

# Reforming Health Through Innovation: A Global Challenge

Presentation to the Australian Ambassador's 2011 Speaker Series - Charts and Tables

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Chart 1: Global age-adjusted mortality rates  
by region and cause, 2008  
(deaths per 100,000 population)

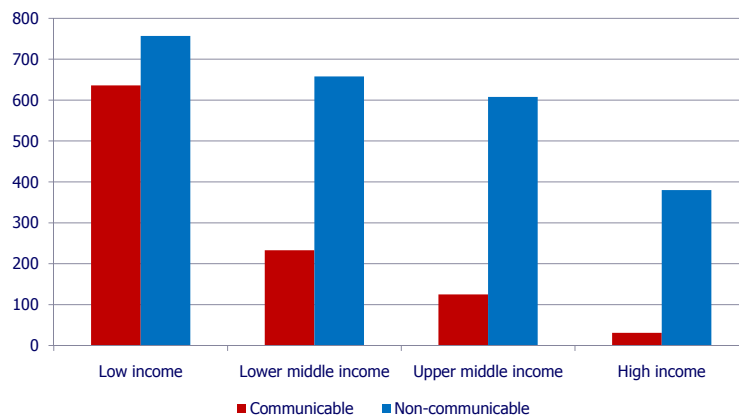
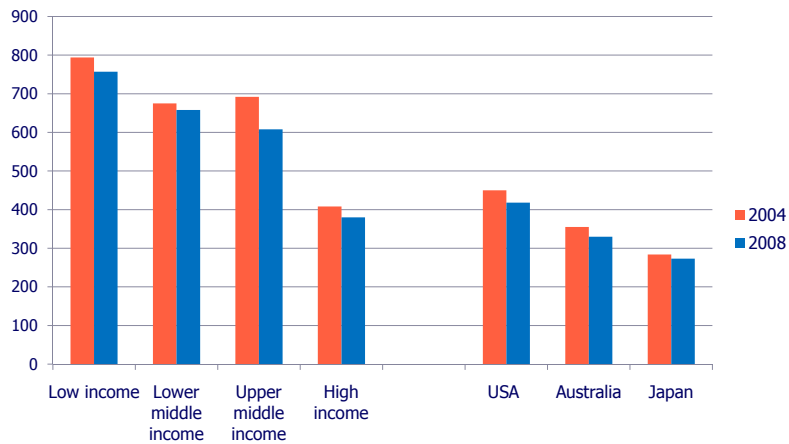


Chart 2: Global age adjusted mortality rates from non-communicable diseases, by region, 2004 and 2008 (deaths per 100,000 population)



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3

Table 1. Components of Comprehensive Wealth

- Natural capital (resources and environment)
- Human capital (education and embodied knowledge)
- Reproducible capital (physical assets)
- Health capital (health and lifespan)

Source: Arrow et al, 2010

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4

Table 2: Growth in Components of Real Per-Capita Comprehensive Wealth: USA, China, Brazil, India and Venezuela, 2000-2005 (% pa)

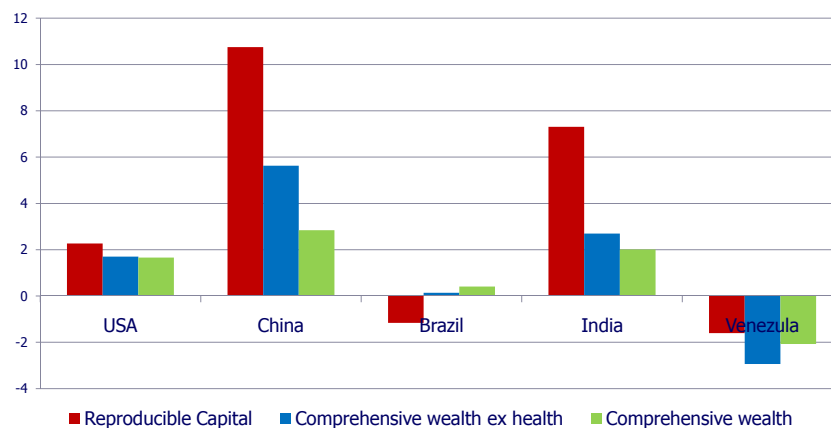
	Elements of Comprehensive Wealth					GDP
	Natural	Human	Health	Reproducible	Total	
USA	-1.1	0.4	0.2	2.3	1.7	2.9
China	-1.0	1.1	0.1	10.8	2.8	7.6
Brazil	-2.0	1.4	0.3	-1.2	0.4	0.5
India	-0.2	3.0	0.2	7.3	2.0	4.0
Venezuela	-2.6	0.2	0.1	-1.6	-2.1	-1.2

