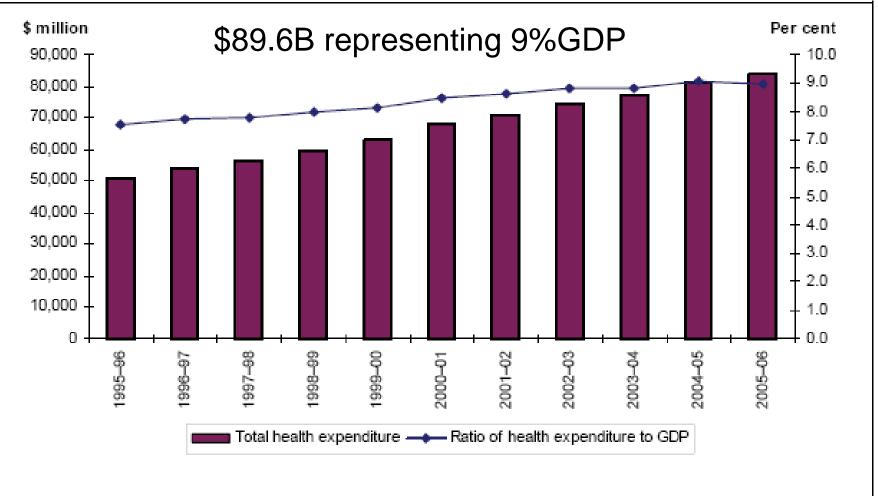


Cost-effective chronic disease treatment – targeting global risk to prevent death and avoidable hospitalization

Alan Cass Director Renal Division acass@george.org.au

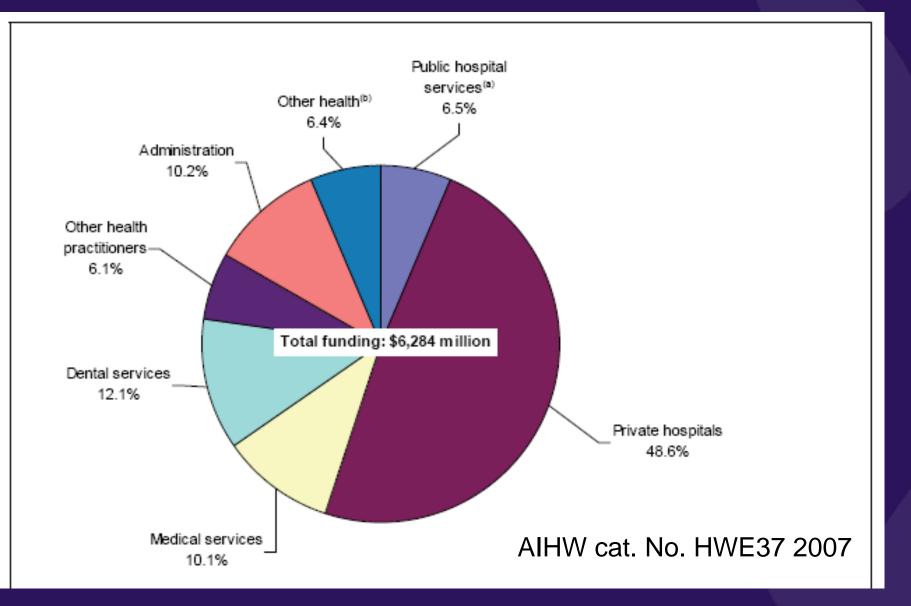
Total health expenditure and GDP



(a) Constant price health expenditure for 1995–96 to 2005–06 is expressed in terms of 2004–05 prices.

