ISSN-0971-8400

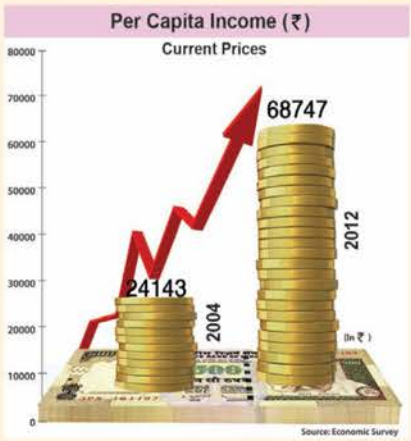
YOJANA

FEBRUARY 2014 A DEVELOPMENT MONTHLY ₹ 10

PUBLIC HEALTH

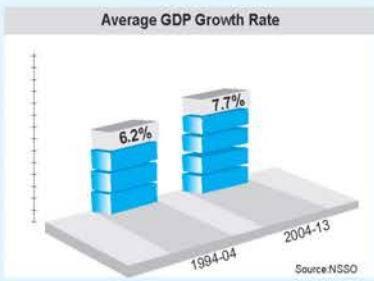
ECONOMIC GROWTH

Per Capita Income in India has increased almost three fold from 2004 to 2012.

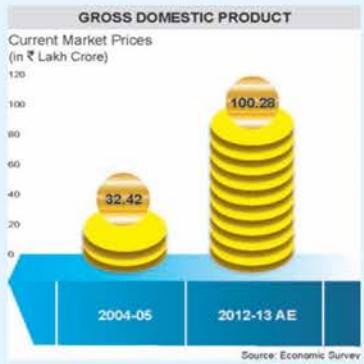


Per capita Income has increased at an annual average of nearly 20% during the last 9 years well above the Consumer Price Index during the same duration.

AVERAGE GDP GROWTH RATE



Average GDP Growth Rate (2004-05 to 2013-14)has been 7.7% despite two global slowdowns in this period.



India's GDP at current prices has increased almost three times during the last 9 years.

As a result of the policies of inclusive growth, real wages in agriculture have increased 6.8% during the 11th Five Year Plan (2007-12) as compared to 1.1% during the 9th and IOth Five Year Plans.

Agriculture Growth rate has been rising consistently. It was 2.5% and 3.7% during IOth and 11th Plans, respectively. It is projected to grow at 4% during the 12th Plan.

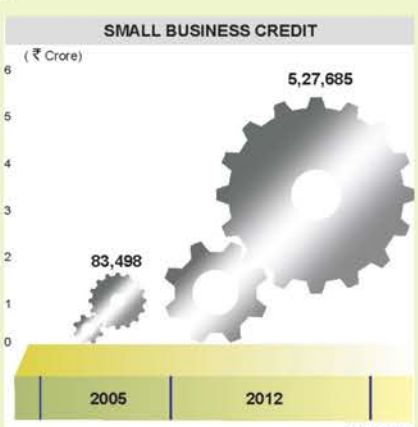
FINANCIAL INCLUSION

The total number of accounts under Pension Fund has increased from four crore in 2002-03 to more than 16 crore by 2011-12. Total enrolment in Employees Pension Funds bas increased from 3.95 crore to 8.85 crore.

More people are using banking facilities. The number of branches of commercial banks has increased from 53,000 to more than 88,000 since 2004.The number of bank accounts has increased from 43.97 crore to 77.32 crore as of last year.

SUPPORTING SMALL BUSINESSES

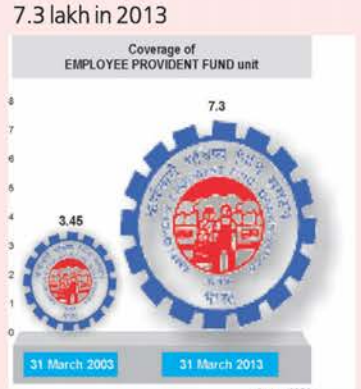
Credit and loan facilities to Micro, Small and Medium Enterprises have grown nearly seven times in the last seven years.



In the last two years, 80 thousand Micro Enterprises have been supported by the Prime Minister's Employment Generation Programme creating job opportunities for 9.23 lakh people.

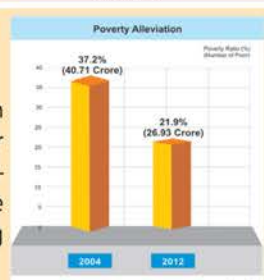
The number of EPF Accounts has reached 16.62 Crore in 2011-12.

Total units under EPF regulations increased from 3.45 lakh in 2003 to 7.3 lakh in 2013



POVERTY REDUCTION

Average decline in poverty was 2% per annum during 2004-12, almost twice the rate of the preceding decade.



February 2014

Vol 58

YOJANA

Chief Editor : Rajesh K. Jha
Senior Editor : Shyamala M. Iyer
Sub Editor : Vatica Chandra

Joint Director (Production) : V.K. Meena
Cover Design : Gajanan P. Dhope
E-mail (Editorial) : yojanace@gmail.com
(Circulation) : pdjucir@gmail.com
Website : www.yojana.gov.in

Let noble thoughts come to us from all sides
Rig Veda

CONTENTS

Our Representatives : Ahmedabad: Amita Maru, Bangalore: B.S. Meenakshi, Chennai: A. Elangovan, Guwahati: Anupoma Das, Hyderabad: Vijayakumar Vedagiri, Kolkata: Antara Ghosh, Mumbai: Abhishek Kumar, Thiruvananthapuram: R.K. Pillai.

YOJANA seeks to carry the message of the Plan to all sections of the people and promote a more earnest discussion on problems of social and economic development. Although **published by the Ministry of Information and Broadcasting**, Yojana is not restricted to expressing the official point of view. Yojana is published in Assamese, Bengali, English, Gujarati, Hindi, Kannada, Malayalam, Marathi, Oriya, Punjabi, Tamil, Telugu and Urdu.

EDITORIAL OFFICE : Yojana Bhavan, Sansad Marg, New Delhi-110001 Tel.: 23096738, 23042511.
Tlgm.: Yojana. **Business Manager (Hqs.) :** Ph :24367260, 24365609, 24365610

For new subscriptions, renewals, enquiries please contact : Business Manager (Circulation & Advt.), Publications Division, Min. of I&B, East Block-IV, Level-VII, R.K. Puram, New Delhi-110066, Tel.: 26100207, Telegram : Soochprakasan and Sales Emporia : Publications Division: *Soochna Bhavan, CGO Complex, Lodhi Road, New Delhi -110003 (Ph 24365610) *Hall No.196, Old Secretariat, Delhi 110054(Ph 23890205) * 701, B Wing, 7th Floor, Kendriya Sadan, Belapur, Navi Mumbai 400614 (Ph 27570686)*8, Esplanade East, Kolkata-700069 (Ph 22488030) *'A' Wing, Rajaji Bhawan, Basant Nagar, Chennai-600090 (Ph 24917673) *Press road, Near Govt. Press, Thiruvananthapuram-695001 (Ph 2330650) *Block No.4, 1st Floor, Gruhakalpa Complex, M G Road, Nampally, Hyderabad-500001 (Ph 24605383) *1st Floor, 'F' Wing, Kendriya Sadan, Koramangala, Bangalore-560034 (Ph 25537244) *Bihar State Co-operative Bank Building, Ashoka Rajpath, Patna-800004 (Ph 2683407) *Hall No 1, 2nd floor, Kendriya Bhawan, Sector-H, Aliganj, Lucknow-226024(Ph 2225455) *Ambica Complex, 1st Floor, above UCO Bank, Paldi, Ahmedabad-380007 (Ph 26588669) *KKB Road, New Colony, House No.7, Chenikuthi, Guwahati 781003 (Ph 2665090)

SUBSCRIPTION : 1 year ₹ 100, 2 years ₹ 180, 3 years ₹ 250. For SAARC countries by Air Mail ₹ 530 yearly; for European and other countries ₹ 730 yearly.
No. of Pages : 68

Illness as Metaphor

Apparently it may look trivial to ask if one can identify a healthy person from an ill one but the concept of health and illness has confounded human beings for long. In fact, disease and its complementary idea health may have some very specific notions rooted in the cultural and social milieu of the people. Those who may qualify as healthy in one socio-cultural context could very well be called ill under a different social context. This is not to deny the now universally accepted parameters of health but to underline the complexity of this concept which has a bearing on the way individual, society and the state respond to the challenges of disease and demands of health. This is also reflected in the fact that in modern times we have seen many new categories entering into the definition of diseases- Depression, Obesity, Dyslexia, Attention Deficit Disorder (ADD), Anorexia and so on. Similarly, a number of body states earlier counted in the category of disease are no more considered to be illnesses.

The ancient Indian system of medicine, *Ayurveda,* conceived of illness as emanating from an imbalance in the basic vital elements phlegm, bile and gas *(Kaf, Pitta, Vayu)* while the Chinese system of health assumed that it is the breakdown in the dynamic harmony between the *Yin* and *Yang* within the human body which is the cause of disease. On the other hand, the modern health system believes in the germ theory of disease. But significant advances are being made towards a deeper understanding of health and disease at the cellular and genetic level which may alter our understanding of health and disease in a fundamental way in the near future. However, in a generalised manner and in a certain sense, one can also visualise health as 'silence of organs' and disease 'their revolt'. Illness is not just the affliction suffered by the individual but it may be seen, at least partly, by 'what the world had done to the victim'.

Illness is indeed a metaphor, as Susan Sontag has pointed out. However, the metaphor of illness is not limited to the individual emotions and feelings. It can be used as a fairly accurate proxy to delineate the dynamics and architecture of relationship the individual enjoys with the state and the society. It does tell us a lot to know that in the US and many other developed western countries anti-depressants, sleeping pills and similar other medicines dealing with mental illnesses constitute a big chunk of the expenditure on medicine. At the same time, in developing countries of Asia and Africa, millions of children die of diarrhoea and malnutrition. In these countries TB is still among the major killer diseases even while cheap and effective medicines exist for these.

The health status of the people in the country is an important flag-post to evaluate the success of the state policy. Health of the individual impacts the growth of the nation in a very material sense. It has been estimated that the differences in the growth performance of many countries can be attributed to the health status of the people. Public expenditure on health support programmes in fact contributes quite tangibly in spurring the growth in the country. According to a study by the WHO, India is estimated to lose more than $ 237 billion of its GDP over the period 2006-15 on account of premature death and morbidity from Non-Communicable diseases alone. It is worth pondering that public expenditure on health care is probably a far more efficient economic investment than many other kinds of investments.

It is also a sad story to learn that each year close to 37 million people fall below poverty line due to high expenditure on health services they have to incur. It is obvious that for the poor health is their only productive asset. Falling sick puts a double burden on them in terms of loss of income and expenditure on health care which pushes them further into debt and poverty. It is high time we inverted the dictum of Darwin and worked for a society which would ensure survival of the weakest and perhaps the sickest too.. ❑

LEAD ARTICLE

Financing India's Quest for Universal Health Coverage

Somil Nagpal

The increased commitment to strengthen the magnitude of public health spending, and the initial lessons from the current generation of UHC programs, together augur well, with great potential to catapult forward India's march toward Universal Health Coverage

UNIVERSAL HEALTH coverage (UHC), as a concept, is about people having access to needed healthcare without suffering financial hardship, thus, encompassing improvements in access, quality and financial protection. UHC aims to achieve better health and development outcomes, prevent people from being impoverished due to health-related causes and give people the opportunity to lead healthier, more productive lives. UHC has also featured prominently in discussions around the post-MDG agenda as a possible goal for the post-2015 global development agenda.

In recent years, a large number of countries around the world have stepped up their activities aimed at achieving Universal Health Coverage for their people. In India too, UHC is now clearly on the policy agenda and there is increasing willingness of central as well as state governments to increase their outlays for the health sector. However, within this overall commitment to increase public health spending, there are difficult decisions to be taken on allocating new resources between personal health care, catastrophic care and population-based public health interventions, when all of these are inadequately financed at present.

The recently approved 12th Five Year Plan clearly lays out its long term objective of establishing a system of Universal Health Coverage (UHC) in the country (Planning Commission 2012). A significant increase in public health expenditure, by about 1 per cent of GDP per year, is aimed to be achieved by the end of the 12th plan. Hitherto, India's health sector has been challenged by overall low levels of public financing, entrenched accountability issues in the public delivery system and the persistent dominance of out-of-pocket spending. However, several recent initiatives have been introduced by the central and state governments in India, aimed at addressing some of these challenges and to improve the availability of and access to health services, particularly for the poor and vulnerable groups in the country. These are discussed in a subsequent section of this article.

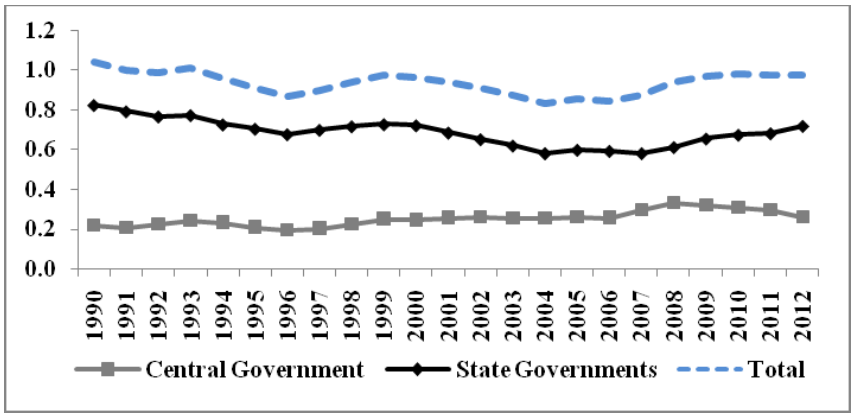
India's Health Financing Context

India has long been a low spender on health care, and allocated approximately 4.1 per cent of GDP

The author is Senior Health Specialist with the South Asia region of the World Bank and is based at the New Delhi office of the Bank since 2009. Prior to this, he served the Insurance Regulatory and Development Authority, India, where he was responsible for setting up the country's first-ever specialized health insurance regulation unit and headed the regulatory and developmental initiatives for the health insurance sector of the country from 2007 to 2009. He has also served at the Indian Ministry of Health and Family Welfare, the National Commission on Macroeconomics and Health (NCMH), the World Health Organization and the Ministry of Finance. He has recently authored and co-authored several World Bank publications on Health Financing and Health Insurance and has been a contributor and reviewer for several renowned journals.