Source: Arrow et al 2010

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5

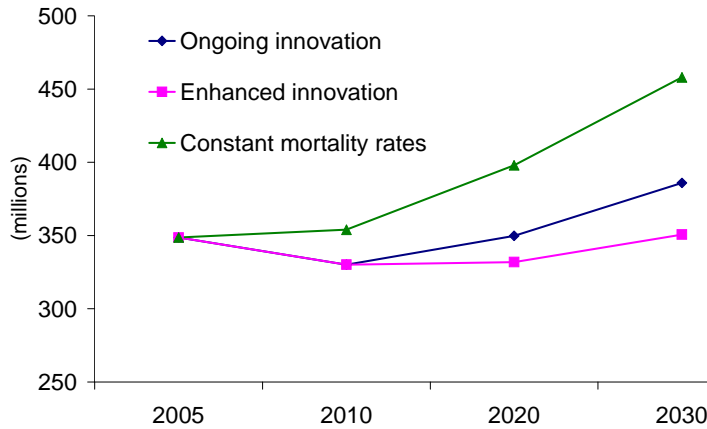
Chart 3: Per-Capita Growth in Reproducible Capital and Comprehensive Wealth, USA, China, Brazil, India and Venezuela, 2000-2005 (% pa)



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Chart 4. Disability adjusted life years lost under three innovation scenarios, 2010 to 2030, APEC developing economies (millions of DALYs)

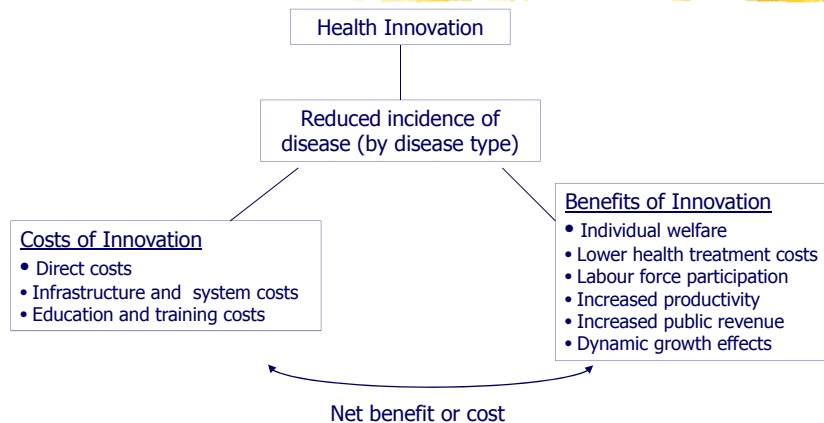


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Source: Estimates of the authors, based on unpublished data provided by Dr Colin Mathers of WHO.

7

Chart 5. A Framework for Analysing the Impact of Health Innovation



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8

Table 3. Costs and benefits of increased innovation, enhanced innovation relative to constant mortality rates, 2010 to 2030, APEC developing economies

	2010	2020	2030
<b>Levels of costs and benefits</b>	(share of GDP, %)		
<b>Cost of Innovation</b>	<b>0.34</b>	<b>0.54</b>	<b>0.52</b>
<b>Benefits of Innovation</b>			
Economic benefits			
Reduction in treatment costs	0.31	0.74	1.13
Labour force and productivity	0.33	1.57	2.68
Individual health benefits <sup>3</sup>	1.04	2.71	4.24
<b>Total benefits</b>	<b>1.69</b>	<b>5.02</b>	<b>8.05</b>

