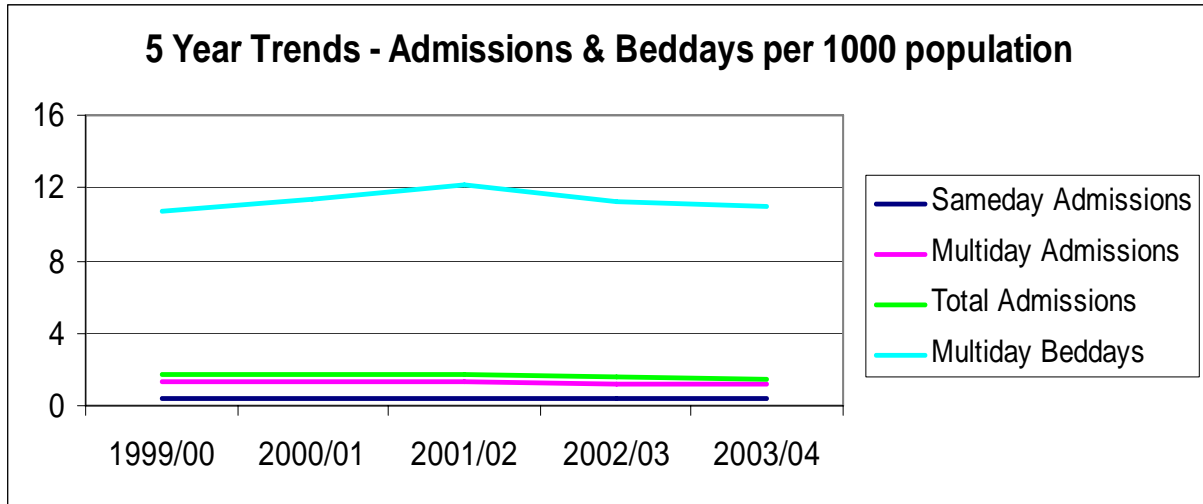
(a) Overall Activity 1999/00 - 2004/05(1)

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
Activity						
Sameday Admissions	549	550	602	583	504	
Multiday Admissions	1,954	1,879	1,858	1,709	1,768	
Total Admissions	2,503	2,429	2,460	2,292	2,272	
Multiday Beddays	15,120	16,338	17,404	16,448	16,309	
Rates per 1,000 population						
Sameday Admissions	0.4	0.4	0.4	0.4	0.3	
Multiday Admissions	1.4	1.3	1.3	1.2	1.2	
Total Admissions	1.8	1.7	1.7	1.6	1.5	
Multiday Beddays	10.7	11.4	12.0	11.1	10.9	

(b) Hospital Separations 1999/00 - 2004/05(1)

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	Annual Rate of Change 02/03 - 03/04
Fremantle Hospital	186	177	127	148	130		-12.2%
King Edward memorial Hospital					2		
Princess Margaret Hospital	577	529	514	478	420		-12.1%
Royal Perth Hospital	578	632	725	666	630		-5.4%
RPH Shenton Park Campus	36	13	26	23	25		8.7%
Sir Charles Gairdner Hospital	707	676	694	659	712		8.0%
TOTAL TERTIARY	2,084	2,027	2,086	1,974	1,919		-2.8%
Armadale-Kelmscott Memorial Hosp.	81	74	70	95	102		7.4%
Bentley Hospital	9	6	3	4	7		75.0%
Joondalup Health Campus	112	166	142	110	87		-20.9%
Kalamunda District Community Hosp.	10	11	7	6	3		-50.0%