AIHW cat. No. HWE37 2007

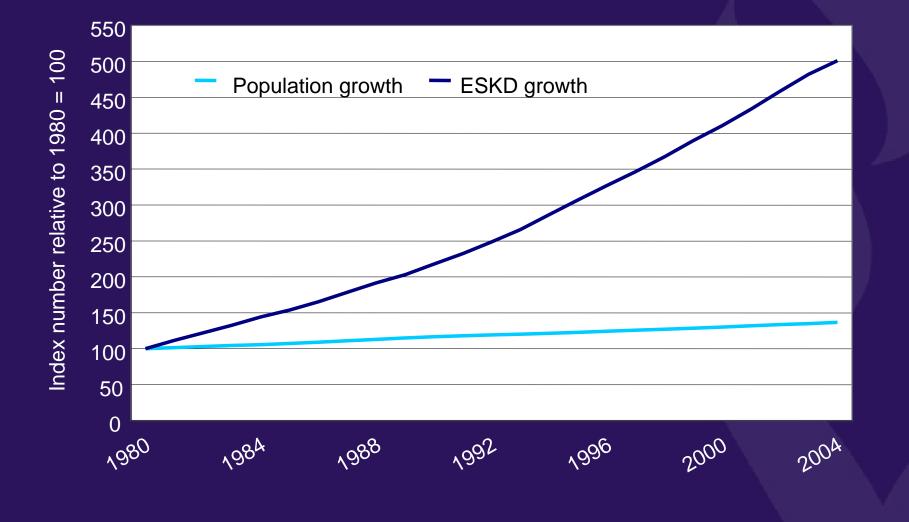
Private Health Insurance Expenditure



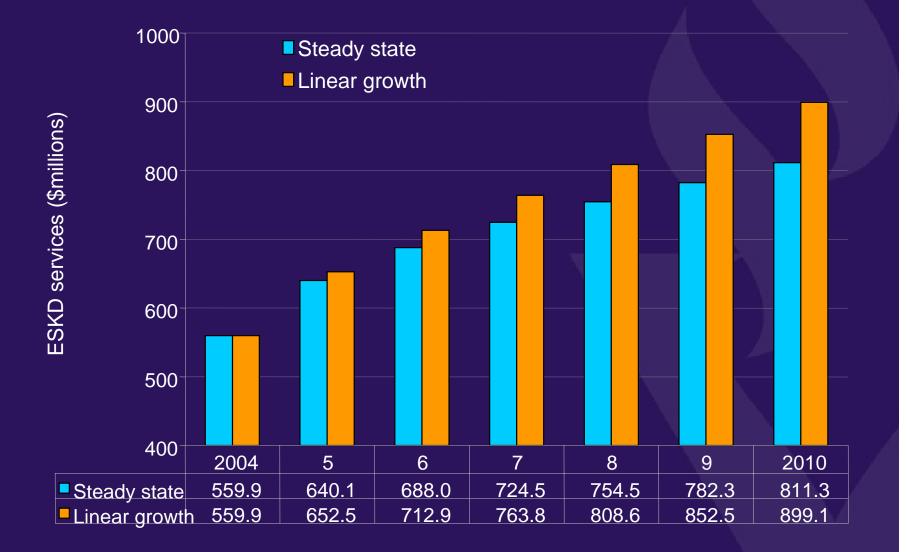
ABS Leading Causes of Death 2004

Multiple Causes	Number (%)	Rank
Cancer	52217 (39.4)	1
IHD	46985 (35.5)	2
Stroke	23359 (17.6)	3
Influenza and pneumonia	18305 (13.8)	4
Heart failure	16837 (12.7)	5
Hypertensive diseases	15605 (11.8)	6
Kidney failure	15235 (11.5)	7
Chronic lower respiratory	14190 (10.7)	8
Organic (incl. mental disorders)	11843 (8.9)	9
Diabetes mellitus	11749 (8.9)	10

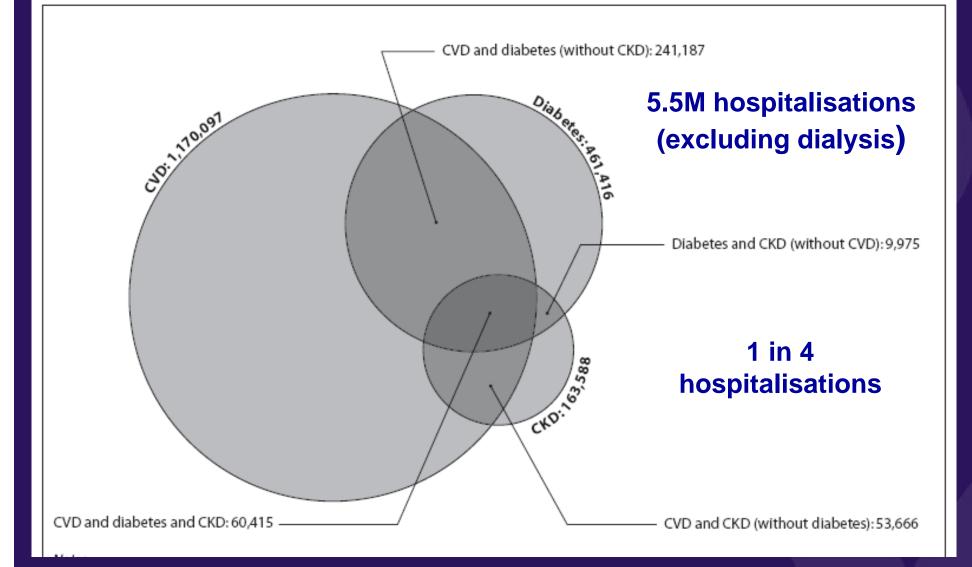
Growth in total demand for RRT services from 1980 to 2004



Projected annual health care costs for RRT for each year from 2004-10



Burden hospitalisation 2004-5



AIHW cat. no. CVD37 2007

Hypertension Management Guide for Doctors 2004



Heartine 1300 36 27 87 Heartste www.heartfoundation.com.au



Australian Government National Health and Medical Research Council

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Report that Automatic Auto Proping Test 10, To 4, April 2010 1228



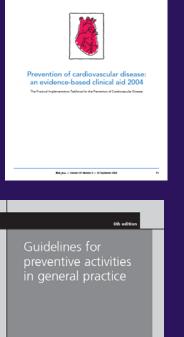




SCHEDULE OF PHARMACEUTICAL BENEFITS FOR APPROVED PHARMACISTS AND MEDICAL PRACTITIONERS

> This Schedule contains some minor stylistic, formatting and display changes necessary to accommodate other media outputs.

EFFECTIVE FROM 1 MAY 2007 (ALL PREVIOUS EDITIONS CANCELLED)