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9

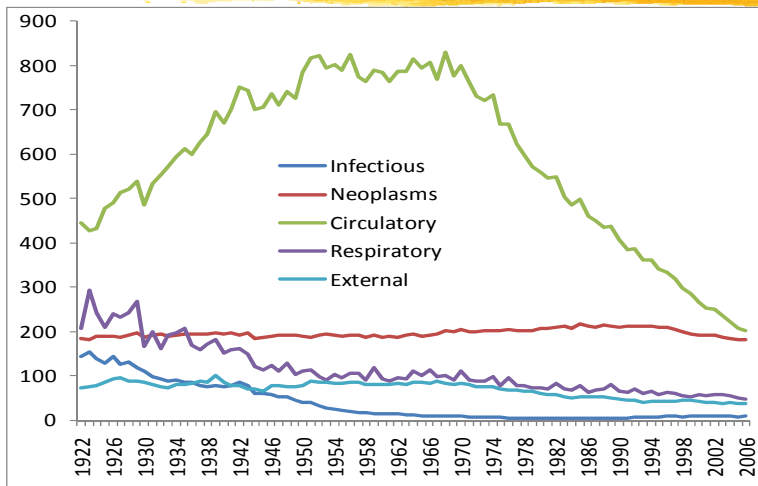
Table 4. Benefit/cost ratios, enhanced innovation relative to constant mortality rates, 2010 to 2030, APEC developing economies

<b>Benefit/cost ratio</b>	2010	2020	2030
<b>Economic benefits</b>			
Reduction in treatment costs	0.9	1.4	2.2
Labour force and productivity	0.9	2.9	5.2
<b>Individual health benefits</b>	3.1	5.0	8.1
<b>Total benefits</b>	<b>4.9</b>	<b>9.3</b>	<b>15.4</b>

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10

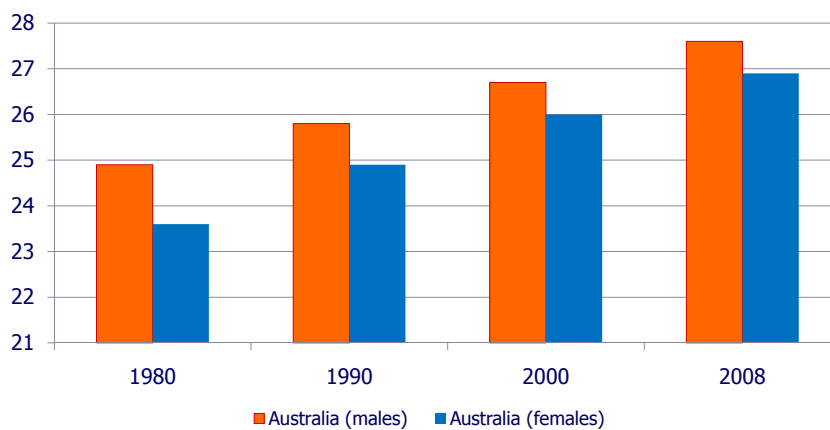
Chart 6. Age standardised death rates by cause, Australia, 1922-2006  
(deaths per 100,000 persons)



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11

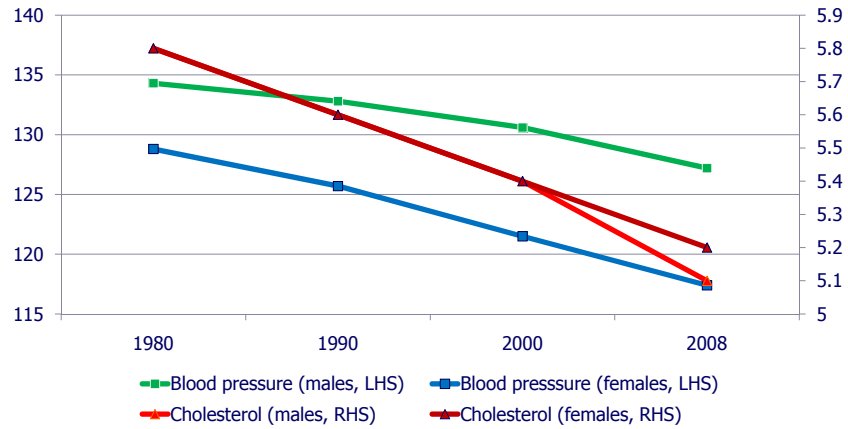
Chart 7. Mean Body Mass Index Measures, Males and Females, Australia, 1980-2008 (kg/m<sup>2</sup>)