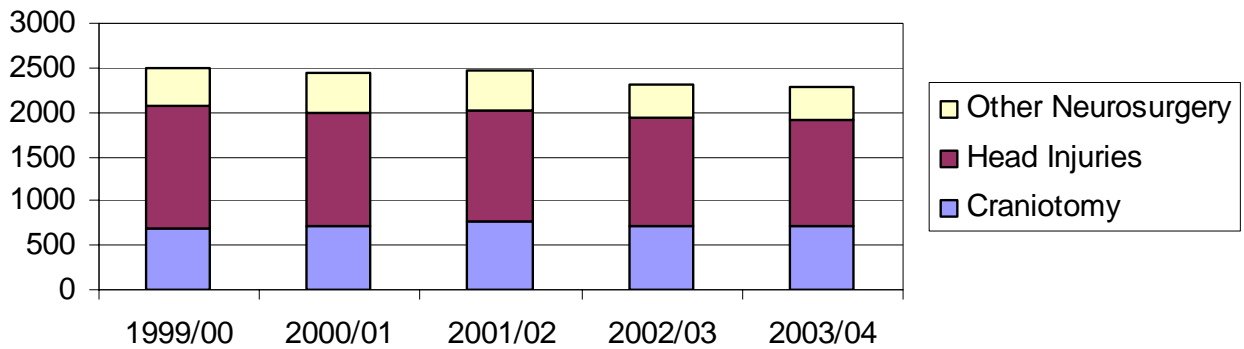
Murray District Hospital	2	2	2	1	2		100.0%
Osborne Park Hospital	11	9	6	6	6		0.0%
Peel Health Campus	73	65	67	34	31		-8.8%
Rockingham-Kwinana District Hosp.	40	40	56	43	53		23.3%
Swan District Hospital	82	31	24	25	71		184.0%
<i>TOTAL NON-TERTIARY</i>	419	404	377	324	362		11.7%
Total	2,503	2,429	2,460	2,292	2,272		-0.7%



Data Analysis

- Admissions decreased overall from 1999/00 to 2003/04 by about 9%. Multiday beddays increased from 1999/00 to 2001/02, but have since declined, with the 2003/04 level being 8% higher than in 1999/00.
- The proportion of sameday activity increased from 22% to 25% over the period 1999/00 - 2002/03 and then declined in 2003/04 to 22%.
- Over the period 1999/00 to 2003/04 the greatest overall decline in separations occurred at Peel (-58%), while Rockingham experienced the largest increase (+33%).
- Admissions per 1000 head of population have declined from 1.8 to 1.5, while multiday beddays per 1000 reached a high of 12.1 in 2001/02 (from 10.7 in 1999/00), but then declined to 10.9 in 2003/04.

5 Year Sub-Specialty Activity Trends



Metropolitan Tertiary Hospital DRGs - 2003/04	Stay Type			Total Separations	% Day Only
	Day only Separations	Overnight Separations	ALOS		
DRG					
Other Head Injury	225	336	1.4	561	40%
Craniotomy W/O CC	3	275	8.3	278	1%
Intracranial Injury	12	192	7.2	204	6%
Craniotomy W Severe or Moderate CC	2	177	12.3	179	1%
Craniotomy W Catastrophic CC		170	20.4	170	0%
Skull Fractures	12	98	5.0	110	11%
Ventilation or Craniotomy Procs for Multiple Significant Trauma		96	36.5	96	0%
Procs for Cerebral Palsy, Muscular Dystrophy, Neuropathy W/O Cat or Sev CC	33	44	2.9	77	43%
Spinal Cord Conditions W or W/O O.R. Procedures W/O Catastrophic or Severe CC	21	51	6.9	72	29%
SpinalProcedures W/O Catastrophic or Severe CC	5	40	6.2	45	11%
Spinal Cord Conditions W or W/O O.R. Procedures W Catastrophic or Severe CC	1	31	21.3	32	3%
SpinalProcedures W Catastrophic or Severe CC		24	13.4	24	0%
Multiple Trauma, Died or Transf to Another Acute Caer facility, LOS<5 Days	6	16	2.1	22	27%
Pituitary Procedures		20	7.9	20	0%
Ventricular Shunt Revision W No Other O.R. Procedures		18	5.8	18	0%
Procs for Cerebral Palsy, Muscular Dystrophy, Neuropathy W Cat or Sev CC		11	13.2	11	0%
Grand Total	320	1,599	10.0	1,919	17%