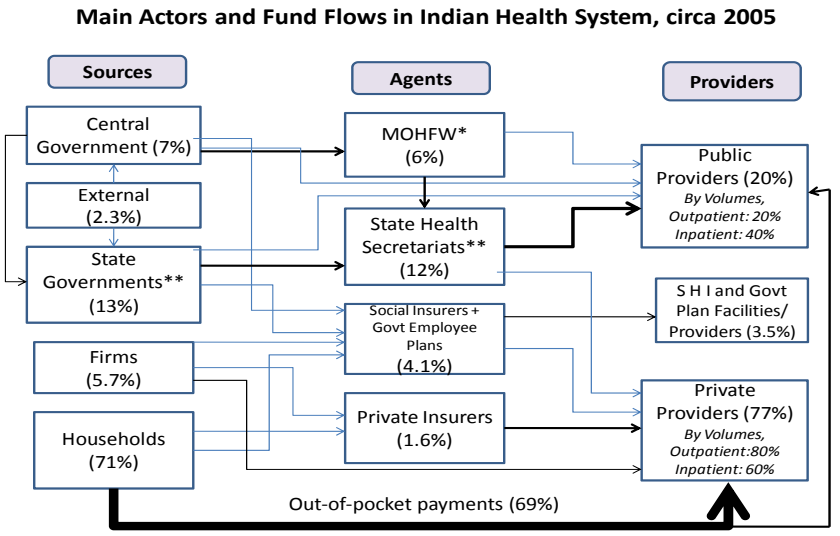
or US$40 per capita in 2008-09 to the health sector. In terms of India's share in global health expenditure, the country with over 17 per cent of the world's population manages with less than 1 per cent of the world's total health expenditure. The share of health spending has also not kept pace with the country's dynamic economic growth (India's total health spending accounted for a much higher 4.8 per cent of GDP in 2001-02 and has reduced its share since then). Public spending on health as a per cent of GDP has varied little over the last two decades, hovering at about 1 per cent (Figure 1). In 2005, government (central, state and local) was the source of about one-fifth of spending while out-of-pocket payments represent about 70 per cent – one of the highest percentages in the world. Though, no official estimates are available for recent years, WHO estimates put the share of government expenditure at 30 per cent and that of out-of-pocket payments at about 60 per cent for 2011, a significant improvement over 2005, but still very high for the country's level of socio-economic development.

Figure 1: Government Health Expenditure: Central and States (per cent of GDP)



Source: Union Budget Documents and RBI: Study of State Finances Reports

Figure 2: Financial Flows in India's Health System



[a]Includes spending by other central ministries.
[b]Includes spending by local governments (1% of total spending).
[c]Refers to utilization volume
[d]Includes other government employee schemes such as those in Railways and Defence ministries.
Based on National Health Accounts for 2004-05 (MOHFW, 2009) and authors' estimates.
Source: La Forgia and Nagpal (2012).

Figure 2 depicts the financial flows among major actors in India's health service system according to the national health accounts classification: categorized by sources, agents and providers, in the year 2005, reflecting the health financing context, in which these programs have their origin. The bolded arrows show the main financial flows.

Health finance and delivery in India have developed along four main and mostly parallel lines. The first, and the far largest, is out-of-pocket spending by households (the dark arrow in Figure 2). Nearly all this spending is directed to fee-for-service private providers, but some are for user fees collected at public facilities. This method of finance places considerable financial burden on poor households, and is seen as one of the important reasons for impoverishment in India. As much as 80 per cent of outpatient and 60 per cent of inpatient care is provided by private practitioners (NSSO, 60th round data). This translates into a flow of 77 per cent of total health spending directed towards private providers (including charitable and other non-profit facilities).

The second is tax-financed, direct public delivery which, in principle, is available for all of India's population. Operated mainly by the states, the public delivery system, which includes the centrally sponsored activities funded under NRHM,runs facilities at primary, secondary as well as tertiary levels, and accounts for about 20 and 40 per cent of outpatient and inpatient utilization in the country respectively. Considerable inter-state variation exists, especially in inpatient utilization (Mahal, et al., 2001) and there are significant sub-national disparities across various dimensions of vulnerability.

The third segment consists of social insurance schemes for formal private sector workers and government employees. These schemes are generally mandatory and most are financed

through employee and employer contributions via a payroll tax, but also benefit from partial government subsidies.

The fourth segment is voluntary private insurance (PHI) which emerged in the late 1980s but has grown rapidly in the 2000s. In 2004-05, PHI accounted for 1.6 per cent of total health expenditure, but reached an estimated 3 per cent by 2008-09.

Health Finance and Outcomes

India is significantly below its global comparators in terms of public expenditure on health as a share of GDP among countries with similar levels of income (GDP per capita in current US dollars). At its current level of income, most countries exhibit higher public spending on health as a share of their GDP than India (World Bank, 2010). Figure 3 illustrates this situation on a log scale in which each circle represents a country. The countries in South Asia have been labeled for ease of comparison.

Large disparities in health outcomes are still evident across states and social groups and improvements have not been shared equally. Public subsidies for health have historically favored the better off segments of society (Mahal et al, 2004). Peters et al. (2002) estimated that in the late 1990s, for every Rs 1 spent on the poorest income quintile, the government spent an estimated Rs 3 on the richest quintile. In this background, India's quest for UHC must address these issues of adequacy, effectiveness, efficiency and equity of public health spending.

Recent Programs

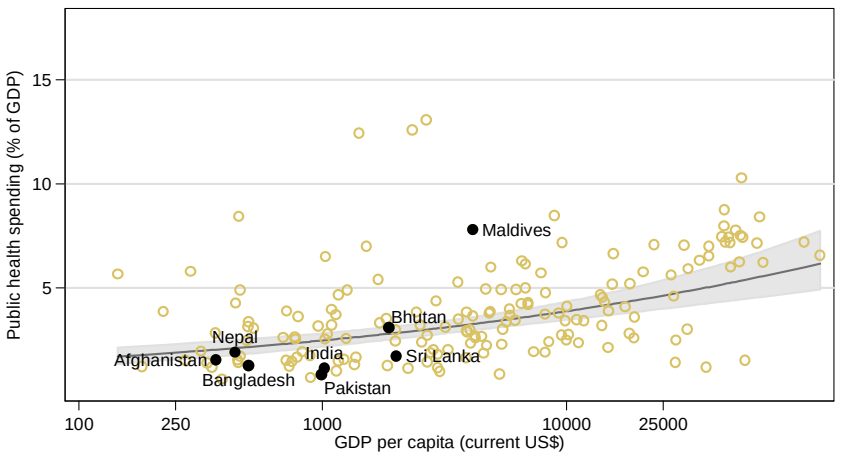
The bottom-up design for expansion of health coverage, starting with coverage of the rural and the poorest segments of the population first, and the rapid scale-up of population coverage in a short period of time, are unique facets of India's recent strides towards universal health coverage.

Two prominent national programs in this respect have been the National Rural Health Mission (NRHM) of the Ministry of Health and Family Welfare (now rechristened as National Health Mission and being further expanded in urban areas) and the Rashtriya Swasthya BimaYojana (RSBY) of the Ministry of Labour and Employment. In addition, several state programs such as the Rajiv Aarogyasri scheme launched by the state government of Andhra Pradesh and similar programs such as the Vajpayee Arogyashri Scheme (Karnataka), Chief Minister's Comprehensive Health Insurance Scheme (Tamil Nadu), Comprehensive Health Insurance Scheme (Kerala), Rajeev Jeevandayee (Maharashtra), Mukhyamantri Amritam (Gujarat), Megha Health Insurance scheme (Meghalaya), Mukhya Mantri Swasthya BimaYojana (Chhatisgarh), and RSBY Plus (Himachal Pradesh) are examples of state-government led efforts to expand access to tertiary, surgical care for their poor and vulnerable population groups.

All these programs were designed and implemented by different institutions almost in parallel, over a similar time period in the last 7-8 years and used different financing and delivery approaches. However, there are several commonalities- they all aim at extending health coverage and improved financial protection to the poor and other vulnerable groups in the country, are fully subsidized by the government and to the extent of their benefits packages, they are 'cashless' for their beneficiaries, not requiring any contributions, upfront payments to providers or bearing a share of the costs of treatment.

Introduced in 2005, NRHM is the flagship initiative of the Ministry of Health and Family Welfare (MOHFW), Government of India, aimed at expanding health coverage in the country. In a context where the country's constitution lays out health as being a subject for state governments, NRHM supplements and strengthens the state-owned public health systems by providing additional resources with a focus on rural areas, primary care and public health programs. NRHM also leverages this financial support to facilitate the creation of institutional mechanisms that enable some degree of financial autonomy and a faster flow of funds.NRHM has led to several service delivery innovations and to significant, though still inadequate, increases in central government investments in health, especially for public health interventions and primary care. In addition to significantly increased

Figure 3: Public Expenditures on Health as a Share of GDP and in Relation to Income Per Capita, 2008



Sources: WDI; WHO
Note: x-axis log scale

Source: World Bank (2010)

financing, the flexibility around hiring contractual staff, supply chain reforms, introduction of a cadre of grassroots workers paid entirely based on performance, innovative financial flow mechanisms and an overall increased emphasis on public health expenditure, distinguish NRHM from the situation prior to its existence.

The NRHM beneficiaries, in theory, can include anyone walking into a public health facility, regardless of income, geography, or other factors. The country's rural population of 833 million (Census 2011) in general, and of these, the 490 million residing in 'high focus' states for NRHM in particular, are the target beneficiaries for the program.To illustrate the scale of the intervention, one of the largest components in NRHM is the Janani Suraksha Yojana, which offers a conditional cash transfer to poor women for availing free institutional maternity services created under NRHM, and is currently utilized by over 10 million women each year. Over 22 million children stand fully immunized each year (NRHM 2012). However, it is also a fact that an overwhelming 80 per cent of ambulatory care and as much as 60 per cent of inpatient care continues to be obtained outside the public health system (NSSO 60th round data).

Since 2007, the new wave of Government Sponsored Health Insurance Schemes (GSHISs) such as RSBY and state programs inspired by Rajiv Aarogyasri in AP, has introduced a new set of arrangements to govern, allocate and manage the use of public resources for health, including an explicit (and delivered) package of services, greater accountability for delivering services, and a bottom-up design to reach universal coverage by first achieving coverage of the poor. GSHISs have been able to scale up rapidly. By 2010, about 240 million Indians were covered by GSHISs, about 19 per cent of the population. Accounting for private insurance and other forms of coverage, more than 300 million people, or more than 25 per cent of the population, had access to some form of health insurance in 2010. Table 1 depicts the number of beneficiaries covered by different insurance schemes in the country, in three time zones, 2003-04, 2009-10 and projections for 2015.

In the light of current trends, and assuming continued political and financial support from the government, insurance coverage is expected (perhaps conservatively) to reach more than 630 million persons, 50 per cent of the population by 2015.

Table 1: Population Coverage of GSHISs and Projected Growth, 2003–04, 2009–10, and 2015 (million people)

Scheme	2003–04	2009–10	2015[a]
Central government			
Employees State Insurance Scheme (ESIS)	31	56	72
Central Government Health Scheme (CGHS)	4.3	3	3
RSBY	—	70	300
State government			
Andhra Pradesh, AP (Rajiv Aarogyasri)	—	70	75
Tamil Nadu, TN (Kalaignar)	—	40	42
Karnataka, KA (Vajpayee Arogyashri)	—	1.4	33
KA (Yeshasvini)	1.6	3	3.4
Total government -sponsored	37.2	243	528.4
Commercial insurers	15[b]	55[b]	90
Grand total (includes others not listed above)[b]	55	>300	>630

Sources: Authors' elaboration based on scheme data.
Note: —= not applicable, scheme not yet in existence.
a. The member base for 2015 is based on La Forgia and Nagpal, 2012. For key assumptions and methodology, please refer to Annex 3B of the publication.
b. Estimated based on average premium from Insurance Regulatory and Development Authority (IRDA) sample database Traffic Advisory Committee/ Insurance Information Bureau (TAC/IIB) applied to published revenue data of the industry
c. Includes other health protection and health insurance schemes, including community health insurance schemes, publicly subsidized schemes for handloom workers and artisans, noncontributory coverage by employers of government (defense, railways, state government staff) and nongovernment employees (where employers run their own facilities or provide reimbursements without using insurance mechanisms) as an employment benefit.

Gazing into the Crystal Ball

The recent efforts towards UHC have high visibility and have also helped raise the political profile of health in the country, which has led to additional financing for programs aimed at providing access to affordable, quality healthcare for the most vulnerable groups in the country.

Significant central investments in NRHM and RSBY form part of the stated strategy of the plan, and a similar expectation is also made from the state level.A recent World Bank publication (La Forgia and Nagpal 2012) also proposes, as a starting point for wider discussion and debate, a possible pathway to progress toward universal health coverage based on realistic assumptions of fiscal capacity, the current configuration of health financing and delivery arrangements, lessons and innovations from NRHM and GSHISs, and international experience.Table 2, reproduced from the publication, estimates the costs of this package to be an additional 0.4 to 0.5 per cent of GDP, in two possible scenarios, to cover the BPL and vulnerable non-poor comprising of 77 per cent of the country's population.

