



Delivering a **Healthy WA**

METROPOLITAN CLINICAL SERVICES MASTERPLAN

MEDICAL IMAGING 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 women, children and regional.</p>

	Where necessary joint appointments or area based credentialing shall facilitate the provision of staff to complement this integrated clinical approach.
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.	Health buildings / infrastructure to be developed to facilitate new models of care. Understand the impact and advantages that can be gained from technology investment including electronic patient records and other ICT initiatives.
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	The overall capital budget as agreed by Government is fixed. 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.

SECTION 2: CURRENT STATUS OF METROPOLITAN INPATIENT SERVICES

2.1 Service Definition

In terms of the information datasets routinely available to the Department of Health, **Metropolitan Inpatient Services** refers to inpatient services provided at public hospitals situated in the metropolitan area and public patients treated in privately managed public hospitals.

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. This data analysis excludes the impact of patients classified as unqualified neonates and boarders.

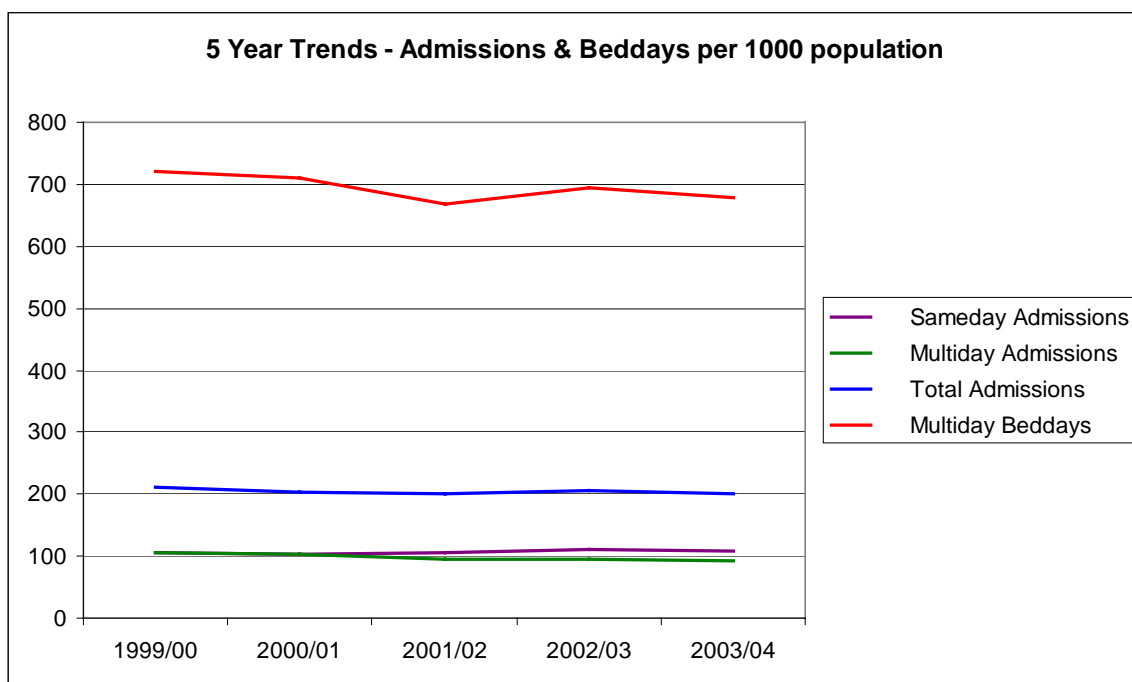
2.2 Activity/Utilisation Trends

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

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
Activity						
Sameday Admissions	149,305	146,311	151,912	162,219	162,511	
Multiday Admissions	150,321	146,340	139,527	141,304	140,662	
Total Admissions	299,626	292,651	291,439	303,523	303,173	
Multiday Beddays	1,023,914	1,021,405	974,444	1,026,645	1,019,463	
Rates per 1,000 population						
Sameday Admissions	105.3	101.7	104.3	109.7	108.2	
Multiday Admissions	106.0	101.7	95.8	95.5	93.6	
Total Admissions	211.3	203.4	200.1	205.2	201.8	
Multiday Beddays	722.0	710.0	669.1	694.1	678.5	