Metropolitan Non-Tertiary Hospital DRGs - 2003/04	Stay Type			Total Separations	% Day Only
	Day only Separations	Overnight Separations	ALOS		
DRG					
Other Head Injury	136	112	1.7	248	55%
Procs for Cerebral Palsy, Muscular Dystrophy, Neuropathy W/O Cat or Sev CC	35	14	1.1	49	71%
Intracranial Injury	5	20	4.2	25	20%
Skull Fractures	7	11	2.4	18	39%
SpinalProcedures W/O Catastrophic or Severe CC		14	2.4	14	0%
Procs for Cerebral Palsy, Muscular Dystrophy, Neuropathy W Cat or Sev CC		3	20.7	3	0%
Multiple Trauma, Died or Transf to Another Acute Caer facility, LOS<5 Days	1	1	1.0	2	50%
Spinal Cord Conditions W or W/O O.R. Procedures W/O Catastrophic or Severe CC		2	6.5	2	0%
Spinal Cord Conditions W or W/O O.R. Procedures W Catastrophic or Severe CC		1	29.0	1	0%
Grand Total	184	178	2.5	362	51%

Data analysis

- As a proportion of all neurosurgery, craniotomies have increased by about 4% since 1999/00, while the proportions of both head injuries and other neurosurgery have declined by about 2%.
- Non-tertiary hospital activity shows a much higher proportion of same days than tertiary hospitals (51% versus 17%).
- Other head injury is the most common procedure by DRG in both the tertiary non-tertiary sectors.

SECTION 3. FUTURE provision of Neurosurgery Services

3.1 Issues arising from CSF consultation process

There were no specific issues raised during the CSF clinical consultation process with respect to neurosurgical services.

3.2 System Activity Projections Included in Clinical Services Framework

The following table provides an estimate of the metropolitan public hospital demand for the specialty based on patient place of residence. Note that these demand projections are based on forecasts from the HARDS Model that underpinned the Clinical Services Framework (CSF). Included in Appendix 3 is an overview of the method used in preparing these estimates.

Separation Projections for 2005/06, 2010/11 & 2015/16

Place of Residence	Same-day Admissions			Multi-day Admissions			Total Admissions			Multi-day Beddays		
	2005/06	2010/11	2015/16	2005/06	2010/11	2015/16	2005/06	2010/11	2015/16	2005/06	2010/11	2015/16
Armadale	84	80	86	161	143	117	245	223	203	1,260	1,309	1,170
Bentley	21	20	14	79	52	60	100	71	73	778	545	676
Fremantle	9	9	8	44	48	31	54	57	39	448	348	343
Interstate	11	10	4	34	36	41	45	46	46	406	395	453
Joondalup	46	49	43	161	190	169	207	239	212	1,298	1,824	1,659
Kalamunda	22	27	48	51	49	55	74	76	103	480	493	604
Murdoch	58	57	71	216	178	139	274	234	210	2,317	1,853	1,560
Osborne Park	56	59	64	264	224	222	320	282	286	2,182	1,990	2,083
Peel	17	16	16	93	79	82	110	95	98	574	694	746
Rockingham	51	53	57	121	138	111	172	191	168	975	1,533	1,105
RPH	52	49	33	165	174	196	217	223	229	1,385	1,505	1,822
Rural WA	44	37	32	305	319	387	348	356	419	3,101	3,177	4,034
SCGH	35	30	33	143	84	64	178	114	97	1,327	848	663
Swan	54	58	57	162	177	162	217	235	219	1,226	1,549	1,431
<i>Total Metro</i>	559	553	568	2,000	1,889	1,835	2,560	2,442	2,403	17,757	18,062	18,349

ESRG Breakdown 2010/11

ESRG Breakdown - 2010/11	Stay Type			Total Separations	% Day Only
	Day only Separations	Overnight Separations	ALOS		
059 Head Injuries	431	716	4.4	1,147	38%
060 Craniotomy	6	876	14.5	882	1%
061 Other Neurosurgery	116	298	7.7	414	28%
Grand Total	553	1,889	9.6	2,442	23%

3.3 Reviewing demand / service targets

The future service delivery framework included in the Clinical Services Framework (CSF) were designed at a high strategic level suitable for metropolitan wide system planning. There were significant consultations to develop these system level clinical service frameworks and it is now the aim of this section to seek further consultation and advice to develop operational clinical service plans by reviewing targets that could be used to refine this modelling.

Question(s)

Do the demand projections in the CSF fit with your understanding of your speciality's future morbidity /mortality trends? And if not why not?