Summing Up

Despite the apparent dichotomy in financing of these newer UHC programs, as well as the apparent fragmentation among the programs, the potential for an interesting complementarity does exist. Interestingly, the programs discussed

Table 2: Estimated Incremental Costs of the Proposed Package of Services, 2015

Proposed Source of financing	Proposed Intervention and target group	Unit cost per family per year (Rs.)	Scenario	Number of beneficiary families (million)	Scenario 1 500 capitation (Rs. crores)	Scenario 2 1,000 capitation (Rs. crores)
Central	Standard package (secondary and maternity coverage)—BPL	1,000[a]	n.a.	60	6,000	6,000
	PHC performance-based primary care scheme: BPL[b]	500 1,000	(1) (2)	60	3,000	6,000
	Central government total,all Components				9,000	12,000
State	Tertiary care top-off scheme- BPL	900[c]	n.a.	60	5,400	5,400
	Standard package (secondary and maternity coverage) for vulnerable non-poor[d]	600[e]	n.a.	120	7,200	7,200
	PHC performance-based primary care scheme—vulnerable nonpoor	500 1,000	(1) (2)	120	6,000	12,000
	Tertiary care scheme: vulnerable non-poor	900	n.a.	120	10,800	10,800
	State governments total costs, all Components			60 (BPL) + 120 (vulnerable nonpoor)	29,400	35,400
Total	Estimated annual costs: all components for BPL and vulnerable non-poor (77 per cent of population)			180	38,400	47,400

Sources: Authors' elaboration in La Forgia and Nagpal 2012.

Notes: n.a. = not applicable.

All figures in nominal terms, estimates for calendar year 2015.

a. The price of the secondary and maternity package is estimated at Rs. 500 per family per year at 2010–11 prices with annual growth of 15 per cent in nominal terms.

b. These denote additional costs for the performance-based primary care scheme. The primary care package assumes continuation of ongoing financing of services with the proposed performance-based credits being provided in addition. In Scenario 1, the performance-based primary care credit is provided at Rs. 500 per family; in Scenario 2 at Rs. 1,000 per family.

c. The price of the tertiary package is estimated at Rs. 450 per family per year at 2010–11 prices and annual growth of 15 per cent in nominal terms.

d. Assumes a 40 per cent copayment at point of service use by the non-poor, and no upfront premium contribution.

e. The cost of secondary and maternity scheme for the vulnerable, nonpoor is estimated at 60 per cent of the costs of the BPL package, with a 40 per cent copay at point of service. This reduces the costs proportionately (in practice, the cost reduction for the scheme may be higher than 40 per cent due to changes in utilization).

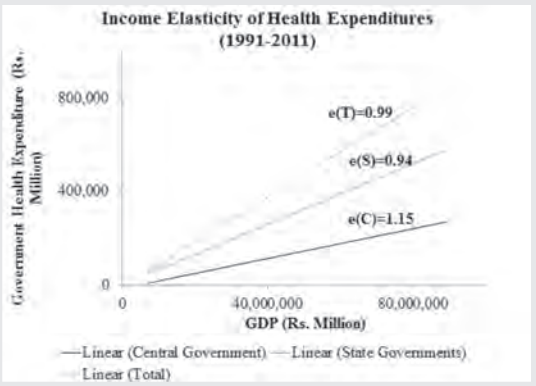
in this brief have their areas of focus clearly marked out—primary care in the case of NRHM, secondary care in the case of RSBY, and tertiary care in the case of Rajiv Aarogyasri and other state health insurance schemes. Though, this distinction in focus was due to their respective evolutionary factors, and did not happen in a planned manner, a very interesting complementarity exists. Thus, if these programs could further evolve to a state of close coordination and similarly defined populations to be covered and with smooth linkages, they could contribute to more seamless, comprehensive coverage for primary, secondary and tertiary care, drawing upon their respective strengths and synergies. There is considerable scope, for example, of NRHM-strengthened primary care facilities serving as effective gatekeepers for the secondary and tertiary health insurance programs, and also contributing to effective follow-up care after these patients are discharged.

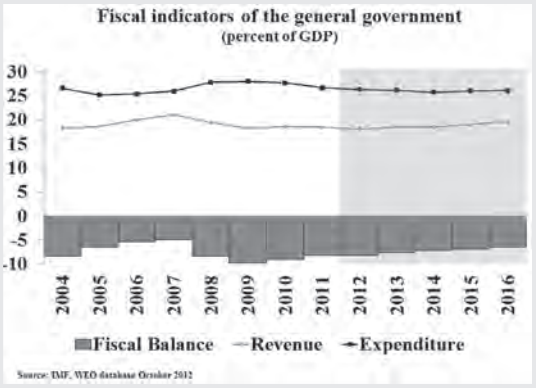
Further, preventive interventions and effective case management for non communicable diseases at the primary care level can contribute significantly in reducing the need for hospitalization, thereby, simultaneously improving quality of life for the beneficiaries and containing the costs of hospitalization programs. Also, lessons from the demand-side financing schemes in aligning facility-level incentives for inpatient care can be used to introduce a performance-based remuneration system for public facilities providing primary care. If these programs can be coordinated in this manner for future expansion plans, their current configuration could be a promising foundation for a reformed health finance and delivery system. The increased commitment to strengthen the magnitude of public health spending, and the initial lessons from the current generation of UHC programs, together augur well, with great potential to catapult forward India's march towards Universal Health Coverage.

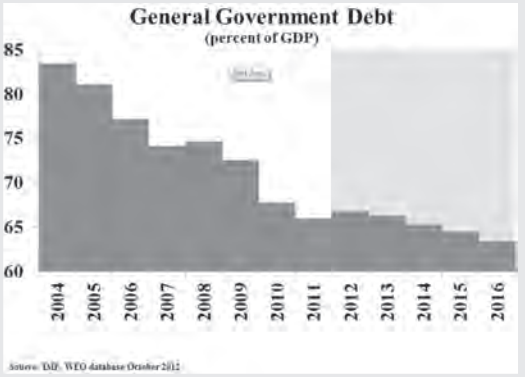
Does India Have Fiscal Room to Finance Universal Health Coverage?

The two proposals for increased public health spending mentioned in this brief will cost the government an estimated additional 0.4 to 1 per cent of GDP. At least a quarter of this additional financing will originate from the central government; the remainder, from the states. Are India's macro-fiscal conditions conducive to increasing public financing for health to attain universal coverage?

India's macroeconomic fundamentals are generally strong. With 10.4 per cent growth in GDP in 2010, India was one of the world's fastest growing economies, and annual GDP growth rates are projected at healthy levels. At the same time, the government has committed to undertake fiscal consolidation efforts that are expected to cut the general government deficit by almost half—and the debt-to-GDP ratio to almost 60 per cent—over the next five years (as depicted in the graphs). In such an environment, expanding public spending on health might be expected to be challenging unless revenues increase significantly more than projected or the government chooses to reprioritize health (e.g., by reducing expenditure on subsidies), or both.







Using data from 1990–2012, the estimated elasticity of general nominal government health spending to GDP in India was about 0.99.[a] This is low when compared to other low- and lower-middle income countries in which the average elasticity is usually in the vicinity of 1.15. This below average elasticity is driven by a generally slower rate of state health spending growth relative to GDP growth. The elasticity of aggregate state health spending to growth is only about 0.94, whereas the elasticity of central health spending to GDP is commensurate with the average for low- and lower-middle income countries.

Numerous factors suggest that, barring major policy reversals or unforeseen economic downturns, the central government's financing share for resourcing universal coverage ought to be attainable in the short to medium term. These positive factors include past secular trends, two decades of robust economic growth, strong growth projections, a high elasticity of central health spending relative to GDP, and credible commitments by the government increasing financing of social protection policies[b].

Procuring the necessary public financing for universal coverage at the state level, however, is likely to be more of a challenge in India. As mentioned, past growth rates and income responsiveness of aggregate state health spending have been significantly lower than those of the central government. At current projections, securing the requisite financing for universal coverage would require aggregate state health outlays to increase by an estimated 20 to 25 per cent per year in nominal terms. An increase in outlays of such a magnitude would require a major reprioritization of the health sector at the state level or substantial improvements in the efficiency of current health spending for many of the states. States such as Uttarakhand have significantly increased health spending in recent years and may have an easier time financing universal coverage, but Rajasthan and other states may be constrained in their ability to do so. Alternatively, the GOI may have to contribute additional funds (beyond the proposed central-financial packages in table 1) to the proposed state-financed packages for states unable to generate sufficient funds. Given India's political economy and complex decentralized public health financing structure, a detailed, state-by-state assessment would need to be conducted to better analyze and outline possible options for financing universal coverage. This would include possible additional support from the center for states facing fiscal constraints.

Source: This box was prepared by Ajay Tandon and updated by Smriti Seth and Somil Nagpal, drawing upon Berman et al. (2010), and Tandon et al. (2010).

a. *Thaindian News*, August 14, 2011, www.Thaindian.com/newsportal/business (accessed September 12, 2011).

b. Elasticity refers to the percent change in health spending for a given percent change in GDP. ❑

(E-mail : snagpal@worldbank.org)

Achieving Universal Coverage in India: Resource Use and Policy Considerations

Ajay Mahal

Expanding coverage to a large number of Indians is a desirable policy goal with the potential of improving health and lowering financial hardships faced by millions of Indians. effective implementation of large-scale public insurance requires navigating a complex set of coverage and organizational issues pertaining to the roles of the public and private sectors in health, primary care versus hospital care and enabling the provision of healthcare services to the rural population

IN THE last decade, governments at the center and state-level in India have taken significant steps to improve service quality and financial affordability of healthcare services. Major initiatives include the National Rural Health Mission (NRHM) that was launched in 2005 and aimed at improving service quality of primary and secondary care, and the Rashtriya Swasthya Bima Yojana (RSBY), a health insurance scheme for the poor launched in 2007, that provides (secondary) hospitalization coverage (and funded by the government). In addition, some states have initiated their own publicly funded insurance schemes, as in Andhra Pradesh, Karnataka and Tamil Nadu. These programs both build on and complement an already existing but relatively low quality public sector infrastructure for the provision of health services in India. They are consistent with an ambitious agenda for 'affordable coverage for all', outlined in the recent report of the High Level Expert Group (HLEG) set up by the Planning Commission, and reaffirm the vision of the Bhore Committee Report of 1946 and the Directive Principles of India's Constitution.

India's pursuit of the path for expanded healthcare coverage for its population accompanies recent efforts in this area in Asia and Latin America. In 2001, the government of Thailand launched a health insurance scheme that provided essentially free coverage to large numbers of people in the agriculture and the informal sectors, in addition to groups in the organized (or formal) sector. As a consequence, almost its entire population was covered by health insurance. China is another noteworthy example. In a nearly two-decade long period following the pro-market reforms introduced by the then Chinese government, the Chinese government reduced its funding for the health sector, leading to sharp increases in financial hardship from illness for households. In response, China launched two insurance funds – one for the population in urban areas; and another for rural areas, the latter known as the *New Cooperative Medical Scheme*. Recent estimates suggest that these schemes cover almost the entire population of China. Major reforms in

The author is the Finkel Chair of Global Health at Monash University and an Adjunct Associate Professor of International Health Economics at Harvard University. Prior to his appointment at Harvard, Professor Mahal was a senior researcher at the National Council of Applied Economic Research (NCAER) in New Delhi, His experience on international health systems practice has included being a resident advisor to the Ministry of Health of the Palestinian Authority (1996-98); technical advisor to the Indian National Commission on Macroeconomics and Health (2004). He has been a consultant to the World Bank, the WHO, the UNDP, the ADB, UNCTAD, and a number of other government and non-government organisations.

the health sector were also launched in Mexico in 2001, expanding coverage to nearly 30 million previously uninsured individuals under the *Seguro Popular* health insurance program.

These international examples and related developments in India reflect three central concerns about healthcare costs and financing. First, overall costs of healthcare have a tendency to rise over time. In developing countries such as India, these rising costs are a function not just of increased demands and rising incomes brought about by an ageing population and the increased incidence of chronic conditions that are expensive to treat. In fact, the rising share of the elderly plays a relatively minor role in healthcare cost inflation.

The major driver of costs is the rapid technological advancement in the health sector, including off the shelf imports of expensive diagnostics and treatments, from developed countries. Second, in the absence of insurance or ready availability of subsidized care in public facilities, the burden of these rising costs will fall primarily upon households in the form of out of pocket payments.

The major driver of costs is the rapid technological advancement in the health sector, including off the shelf imports of expensive diagnostics and treatments, from developed countries. Second, in the absence of insurance or ready availability of subsidized care in public facilities, the burden of these rising costs will fall primarily upon households in the form of out of pocket payments. As family sizes fall in India with parents having fewer children, the role of adult children as a means of financial support for healthcare in old age has implications not just for family harmony, but also for the economic and social well-being of the children themselves. Third, there are issues of resource wastage and equality involved. Paying out of pocket can also lead to wastage, since insurers can negotiate lower fees with healthcare providers than individuals. Increased reliance on out of pocket spending means that only those who can afford to pay, can access care of reasonable quality. Less well-off households and even members of the middle class may have to sell productive assets (such as livestock or land) or borrow and this translates into future losses of income and household impoverishment.

Designing and implementing a strategy of universal coverage, however, presents significant challenges to policy makers and implementation agencies. The goal of this article is to describe four major challenges and the associated policy options:

- How much will universal coverage cost?
- What will it cover?
- Who will it cover?
- Who will provide the services?