(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	42,082	44,040	45,367	46,228	45,476		-1.6%
Graylands Hospital	2,536	2,554	2,067	1,811	1,595		-11.9%
King Edward Memorial Hospital for Women	14,014	13,188	12,831	12,599	12,782		1.5%
Princess Margaret Hospital for Children	22,534	22,590	20,623	21,212	20,478		-3.5%
Royal Perth Hospital	53456	53643	49546	53,503	55,338		3.4%
RPH Shenton Park Campus	16,710	13,602	13,815	14,832	15,459		4.2%
Sir Charles Gairdner Hospital	58,746	52,754	55,395	58,779	58,586		-0.3%
TOTAL TERTIARY	210,078	202,371	199,644	208,964	209,714		0.4%
Armadale-Kelmscott District Hospital	12850	13680	14299	17186	17933		4.3%
Bentley Hospital	7656	7629	7287	7396	6775		-8.4%
Joondalup Health Campus	23,791	23,842	23,863	23,748	23,513		-1.0%
Kalamunda District Community Hospital	4304	4471	4236	3953	3725		-5.8%
Murray District Hospital (Pinjarra)	800	725	698	632	494		-21.8%
Next Step Drug & Alcohol Services	668	646	544	508	474		-6.7%
Osborne Park Hospital	9315	9197	9160	9780	8778		-10.2%
Peel Health Campus	10000	11291	13629	13053	12682		-2.8%
Rockingham-Kwinana District Hospital	7149	6796	6930	7036	7055		0.3%
Selby Authorised Lodge	158	128	107	144	149		3.5%
Swan District Hospital	10985	10111	9459	9667	10313		6.7%
Woodside Maternity Hospital	1872	1764	1583	1456	1568		7.7%
TOTAL NON-TERTIARY	89,548	90,280	91,795	94,559	93,459		-1.2%
Total	299,626	292,651	291,439	303,523	303,173		-0.1%



Data Analysis

- Total admissions increased by only 1% in the period 1999/00 to 2003/04. This growth is due to increases in sameday admissions (9% growth over the period) as multiday admissions fell by approximately 9,700 from 1999/00 to 2003/04.
- Multiday beddays fell from 1999/2000 to 2001/02 to be nearly 50,000 or 5% lower than in 1999/2000. By 2003/04 beddays were only 4,000 below 1999/2000 levels.
- Graylands Hospital showed a 37% decrease from 1999/2000 to 2003/04. Armadale Kelmscott District Memorial Hospital showed a 40% increase over the same period
- Admissions per 1000 head of population decreased from 211.3 in 1999/2000 to 201.8 in 2003/04, multiday beddays per 1000 decreased over the five year period to 678.5 in 2003/04 from 722.0 in 1999/2000.

Metropolitan Tertiary Hospital Top 20 DRGs - 2003/04	Stay Type			Total Sum of Eps	% Day Only
	Day Only Separations	Overnight + Separations	ALOS		
DRG					
L61Z, Admit for Renal Dialysis	43,117	2	1.00	43,119	100%
R63Z, Chemotherapy	15,709	5	2.80	15,714	100%
Z64B, Other Factors Influencing Health Status Age<80	2,393	296	14.25	2,689	89%
F42B, Circulatory Disorders W/O AMI W Invasive Cardiac Inves Proc W/O Complex DX/Pr	1,871	607	2.35	2,478	76%
G44C, Other Colonoscopy, Sameday	2,466	0	N/A	2,466	100%
G45B, Other Gastroscopy for Non-Major Digestive Disease, Sameday	2,079	0	N/A	2,079	100%
R61C, Lymphoma and Non-Acute Leukaemia, Sameday	1,953	0	N/A	1,953	100%
Q61C, Red Blood Cell Disorders W/O Catastrophic or Severe CC	1,644	272	3.17	1,916	86%
Z60A, Rehabilitation W Catastrophic or Severe CC	0	1,681	27.71	1,681	0%
F74Z, Chest Pain	553	1,031	1.85	1,584	35%
Z62Z, Follow Up After Completed Treatment W/O Endoscopy	1,483	97	1.88	1,580	94%
O60D, Vaginal Delivery W/O Complicating Diagnosis	89	1,476	2.69	1,565	6%
Z40Z, Follow Up After Completed Treatment W Endoscopy	1,528	16	1.38	1,544	99%
G67B, Oesophagitis, Gastroent & Misc Digestive Systm Disorders Age>9 W/O Cat/Sev CC	461	1,069	2.75	1,530	30%
Q60B, Reticuloendothelial and Immunity Disorders W/O Catastrophic or Severe CC	1,328	193	4.96	1,521	87%
L67C, Other Kidney and Urinary Tract Diagnoses W/O Catastrophic or Severe CC	1,211	265	4.12	1,476	82%
I68C, Non-surgical Neck & Back Conditions W Pain Management Proc/Myelogram	1,374	94	10.67	1,468	94%
I26Z, Other Wrist and Hand Procedures	631	766	1.65	1,397	45%
L41Z, Cystourethroscopy W/O CC	1,027	251	2.43	1,278	80%
D40Z, Dental Extractions and Restorations	1,123	117	1.89	1,240	91%
Grand Total	82,040	8,238	8.16	90,278	91%