3.4 World's CURRENT best practice in neurosurgery

Refer to web links and literature (appendix 2) to answer the following questions

3.4.1 INPATIENT CARE

Question(s)

What conditions, currently treated by your speciality as inpatients, could have been prevented by timely and effective care?

How should patients who have diseases or co-morbidities that extend beyond any one specialist medical group be best cared for?

What would your speciality need to do differently to reduce total multi day bed demand by 30%, whilst maintaining/improving patient outcomes?

3.4.2 NON INPATIENT CARE

Question(s)

For patients in your speciality with chronic conditions, how many have easy access to:

- (a) Best practice guidelines?
- (b) Regular follow up and monitoring/case management?
- (c) Early medical intervention as required?
- (d) Patient education and empowerment?

3.5 Other Key Issues

3.5.1 CLINICAL LINKAGES

Question(s)

What relationships does your speciality have with other specialities or services that the architects need to be mindful of, when designing new/refurbished hospitals including those where it makes clinical or operational sense to co-locate together?

3.5.2 WORKFORCE

Current workforce supply - Generally

The impact of the ageing population means that while the national workforce pool currently grows at an annual rate of around 170,000 p.a. its growth will reduce to 12,500 p.a. by 2020. This massive drop in supply will be magnified in health as:

- Many health disciplines already have a significant supply shortage, and
- The ageing population will increase demand for all health professionals.

An example of the projected workforce supply shortage is for medical practitioners, where the demand is expected to increase at 2.29% p.a. resulting in a predicted 35.1% shortage of medical practitioners across the WA public sector by 2022. The forecasts also estimate a similar shortfall in the supply of nursing staff.

For the purposes of metropolitan wide clinical services planning, it is essential that new ways of working are developed to make significantly better use of clinicians' time because of the clinical workforce issue.

Question(s)

1. With the knowledge that the health workforce is predicted to be diminishing how could
 - Your role be done differently
 - Some of your work be done in a different setting
 - Elements of your role be done by another Health Care Worker

while still achieving best clinical outcomes, efficiency and safety?

2. What would you change to make to the WA health system safer and to help retain existing staff?

3.5.3 TECHNOLOGY/INNOVATION

Capturing clinical information in bulky medical records does not always facilitate its timely retrieval or appropriate exchange of information between clinicians. Information can also be lost in illegible handwriting.

Clinical guidelines have become a routine part of clinical practice in other parts of the world. Often they are supported/backed by clinical decision/support algorithms which are designed to improve reliability, safety and clinical care decisions for patients.

Question(s)

1. How should we be capturing and exchanging clinical data and organising our medical records to maximise patient outcomes?
2. Does your specialty feel there are opportunities for clinical support systems to be part of our hospital system by 2011? If yes, will this impact on your answer to the question in section 3.4.1 above regarding reducing total bed demand by 30% whilst maintaining/improving patient outcomes
3. What existing, new or emerging medical equipment and/or technology will be important to the way you practice healthcare delivery in 10 years time? How will this impact on the demand for inpatient accommodation (beds)?
4. What experience have you had in other health systems that should be imported into WA health?

3.5.4 PREVENTION

Question(s)

For your speciality, what common conditions should have a more aggressive prevention strategy implemented. Do you have suggestions for doing this?

3.5.5 TEACHING/RESEARCH

Question(s)

Given the answers above, how do we ensure that teaching and research still have their appropriate priority?

3.5.6 IDENTIFY ANY OTHER ADDITIONAL KEY CLINICAL PLANNING ISSUES RELEVANT TO YOUR SPECIALITY

PREDICTING YOUR SPECIALTIES FUTURE?

17. After reviewing worlds best practice and your 2005 multiday inpatient activity projections, please provide a 'guesstimate' of what percentage of todays patient cohort will be treated in the following settings by the year 2011?