Cost

There is little doubt that expanding coverage will require a much larger allocation of public resources than in the past. The HLEG report estimated the fiscal implications of 'progressively moving' to universal coverage in India as a share of GDP, and projected that public spending will need to increase to 3.0 per cent of GDP by 2022 from its current level of 1.1 per cent of GDP. However, other projections of the fiscal burden are considerably greater, of the order of 4 per cent of GDP or even higher, annually. These projections are unsurprising given the experience with rising expenditures in Mexico and Thailand following the expansion of healthcare coverage in those countries. Recent reports from Indonesia lend further support to the likelihood of rising demands on the budget, with government allocations to healthcare falling substantially short of the requirements to fund healthcare benefits under their national health insurance program.

The jump from 1.1 per cent of GDP to 3.0 per cent-4.0 per cent of GDP appears large given the current state of budgets at the center and states in India. However, it is possible that even this increase may not be enough to cope with increased demand for healthcare services following implementation, once the scope of benefits becomes better known to the Indian population. The experience of the Arogyasri health insurance scheme in Andhra Pradesh, which was also introduced in 2007, clearly illustrates this. For this reason, program designers need to think carefully about what benefits to cover (and when appropriate), while placing some restrictions on which groups benefit from the subsidies provided under publicly financed insurance.

What Benefits will it Cover?

Should insurance cover the cost of *all* types of illness? Clearly, resource limitations will not permit this. But budget constraints apart, there are

...there are grounds for arguing against 100 per cent coverage. Administrative costs can be extremely high for processing multiple small claims. There is also the risk that full financing of all services leads to wastage due to overuse of subsidized healthcare. People could end up seeking care for minor aches and pains, cough and colds and so forth. At the same time, we do want people to use preventive care (e.g., immunization, regular medical check-ups, ante-natal and post-natal care) that can lower the risk of later complications and hospitalizations.

grounds for arguing against 100 per cent coverage. Administrative costs can be extremely high for processing multiple small claims. There is also the risk that full financing of all services leads to wastage due to overuse of

subsidized healthcare. People could end up seeking care for minor aches and pains, cough and colds and so forth. At the same time, we do want people to use preventive care (e.g., immunization, regular medical check-ups, ante-natal and post-natal care) that can lower the risk of later complications and hospitalizations. And it is also desirable to protect households against the financial risks arising from health conditions that tend to occur rarely, such as cancers and heart disease, but that are extremely expensive to treat.

It is arguable that India is not in a fiscal position to offer publicly subsidized services as generous as Mexico (or Thailand). The limited annual benefits offered under the RSBY scheme –Rupees thirty thousand worth of hospital care for a family of five – illustrates this. The lesson from Mexico in designing a benefits package is crucial and efficiencies are likely to be achieved when covered services are chosen in a manner that achieve the maximum health benefits for resources spent, while balancing the need to protect people against large expenses associated with hospital stays.

Mexico offers an example of how to choose services to be covered (or 'benefits package'). Specifically, healthcare visits were divided by Mexican policymakers into (a) those intended for preventive purposes (e.g., immunization, health promotion education) (b) to care for relatively rare conditions that are expensive to treat (e.g., cancer) and (c) intended to treat common conditions (fevers, injuries, asthma, etc.). The approach followed in Mexico is to cover those healthcare visits and hospital stays that offer the most health benefits per rupee (peso in the case of Mexico) spent on an average. Given that it is much richer than India, Mexico has been able to provide fairly generous coverage. Cosmetic surgery, transplants and renal dialysis are excluded, but even these are expected to be covered soon. A similar strategy has been adopted in Thailand.

It is arguable that India is not in a fiscal position to offer publicly subsidized services as generous as Mexico (or Thailand). The limited annual benefits offered under the RSBY scheme –Rupees thirty thousand worth of hospital care for a family of five – illustrates this. The lesson from Mexico in designing a benefits package is crucial and efficiencies are likely to be achieved when covered services are chosen in a manner that achieve the maximum health benefits for resources spent, while balancing the need to protect people against large expenses associated with hospital stays.

Who will it Cover?

Policy choice about the benefits to be covered is one strategy when resources are scarce. Alternately, could the government target some groups for greater subsidies than others to conserve resources? Universal coverage need not translate into universally free coverage! For example, health insurance programs may require contributions from some population groups and not from others. The RSBY program mentioned above limits the benefits package but involves no payment of premiums, which are paid directly by the government to the insurance company. But one can imagine a scenario where better off households pay more in premiums to receive health insurance benefits, which nonetheless is better than directly paying out of pocket for the full cost of services. Many countries that have achieved universal coverage have relied upon differential treatment of populations for purposes of payment. In the Republic of Korea, earnings determine whether a household receives any subsidy from the government. When healthcare is financed primarily by taxes as in India's public sector health services, implicitly it is the better off who are likely to pay more in tax revenues. In India, contributions to the Employees' State Insurance Scheme (ESIS) also involve differential contributions depending on earnings.

The Republic of Korea and other developed countries can fine-tune differential premium payments by income because data on household incomes are of good quality. The difficulty in India is effective identification of the less well off, given that large numbers of people work in

The difficulty in India is effective identification of the less well off, given that large numbers of people work in the informal sector where earnings are neither regular, nor well recorded. This makes it difficult to implement the payment of premiums that depend on household earnings, unless some fairly simple rules of identification of economic status – e.g., car or scooter ownership – are followed.

the informal sector where earnings are neither regular, nor well recorded. This makes it difficult to implement the payment of premiums that depend on household earnings, unless some fairly simple rules of identification of economic status – e.g., car or scooter ownership – are followed. Thailand and Indonesia have dispensed with this difficulty by eliminating premiums altogether for people who work in the informal sector, just as for the RSBY programme in India, that is no targeting of subsidies to the poor. But if targeting of premium payments by economic status is not undertaken, a less generous benefits package will result.

Who will Provide Healthcare Services?

Financing is not the sole issue. Expanding health insurance coverage will raise the demand for healthcare

services in India by making care more affordable. This draws attention to supply side issues, three of which are particularly significant.

First, we need to assess the appropriate role of the private and public sectors in the context of increased government financial contributions to the health sector. Currently, India's population relies heavily on private care which is perceived to be more responsive to consumer needs, relative to the public sector. Given the scale and reach of private healthcare provision in India – accounting for nearly 75 per cent of all outpatient visits and more than half of all hospital admissions – it is unlikely that a program of expanded coverage will work without the substantial involvement of the private sector. Private sector involvement

India's population relies heavily on private care which is perceived to be more responsive to consumer needs, relative to the public sector. Given the scale and reach of private healthcare provision in India – accounting for nearly 75 per cent of all outpatient visits and more than half of all hospital admissions – it is unlikely that a program of expanded coverage will work without the substantial involvement of the private sector.

is also desirable, since increased public-private provider competition for funds could end up making both responsive to regulatory guidelines. Accountability to patients could also be improved, by making continued funding a function of quality of service and patient satisfaction. The RSBY program and some state-level health insurance programs already do this with respect to hospital care, with funding allocations dependent on where the patient seeks care, public or private.

How then to organize public-private competition that improves service outcomes? A longstanding criticism of the government-run health facilities in India is their poor responsiveness to patient needs. Unlike private sector facilities, which can use funding that they receive to modernize facilities and even to provide incentives to motivate their personnel, the public sector is hampered by its administrative and financial structures. The high level of centralization in the way the public sector healthcare delivery in India is organized means that public sector personnel are more accountable to their superiors in a state capital than to the local population. Relatively rigid salary structures and facility budgets also mean that without additional administrative flexibility to retain and use extra-budgetary funding increased collections from health insurance cannot provide the necessary incentives or make substantial infrastructure improvements. Effectively, there is no competition since those patients who can afford to do so, use the private sector. For public-private competition to be meaningful, reforms will entail mechanisms for greater local oversight over public facilities and more autonomy with respect to extra-budgetary finances and personnel management. Similar reforms were introduced into the British National Health Service (NHS) in the early 1990s with many public hospitals acquiring some autonomy on staff hiring and services offered and being able to retain financial surpluses.

Secondly, the organization of primary care and hospital care needs improvement. Currently, individuals can directly visit hospitals and specialists completely bypassing healthcare services at the primary level. Apart from long queues in major hospitals, this results in inefficient use of expensive specialist time. Both types of services are beneficial, as we noted above in the discussion on benefits package, and primary care can play a key role in preventing more severe health outcomes. There are at least two alternative models of public and private sector roles that appear relevant in India's setting consistent with a model of public-private competition. First, there could be an 'integrated' group of primary providers (e.g., primary health centers) and public hospitals, perhaps competing with similarly structured private sector network(s). This is the model in Thailand. Alternately, we could have autonomous networks of primary care providers (public or private or even a mix) competing with each other, linked to separate autonomous public (or private) hospitals via referrals. This is the model being proposed for Malaysia.

Third, expanding the reach of health services to rural and remote areas is

According to the Ministry of Health and Family Welfare (MOHFW), even in 2010, there were shortages of 50 per cent-70 per cent of physicians and various specialists, lab technicians and radiographers at community health centers. Amenities such as water supply and electricity were also in short supply. This is the situation after 5 years of the National Rural Health Mission (NRHM).

hindered by the limited availability of providers there. According to the Ministry of Health and Family Welfare (MOHFW), even in 2010, there were shortages of 50 per cent-70 per cent of physicians and various specialists, lab technicians and radiographers at community health centers. Amenities such as water supply and electricity were also in short supply. This is the situation after 5 years of the National Rural Health Mission (NRHM). In addition, there are well known problems with absenteeism in public sector health facilities. The option of the private sector is not without its

limitations either. The quality of private sector services available to the rural population is poor, with many residents relying on unqualified providers.

There is no magic bullet to the challenge of improving health service provision in rural areas and a mix of different strategies have been implemented or proposed in India and elsewhere. Under the NRHM there have been efforts to hiring staff locally, and improving the level of training of staff. Budgetary allocations have also been increased to public facilities. The RSBY scheme requires empanelled private hospitals to provide mobile clinics and conduct health camps in underserved areas. The HLEG report suggests the development of a public health cadre that would take the pressure off existing clinical staff for activities related to management, prevention and health promotion activities, introducing three-year degree programs to train medical staff equipped to work in rural areas, and setting up more nursing colleges and medical colleges in less served areas. Large numbers of unqualified practitioners who already provide care in rural areas are another potential resource. Apart from implementing immunization and health promotion programs, this group could be a rich recruitment base for short-duration and three-year training programs for medical personnel.

In terms of country experiences, Sri Lanka and Vietnam allow government doctors to practice privately, outside of work hours, to make rural locations attractive. Thailand, Malaysia, and Sri Lanka require their new medical graduates to serve in rural areas following graduation and have experienced relatively high compliance at least for graduates of highly subsidized medical colleges. However, countries where private medical schools dominate are likely to have less success in imposing such service requirements, and this is India's situation. Other alternatives do not involve the location of highly trained medical personnel in remote areas at all. These include phone-based medical consultation services, already being used in some parts of India. An approach now being piloted in Africa and India is the use of treatment protocols on hand-held devices by locals who can use the protocols to diagnose simple health problems while referring more complicated cases to urban areas using cell phones or the internet.

Conclusion

Expanding coverage to a large number of Indians is a desirable policy goal with the potential of improving health and lowering financial hardships faced by millions of Indians. However it is going to be expensive in terms of public sector resources. In addition, effective implementation of large-scale public insurance requires navigating a complex set of coverage and organizational issues pertaining to the roles of the public and private sectors in health, primary care versus hospital care and enabling the provision of healthcare services to the rural population. ❑

(E-mail :ajay.mahal@monash.edu)

SPECIAL ARTICLE

Strategies for Sustainable Progress

Arun Maira

Citizens in each country and then all countries together must have an integrative vision of sustainable progress. More effective processes must be designed for people to participate in the shaping of policies that affect their future. The 21st century leader's role has to be to lead and facilitate the dialogue

THERE IS a great urgency to reform institutions: around the world, and in my own country, India.

The world is going through troubled times. There is concern everywhere about the sustainability of the present paradigm of progress. Trust in institutions of government and business is low. I will explain why this global institutional crisis has arisen. I will also present some ideas about how we may go about creating the institutions we need now.

First, let me describe the ways in which institutional reform has become the focus of the political process in India. That it has become the focus is very good news indeed. In fact, scenarios of India's future prepared by the Planning Commission in the run up to the 12th Five Year Plan (which commenced in April 2012) had laid out that India's economic growth rate was declining sharply because there was 'sand in the wheels' of institutions. The scenarios analyzed that the declining trust of India's citizens in institutions of government, political parties and big business, was creating a policy log-jam. Unless the trust could be restored, the wheels of progress will not be able to move faster.

2014 has dawned with the agenda laid out for political parties who will be competing for citizens' support in the national elections in a few months' time. The agenda is 'reform institutions'. Institutions must serve the people and not be fiefdoms of people in power. Government institutions must deliver the outcomes people need, not merely absorb large amounts of public funds. Good service from public institutions is the people's right, not a favour they must pay a bribe for.

Reforming Institutions

John F. Kennedy's call in 1961 to America to put a man on the moon had stirred the nation's imagination. The objective, which seemed way beyond reach when he announced it, was reached within a decade. It was made possible with the development of vehicles that could operate in the rarefied atmosphere of space. When Kennedy made his speech, jet planes were flying across oceans. But the conditions in space are very different to those in the earth's atmosphere. Therefore, the mission to the moon required the development of radically new vehicles that could operate in those conditions.