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12

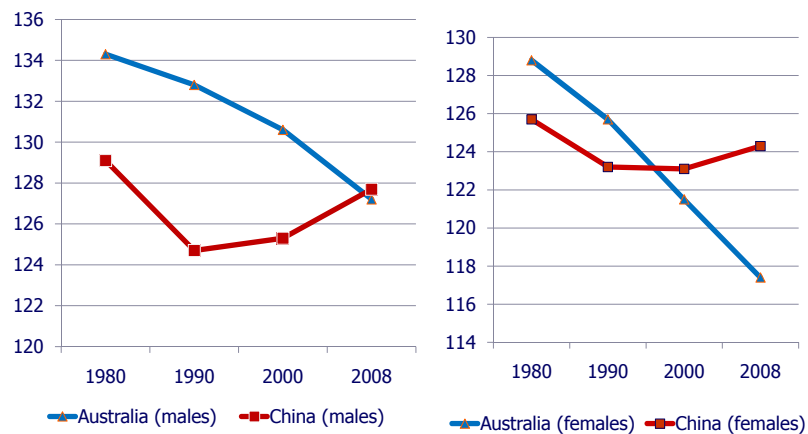
Chart 8. Mean Systolic Blood Pressure and Cholesterol Measures, Males and Females, Australia, 1980-2008 (mm Hg and mmol/l)



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13

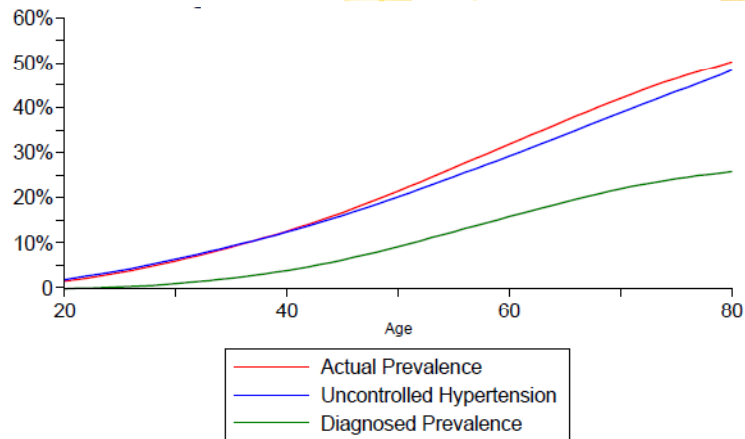
Chart 9. Mean Systolic Blood Pressure, Males and Females, Australia and China, 1980-2008 (mm Hg)



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14

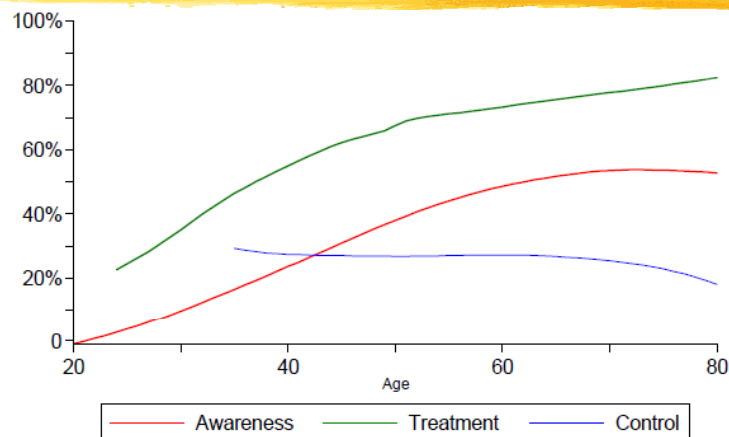
Chart 10. Diagnosed prevalence, actual prevalence and uncontrolled rate of hypertension, China, 2004-06