Care Setting		Percentage of activity in 2011
Hospital Care		
	Multiday	
	Same day :surgery/procedures (including DO23) Medical care Rehabilitation	
	Outpatient	
	Subtotal % of hospital care	%
Out of hospital care		
	Primary care	
	Respite	
	Step down	
	Medi hotel	
	Rehabilitation	
	Chronic care management	
	Subtotal % of out of hospital care	%
Home care		
	Hospital in the home	
	Other domiciliary care	
	Other (please specify)	
	Subtotal % of home care	%

		100%
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Appendix 1 - Clinical Services Framework

Definitions - Neurosurgery Services

Level 1

Not applicable

Level 2

Not applicable

Level 3

Not applicable

Level 4

- Minor head injuries dealt with by general surgeon
- Neurosurgical consultation available
- Operating equipment adequate for emergency neurosurgery
- Link with level 4 rehabilitation services

Level 5

- Diagnostic services and surgery on low, moderate and high risk patients by on call neurosurgeon
- Designated neurosurgical beds
- Access to specialist SRN
- 24 hour access to CT
- Link with brain and spinal injury rehabilitation
- May have some teaching and research role

Level 6

- Able to deal with all cases including all emergency cases
- Neurosurgical ward and neurosurgical high dependency/ICU
- Neurosurgery registrar/RMO
- Link with level 5 rehabilitation service
- Access to specialist SRN
- Statewide referral role
- Undergraduate and post graduate teaching role
- Research role

Appendix 2 - General Web links

INFORMATION RESOURCES TO INFORM THE METROPOLITAN CLINICAL SERVICES PLANNING PROCESS

“The Advisory Board is a membership of 2,500 of the country's largest and most progressive health systems and medical centres. The Advisory Board provides best practices research and analysis to the health care industry, focusing on business strategy, operations and general management issues.

Gathering data across and beyond the membership, the Advisory Board publishes daily and weekly news services, 50 major studies and 3,000 customized research briefs each year on progressive management and clinical practices in health care. In general, the research focuses on the best (and worst) demonstrated practices, helping member institutions benefit from one another's learning curves.”

North Metropolitan Area Health Service Executive has a membership to the Advisory Board Company and their staff access reports from the site.”

<http://www.advisoryboardcompany.com/>

“The Australian Institute of Health and Welfare (AIHW) is Australia's national agency for health and welfare statistics and information.” Includes biennial publications such as Australia's Health

<http://www.aihw.gov.au/>

Aust. Australian Dept of Health and Ageing The State of our Public Hospitals June 2005 Report

<http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/health-ahca-sooph-index05.htm>

“The Australian Patient Safety Foundation Inc. (APSF) is a non-profit independent organisation dedicated to the advancement of patient safety. The APSF provides leadership in the reduction of harm to patients in all health care environments.”

<http://www.apsf.net.au/>

South Metropolitan Area Health Service has a corporate membership to ARCHI and staff can access all parts of the site.

<http://www.archi.net.au/content/index.phtml/itemId/45034>

“The National Institute of Clinical Studies (NICS) is Australia's national agency for improving health care by helping close important gaps between best available evidence and current clinical practice.”

<http://www.nicsl.com.au/>

“The core mission of the CEC is to identify issues of a systemic nature that affect patient safety and clinical quality in the NSW health system and to develop and advise on implementation strategies to address these issues.

Part of the role of the CEC is to acquire and share information about how well the NSW health system is performing and to use this information to improve the performance of the system.”

<http://www.cec.health.nsw.gov.au/>

“Hunter New England Health's Maggie Program is fundamentally redesigning our healthcare systems by focusing on improving 'patient journeys'. We are doing this to maximise the safety and satisfaction of patients and staff.

The Maggie Program is Hunter New England Health's major reform program. It will help us to meet many of the organisation's goals.

The program is about re-orienting healthcare processes to truly focus on the patient.

By walking in the shoes of patients and their carers, we will redesign the system so that every patient's 'journey' fits around them, rather than making the patient fit the system.”

<http://www.hnehealth.nsw.gov.au/maggie/index.htm>

<http://www.pc.gov.au/study/healthworkforce/index.html>

Aust. Queensland Health Action Plan: Building a Better Health Service for Queensland
October 2005

http://www.health.qld.gov.au/publications/corporate/action_plan.asp

“The needs of today's health system will be significantly different to the needs of the future. Victorians are getting older and living longer. As a result, health care is becoming less about the treatment of endemic disease and more about the management of chronic disease into old age.

Victoria. A better state of health is the Victorian Government's plan to address the challenges of the future, improve health services and ensure a sustainable health system for all Victorians.”