Institutions—of the state, of business, of democracy, of justice—have been developed by human beings, over centuries, to fulfil the needs of their societies. Institutions are vehicles with which societies

The author is Member of the Planning Commission, Government of India He is the author of several books including *Transforming Capitalism: Business Leadership to Improve the World for Everyone*, and *Shaping the Future: Aspirational Leadership in India and Beyond*. He worked with Arthur D. Little Inc, the international management consultancy, in the USA from 1989 to 1999, and was Chairman of The Boston Consulting Group in India

realize their aspirations. Indeed, homo sapiens can be distinguished from other animal species by their *deliberate* development of institutions for the management of their affairs. Animal, bird and insect communities have innate, institutionalized rules that govern their behaviour. But so far as we know they do not, unlike human beings, *consciously* change and improve these institutionalized rules.

The conditions in which humanity's social and economic institutions must perform have changed dramatically in the past two decades. Just as aircraft designed for atmospheric flight cannot operate safely in open space, we now need fundamental redesign of many institutions.

The conditions in which humanity's social and economic institutions must perform have changed dramatically in the past two decades. Just as aircraft designed for atmospheric flight cannot operate safely in open space, we now need fundamental redesign of many institutions.

An Unprecedented Storm

As the 21st century unfolds, there are four strong winds blowing across the world and converging to create an unprecedented storm which is challenging business and government institutions that are not designed for these conditions.

The first strong wind is the idea of free markets and capitalism. This is not a new idea. Often attributed to Adam Smith, it has been around for at least 200 years.

With the spread of free markets everywhere and into India too with the opening of our economy in the 1990s, economies of many countries have been growing faster. Most noteworthy is the growth of the two billion-people plus countries—China and India. The growth of their economies is enabling many millions of people to escape poverty.

Economic growth in free markets follows the principle of cumulative causation. As the market is opened up, those who already have some assets--financial, educational or access to political power—can take advantage of the opportunities available. And their incomes and wealth grows faster than that of those who do not have these assets.

Thus, economic growth in freer markets is accompanied by increase in gaps of income and wealth. So it is no surprise that Gini coefficients are increasing in China, Russia, India and in other countries that have embraced the free market and capitalism. In time, the benefits of economic growth trickle down to the poorer people when they begin to acquire access to education, finance and employment opportunities.

In this model, one must be patient. And, in this model, to force redistribution is 'socialist' and wrong. Whereas, to induce the rich to accelerate growth of their assets, by giving them tax-breaks, so that the economy can become larger, is capitalist and acceptable.

The second wind that has been gaining strength across the world is respect for the rights of all human beings—white or black, male or female, rich or poor. This is a more recent force than capitalism. This force, of respecting the rights of all, combines well with the idea of democracy. It has been gaining a lot of strength in the last two decades, with the collapse of the totalitarian governments in the Soviet Union and the revolutions of the Arab Spring.

Blowing around deep within this second strong wind is the notion of justice, equity and fairness. From the perspective of economists, there may be nothing wrong with disparities increasing as economies grow. It is part of the game, they may say. But is it fair from a human perspective, ask others.

The third wind is a voice speaking loudly to us, literally out of the Earth.

There is concern everywhere with the state of the environment. Now we all agree that the paradigm of economic growth that has brought the rich countries their wealth is not sustainable. Mankind's global footprint—which is a measure of the pressure that human activity exerts on the resources of the earth—was 60 per cent of the earth's capacity to renew itself in 1960. It has reached 130 per cent of the earth's capacity now. We are no longer living off the revenue account. We are eating into our natural capital.

The fourth wind, of more recent origin, is the gale force of information. Within the last twenty years only, telecommunications and the internet have enabled people to reach out and be reached in a way unprecedented in human history. This wind has become a category six storm.

Now you can sit here and instantly call anywhere in the world on a cell-phone. Twenty years ago, you could not do this. Not even in the USA. Now cell phones are in the hands of poor people and all over India and other countries too. Now you can log onto the internet, and Google and find information on almost anything. You could not do it ten years back.

Mankind's global footprint—which is a measure of the pressure that human activity exerts on the resources of the earth—was 60 per cent of the earth's capacity to renew itself in 1960. It has reached 130 per cent of the earth's capacity now. We are no longer living off the revenue account. We are eating into our natural capital.

With these four storm winds converging only within the last ten years, an unprecedented storm has formed. With information flowing around and many more voices being heard, two major concerns can be heard more loudly in this storm, about the way the world is progressing. One is, "Our pattern of economic growth is not sustainable". The other is, "Our pattern of economic growth is not fair".

These concerns are putting pressure for reform in institutions of capitalism,

government and democracy so that the economic growth can be more sustainable, more inclusive and more fair.

I dare to say that this storm, stirred by the gale force of ubiquitous communications, is surfacing a clash between institutions of capitalism and institutions of democracy. Institutions of capitalism operate on different principles to the institutions of democracy. Capitalist institutions run on the principle that one dollar equals one vote. Therefore, those who have more dollars invested in the enterprise must have a larger say in how the enterprise is run. On the other hand, democracy says that every human being, rich or poor, has an equal vote. When systems that run on different principles connect,

Institutions of capitalism operate on different principles to the institutions of democracy. Capitalist institutions run on the principle that one dollar equals one vote. Therefore, those who have more dollars invested in the enterprise must have a larger say in how the enterprise is run. On the other hand, democracy says that every human being, rich or poor, has an equal vote. When systems that run on different principles connect, there will be dissonance. It is like connecting an appliance than runs on DC electricity into a socket with AC current. Something will blow up.

there will be dissonance. It is like connecting an appliance than runs on DC electricity into a socket with AC current. Something will blow up.

The storm of the four forces is swirling in India. India, with its 1.2 billion people—expected to grow to 1.5 billion even—may be the most environmentally stressed large country in the world—for fresh water, land, and green cover to meet the needs of its growing population and growing economy.

With its economic reforms since the 1990s, India joined the world of global trade and finance just when, with the fall of the Soviet Union, ideas of open, free market, capitalist economies had claimed an ideological victory. Concepts of democracy and human rights have been built into India's constitution and its political discourse since the independence of India from its colonial rulers in the middle of the last century. India has 3.3 million NGOs. A noisy and free media in the country has been supplemented by communications over cell phones and internet-enabled social media.

The growth of the Indian economy has slowed sharply in the last two years. The root cause is a policy log-jam. This log-jam has been created by the mistrust of citizens in institutions of government and big business and collusion amongst them. What we are hearing in India is the rumble of democracy, as it down-shifts into a lower gear to pass over steeper hills it has encountered. Attention of Indians has shifted to the condition of the country's institutions. The agenda for the next national elections in 2014 has become: who can citizens trust to clean up institutions and put the economy into a faster gear?

Redesigning Aircrafts while Flying in them

Reforming institutions is not easy. If institutions are the vehicles in which we are travelling, then we must 'redesign the aircrafts while we are flying in them'.

'Institutions', as Nobel Laureate Douglass C. North explains, are not merely 'organizations' with their hierarchies and budgets. Institutions are also the processes by which societies perform functions. Institutions also include the norms by which societies conduct themselves. Therefore, deep institutional reform requires change in the implicit 'theories-in-use' that guide the conduct of our affairs.

A fundamental and implicit 'theory-in-use' lies in Man's relationship with the natural world. Man's desire to be in charge of the world and reorder it to suit himself, places him outside the system that he wishes to redesign and control, like an engineer sitting outside his machine and tinkering with it. Whereas in reality man is only a component of the system, embedded within it. And therefore his actions in the system create reactions that affect man.

Related to these two different views of the agent and the system, are two fundamental laws of science. The first is the Second Law of Thermodynamics that every engineer must learn. It says that the entropy (or useless energy) in a complex system must increase with time. Therefore, the capability of any complex machine will reduce with time. The other law—of evolutionary biology—says that the capabilities of complex systems will evolve and increase with time!

These two laws that we see in operation all around us seem contradictory. However, they are easily reconciled. The Second Law of Thermodynamics begins with, 'In a closed system' and then goes onto say that in such a system, the entropy must inevitably increase. Whereas, the Law of Evolution operates in an open system, rich in diversity, as nature is.

A fundamental and implicit 'theory-in-use' lies in Man's relationship with the natural world. Man's desire to be in charge of the world and reorder it to suit himself, places him outside the system that he wishes to redesign and control, like an engineer sitting outside his machine and tinkering with it. Whereas in reality man is only a component of the system, embedded within it. And therefore his actions in the system create reactions that affect man.

Multi-disciplinary studies of systems by scientists are revealing the architectural principles whereby Complex, Self-Adaptive Systems, as many systems in nature are, are able to evolve themselves. They are redesigning the aircraft as it is flying. Clues to how to redesign an aircraft while flying in it, which is a good metaphor for the challenge of reforming institutions, can emerge

from an understanding of the structure of Complex, Self-Adaptive Systems.

Man is not satisfied with the natural order. He has ambitions to change the structures of natural systems to make them deliver more than they can. Man wishes to change the course of rivers. He wants to reengineer seeds. He is on the threshold of designing new human bodies. He does all this without sufficient understanding and respect for the innate processes of natural systems. Thus, he interferes with, and can reduce their 'self-adaptive' abilities.

A New Architecture of Institutions

Governance in 21st century conditions requires a new architecture. It must be formed around four 'L's.

The first L is localization. Power and control of governance must be shifted much more from remote centers down to localities.

The second L is lateralization. Silos in management and silos amongst academic disciplines are required for specialization. However, they prevent the development and implementation of systemic solutions, which is what we must have now.

The third L is learning. The paradigm of governance must change from obtaining more control of the system for improving the ability of the system to learn.

The fourth L is listening. We will understand the whole system if we will listen to others.

The first three Ls—localization, lateralization and learning are congruent with the principles by which complex self-adaptive systems operate. The fourth L—conscious listening—is specially required in human systems.

The Bertelsmann Foundation of Germany has carried out an international survey of strategies that leading countries are adopting for sustainability of progress. This study, 'Winning Strategies for a Sustainable Future', has distilled five key success factors. Two of these must be highlighted. They endorse the fourth L. And they are the starting points of a process of redesigning institutions.

The first is that sustainability policy derives from an overriding concept and guiding principles that are made to permeate significant areas of politics and society. And the 'best practice' to make this happen is to get specific in national debates on new measures of progress.

The second requirement for success is that sustainability policy must be developed and implemented in a participatory manner. Therefore, the task for countries is to develop new participatory formats.

Not only must large numbers of people be engaged, but different constituents must listen to each other too.

The Internet and social media are providing a profusion of unfiltered information that can overwhelm without informing. What is the signal emerging from all that chatter and noise on social media platforms? And, how does one ensure that democratic principles are at work when obtaining inputs electronically? Are some technology-savvy people 'stuffing the ballot boxes' with multiple responses, whereas the views of many not so savvy are not being counted at all?

Modern communication technologies seem to provide the means to listen to the masses. Millions can express themselves in Tweets and posts on social media platforms. However, as policy-makers using these mediums of communication have realized, these mediums' vast reach and speed may make democratic communication more difficult, not less.

The Internet and social media are providing a profusion of unfiltered information that can overwhelm without informing. What is the signal emerging from all that chatter and noise on social media platforms? And, how does one ensure that democratic principles are at work when obtaining inputs electronically? Are some technology-savvy people 'stuffing the ballot boxes' with multiple responses, whereas the views of many not so savvy are not being counted at all?

When there are ideological differences amongst persons and organizations, there is much greater reluctance to meet others, who they consider the opposition. This makes deliberation amongst the people much more difficult. Sections of citizens may agree on what 'people like them' want. However, citizens cannot come to an agreement about what "we, all the people" really want.

The ubiquity of information with which people are being bombarded through the internet, social media, and multiple 24x7 news channels has surpassed human capacities—biological and mental—for the amount of information that a person can process at any one time. Therefore, to cope with the increasing "attention deficit disorder" that we are suffering from with information overload, we must consciously or unconsciously choose what and who we pay attention to. We must choose the channels and internet communities we will connect with and the opinion makers we will follow.

Our choices will be inevitably guided by our underlying beliefs about the sort of ideas and people we like and those we do not. Thus, people are being driven into "conceptually gated communities" in which they listen to people with the same beliefs. And they shut out others, who may have fundamentally different beliefs.

I conclude with the imperative for leaders. Citizens in each country and then all countries together must have an integrative vision of sustainable progress. More effective processes must be designed for people to participate in the shaping of policies that affect their future. The 21st century leader's role has to be to lead and facilitate the dialogue. ❑

(E-mail :arun.maira@nic.in)

Challenges of Ensuring Public Health: Assessing the Past, Charting the Future

Jacob Puliyel

To start the process, the government must publish the vaccine under consideration. Stake holders – (patient groups, health professionals, academic institutions, industry producing the vaccine, trade unions and international organizations like the WHO and GAVI) can then register their interest. Public participation is of essence here

THE PRACTICE of medicine traditionally, used to be a paternalistic affair – with the doctor telling the patient what to do and the patient being expected to follow orders. The wishes, feelings, beliefs and values of the patient did not merit much consideration. The arrogant assumption was that the doctor knows best. Doctors felt that yielding autonomy to patients was likely to result in decisions that were not in best interest of the patients themselves. Seen in the context of information asymmetry, patients were particularly disadvantaged because of the disparity between them and their doctors in terms of education, information about their condition and the treatment options for it. They were especially vulnerable in the background of more serious and life threatening or life shortening illnesses.

Fortunately, this has begun to change recently as we move into an age of patient empowerment and 'patient-centered medicine'. Underlying this change is more widespread acceptance of the principle of patient autonomy. Doctor-patient interactions are now more informative, interpretive and deliberative, creating space for 'shared decision making' and 'negotiation' between doctor and patient. The interpretive model portrays the doctor as a counselor who will inform the patient and interpret relevant values, and implement the treatments chosen in accordance with the patient's value system.

Unfortunately, these changes in how clinical medicine is practiced have had little impact on how public health decisions are taken. This paper will review how the process has, in fact, changed for the worse, with regard to vaccine decision-making. It will explore the possibility of having a more explicit, evidence based, logical and transparent method which can inspire public confidence and enhance uptake of this essential child protection tool.