Diabetes Management in



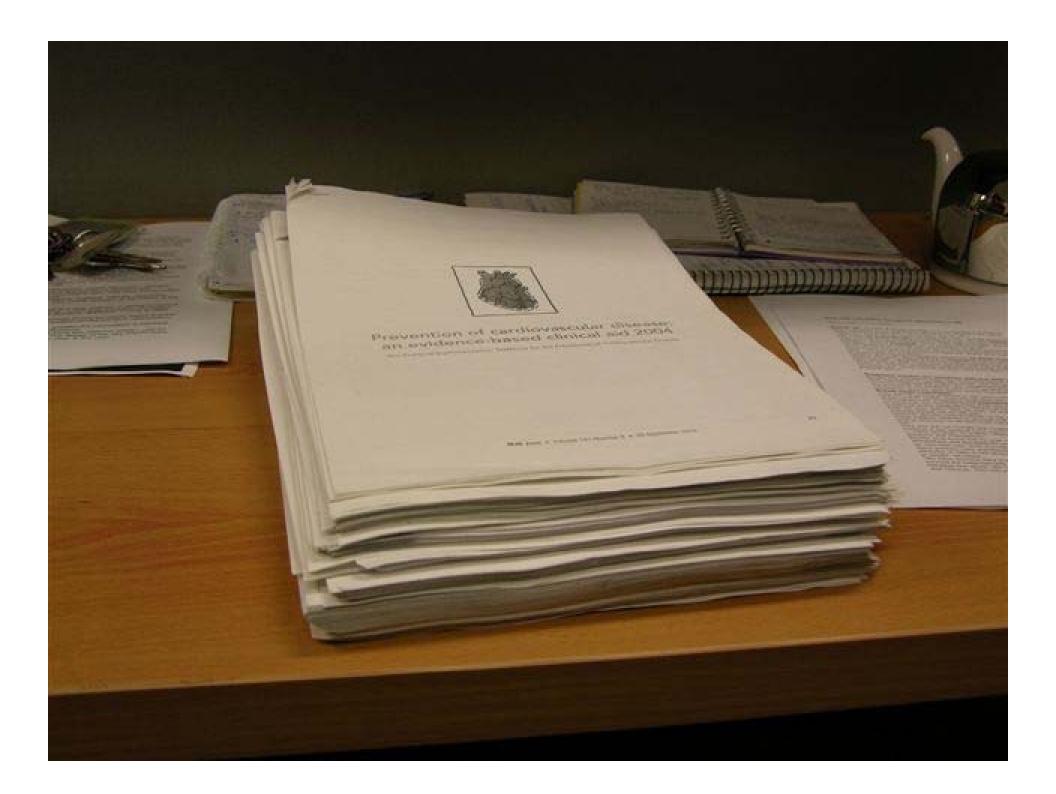
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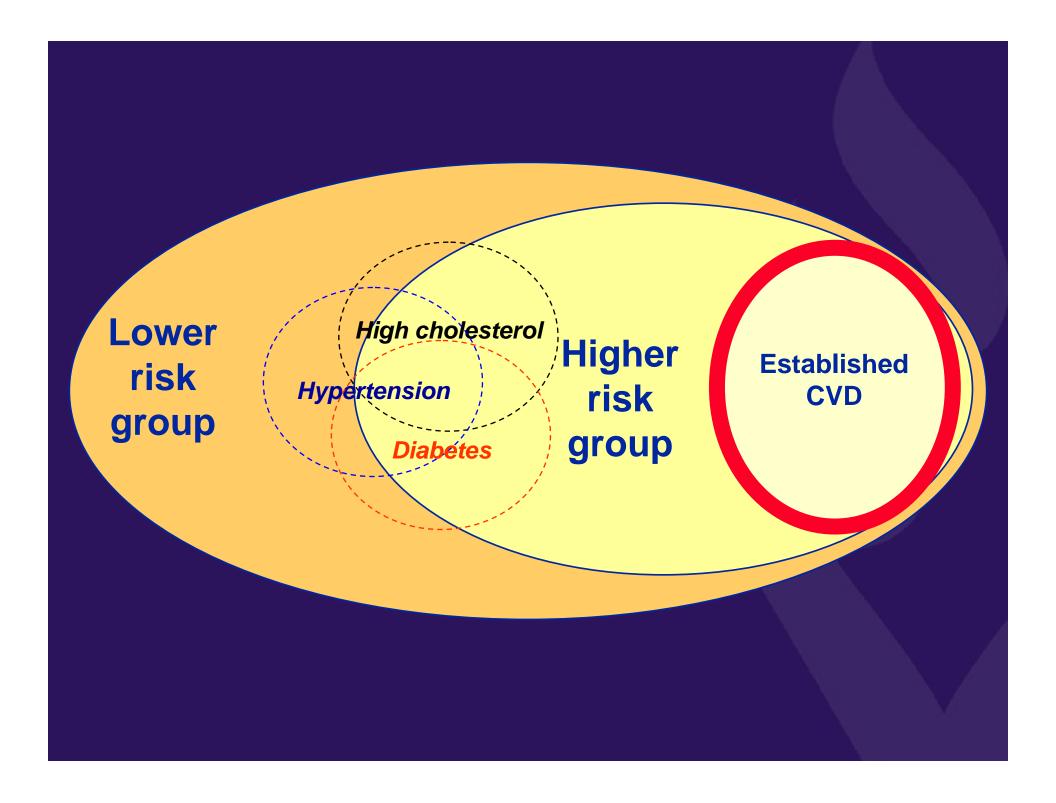


ATIONAL STRATEGY FOR HEART, STROKE AND VASCULAR HEALTH IN AUSTRALIA

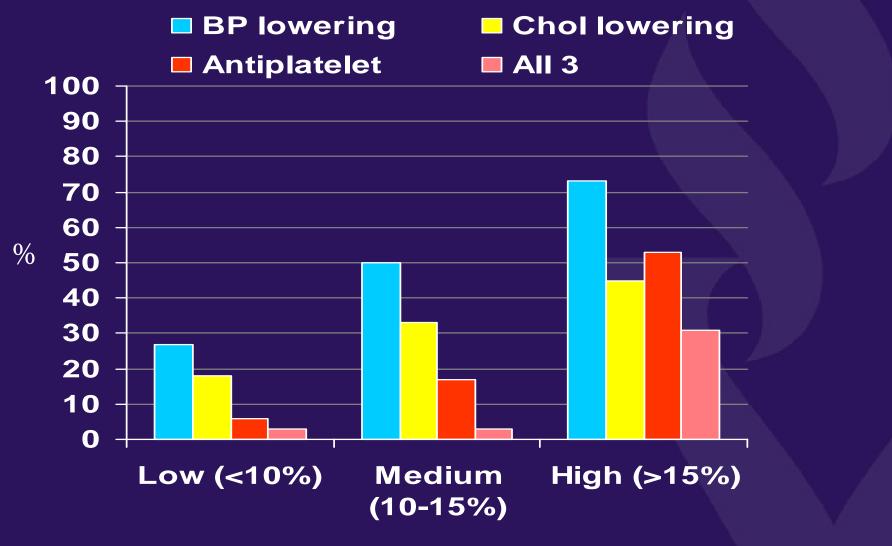
> ational Heart, Stroke and Yascular Heal Strategies Group

> > February 2004





Treatment gaps



Unpublished data The George Institute

0	Vascular health clinic data entry		
Vascula	Currently logged in as "test".	Clinic	Logout ?
r INGRAM, Bobby (PID 1) Demographics Problem Current Medications Anthropomom	etry Lifestyle Medical Results C	CVD risk profile CVD Management	Correspondence
Patient details: PID: 1 Mr INGRAM, Bobby. Male DOB: 11/Dec/1954 (52 yea 365 King St Marrick∨ille, NSW, 2204	ars)	Referral source: UID: O Dr CHAN, Leah 34 links Ave, Bexley NSW 2194, Australia 'CC' list: UID 1: Arjumna Medical Se	
Australia "To Do" list:		UID 2: Dr Sunitha SINGH, S Other 'CC:' list:	
		Add new Delete Add patient to 'CC' list	Edit
Add new Delete Edit			
Patient List Referral List			

0		0
\mathbf{O}	\bigcirc	0

Vascular health clinic data entry

Logout

Vascular Health Clinic

Currently logged in as "test".

