Developing country projections of health care expenditures

WHO Kobe Center/INTRA-III Project

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Ravi P. Rannan-Eliya Institute of Health Policy/ Health Policy Research Associates Colombo, Sri Lanka





Global experience

Sri Lanka Projection Model Proposal for INTRA-III Strategy

Sri Lanka Background

- Most rapidly ageing national population in Asia
 65 + doubling time 7%-14%: 22 years
- Increasing awareness, & occasional high level interest in past decade
 - Pensions, social security provision
 - Ageing impact on health services
 - Strong public service provision, history of universalism
- Health Policy Programme (HPP, IPS -> IHP)
 - Long-term research effort since 1996 on implications of ageing
 - Demographic projections, pensions forecast modeling (MoF, Presidential Secretariat), assessment and expansion of social security schemes (MoL, ILO)
 - Health costs and social policy responses to ageing (MoH/Planning, NIA, World Bank)
 - Enhancing role of family medicine approach (SLCGP)
 - Advocacy for central role of public financing/provision (NCMH, MoH)



Global experience

Sri Lanka Projection Model Proposal for INTRA-III Strategy

Ageing as a Cost Driver

• Variation in health status by age: •Variation in utilization and costs • Age is a proxy for health status • Two cost increasing factors: ⊙Increased utilization of services by age Increased cost-intensity of services by age • Population ageing: • Change in age structure - increase in share of older age groups • Potential upward pressure on costs • Ageing process faster in developing countries

Utilization of Medical Services by Age, Females, Sri Lanka 1996/97



Approaches to Projecting Health Expenditures

•Two basic approaches: • Epidemiological models disease incidence - Data requirements unfeasible even in developed countries Poor fit to actual trends Actuarial models age-sex structure Can incorporate other factors

Developed Country Experience in Projecting Health Expenditure

• Most projections use actuarial approach • Several governments undertake regular projections for planning purposes: **OUSA**, UK, Canada • Main use is forecasting public resource requirements • Ageing has substantial impact on future costs, but other factors can be more important: Oconsumer demand • Productivity changes, technology ●Increase in cost of inputs OMORPHICE MORPHICE MORPHICE MORPHICE

Age-specific Changes in Demand Japan 1950-1984



Age group

Cost drivers, Japan 1980-90



Cost drivers, USA 1980-2010

Factors Accounting For Growth In Per Capita Personal Health Care Expenditures, Selected Periods 1980-2010



SOURCE: Health Care Financing Administration, Office of the Actuary, National Health Statistics Group.

^a Includes quality and mix of services. As a residual, this factor also includes any errors in measuring prices or total spending.

^b Medical inflation is calculated using the personal health care (PHC) chain-type index constructed from the Producer Price Index for hospital care, Nursing Home Input Price Index for nursing home care, and Consumer Price Indices specific to each of the remaining PHC components.

Cost drivers, UK 2001-2010

Chart 5.5: Average annual impact of demand drivers on NHS expenditure for England



Note: The demand drivers are considered in isolation of each other and all other factors in the model.

Projecting Health Care Expenditures

• Should take account of: • Population ageing Trends in demand • Trends in costs/productivity/technology OMorbidity compression • In practice, will be limited by availability of data and resources (financial/human) • Primary benefit is not in knowing what expenditures will be, but in understanding role of different factors -> Policy implications



Global experience

Sri Lanka Projection Model

Proposal for INTRA-III Strategy

Sri Lanka Health Expenditure Projections, 2001-2051

- Model developed for MoH (funding by World Bank, US NIA)
- •Actuarial cost model incorporating:
 - •Age structure change
 - Oconsumer demand changes
 - OProductivity/Cost/price trends
- Omissions:
 Morbidity compression
 Disability states

Changes in Age Structure Sri Lanka 2001



Changes in Age Structure Sri Lanka 2041



Age-specific Changes in Demand Sri Lanka Female Outpatient Use 1981-1996



National Health Accounts:

Functional use of government expenditures, Sri Lanka 1997



Trends in MOH Unit Costs Sri Lanka 1930-2002



Sri Lanka Estimation Steps

- 1. Project population
 - Size, age-sex structure
- 2. Separate national health expenditures (from NHA)
 - Public sector personal medical services
 - Public sector preventive/collective services
 - Private sector personal medical services
- 3. Project age-sex specific utilization rates
 - Scenarios based on historical experience
 - Inpatient admissions, Outpatient visits
 - Assumptions about public/private mix
- 4. Project unit costs/prices of medical services
 - Scenarios based on historical experience
- 5. Future cost = Utilization rate x Unit cost
 - Preventive costs added as constant share of GDP