Public Health and Individual Autonomy

There is strong and persuasive literature for moving away from paternalistic public health models. According to Buchanan, public health should seek to expand individual autonomy to improve population health on both ethical and empirical grounds. Seeking to shore up support for paternalistic interventions may only undermine trust of public health authorities. Paternalism in public health erodes the basic ethical principle of 'autonomy' of the individual just as it does in clinical medicine. He points out that the critical point is being in a position of deciding and accepting. This concept of autonomy has health benefits and needs to be promoted but it

The author is Head of Department of Pediatrics, St Stephens Hospital, Delhi. He is a member of the National Technical Advisory Group on Immunization (NTAGI) of the Government of India. He has contributed in internationally indexed journals including British Medical Journal, Lancet, American Journal of Perinatology, Pharmacoeconomics, Paediatrics, and Expert Review of Pharmacoeconomics Outcomes Research.

puts an onus on public health authorities to secure agreement from the public. To avoid soliciting agreement from the public, on the specious grounds that public health issues are too complex for the populace to comprehend, is unacceptable, can be counterproductive and erode confidence in public health schemes that are clearly beneficial to the community. It is for the authorities to see how best to explain matters to the public and secure their agreement.

NTAGI in the Past

The Government of India set up the National Technical Advisory Group on Immunization (NTAGI) in 2001 to advise it on technical matters related to immunization. The world over, such groups have been set up to promote advocacy for vaccines, especially for the introduction of new vaccines in the national immunization programmes. The push to form such advisory committees came from the World Bank and other international agencies.

Vaccines are introduced into the national programme of countries based on the burden and seriousness of disease to be prevented, the safety and efficacy of the vaccine and its economic affordability in the context of the national economy. Feasibility for inclusion in the routine immunization schedule and acceptance of the people at large also needs to be considered.

Vaccines are introduced into the national programme of countries based on the burden and seriousness of disease to be prevented, the safety and efficacy of the vaccine and its economic affordability in the context of the national economy. Feasibility for inclusion in the routine immunization schedule and acceptance of the people at large also needs to be considered.

Resolution 45.17 of the World Health Assembly mandates that member countries integrate cost-effective 'newer vaccines' into the national immunization programs. However, of late, the WHO has been making recommendations for universal inclusion of vaccines like the rotavirus vaccine without regard to local cost effectiveness. Organizations like Global Alliance for Vaccines and Immunization (GAVI) have been persuading developing countries to use new vaccines by providing donor-grants (effectively driving costs to nearly zero in the initial stages). The full cost implications are only realized once funding is withdrawn, after the vaccine has been included in the universal immunization programme (UIP) of the country. This form of pressure on governments to introduce new vaccines into their UIP without evaluating the local burden of disease or cost-benefits, in effect perverts the intention of the World Health Assembly: Resolution 45.17. This essay is based on the premise that national governments have to evaluate cost-effectiveness of newer-vaccines.

Until recently, when a vaccine was proposed to be introduced, a subcommittee of the NTAGI would review the available literature and consult prominent experts to make an informed decision about introduction of the vaccine into the UIP. To promote transparency and to facilitate access to everyone, the minutes and recommendations (http://mohfw.nic.in/dofw per cent20website/june.pdf) were published on the MoHFW website (http://mohfw.nic.in/dofw per cent20website/dofw.htm).

However, as a consequence of this openness, NTAGI decisions were subjected to scrutiny and it made it vulnerable to criticism for using evidence selectively.[11], [12] For example Minz *et al* performed meticulous surveillance of Hib meningitis in a population of 6.5 lac persons, over a two year period (1997 to 1999).[13] They found the incidence of Hib meningitis of 7 per 100,000 children under 5. In real terms, if the year's birth cohort in India (25 million babies) are vaccinated against Hib, nation-wide it will prevent only 1750 cases of Hib meningitis. Yet, the NTAGI recorded that there are 52,000 new cases of Hib meningitis in the country each year based on a small survey of cases of 'presumed meningitis' in one district in Kerala.

NTAGI Reconstituted

In this background in June 2013, the NTAGI was reconstituted and an Immunization Technical Support Unit (ITSU) was set up to help the NTAGI. The ITSU is funded by Bill & Melinda Gates Foundation specifically to provide technical and managerial support to accelerate coverage and to ensure system preparedness for new vaccines. A new confidentiality clause has been inserted, ostensibly to protect the 'proprietary' interests of commercial, academic and other research institutions. However, the confidentiality clause extends beyond proprietary matters and no member is allowed to disclose the discussions, opinions or decisions of the NTAGI on a public or private forum for 10 years after leaving the committee.

In real terms, if the year's birth cohort in India (25 million babies) are vaccinated against Hib, nation-wide it will prevent only 1750 cases of Hib meningitis. Yet, the NTAGI recorded that there are 52,000 new cases of Hib meningitis in the country each year based on a small survey of cases of 'presumed meningitis' in one district in Kerala.

The committee is selected by the Government and it is neither representative of the population nor of all the experts in the field; and voting numbers at such meetings are meaningless. Decisions will have to be taken on the strength of the evidence on the table, not on the number of votes. With the new confidentiality clause, the public will have less access to the rationale for decisions. This is why, it is crucial that the minutes of the NTAGI must faithfully record the data that was presented and the basis on which decisions are made. The minutes of the first meeting is yet

to be publicized and the public must await this with anticipation in the context of the confidentiality rules. If the records are not sufficiently detailed and explicit, the public will view with suspicion what was transacted behind such a heavy veil of secrecy and this could affect public trust and compliance.

Choosing from the Best Models Overseas

Fortunately, there are different models of 'vaccine advisory committees' in various countries and

...the general guideline is that interventions that cost less than the per capita gross national product (GNP), per quality adjusted life years (QALY) saved, are considered cost effective. According to the WHO Commission on Macro-economics and Health, interventions that costs less than three times GDP per capita for saving a 'healthy life-year equivalent' is worthwhile and good value for money.

the Government can pick the best for India. Allowing the Ministry of Health free rein in selecting the committee, can skew the vote. In the USA, the committee called the U.S. Advisory Committee on Immunization Practices (ACIP) is selected from applicants through an advertisement and they hold their position for a limited duration of time. When openings for membership occur, nominations are solicited on the ACIP website and in the '*Federal Register'*. Suggestions for members are also sought annually from a variety of sources, including professional societies, current and former ACIP members, and the general public. Application for membership has purposely been made open, transparent and uncomplicated. Meetings of the ACIP are open to the public. Specifically, the meetings are conducted in accordance with the Federal Advisory Committee Act of 1972 (FACA), which stipulates that meetings be announced in the *Federal Register* at least 15 days before the meeting date (http://www.gpoaccess.gov/fr/), that members of the public be permitted to attend meetings and to speak or file written statements and that meeting minutes be maintained and made available to the public in a timely fashion. The emphasis is on openness, not confidentiality.

Algorithm for Decision Making

The essential step to moving away from paternalistic decision making in public health, is to be able to explain the logic and rationale for introducing public health measures. Once it is explained, the public will enthusiastically support the programmes, as it is in their self interest to do so. The process used by the NTAGI for decision making needs to be transparent. For vaccine selection, the process can be logical and mathematical and so it is particularly easy to present the data to the public to garner their support. This has been described elsewhere. Briefly, the general guideline is that interventions that cost less than the per capita gross national product (GNP), per quality adjusted life years (QALY) saved, are considered cost effective. According to the WHO Commission on Macro-economics and Health, interventions that costs less than three times GDP per capita for saving a 'healthy life-year equivalent' is worthwhile and good value for money.

Allocative Efficiency

Data on absolute risk reduction by the intervention in the country must be sought and from this, the numbers needed to treat (NNT) (number of individuals who must be vaccinated) to avoid 1 case of disease can be derived. The cost of immunization to avoid 1 case of disease can then be calculated easily. Evaluations up to this point are mathematical. Interventions that have poor risk-benefit ratio, those that are not cost-effective or affordable cannot be recommended. If, however the intervention is both cost-effective and affordable, there is also the need to evaluate efficiency of the program – whether it is capable of providing better returns than other uses of this resource. If a cost-utility assessment has been done, the 'optimum decision rule' involves ranking the incremental cost-utility ratios of different interventions and selecting those with the lowest ratio ("best value") until the budget is depleted.

A hypothetical example may be used to clarify this. Assume polio control costs Rs.350 crores and saves 1 QALY per Rs 10,000 spent, rotavirus control costs Rs 200 crores and saves one QALY per Rs. 20,000 spent, and tuberculosis control costs Rs 700 crores and saves one QALY per Rs. 5000 spent. Assume also a budgetary constraint of Rs. 1000 crores. The first program to be accepted should be TB control as it provides the best utility (one QALY / Rs. 5000). Once this is accepted, there is only Rs. 300 crores remaining in the budget. The next program to be accepted must be polio control. Rota virus control costs only Rs. 200 crores, which is less than the cost of polio control (Rs. 350 crores) but polio control takes precedence as it provides more utility.

The cost of immunization to avoid 1 case of disease can then be calculated easily. Evaluations up to this point are mathematical. Interventions that have poor risk-benefit ratio, those that are not cost-effective or affordable cannot be recommended. If, however the intervention is both cost-effective and affordable, there is also the need to evaluate efficiency of the program – whether it is capable of providing better returns than other uses of this resource.

Public Participation in the Process

The process utilized by the National Institute for Care and Health Excellence (NICE) UK has been adapted below for this purpose. To start the process, the government must publish the vaccine under consideration. Stake holders – (patient groups, health professionals, academic

institutions, industry producing the vaccine, trade unions and international organizations like the WHO and GAVI) can then register their interest. Public participation is of essence here.

In the next stage, the NTAGI sub committee may assess the clinical evidence and the economic data on benefits. Based on the evidence, draft guidelines can be drawn up for assessment by the registered stakeholders. NTAGI must revise the guidelines if more evidence is provided by the stake holders. An 'independent-review-panel' then reviews the guidelines to decide if all valid stake holder comments are taken into account. The final guidelines can then be published by the NTAGI and government can get clear and unbiased advice on which to base decisions. Such explicitly formulated recommendations are easy to explain to the public and will inspire public confidence and better compliance.

Funding Needs

This process need not entail unaffordable costs as most of the experts volunteer time and the resources of their parent organization for working on the NTAGI. It is crucial not to take funding from international organizations so that they may not be seen as subtly influencing decisions. Like with the move from paternalistic clinical medicine, the barrier is never a lack of resources but the difficulty in shifting the mindset of the professionals involved.

Endnotes

1 Alastair Campbell, Grant Gillett, and Gareth Jones (2005). Medical Ethics. Oxford: Oxford University Press.

2 *Rachel Warren.* Paternalism in Medical Ethics: A Critique. Journal of The University of York Philosophy Society. http://dialecticonline.wordpress.com/issue-06-summer-10/paternalism-in-medical-ethics-a-critique/

3 Hope. T, Savulescu. J and Hendrick. J, 2008, Medical Ethics and Law: The Core Curriculum (Second Edition) Edinburgh: Churchill Livingstone Elsevier.

4 Buchanan DR. Autonomy, paternalism and justice: Ethical priorities in public health. Am J Public Health. 2008 Jan;98(1):15-21)

5 T Jacob John. National Technical Advisory Group on Immunization: a major step forward for child health. Indian Pediatr. 2002 Apr;39(4):327-30.

6 T Jacob John. National Technical Advisory Group on Immunization: a major step forward for child health. Indian Pediatr. 2002 Apr;39(4):327-30.

7 John TJ. India's National Technical Advisory Group on Immunisation. Vaccine. 2010 Apr 19;28 Suppl 1:A88-90. doi: 10.1016/j.vaccine.2010.02.041.

8 WHO. Rotavirus vaccines. WHO position paper – January 2013. Wkly Epidemiol Rec. 2013 Feb 1;88(5):49-64

9 Subcommittee on Introduction of Hib Vaccine in Universal Immunization Program, National Technical Advisory Group on Immunization, India. Indian Pediatr. NTAGI subcommittee recommendations on Haemophilus influenzae type B (Hib) vaccine introduction in India. Indian Pediatr 2009 Nov;46(11):945-54.

10 John TJ. India's National Technical Advisory Group on Immunisation. Vaccine. 2010 Apr 19;28 Suppl 1:A88-90. doi: 10.1016/j.vaccine.2010.02.041.

11 Lone Z, Puliyel J. Introducing pentavalent vaccine in the EPI in India: A counsel for caution Indian J Med Res 132, July 2010, pp 1-3.

12 Puliyel J. Making a case for universal Hib immunization in India: over interpreting the data. Indian J Med Res. 2013 April; 137(4): 639–641.

13 Minz S, Balraj V, Lalitha MK, Murali N, Cherian T, Manoharan G, et al. Incidence of *Haemophilus influenzae* type b meningitis in India. Indian J Med Res. 2008;128:57–64.

14 Pharmabiz Bureau, New Delhi. Bill Gates commits more support to national programmes, priority areas in India. Pharmabiz 1 June 2012. http://pharmabiz.com/NewsDetails.aspx?aid=69338&sid=2

15 Smith JC. The structure, role, and procedures of the U.S. Advisory Committee on Immunization Practices (ACIP). Vaccine. 2010 Apr 19;28 Suppl 1:A68-75.

16 Dhanasiri SK, Puliyel JM. Regulating vaccines: Can health-economics tools be used profitably? Indian Pediatrics 2007;44:11-14

17 World Health Organization (WHO). The World Health Report 2002. Reducing risks, promoting healthy life. Geneva: WHO, 2002.