Metropolitan Non-Tertiary Hospital Top 20 DRGs - 2003/04	Stay Type			Total Sum of Eps	% Day Only
	Day Only Separations	Overnight + Separations	ALOS		
DRG					
L61Z, Admit for Renal Dialysis	16,286	1	1.00	16,287	100%
G44C, Other Colonoscopy, Sameday	3,988	0	N/A	3,988	100%
O60D, Vaginal Delivery W/O Complicating Diagnosis	100	3,877	3.09	3,977	3%
C08Z, Major Lens Procedures	3,218	68	1.19	3,286	98%
G45B, Other Gastroscopy for Non-Major Digestive Disease, Sameday	1,971	0	N/A	1,971	100%
R63Z, Chemotherapy	1,826	0	N/A	1,826	100%
Z60A, Rehabilitation W Catastrophic or Severe CC	0	1,568	25.02	1,568	0%
O01D, Caesarean Delivery W/O Complicating Diagnosis	1	1,370	4.66	1,371	0%
F74Z, Chest Pain	648	609	1.62	1,257	52%
J11Z, Other Skin, Subcutaneous Tissue and Breast Procedures	1,134	101	2.01	1,235	92%
N07Z, Other Uterine and Adnexa Procedures for Non-Malignancy	925	254	1.90	1,179	78%
L41Z, Cystourethroscopy W/O CC	983	100	1.88	1,083	91%
Z40Z, Follow Up After Completed Treatment W Endoscopy	1,017	6	1.33	1,023	99%
G67B, Oesophagitis, Gastroent & Misc Digestive Systm Disorders Age>9 W/O Cat/Sev CC	249	649	2.72	898	28%
N04Z, Hysterectomy for Non-Malignancy	3	857	3.94	860	0%
G09Z, Inguinal and Femoral Hernia Procedures Age>0	263	594	1.34	857	31%
Z64B, Other Factors Influencing Health Status Age<80	531	311	41.12	842	63%
D11Z, Tonsillectomy or Adenoidectomy	152	684	1.02	836	18%
H04B, Cholecystectomy W/O Closed CDE W/O Catastrophic or Severe CC	8	814	1.83	822	1%
U67Z, Personality Disorders and Acute Reactions	0	819	6.96	819	0%
Grand Total	33,303	12,682	6.79	45,985	72%

Data Analysis

- Admit for Renal Dialysis (L61Z) is the main driver of activity in the tertiary and non-tertiary sectors. It accounts for approximately half of all sameday activity.
- Vaginal Delivery without Complicating Diagnosis (O60D) has the largest number of overnight + separations in non-tertiary sector and second largest in the tertiary sector.
- Tertiary hospitals have a higher sameday rate than non-tertiary hospitals (91% VS 72%).

SECTION 3: FUTURE provision of Medical Imaging Services

3.1 Issues arising from CSF consultation process

There were no specific issues raised during the CSF clinical consultation process with respect to medical imaging services although the relationship with other acute services is acknowledged.

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	20,564	24,874	30,906	16,021	15,197	14,657	36,585	40,071	45,563	99,611	107,231	121,162
Bentley	6,390	7,683	10,649	6,368	5,129	5,456	12,758	12,812	16,105	58,064	55,661	64,091
Fremantle	5,065	5,734	7,277	4,350	3,815	4,513	9,415	9,549	11,789	35,107	32,936	37,107
Interstate	659	654	675	1,701	1,684	1,766	2,359	2,338	2,442	14,464	14,159	14,366
Joondalup	21,188	28,253	37,843	17,661	18,957	22,160	38,849	47,210	60,003	105,206	125,004	152,665
Kalamunda	4,504	5,698	7,314	4,440	4,814	5,002	8,945	10,513	12,316	31,435	33,684	36,671
Murdoch	26,594	32,749	44,154	19,845	18,011	18,905	46,440	50,760	63,059	144,139	152,920	189,388
Osborne Park	26,281	31,082	37,139	21,780	21,089	20,954	48,062	52,171	58,093	156,528	161,606	169,602
Peel	10,143	12,937	16,785	7,670	7,965	8,791	17,813	20,902	25,576	54,162	62,782	78,020
Rockingham	14,091	18,344	24,136	11,805	12,117	13,495	25,896	30,461	37,631	66,890	76,479	92,009
RPH	21,978	25,041	26,219	16,032	15,326	15,953	38,010	40,367	42,172	123,579	123,402	130,044
Rural WA	12,292	15,300	19,082	14,326	14,610	14,790	26,618	29,910	33,872	117,996	120,957	127,439
SCGH	7,277	8,543	10,256	5,742	5,402	4,993	13,019	13,945	15,248	60,064	56,041	52,554
Swan	19,722	24,443	29,933	14,206	15,403	16,429	33,927	39,846	46,363	95,804	108,021	116,760
Total	196,748	241,336	302,368	161,947	159,519	167,865	358,696	400,854	470,233	1,163,047	1,230,883	1,381,878

3.3 Reviewing demand / service targets

The forecasts included in the 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 specialty's future morbidity /mortality trends? And if not why not?

3.4 World's CURRENT best practice in medical imaging

Refer to web links in appendix 2 and literature (as appropriate) 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 the 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 aging 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 Workerwhile 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%

Appendix 1 - Clinical Services Framework

Definitions - Inpatient Services

Role delineation applicable to the individual clinical service

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%3Anonclinical

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.