Demographics	Problem	Current Medications	Anthropomometry	Lifestyle	Medical	Results	CVD risk profile	CVD Management	Correspondence	
Problem List										
		anglogram 2005)								
2 Sarcoid	1									
Add new		elete CEd	it 🕦 🕕 🕖	To "Inac	tive"					
Inactive med	ical history	:		_		her History	(local information)	on, not for output l	etters):	
2 Osteoa	rthritis									
Add new		elete Ed	it 🕦	To 'Active'		dd new	Delete	. Edit		
Patient List	Refer	ral List								
attent List	iteren									

		0
0	0	0

Vascular health clinic data entry

Logout

Vascular Health Clinic

Currently logged in as "test".

Medication 1 aspin 75mg PO daily 2 atenolol Tablet 50 mg PO daily 3 istirupuit Tablet 20 mg PO daily 4 simvastatin Tablet 40 mg PO daily Add new Delete £dit (1) Allergies/Drug SE: Other non-medical remedies: 1 Nil known Add new Delete Edit (1) Nil known Add new Patient List Referral List	Demogra	aphics	Problem	Current Medications	Anthropomometry	Lifestyle	Medical	Results	CVD risk profile	CVD Management	Correspondence	
1 aspirin 75mg PO daily 2 atenoiol Tablet 50 mg PO daily 3 Isimupil Tablet 20 mg PO daily 4 simvastatin Tablet 40 mg PO daily 4 simvastatin Tablet 40 mg PO daily Add new Delete Edit Image: Add Custom Allergies/Drug SE: Other non-medical remedies: 1 Nil known Add new Delete Edit Image: Im	Medic	ation Li	st:									
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4 simvastatin Tablet 40 mg PO daily Add new Delete Allergies/Drug SE: Other non-medical remedies: 1 Nil known Add new Delete Edit Other non-medical remedies: Add new Delete Edit Nik Add new Delete Edit Vik Add new Delete Edit Vik Nik Add new Delete Edit												
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Add new Delete Edit I NKA Add new Delete Edit I I	Allerg	ies/Dru	g SE:				Ot	her non-m	edical remedies:			
	1	Nil knov	vn									
Patient List Referral List	Add	new		elete E	dit 🕦 🕕	NKA		dd new	Delete	. Edit		
	Patient	List	Refe	rral List								

 $\bigcirc \bigcirc \bigcirc$

Medications

_ Available Medication List:

Name	Brand	FormStren AuthCode	Caution
ABACAVIR SULFATE	Ziagen	Tablet 300 J05AF06	62640;6265R;
ABACAVIR SULFATE with LAMIVUDINE	Kivexa	Tablet 600 J05AR02	6458X
BACAVIR SULFATE with LAMIVUDINE and Z DOVUDIN	Trizivir	Tablet 300 J05AR04	6327D
ABCIXIMAB	ReoPro	I.V. injectio BO1AC13	8C48N
ACAMPROSATE CALCIUM	Campra	Tablet 333 NO7BBO3	8357W
ACARBOSE	Glucobay 50;Glucobay 100;	Tablet 50 n A10BF01	8188Y;8189B;
CETAZOLAMIDE	Diamox	Tablet 250 SO1ECO1	1CO4W
CETYLCYSTEINE	Mucomyst	Sterle inha ROSCBO1	8747J
CICLOVIR	Aciclovir 200; Aciclovir 800; Acihexal; Acyclo-V 200; Ac	Tablet 200 J05AB01;S0	1/ 1CO/B;1052J;1003
CITRETIN	Neotigason	Capsule 25 DO5BBO2	2C2OH;2O19G;
DALIMUMAB	Humira	Injection 4C LO4AA17	9C33K;9078T;8741
DEFOVIR DIPIVOXIL	Hepsera	Tablet 10 n JOSAFOB	6450L
DRENALINE	EpiPen;EpiPen Jr.;	Injection 1 (CO1CA24;RC	3 1C16L;3451P;5004
LBENDAZOLE	Eskazole;Zentel;	Tablet 400 PO2CAO3	8459F;9047E;8503
LEFACEPT	Amevive	Pack conta LO4AA15	4535Q;4534P;
LENDRONATE SODIUM	Alendro Once Weekly;Fosamax Once Weekly;Fosamax	Tablet equi [,] MO5BAO4	8511Y;8090T;
LENDRONATE SODIUM with COLECALCIFEROL	Fosamax Plus	Tablet equi [,] MO5BBO3	9C12H
LLANTOIN with GLYCEROL and ICHTHAMMOL	Egoderm Cream;Egoderm Ointmert;	Cream 5 m; D11AX	4281H;4280G;
LLANTOIN with SULFUR, PHENOL, COAL TAR SOLUT	EgopsoryI-TA	Gel 25 mg-: DOSAA	4505D
LLOPURINOL	Allohexal;Allosig;Chem mart Allopurinol;GenRx Allopuri	Tablet 100 MO4AA01	2600W;2604C;
LPRAZOLAM	Alprax 0.25; Alprax 0.5; Alprax 1; Alprax 2; Alprazolam-	Tablet 250 NO5BA12	2130D;2131E;2132
LPROSTADIL	Caverject Impulse	Intracaverr GO4BEO1	4580C;4579B;
LUMINIUM HYDROXIDE with MAGNESIUM HYDROXIDE	Mylanta P	Oral susper AO2ADO1	2157M;2576N;
LUMINIUM HYDROXIDE with MAGNESIUM HYDROXIDE a	Mylanta Double Strength	Oral susper AO2ADO1	4118R;4453J;
LUMINIUM HYDROXIDE with MAGNESIUM TRISILICATE	Gastrogel	Oral susper AO2ADO1	2159P
MANTADINE HYDROCHLORIDE	Symmetrel 100	Capsule 10 NO4DD01	JC16R
MILORIDE HYDROCHLORIDE	Kaluril	Tablet 5 mg CO3DBO1	3109P
MINO ACID FORMULA with VITAMINS and MINERALS	XLYS, LOW TRY Analog;XLYS, LOW TRY Maxamaid;	Infart form VO6DX	2650L;2646G;

Add...