<http://www.health.vic.gov.au/betterstate/index.htm>

Aust. Victorian Dept of Human Services Design Guidelines for Hospitals and Day Procedure Centres (DGHDP) March 2005

<http://www.healthdesign.com.au/vic.dghdp/>

<http://www.cihr-irsc.gc.ca/e/193.html>

Research on "setting wait-time benchmarks for key medical procedures" 16 Nov 2005

<http://www.cihr-irsc.gc.ca/e/29902.html>

<http://www.cihr-irsc.gc.ca/e/29905.html>

<http://www.cihr-irsc.gc.ca/e/29904.html>

<http://www.cihr-irsc.gc.ca/e/29903.html>

Canada Health Canada Commission on the Future of Health Care in Canada (Romanow Commission)

<http://www.hc-sc.gc.ca/english/care/romanow/index1.html>

"The nation turns to the Institute of Medicine (IOM) of the [National Academies](#) for science-based advice on matters of biomedical science, medicine, and health. A non-profit organization specifically created for this purpose as well as an honorific membership organization, the IOM was chartered in 1970 as a component of the National Academy of Sciences.

The Institute provides a vital service by working outside the framework of government to ensure scientifically informed analysis and independent guidance. The IOM's mission is to serve as adviser to the nation to improve health. The Institute provides unbiased, evidence-based, and authoritative information and advice concerning health and science policy to policy-makers, professionals, leaders in every sector of society, and the public at large."

<http://www.iom.edu/>

"Kaiser Permanente's Care Management Institute (CMI) is a unique, pioneering institution with a mandate to drive, fund, and catalyze care management activities throughout our non-profit HMO. CMI strives to make the right thing easier to do.

Care management, also commonly referred to as "disease management", has been widely acclaimed by forward-looking health care experts as the next, major, evolutionary step beyond the cost-focused innovations of "managed care."

CMI was created in 1997 for the express purpose of helping Kaiser Permanente improve the quality of care and health outcomes for our members.

Drawing on the extensive clinical experience, research, and data of an integrated health care system with more than 8 million members - as well as from research centres internationally - CMI synthesizes knowledge about the best clinical approaches in order to create, implement, and evaluate effective and efficient care management programs."

<http://www.kpcmi.org/>

“Kaiser Permanente's Centre for Health Research/Northwest and Hawaii is a professionally independent, non-profit research institute whose mission is to improve individual health and inform health policy. Its work brings together scientists from many fields—anthropology, biostatistics, informatics, dentistry, economics, endocrinology, epidemiology, genetics, gerontology, medical care organization, nursing, nutrition, preventive medicine, psychiatry, public health, social psychology, and sociology—who conduct research and demonstration projects across a broad range of health and health care issues.”

<http://www.kpchr.org/public/default.asp>

“Our purpose is to provide a focus and resources for Kaiser Permanente to better participate in shaping the nation's health policy agenda. We bring experts together to research and analyse health policy, with a goal of increasing understanding of policy issues and helping provide solutions. Working in collaboration with foundations, policy institutes, research programs, policymakers, and other organizations, the Institute seeks to develop unbiased information about health policy issues and alternatives.”

<http://www.kpihp.org/about/index.html>

<http://www.oecd.org/dataoecd/58/47/35624825.pdf>

HealthCast 2020: Creating a Sustainable Future

“The health systems of nations around the world may be unsustainable if unchanged over the next 15 years. Globally, healthcare is threatened by a confluence of powerful trends -- increasing demand, rising costs and uneven quality. If ignored, these trends will overwhelm health systems, creating massive financial burdens as well as major health problems for current and future generations.

PricewaterhouseCoopers interviewed 700 health and business leaders in 27 countries around the world about their health systems. While no one country has all of the answers, solutions to local problems can be found in many places. Creating a sustainable strategy for the future depends on organisations' abilities to learn and customise workable solutions within their own societal context.”

<http://www.pwcglobal.com/Extweb/pwcpublications.nsf/docid/C50392B2A90B03C6802570AF003ACCE>
[E](#)

<http://www.wise.nhs.uk/cmswise/default.htm>

UK NHS Institute for Innovation and Improvement - supersedes the NHS Modernisation Agency

“The NHS Institute for Innovation and Improvement is a new and exciting venture which will provide an ambitious focus for new ideas, technologies and practices to improve services to patients, users and the public. From the outset, we will be receptive to the needs of the NHS, working as part of the wider NHS system to draw on the best skills and expertise to clarify solutions to the priority issues.”