Model Structure



Sri Lanka Model

POPLOUTPAIPUBLIC UTILISATION TRENDS

Source:	Source:	Source: Units:	Source:	IPS analysis								
Scenar Scenario :												
		Scenario	Scenario =	NO CHANGE	E							
Sex	Age group				Year							
	0-4 years	Category	Category		2001	2002	2003	2004	2005			
Female	5 + years	Outpatient s	i i i i i i i i i i i i i i i i i i i									
Female		Inpatient ser	Outpatient vis	i %	50%	50%	50%	50%	50%			
Female			Admissions	%	95%	95%	95%	95%	95%			
Female	Sex											
Female		Category										
Female	Female		Scenario = INCREASED PRIVATISATION									
Female	Female	Outpatient			Year							
Female	Female	Inpatient ac	Category		2001	2002	2003	2004	2005			
Female	Female	· · ·	0,									
Female	Female		Outpatient vis	i %	50%	49%	48%	46%	45%			
Female	Female	Scenario :	Admissions	%	95%	94%	93%	92%	91%			
Female	Female											
Female	Female	Category										
Female	Female	Outpatient	Scenario =	PUBLIC STRE	NGTHENING							
Female	Female	Innatient ser			Year							
Female	Female	inpatient sei	Category		2001	2002	2003	2004	2005			
Female	Female		cutegory		2001	2002	2000	2001	2000			
Female	Female	Category	Outpatient vis	i %	50%	51%	52%	52%	53%			
	Female		Admissions	%	95%	95%	95%	95%	95%			
	Female	Outpatient		,,,	102	115	101	140	1 71			
	Female	Junetiant	contacts (r	upees)	102	115	131	149				
	Female	inpatient ac	amissions (r	upees)	2,010	2,169	2,3/4	2,590	2,850			
	Female	TOTAL		4.9	4.9	5.0	5.0	5.1				

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Sri Lanka Age structure 2001-2051



Sri Lanka Health Expenditures 2001-2051



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Sri Lanka Cost drivers 2001-2051



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Global experience

Sri Lanka Projection Model

Proposal for INTRA-III Strategy

Proposed INTRA-III Strategy

• Estimate projections using actuarial model-based protocol • Protocol has multiple components • Countries will apply components that are feasible (data sources, capacity, budget) • Phase 1: Identify information sources • Phase 2: Compile information • Phase 3: Develop projections

Data collection tools

1.2 I 1.3 C 1.4 U	able p Give ab J Jnder " i i Coun	Notes: 2.1 Complete th 2.2 If the age cat 2.3 The initial p) If the age categ i) Age categorie 2.4 For each set	is table for set o tegories availabl urpose of this ta gories used in th s should be 0-4, of projections, s	f population project e in the projections ble is to assess the c e projections did no 5-14, 15-29, 30-39 give details of the ke	ions that is p being used o comparability of match thos , 40-49, 50-5 cy parameter	proposed to be u do not match the v of the available se given below. 54, 55-59, 60-64 s or assumptions	sed ose given below, e statistics for each , 65-69, 70-74, 7: s in the projection	please provid 1 country. Ple 5-84, 85 + 1s about TFR,
	Sri La	Country	Projection	Identity of	Age-sex	Population ('000s)		
	Sri La			projection of there is more than one in set	Sex	Age group (years)	2001	201 <u>1</u>
	- F	Utopia IDS	IDS			0-4		
				Low projection	Female	5-14		
						15-29		
Con	nment					40.49		
						50.54		
						55.59		
						60-64		
						65-69		
						70-74		
						75-84		
						85+		
						0-4		
						5-14		
						15-29		
						30-39		
					40-49			
					Male	50-54		
						55-59		
						60-64		
						65-69		
						70-74		
	1000					75-84		
						85+		
					Total Fertili	ty Rate (TFR)		
					IMR			
					LEB (female)			
						I FB (male)		

Empirical Guidelines for Estimation of Ageing

Impact on Health Expenditures

Preliminary Draft April 12, 2005

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Ravi P. Rannan-Eliya Director Health Policy Research Associates Colombo 2, Sri Lanka Email: ravi@hpra.lk Web: www.hpra.lk

Data Requirements (1)

- 1. Population projections, 2001-2051
 - Use secondary sources (international/local)
 - Need to fit age categories to protocol
- 2. Household survey data on health care use
 - Inpatient/outpatient use by age-sex
 - Most survey reports do not give age details
- 3. Household survey data on health care use
 - Inpatient/outpatient use by age-sex
 - Public/private sector mix
 - Most survey reports do not give age details

Data Requirements (2)

4. Administrative data on actual levels of use

- Needed to estimate trends in use/costs over time
- May not cover private sector, but can be combined with survey data
- Eg: MOH Annual Reports, HIS, etc

5. National health expenditure estimates

- Ideal source: National health accounts
- SHA-based:
 - Separates public/private, personal/collective, inpatient/outpatient expenditures
 - Available for China, Malaysia, Sri Lanka, Kenya?, Bolivia?, Peru? India?

Data Requirements (3)

6. Substitute for NHA

- Public budgetary expenditures
 - Usually available to MOH
 - Identify personal vs. collective components
- Facility-based cost studies
 - Needed to separate inpatient/outpatient expenditures
 - Rely on secondary sources may have been conducted by academic researchers
- 7. Other items
 - Previous projection studies
 - Inventory of any studies of morbidity compression

Adaptation of Protocol

Level 1 Projections

Only factor controlled for is change in age-sex
Use substitutes for NHA

Level 2 Projections

⊙Incorporate change in utilization rates

Level 3 Projections

⊙Incorporate cost/productivity change

• Simulate impact of changes in public/private mix

Level 3 + Projections?

⊙Incorporate morbidity compression

●Incorporate disability states



20 April - 30 May
Oldentification of local collaborators
Finalization of preliminary version of data collection templates
WKC will establish list-serve

June - July 2005 O Inventory taking of available data sources

August - October 2006 • Production of estimates