Find: All available medications

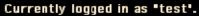
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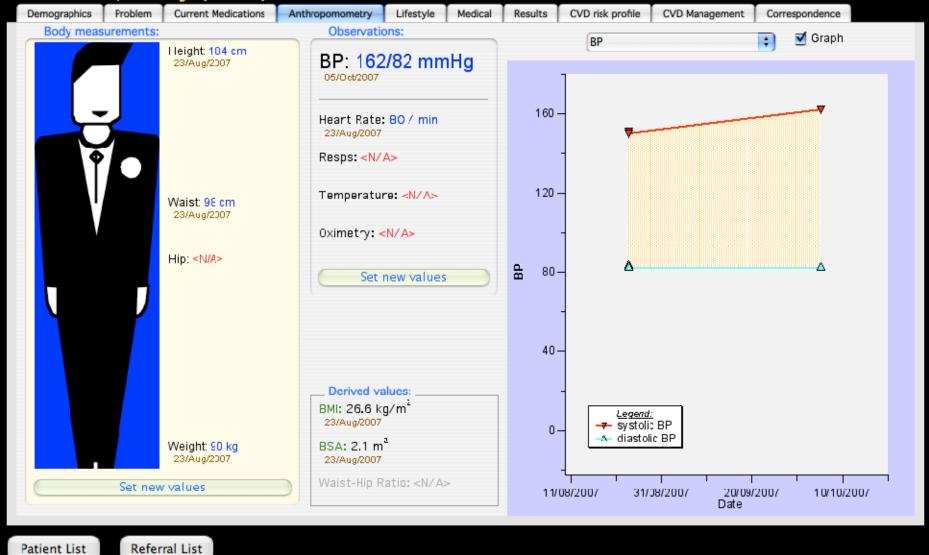
OK

Vascular health clinic data entry

Logout

Vascular Health Clinic





00	Vascular health clinic data entry	/		
Mr INGRAM, Bobby (PID 1)	Currently logged in as "test" opomometry Lifestyle Medical Results	CVD risk	profile CVD Management Correspondence	Logout
	Lifestyle assessmen	nt		
Summary Smoking Diet Exercise				
Smoking: Never smoked Smoker/Ex-smoker	Diet: Alconol (estimate): None or minimal Et0H use	1	Exercise: Fxercise Amount (estimate): <n a=""></n>	
	Dietary Sodium (estimate): <n a=""></n>	١	Exercise Duration (estimate): <n a=""></n>	
	Dietary dairy intake (estimate): <n a=""></n>	í	Exercise Frequency (estimate): <n a=""></n>	
	Dietary frest F & V irtake (estimate): <n a=""></n>	١	Set Exercise Summary Data	
	Set Dietary Summary Data			
Patient List Referral List				

0	Vascular health clinic data entry			
Vascu	Currently logged in as "test".		linic	Logout
	opomometry Lifestyle Medical Results	CVD risk	profile CVD Management Correspondence	
Summary Smoking Diet Exercise				
Smoking: Never smoked Smoker/Ex-smoker	Diet: Alconol (estimate): None or minimal EtOH use	1	Exercise: Fxercise Amount (estimate): <n a=""></n>	1
Started at age: 15 years Has smoked for: <n a=""> Number per day: 20 Tobacco type: Cigarettes Year ceased: 1994 Set new values</n>	Dietary Sodium (estimate): High Dietary dairy intake (estimate): <n a=""> Dietary fresh F & V irtake (estimate): medium Set Dietary Summary Data</n>	(i) (i)	Exercise Duration (estimate): <n a=""> Exercise Frequency (estimate): <n a=""> Set Exercise Summary Data</n></n>	

Patient List Refe

Vascular health clinic data entry

Vascular Health Clinic

Currently logged in as "test".

Logout

ographics Problem Current Me	Started at age (years):	Has smoked for (years):		inagement	Correspondence
	(15	(<n a=""></n>	;		lan di
mmary Smoking Diet Exer	Number per day:	Tobacco type:			
Smoking:	20	Cigarettes	•		
Never smoked	Year ceased:			ount (estir	mate):
• Smoker/Ex-smoker	Current	•			
	Date & Time:			ation (esti	mate):
Started at age: 15 years	Year: Month:	Dav: Hour: Min:			
Has smoked for: <n a=""></n>	2007 🛟 Oct 🛟 S	3 3 37	Set Now	quency (es	stimate):
Number per day: 20	Cancel	Continue	Help		
Tobacco type: Cigarettes	medium			4 Exercise S	Summary Data
Year ceased: 1994 Set new values		Set Dietary Summary Data			

Patient List

• • •	Vascular health clinic data entry			
Vascu	Lar Health Currently logged in as "test".		nic	Logout
Mr INGRAM, Bobby (PID 1) Demographics Problem Current Medications Anthro	opomometry Lifestyle Medical Results	CVD risk profile	CVD Management Correspondence	се
Summary Smoking Diet Exercise	Ellestyle assessmen	L.		
Smoking:	Diet:	E	xercise:	
 Never smoked Smoker/Ex-smoker 	Alconol (estimate): None or minimal Et0H use		ercise Amount (estimate): <n a=""></n>	1
Started at age: 15 years	Dietary Sodium (estimate): High		ercise Duration (estimate): <n a=""></n>	
Has smoked for: <n a=""> Number per day: 20</n>	Dietary dairy intake (estimate): <n a=""></n>		ercise Frequency (estimate): <n a=""></n>	
Tobacco type: Cigarettes	Dietary frest F & V irtake (estimate): medium	(i) (c)	Set Exercise Summary Data	
Year ceased: Currert Set new values (SOC) Smoking intentions: Not considering cessation Use of gum/patches (NRT): No use of NRT Use of oral cessation Rx: <n a=""> Set new values</n>	Set Dietary Summary Data			

Patient List Re

0			Vascular health	clinic data entry			
	Vaso		Currently logg			nic	Log
INGRAM, Bob emographics Problem	by (PID 1) Current Medications	Anthropomometr		edical Results	CVD risk profile	e CVD Management	Correspondence
			Medical as	sessment			
Summary							
_ CVD History:		Exar	nination:			Imaging/Testing:	
CAD. No							
Stroke: No							
PVD: No							
Aortic ∆: No		_					
CVD FLIX: No							
Gen.Lipid ∆: No							
LVH: No							
Aboriginal: Yes		-					
TSI: No							
Maori: No							
Pacific Is: No							
Sth Asian: No							
Other Indig: No							
Diabetes: No		-					
HbA1c > 8%: No							
Proteinuria: No							
Set 'CVD'	risk data						