<http://www.institute.nhs.uk/>

UK National Audit Office A Safer Place for Patients: Learning to Improve Patient Safety
November 2005.

“The UK National Audit Office report reviews progress made by the NHS in reducing unintentional harm to patients in hospitals. The report states that more than 2,000 deaths occurred in NHS hospitals over the period April 2004 to March 2005 as a result of patient safety incidents. "About 980,000 patient safety incidents (including medication errors, equipment defects and patient accidents) and near misses were reported - some two thirds of incidents resulted in no long-term harm. Around a half of incidents in which NHS hospital patients were unintentionally harmed could have been avoided, if lessons from previous incidents had been learned. The cost of mistakes to the NHS was estimated to be £2bn a year in lost bed days on top of the costs of litigation." "A retrospective study of patient records in two English hospitals found that just over 10 per cent of patients experienced an 'adverse event'. Around half of these (5.2 per cent) were judged to have been preventable. Responses to the NAO survey showed that, in 2004-05, trusts recorded some 2,081 deaths as a result of patient safety incidents, but it is widely acknowledged that there is significant under-reporting of deaths and serious incidents. Other estimates of deaths range from 840 to 34,000 but, in reality, the NHS simply does not know."

http://www.nao.org.uk/publications/nao_reports/05-06/0506456.pdf

“The National Patient Safety Agency (NPSA) is a Special Health Authority created to co-ordinate the efforts of all those involved in healthcare, and more importantly to learn from, patient safety incidents occurring in the NHS.

From 1 April 2005, the NPSA's work also encompasses: safety aspects of hospital design, cleanliness and food (transferred from NHS Estates); ensuring research is carried out safely, through its responsibility for the Central Office for Research Ethics Committees (COREC); and is supporting local organisations in addressing their concerns about the performance of individual doctors and dentists, through its responsibility for the National Clinical Assessment Service (NCAS), formerly known as the National Clinical Assessment Authority. It also manages the contracts with the three confidential enquiries. This responsibility has been transferred from the National Institute for Clinical Excellence (NICE).”

<http://www.npsa.nhs.uk/>

“The Agency for Healthcare Research and Quality's (AHRQ) mission is to improve the quality, safety, efficiency, and effectiveness of health care for all Americans. Information from AHRQ's research helps people make more informed decisions and improve the quality of health care services. AHRQ was formerly known as the Agency for Health Care Policy and Research.”

<http://www.ahrq.gov/>

“The Institute for Healthcare Improvement (IHI) is a not-for-profit organization driving the improvement of health by advancing the quality and value of health care.”

<http://www.ihl.org/ihl>

“The RAND Corporation is a non profit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world.”

http://www.rand.org/research_areas/health/

BMJ British Medical Journal - Topic Collections on:

Home page for links to all collections: <http://bmj.bmjournals.com/collections/index.shtml>

Health Care Statistics http://bmj.bmjournals.com/cgi/collection/health_care_statistics

Health Economics http://bmj.bmjournals.com/cgi/collection/health_economics

Medical Managers http://bmj.bmjournals.com/cgi/collection/medical_managers

Organisation of Health Care

http://bmj.bmjournals.com/cgi/collection/Organisation_of_health_care%3Aonclinical

Other Management http://bmj.bmjournals.com/cgi/collection/other_management

Patient Safety / Clinical Risk / Medical Error

http://bmj.bmjournals.com/cgi/collection/medical_error_patient_safety

Quality Improvement (Including CQI and TQM)

<http://bmj.bmjournals.com/cgi/collection/quality-improvement>

Resource Allocation (including rationing) http://bmj.bmjournals.com/cgi/collection/resource_allocation