Source: CHNS, 2004 and 2006  
Lowess smoothing, bw=0.8

Centre for Strategic Economic Studies Source: Xiaoyan Lei et al. 2010, SES Health Gradients during the Epidemiological Transition: The Case of China, IZA DP No. 4914, Bonn, p. 21. 15

Chart 11. Awareness of hypertension, and treatment and control conditional on awareness, China, 2004-06



Source: CHNS, 2004 and 2006  
Lowess smoothing, bw=0.8

Centre for Strategic Economic Studies Source: Xiaoyan Lei et al. 2010, SES Health Gradients during the Epidemiological Transition: The Case of China, IZA DP No. 4914, Bonn, p. 21. 16



## Neglected Tropical Diseases

- **Neglected tropical diseases (NTDs) are a group of 13-14 chronic parasitic and related infectious diseases:**
  - The most common infections in developing countries
  - Ancient conditions having affected humankind for thousands of years.
  - Disproportionately affect the world's poorest people.
    - Subsistence farmers & families
    - Urban slum dwellers
  - Often cause high morbidity and disability but low mortality conditions.
  - Promote poverty and interfere with economic development.

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## Table 5. Major NTDs in South East Asia

<u>Disease infected</u>	<u>Number of Cases</u>	<u>% SE Asia</u>
Ascariasis	227 million	40%
Trichuriasis	200 million	36%
Hookworm	150 million	26%
Lymphatic filariasis	<15 million	3%
Opisthorchiasis	10 million	2%
Trachoma	2 million	<1%
Schistosomiasis	<1 million	<1%
Leprosy	<1 million	<1%
Amebiasis/Enterics	Not Determined	
Dengue fever	Not Determined	
Japanese encephalitis	Not Determined	
Melioidosis	Not Determined	

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## Sabin Vaccine Development

- Sabin Vaccine Development, with George Washington University and international partners, is making the vaccines for which market returns do not exist to attract pharmaceutical companies.
- Drawing on 10 years of R&D experience, Sabin Vaccine Development has created a comprehensive, relatively low-cost model that serves as a blueprint for vaccine development.

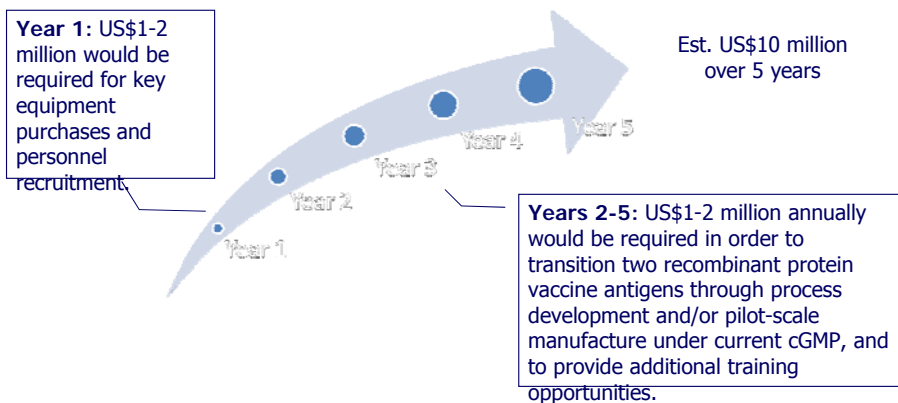
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## Sabin Vaccine Development Proposal: Indonesia

- To establish the first facility in Indonesia for producing a new neglected tropical disease vaccines.
- To develop and test vaccines for the most common infections of the poorest people living in Indonesia and elsewhere in SE Asia.

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## Chart 12. Funding Needed to Establish Vaccine Facility



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