000		Vascula	r health clinic data	entry		
	000		History: CVD			Logout
	Set all unchecked t	o <u>negative</u>				
Mr INGRAM, I			ear of Event:	Genetic lipid disease:	•	
Demographics Pro	E Stroke	=	N/A>	LVH:		spondence
	PVD	=	N/A>	No	•	
Summary	Atheroaortic disease	-	N/A>			
CVD History:		-				
CAD: NO	🔲 CVD in 1° relative (F <	65Y, M < 55Y)				
Stroke: No PVD: No	Set all unchecked t	o <u>negative</u>				
Aortic A: No	Moriginal	📃 Torre	es St. Is.	📃 Maori		
	📃 Pacific Is. background	📃 Sth /	Asian background	📃 Other ind	digenous	
CVD FHx: No Gen.Lipid <u>A: No</u>	📄 Proteinuria (ACR>30m	a/mmol or >300mg	/day)			
LVH: No		Year of Diagnosis:				
Aboriginal: Ye	📃 Diabetes	<n a=""></n>	HbA1	c >8% (over a year or	more)	
TSI: No						
Maori: No	Date & Time:	2	0.00	7637		
Pacific Is: No	Year: Mont	h: Dav:	+ N/A>	Min:	Set Now	
Sth Asian: No						
Other Indig: No	Cancel		Continue		Help	
Diabetes: No	_					
HbA1c > 8%: No						
Proteinuria: No						
Set '(CVD' risk data					
500	evo lisk data					
Patient List R	eferral List					

Vascular health clinic data entry

Logout

Vascular Health Clinic

Currently logged in as "test".

	Demog	raphics	Problem	Current Med	dications	Anthropom	nometry	Lifestyle	Medica	Res	ults	CVD risk profil	e C	VD Manageme	nt	Correspondence	
								R	esult	s							
1	All	Lipids	Biochemis	try Endoc	rine Ha	ematology	Immun	ology Mi	cro Ra	diology	Cardio	ology Vasc	ular	Documents			
	Sta	indard lip	id results:														
		Total-C	C: 6.1 mM	2	3/Aug/2007												
		HDL-0	C: <mark>1.2</mark> mM	2	3/Aug/2007	r i i											
		LDL-0	C: 3.7 mM	2	3/Aug/2007												
	I	riglyceride	e: <mark>2.7</mark> mM	2	3/Aug/2007												
		TC/HDI	. 5.1														
		LDUHDI	.: 3.1														
		CR	<n a=""></n>														
		VLDL-0	: <n a=""></n>														
		IDI	: <n a=""></n>														
		Lp(a): <n a=""></n>														
		Apo-E	: <n a=""></n>														
			Set lipio	d values													
	atient	list	Pofor	ral List													

Vascular health clinic data entry

Logout

Vascular Health Clinic

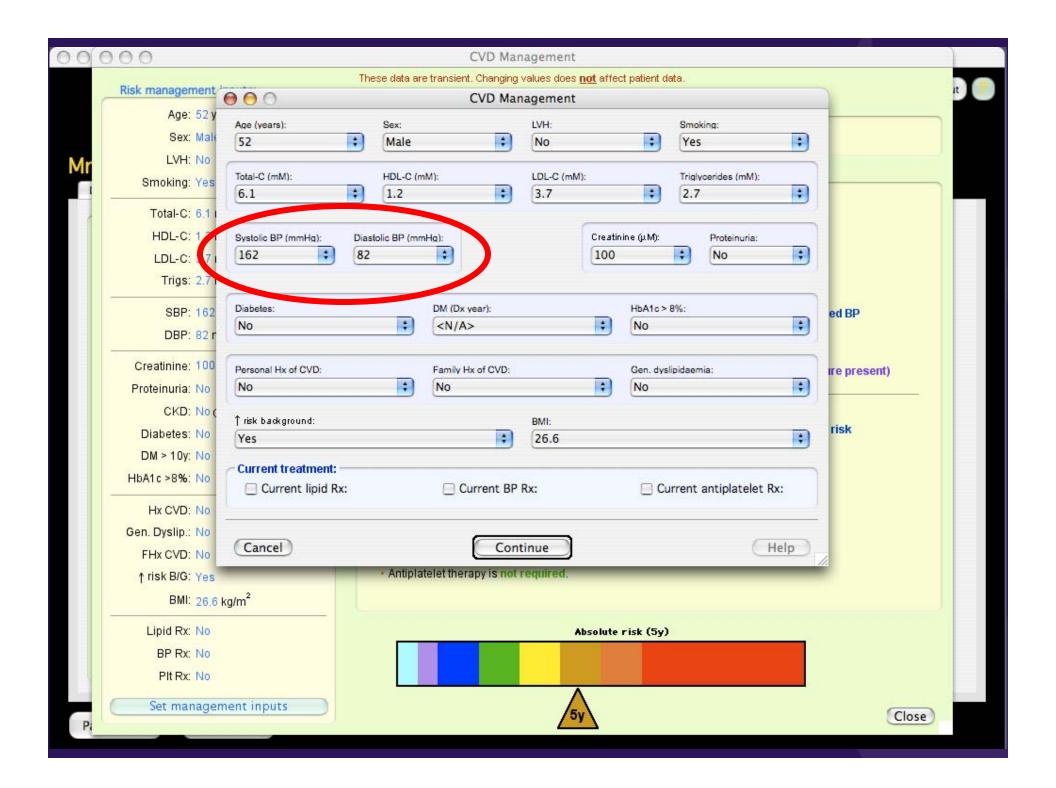
Currently logged in as "test".