31.1. CMAJ – Canadian Medical Association Journal - Collections

Home page for links to all collections: <http://www.cmaj.ca/cgi/collection/>

See the links under Health Policy, in particular Organization of Health Care

http://www.cmaj.ca/cgi/collection/organization_of_health_care

31.2. MJA - Medical Journal of Australia - Topic Lists

Home page for links to all topics: <http://www.mja.com.au/Topics/index.html>

Administration and Health Services

<http://www.mja.com.au/Topics/Administration%20and%20health%20services.html>

Appendix 3 - CSF Harges Demand Model Methodology

Background

A key factor underpinning the development of the Clinical Services Framework (CSF) is the projected future demand for clinical services. To ensure the most accurate projections were obtained, external verification of the demand modelling underpinning the Reid/Health Reform Committee (HRC) Report was undertaken by Harges and Associates. They have extensive experience in demand modelling and are currently working, or have provided modelling for, the Health Departments in New South Wales, Victoria, Queensland and South Australia, as well as groups in the private health sector. The methodology used, 'Market Projection Analysis', was developed primarily to assist state health authorities in projecting future acute hospital demand - and to provide a tool for modelling supply alternatives.

The Harges approach is a complex modelling technique that projects future demand taking into account population growth, population ageing as well as age/sex/specialty specific trends in admission rates and length of stay.

Data

There are two main sources of data used in the Harges modelling - hospital morbidity data and population projections.

The hospital morbidity data is routinely collected information on each separation to a WA hospital. For this exercise, morbidity data for each hospital (private and public) were used for the five years 1999/00 to 2003/04. Data required included patient age group, gender, payment class, stay type (same day or overnight), cause of admission, place of treatment, place of residence and length of stay.

The other major source of data is population projections. These data are sourced from the Australian Bureau of Statistics Census 2001 and are estimated resident population projections according to age/sex/SLA for June 30 of the financial year to which the hospital morbidity data refer.

Process

A. Review of current patterns of service delivery

This entails an analysis of specialty-specific patterns of utilisation. The two basic elements are catchment tables (outlining where patients receive services in comparison to where they live) and a population-based review of 'expected' and actual admission rates (identifying patterns of under/over utilization).

B. Projection of future demand (population-based)

Projections are calculated for specialty-specific demand for residents of all areas of the state. The projections take into account population growth and ageing as well as specialty-specific trends in admission rates, length of stay and same day admissions. Projections are made for separations and bed days. For each specialty, projections are broken into same day, non-tertiary and tertiary components. Demand projections do not indicate where patients will be treated - only the nature and volume of work to be expected from the residents of a given area.

It is important to recognise that these projections outline the volume and type of work that can be anticipated if the population projections are correct and the trends in service utilisation continue into the future. Projections are based upon historic trends. They do not imply that this is the optimal outcome - only that this is the direction in which the system is heading. Interpretation of results needs to be cognizant of this qualification.

C. Projection of supply

Given the referral patterns identified in A, projected demand from B is distributed to generate the likely case mix and volume at selected hospitals - assuming the same referral patterns but adjusted demand (as a result of trends, population growth etc). This is essentially a status quo model that provides information about what each individual hospital will look like in the absence of deliberate strategies to change the service mix. While this is rarely a desirable outcome it provides a base case scenario.

D. Projection of supply (scenario models)

The end point of services planning is development of a model that provides a capacity to model alternate supply scenarios - and the consequent impact on the capital works and operational funding for each hospital under the proposed scenario. For each scenario the impact on any given hospital is identified in terms of specialty-specific projections of separation and bed days.

A supply scenario was created that redirected activity to represent the recommendations/reforms of the Reid/HRC report. This took into account things such as ensuring patients were treated closer to home and proposed new role delineation of hospitals.

Assumptions

- The occupancy rates used to calculate beds are as follows:

Multi-day

- 90% for tertiary hospital medical/surgical cases;
- 90% for all mental health and rehabilitation;
- 80% for obstetrics cases at King Edward Memorial Hospital for Women;
- 65% for all other obstetrics cases; and
- 85% for everything else.

Same-day

- Dialysis - 2 sessions per day, 6 days per week, every week of the year; and
 - Activity other than dialysis - 1.5 sessions per day, 250 days per year.
- Activity levels are not restricted by workforce, bed or funding limitations. This assumes that the workforce can be increased or decreased in volume and the mix of labour changed according to demand.
 - The level of service patients receive in the base year (2003/04) are carried forward and that the trends evident in the five years data 1999/00 to 2003/04 are reasonable going forward.