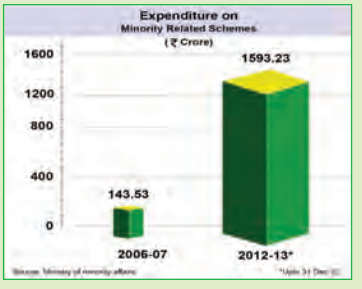
18 Palmer S, Byford S, Raftery J. Economics Notes: Types of economic evaluation. BMJ 1999;318:1349.

19 Martin B. Implications of the appraisal function of the National Institute of Clinical Excellence. Value Health 2001;4:212-216 ❑

(E-mail :puliyel@gmail.com)

Social Security For Special Sections

- Minorities are benefitting from the PM's new 15 point programme, the Multi-Sectoral Development Programme and the various scholarship schemes for minority students.
- 15% of all priority sector lending from banks now reaches minorities to help them start and expand small businesses.
- More than 20 million scholarships were awarded since 2004-05 to students from Scheduled Castes Scheduled Tribes and minority communities under various schemes.



INTERVENTION

Transforming Rural India with Digital Technologies

Uma Ganesh

The key stakeholders in rural development involving the grass root level organisations and NGOs, the Government, the technology providers and providers of rural centric offerings would have to come together and create an integrated approach aimed at expanding the rural economy

DIGITAL TECHNOLOGIES have made a dramatic impact in not just bringing the world closer for everyone but, as netizens, everyone is now part of the global village. The intimacy and the familiarity with each other, experienced in villages are now being sensed in the global digital village as well. As a result, it is easy to reach out to communities and get across the message to anyone if we have the real desire to do that. We have recently witnessed how the political and the governing process itself has been transformed in Delhi on account of the power of active communication and collaboration amongst people. Opinion making, experience sharing and building leaders overnight are the new exciting trends of the digital technologies. The potential of collaborative technologies in the context of rural upliftment, can lead to path breaking socio economic changes. Arab Spring set the stage for re imagining the world we live in, in recent times. Any revolution the world has lived through, has been the resultant of a shift in the beliefs and vision of people collectively, when large communities of people are influenced by such information which makes them think differently. In the past, the medium of such communication were books or radio or public meetings. Television and Internet have taken the world by storm and digital technologies in particular have empowered the people through timely and reliable information which can also be verified. Thus, it is exciting to envisage how the rural masses can be enthused to seek and share information about various aspects of their lives leading to better opportunities for themselves.

The Indian rural market is undergoing transformation with better access to information and changing patterns in demand structure and lifestyle. According to *ruralmarketing.org*, India has 6.27 lakh villages and business in rural India grew at about 11 per cent annually over the last decade. FMCG sales are expected to grow to $33 billion by 2015, of which $22.1 billion will be contributed by rural areas. Poverty levels have dropped to 22 per cent in 2011-12 from 37.2 per cent in 2004-05 as per the reports of the Planning Commission. While this is a very positive development, the challenge going forward would be not only to reduce the level further, but is also to ensure the people who have moved up, remain there and become part of the growth story. This would require focus among others, things, on education and skill development leading to better livelihood options.

The author is CEO, Global Talent Track. Prior to founding GTT, Uma was the Chief Corporate Development Officer in HSBC Global Resourcing. Uma has been active in various professional forums such as CII, National HRD Network, Bombay Management Association and others and she has contributing to leading journals and newspapers. She is currently the member of the Executive Council of National HRD Network.

It is a widely acknowledged fact that digital technologies hold a great promise for rural development and transformation. Broadly, we could classify the ICT offerings meant for the rural sector into three categories. The first would be those solutions which are aimed at 'empowerment'. The second would be 'enablement'. The third category would be 'market expansion'. Let us try and take a look at some examples of each of these

...we could classify the ICT offerings meant for the rural sector into three categories. The first would be those solutions which are aimed at 'empowerment'. The second would be 'enablement'. The third category would be 'market expansion'.

dimensions to understand how ICT is making a transformational impact on the rural sector.

When we examine the first dimension – empowerment - E chaupal comes up as a fine example. E chaupal, with over 6500 kiosks in 40,000 villages in 10 states covering 4 million people, is an after quoted example of efficient supply chain system empowering the farmers with timely and relevant information and enabling them to get better returns for their produce. Because of the community centric approach it adopts, the system has managed to create opportunities for providing other offerings as well to the farmers – insurance and farm management practices, to name a few.

The e-governance system is the example of the second dimension-enablement - with immense potential to create transparency and good governance through IT. The successful implementation of this system in areas such as land records in the states of Maharashtra, Andhra Pradesh and others is indeed a great step in removing the malpractices and creating assurance of rightful ownership with the citizens. In recent times, Aadhar has been seen as yet another tool to empower the masses by confirming their identities. Despite the recent judgement of the Supreme Court and the opposition to this scheme on the grounds of politicization, security and privacy, Aadhar is a good example of ICT solution attempting to provide access to monetary benefits by establishing the correct identity and through this approach, trying to expand the rural economy by energizing the dynamics of the economic system.

The third dimension, namely market expansion with digital technologies, can be gleaned from several examples. Village and heritage tourism in remote parts of the country have picked up a huge momentum on account of awareness being created through online portals and thus attracting more visitors as compared to the past. Direct connect with the potential customers with the smart use of digital technologies through ecommerce has facilitated a large number of artisans and agro based small enterprises in the rural areas to bring in new businesses from new markets. Women's livelihood is being facilitated amongst the weavers' community in the north eastern states by marketing their products through the internet medium and thus, facilitating custom orders or off the shelf sales without women having to travel long distances to exhibit their wares. We need a game plan for orientating of rural India with such case studies on using the technology to market their services to wider audiences outside of the rural base- be it web presence and marketing for their traditional crafts and arts or farm produce to customers globally or bring in customers to their base through smart communication strategies, marketing their villages as holiday destinations.

While we see benefits from all three dimensions of engagement through digital technologies, we would be able to experience substantial upliftment and sustainable development only when the purchasing capacity also increased in rural markets. India's rural income is slated to grow from US$ 572 to USD 1.8 trillion by the year 2020. 70 per cent of population which lives in rural India accounts for about 50 per cent of India's GDP. Per capita GDP in rural areas has been growing faster than in urban locations since 2000 which stands at 6.2 per cent CAGR versus 4.7 per cent. Hence, most companies have recognized the need to shift focus to rural from urban in order to get the lion's share of the market. The big challenge sellers face is, how to reach the dispersed rural masses with diverse cultures and languages and find cost effective means of making this happen. Digital technology could be one of the means of achieving this but how feasible is it to implement in the Indian countryside? Let us examine some of the key trends of digital penetration and usage in rural India.

Out of the 833 million people residing in the rural parts in India, according to the Internet and Mobile Association of India, as of June 2012, there are 38 million Internet users and 12 per cent of them could access the Internet on their mobile phones. What is noteworthy is that this population that accesses internet via mobile phones has increased seven fold in just two years -from 0.50 million in 2010 to 3.6 million in 2012. Key factors that have helped in increasing mobile

...most companies have recognized the need to shift focus to rural from urban in order to get the lion's share of the market. The big challenge sellers face is how to reach the dispersed rural masses with diverse cultures and languages and find cost effective means of making this happen. Digital technology could be one of the means of achieving this but how feasible is it to implement in the Indian countryside?

penetration in rural areas include falling prices of handsets, increased battery life, lower data charges and improved network infrastructure and this trend is likely to continue. There is still a very sizeable market for used mobile phones majority of which are not connected to the internet. It is estimated that the unique mobile users

are around 100 million. Awareness and access of internet via mobile phones for entertainment and communication are currently the highest as compared to other online services such as e-commerce, education, jobs and social media, which are slowly but steadily picking up pace.

In the coming years, as mobile and internet usage increases in the rural markets, organisations targeting the rural markets need to come up with a marketing strategy vastly different from today's approach to the market. As opposed to the urban markets, the challenge in the rural markets is targeted reach rather than gaining their attention. On account of significant variations in the profiles of rural population, homogeneous approaches may not work. With a sound database and analytics of profiles of individuals, targeted marketing for products and services could be successful. Rural customers traditionally value community recommendations for their buying decisions. Social media marketing can be gainfully deployed with smaller communities focusing on their interest areas and using them to promote products and services. Building partnerships with NGOs, financial institutions and Government agencies to create social platforms and through these platforms, gently nudging the rural customers to buy their products and services, is required to be done. ITC and HLL are two good examples of early practitioners of ICT in rural marketing who have been successful using such approach to win over rural customers. Personal devices like smart phones and tablets are non intrusive media available for marketing organisations to reach out to such customers in innovative ways.

Rural customers traditionally value community recommendations for their buying decisions. Social media marketing can be gainfully deployed with smaller communities focusing on their interest areas and using them to promote products and services. Building partnerships with NGOs, financial institutions and Government agencies to create social platforms and through these platforms, gently nudging the rural customers to buy their products and services, is required to be done.

To win over rural customers for new offerings, businesses have to invest in all round the year communication and engagement with the potential customers. Many organisations find this hard to do as the timelines for the returns are not predictable. With digital technologies, with the understanding of the pockets where penetration and usage pattern is good, companies could start seeding their offerings using relatively inexpensive media and slowly expand in other territories based on such experiences. The rural population which is connected via mobiles, is predominantly putting it to use for the purpose of entertainment and communication. One of the key inhibiting reasons for not using other content is due to lack of relevant content available in local languages. Businesses would be able to benefit a great deal by being attentive to this need and ensuring that content relevant for decision making is made available to the rural masses in vernacular languages in an entertaining manner.

Although, last mile connectivity continues to be the major challenge to establish the reach with the rural areas, there have been innovative initiatives like DakNet in Orissa and Babasaheb Ambedkar Open University (BAOU) in Gujarat through buses equipped with ICT using which, the rural citizens are able to access the internet for their needs. While penetration of personal devices and access to the internet will grow steadily, in the medium term, Common Services Centres (CSCs), set up by various State Governments, could be leveraged to some extent. CSCs were announced and rolled out with a lot of fanfare but the public-private partnership envisaged is yet to come up with a sound business model. Organisations keen on tapping rural markets cannot ignore these CSCs and, in fact, should study carefully the successes achieved in some states and use them to pilot their plans for rural markets. Understanding the usage patterns of rural netizens, determining how to stay engaged with them, sizing up internet enabled and non enabled mobile phone usage and creating appropriate content in vernacular languages, would be critical to making digital marketing a success in the rural areas.

In the case of IT products/solutions, very few offerings have been designed specially keeping in mind the rural customer. Further, most of the solutions or products – IT or non IT have often aimed at addressing the needs of the population and not necessarily enhancing the demand side. It is when IT solutions are designed to create new demand that there will be overall expansion of rural economy powered by digital technologies. Although, the Government has been keen on bridging the digital divide and has initiated several projects towards this objective, there is a huge requirement for building more IT products and solutions leading to noticeable change in the rural economy. Of late, there are several innovative social ventures being conceived around the use of digital technologies aimed at the rural segment. Rural BPOs, for instance have caught the imagination of some entrepreneurs, although replication of this model in many locations with consistent quality and predictability of business have been not easy. In states such as Tamil Nadu, Kerala and Goa where the difference between rural and urban living styles and the aspirations of the youth, are not very divergent in rural vs urban locations, we are seeing an interesting phenomenon of the

Understanding the usage patterns of rural netizens, determining how to stay engaged with them, sizing up internet enabled and non enabled mobile phone usage and creating appropriate content in vernacular languages, would be critical to making digital marketing a success in the rural areas.

same set products and services being relevant to both audiences, albeit with a difference in pricing to take care of the purchasing power capabilities. Apart from designing IT products or solutions, providing access is equally an important subject of attention. The ISPs and the State Governments are assiduously working towards expanding the last mile connectivity and it would be only a matter of time by when this dream is realised. In rural areas, we are witnessing the power of digital technologies in everyday life through examples such on online ticketing and electricity bills payments, matrimonial alliances, even if people do not have access to digital devices at home, as the cyber cafes and shared desktops are handy and offer inexpensive alternate access.

The key stakeholders in rural development involving the grass root level organisations and NGOs, the Government, the technology providers and providers of rural centric offerings would have to come together and create an integrated approach aimed at expanding the rural economy. The Citizen Service Centres (CSCs) which were designed to address this objective and launched with much fanfare in many states, have unfortunately not taken off due to lack of viable business models attractive to the investors and offerings appealing to the rural audience. The need for building a technology enabled education system which brings in the best of expertise and teaching pedagogies at the fingertips of the students is much more significant in rural India than the urban locations where students do have choices. We need a MOOC like approach to skill development oriented programs in vernacular languages, which could be delivered through CSCs and schools in rural locations. The project involving 34 ITIs in Kerala, majority of which are in remote parts of the state, for training students in employable skills using CISCO's Webex system supported by the dual language content and training delivery by Global Talent Track is an example of how with the blend of innovation and technology, the needs of rural youth could be addressed, despite the challenges of power and other infrastructure issues.

Rural transformation through ICT innovations requires a long term approach with an appetite for risk taking and tolerance for failure. Although, some of the current venture fund initiatives are supporting the proposals that are aimed at 'inclusive India', there is also a need to create venture funds with the specific focus on innovation for rural India as the demand generation and the characteristics of market functioning are very different from the urban models and their customer mindsets. With the growth of agriculture segment hovering around 2 per cent, and the resources being scarce, the objective of equipping the villages to embrace knowledge economy powered by digital technologies has to be vigorously pursued to build a sustainable development plan. ❑

(E-mail :umaganesh@gttconnect.com)

High Prices of Patented Medicines in India: Can we do anything about it?