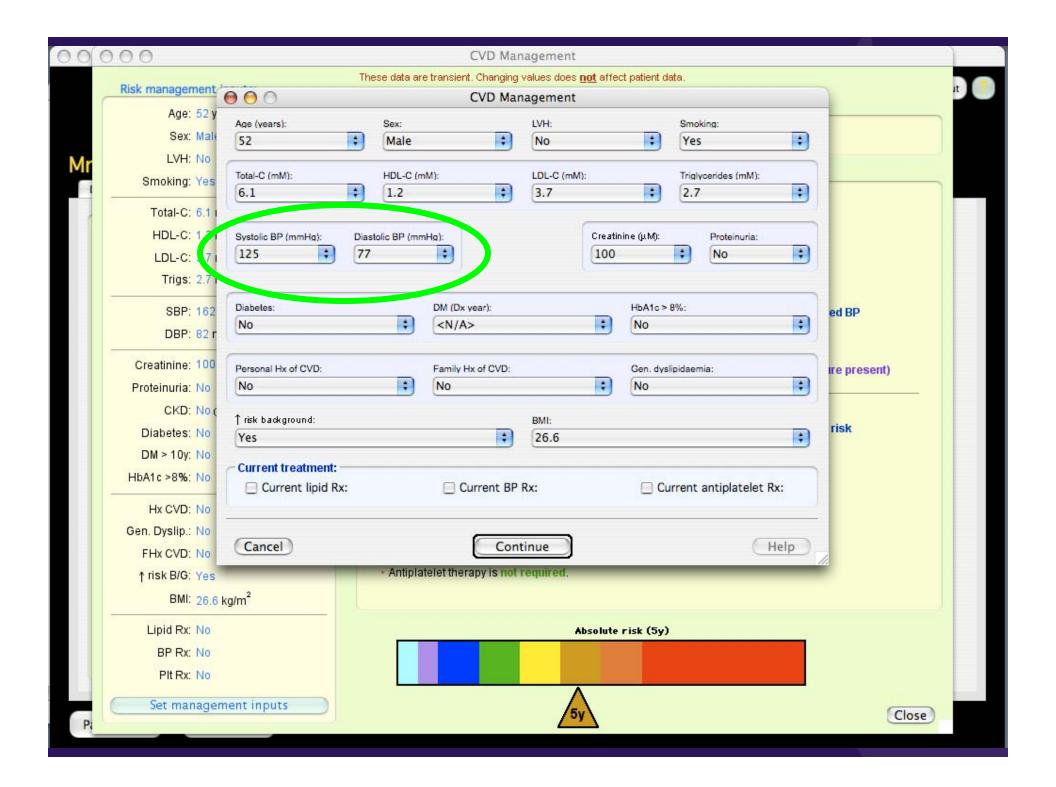
Mr INGRAM, Bobby (PID 1)

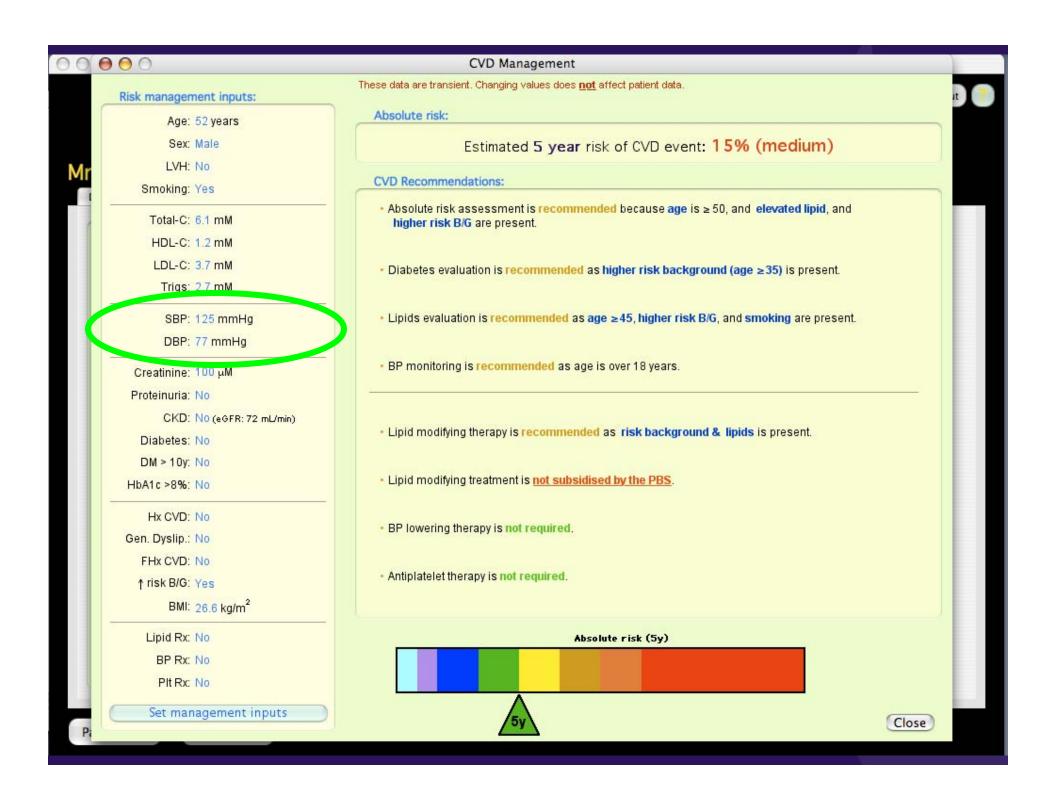
Demographics	Problem	Current Medications	Anthropomometry	Lifestyle	Medical	Results	CVD risk prof	le CVD Management	Correspondence	
Risk calcu	lator inputs:		Manag	ement plan in	puts:					
Framing	ham inputs: Age: 52 yea			n <mark>t treatment</mark> .ipid Rx: No	:s:					
	Sex: Male SBP: 162 m	mHg		BP Rx: No						
	HDL: 5.1 etes: No			Plt Rx: No						
	oking: Yes LVH: No			Set t	reatments					
	CVD: No CVD: No nicity: Yes			CVD Man	agemen	t Tool				
Gen. Li	pid ∆: <mark>No</mark>	FR: 72 mL/nin)	-							
	> 10y: No > 8%: No		_							
Protei	nuria: No	'risk data								
	Set CVD	· HSK Gata								

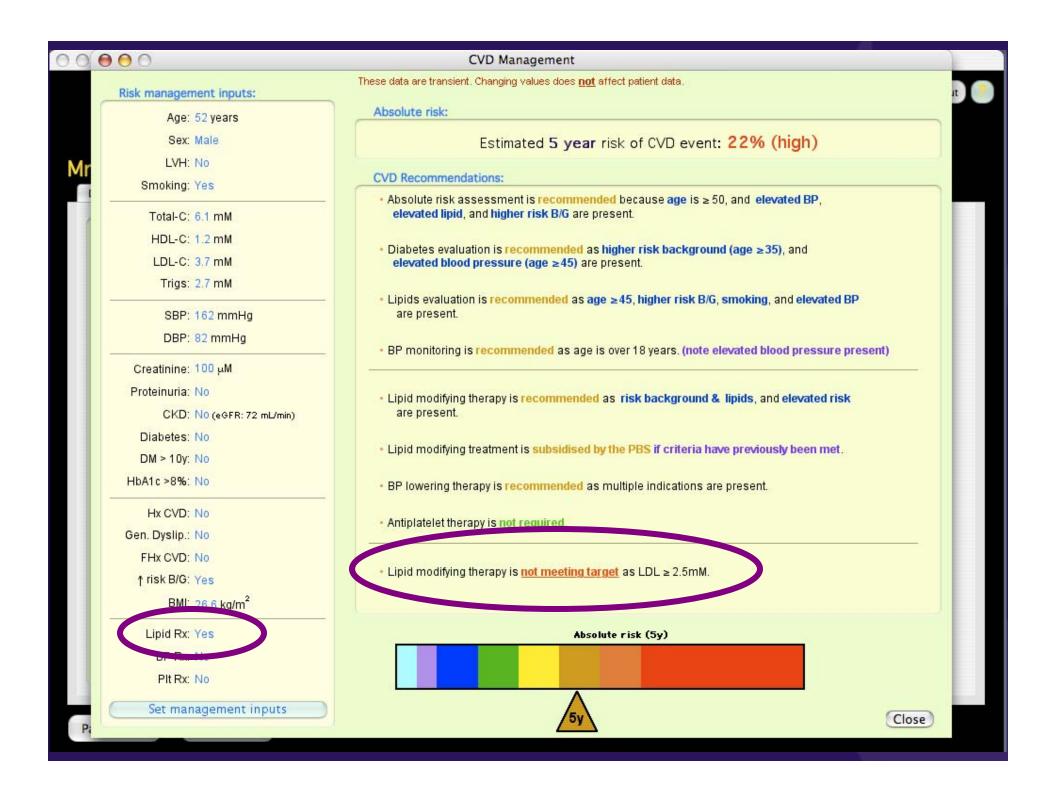
Patient List

0	CVD Management
Risk management inputs:	These data are transient. Changing values does not affect patient data.
Age: 52 years	Absolute risk:
Sex: Male	Estimated 5 year risk of CVD event: 22% (high)
LVH: No	
Smoking: Yes	CVD Recommendations:
Total-C: 6.1 mM	 Absolute risk assessment is recommended because age is ≥ 50, and elevated BP, elevated lipid, and higher risk B/G are present.
HDL-C: 1.2 mM	
LDL-C: 3.7 mM	 Diabetes evaluation is recommended as higher risk background (age ≥35), and
Trigs: 2.7 mM	elevated blood pressure (age ≥45) are present.
SBP: 162 mmHg	 Lipids evaluation is recommended as age ≥45, higher risk B/G, smoking, and elevated BP
DBP: 82 mmHg	are present.
Mµ Creatinine: 100	 BP monitoring is recommended as age is over 18 years. (note elevated blood pressure present)
Proteinuria: No	
CKD: No (eGFR: 72 mL/min)	
Diabetes: No	 Lipid modifying therapy is recommended as risk background & lipids, and elevated risk are present.
DM > 10y: No	
HbA1c >8%: No	 Lipid modifying treatment is not subsidised by the PBS.
Hx CVD: No	
Gen. Dyslip.: No	 BP lowering therapy is recommended as multiple indications are present.
FHx CVD: No	
∱ risk B/G: Yes	Antiplatelet therapy is not required.
BMI: 26.6 kg/m ²	
Lipid Rx: No	Absolute risk (5y)
BP Rx: No	
Plt Rx: No	
Set management inputs	5y Clos

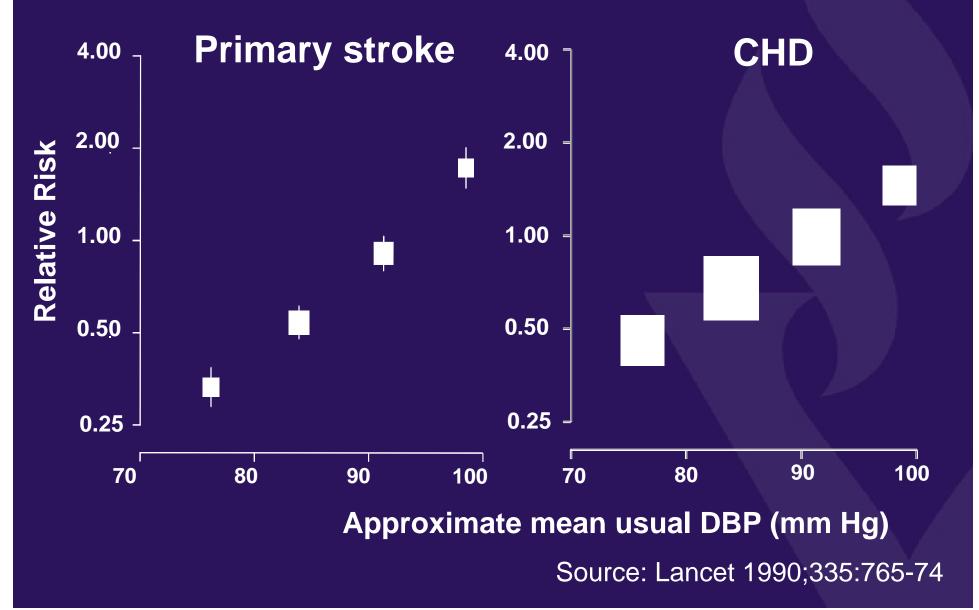








BP and outcomes



What would we gain?

- 1. Target treatment at high risk
 - > cost-effective
- 2. Close evidence-practice gap
- 3. Bring together multiple conflicting guidelines into one evidence-based algorithm
- 4. Prevent avoidable hospitalisations
- 5. Potential \$ saved for private health insurers
- 6. Attract members to high-quality prevention services