Sudip Chaudhuri

TRIPS imposes some conditions relating to the grant of compulsory licensing. But TRIPS also provides the countries adequate flexibility to devise their own system. TRIPS, for example insist that non-patentees will have to first try to get a voluntary licence on reasonable commercial terms from the patent holder. But guidelines can be issued for reasonable terms. The maximum time period can also be stipulated. In this case, the procedure can be very simple - if the applicant does not get a voluntary licence within that time and on these terms, it can be given a compulsory licence

INDIA WAS once considered to be among the highest priced nations in the world in pharmaceuticals. With the abolition of product patent protection in pharmaceuticals in 1972, the situation changed fundamentally. India emerged as a major player in the global pharmaceutical industry receiving world-wide recognition as a low-cost producer of high quality drugs. But from 1 January 2005, drug product patent protection has been re-introduced in India to comply with the requirements under the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) of the World Trade Organization (WTO). Reminiscent of the period before the 1970s, patented drugs are again being sold in the country at exorbitant prices. A 60 ml injection of Sanofi-Aventis anti-cancer drug Jevtana (generic name: cabazitaxel), for example, cost about Rs. 3,30,000. Roche's Herceptin (trastuzumab) is sold at Rs. 1,10,000 and Merck's Erbitux (cetuximab) at Rs. 92,000 (see Table 1 for other drugs costing more than Rs 50,000 for each dose).

The principal economic rationale for granting patents is that it will stimulate investment for research for innovation. The basic presumption is that developing new drugs is expensive. It is argued that without patent protection, others may be able to imitate new products, thereby limiting the innovators' ability to recoup the research and development costs. Hence, the innovator will not have any incentive to undertake such R&D or to publicly disclose it. A delay in imitation through patent protection would stimulate R&D for innovation. This impact on innovation is the expected positive effect. But, patent rights which exclude others from producing and marketing the product, lead to inhibition of competition leading to high prices and less access. This is the negative effect. The net benefits of the patent system to society have remained controversial over the years. What is recognised in patent laws around the world and also emphasized in the TRIPS agreement is that, the protection of the rights of the patentees is not the sole concern of patent laws. Article 7 of TRIPS on "Objectives" and Article 8 on "Objectives" specifically speak of the mutual advantage of both producers and users of technological knowledge, stress the need for a balance of rights and obligations and empower the member countries to take steps to prevent abuse of patent (and other intellectual property) rights.

The author is a Professor of Economics at the Indian Institute of Management Calcutta. His research interests include industrial policy, role of state in developing countries and intellectual property rights. He has published widely including a book on WTO and India's Pharmaceuticals Industry: Patent Protection, TRIPS and Developing Countries, Oxford, University Press. He has done commissioned studies for various organizations including the World Health Organization, Geneva, United Nation Development Programme, New York, United Nations Industrial Development Organization, Vienna, Reserve Bank of India and the Government of India.

Two important flexibilities which TRIPS permits to tackle the negative consequences of product patent protection are: (i) Exemptions from grant of patents in certain cases and (ii) Compulsory licensing. India has used the former quite successfully by inserting Section 3(d) in the amended Patents Act when re-introducing product patents in pharmaceuticals in 2005. The Supreme Court of India has recently rejected the plea of Novartis for patent protection for its anti-cancer drug sold in the name of Glivec or Gleevec. The Novartis patent case involving Section 3(d) has attracted world-wide attention. Though, it has significant implications, it can be argued that if the high prices of patented drugs are to be checked, proper use of compulsory licensing is of more critical importance. Unlike Section 3(d), India has not yet been able to use the compulsory licensing provisions effectively.

Patent is given for a limited time period, currently for 20 years under TRIPS. Thus, after the expiry of the patent, other firms can and do enter the market and that results in a fall in the prices and hence of profits of the patent holder. That indeed is the intention of patent laws. But the multinational corporations (MNCs) holding patents such as Pfizer, Glaxosmith Kline, Roche, Novartis often try to block or delay this competition by getting secondary patents on minor changes to the product, a practice which has come to be known as 'evergreening'

Patent is given for a limited time period, currently for 20 years under TRIPS. Thus, after the expiry of the patent, other firms can and do enter the market and that results in a fall in the prices and hence of profits of the patent holder. That indeed is the intention of patent laws. But the multinational corporations (MNCs) holding patents such as Pfizer, Glaxosmith Kline, Roche, Novartis often try to block or delay this competition by getting secondary patents on minor changes to the product, a practice which has come to be known as 'evergreening'. The secondary patents, for example can be salts, esters or other derivatives of patent expired drugs. These are technically "new" drugs with a new chemical structure but may have essentially the same therapeutic effect - innovation is often absent, limited or trivial. In such cases, the countries are justified in denying the patent because the objective of the patent system is not to encourage or permit patenting of new forms of old drugs just to extend the patent term. But in the name of innovation, even in these circumstances, product patents are granted in countries such as the United States– a model which many developing countries willingly or not so willingly follow.

Section 3(d) tries to regulate such abuses of the patent system. Under Section 3(d), "the mere discovery of a new form of a known substance which does not result in the enhancement of the known efficacy of that substance" is not patentable. Novartis applied for a patent for imatinib (and other derivatives of a compound) in the United States (US) in April 1994. After getting marketing approval, what the company started selling as the drug for treating chronic myeloid leukemia was not imatinib, but a derivative of it viz., imatinib mesylate (brand name: Glivic or Gleevec). It did not apply for a separate patent for imatinib mesylate in the US because as the Supreme Court judgment shows, the Novartis patent covered not only imatinib but also imatinib mesylate. Novartis could not at that time apply for a patent for imatinib/mesylate in India because India is not required to provide protection for a patent applied or granted elsewhere before TRIPS came into being, i.e., before 1 January, 1995.What Novartis did in India after 1995 (in July 1998) was to apply for a patent for the beta crystalline form of imatinib mesylate. But the Supreme Court ruled that the beta crystalline form does not satisfy the section 3(d) criterion. Supreme Court denied the patent to Novartis because Novartis could not demonstrate that the new form (beta crystalline) of the known substance (imatinib mesylate) enhanced the therapeutic efficacy of the drug.

It will be more difficult to indulge in 'evergreening' in India. Considering the strict criterion of efficacy, new forms of non-patented drugs or patent-expired drugs will not be easy. The Patent office in India is unlikely to grant such patents unless therapeutic efficacy is demonstrated. And demonstrating that new forms are therapeutically more effective may not be that easy as the Novartis case suggests. Thus, medicines such as Gleevec which otherwise would have been patented with high monopoly prices will not be patentable and hence will be more affordable. The Supreme Court decision is consistent with TRIPS and has been arrived at not arbitrarily but by following transparent and internationally accepted legal processes. Thus, other countries which have stricter patent regimes might be induced to introduce similar provisions in their patent laws to make drugs more affordable. Thus the judgment has significant international implications as well.

It will be more difficult to indulge in 'evergreening' in India. Considering the strict criterion of efficacy, new forms of non-patented drugs or patent-expired drugs will not be easy. The Patent office in India is unlikely to grant such patents unless therapeutic efficacy is demonstrated. And demonstrating that new forms are therapeutically more effective may not be that easy as the Novartis case suggests. Thus, medicines such as Gleevec which otherwise would have been patented with high monopoly prices will not be patentable and hence will be more affordable.

But new drugs which are currently under patents, for example those listing in Table 1 or those which will be patented in future will continue to be under monopoly till the patents expire. It is important to note that if rather than in April 1994, Novartis had filed the patent in the US a few months later after 1 January, 1995 when TRIPS came into effect, the anti-cancer drug would have been eligible for a patent in India as a new substance and section 3 (d) would not have been applicable (till that patent expired). Thus, section 3(d) deals with only a part of the problem. What can the country do when the prices of medicines for which product patents have been granted are exorbitant? It is here that the role of compulsory licensing becomes critical.

A Compulsory licence is an authorization by the government to non-patentees to use the patent, for example to manufacture and sell the patented medicine without or against the consent of the patentee on payment of royalties. As different studies and reports have highlighted, in a product patent regime, a proper compulsory licensing system is of vital importance to deal with the negative implications of product patent protection on prices. If Indian companies are given licences to produce a patented drug, competition among manufacturers would drive down prices, but the royalty paid to the innovators would continue to provide funds and the incentive for R&D.

The amended Act has elaborate provisions on compulsory licensing. The "general principles" stress the importance of making the patented invention available at "reasonably affordable prices to the public," to secure that these are worked in India, and not to enable patentees to enjoy monopoly power by importing. In fact, an application for a compulsory licence can be made on the ground that the "reasonable requirements of the public" have not been satisfied, or that the product is not available at a "reasonably affordable price," or that the patented invention has "not worked in the territory of India."

Table 1: Price of MNC Monopoly Drugs, 2013

Branded product	Generic name	MNC	Therapeutic group	Price per unit
Jevtana 60 mg injection	Cabazitaxel	Sanofi-Aventis	Anti-cancer	330000
Herceptin injection 50 ml	Trastuzumab	Roche	Anti-cancer	110700
Erbitux 500 mg injection 50 ml	Cetuximab	Merck	Anti-cancer	92316
Mabthera 500 mg injection 50 ml	Rituximab	Roche	Anti-cancer	80000
Novoseven (eptaccogalfa) 2.4 mg injection 1	Antihaemophilic globulin b & prothrombin complex	Novo Nordisk	Blood related	79000
Torisel 25 mg injection 1 ml	Temsirolimus	Pfizer	Anti-cancer	74520
Alimta 500 mg injection 1	Pemetrexed	Eli Lilly	Anti-cancer	73660
Sandostatin 0.1 mg injection 1	Octreotide	Novartis	Blood related	72081
Ixempra 45 mg injection 1	Ixabepilone	BMS	Anti-cancer	71175
Sandostatinlar 20 mg injection 1 ml	Octreotide	Novartis	Blood related	65499
Velcade 3.5 mg injection 1	Bortezomib	Johnson & Johnson	Anti-cancer	60940

Source: Sales audit data of AIOCD-AWACS.

Can there be any doubts that medicines with prices more than Rs. 50,000 per dose are not reasonably affordable? But though, it is almost a decade that the granting of product patents has started in India, only one compulsory licence has been granted till now to Natco, an Indian generic company for an anti-cancer drug, sorafenib tosylate (sold as Nexavar by the patentee, Bayer).

As the experience of countries where compulsory licensing has been effectively used, as for example in Canada in the past suggests, what is crucial is to have straightforward, transparent and fast procedures. A patent holder will naturally be opposed to any compulsory licences. The Canadian experience shows how the practice and the procedures can be such that the patentees have practically no opportunity to delay or prevent the grant of compulsory licenses. But in India, that has not been the case. The entire process is excessively legalistic. The procedure is open-ended without any time limit imposed for the grant of compulsory licenses and provides the patentees the opportunity to buy time through litigation. The huge legal expenses involved in fighting the MNCs holding the patents and the uncertainty may dissuade the generic companies from applying for licenses in the first place. These are not mere theoretical possibilities. This is precisely what happened in India before the 1970s and is happening now after 2005. The current procedure for the grant of compulsory licences is essentially similar to that before the 1970s when India recognised product patents in pharmaceuticals. Only two compulsory licences were granted then. The main reason was the cumbersome procedure. It is the same procedure which the 1970 Act inherited for products other than pharmaceuticals and now the amended act has retained and made applicable for all the products including pharmaceuticals. TRIPS imposes some conditions relating to the grant of compulsory licensing. But TRIPS also provides the countries adequate flexibility to devise their own system. TRIPS, for example insist that non-patentees will have to first try to get a voluntary licence on reasonable commercial terms from the patent

holder. But guidelines can be issued for reasonable terms. The maximum time period can also be stipulated. In this case, the procedure can be very simple - if the applicant does not get a voluntary licence within that time and on these terms, it can be given a compulsory licence.

Another flexibility which India can utilize is to directly control the price of patented drugs. Price control is not forbidden under TRIPS or any other agreement of the WTO. But two important differences between price control measures and compulsory licensing must be noted. If the price is controlled, the MNCs holding the patent may not sell in India at all. If they do, then drugs do become more affordable but that does not provide any room for generic companies. Compulsory licensing not only makes the prices more affordable through competition. It also ensures some space to generic companies, which is vital for their long term sustenance. ❑

(E-mail: sudip@iimcal.ac.in)

DO YOU KNOW?

India Backbone Implementation Network

India Backbone Implementation Network (IBIN) project was launched on April 19, 2013 by the Planning Commission. The purpose of IBIN is to improve implementation of policies, programs and projects which the twelfth five year plan has identified as of critical importance. The ultimate objective is to accelerate inclusive and faster growth. The IBIN has been launched in view of the finding that several projects and schemes have been facing bottlenecks at the implementation level in districts, state and the central level. Poor coordination among agencies, poor implementation and faulty delivery systems have been blamed for the poor state of health, education and other public services. Need has been emphasized to convert confusion into coordination, contention into collaboration and intention into implementation.

IBIN has been modelled on the very successful 'Total Quality Movement' (TQM) in Japan. In the 1960s and 70s, it transformed the capabilities of Japanese organizations in the private and public sectors. Techniques and systems were improved in Japan through the participation of universities, manufacturers etc. The emphasis on quality and efficiency made Japan synonymous with high level of delivery systems at all levels. IBIN uses the tools of collaboration, coordination and implementation. This movement may take time in showing results, yet it is a bold and much needed initiative.

The TQM movement in Japan offered techniques and tools to teams within organisations and inter-organisational teams to make rapid improvements of processes. The Planning Commission studies best practices for coordination and implementation in other countries like Korea, Brazil, Malaysia and Germany.

The twelfth five year plan has introduced several innovations to improve planning, communication and implementation.

The IBIN movement will disseminate techniques and skills for collaboration, coordination and better planning through a network of agencies in the country, like Administrative Staff College of India, the Indian School of Business, UNDP, World Bank etc. to a achieve certain national goals in important sectors.

India has a huge potential but there are many constraints to growth. Implementation failures are rooted in systemic problems. There is a need for shared vision and role clarity among the stakeholders of a process or system. The IBIN is designed to catalyse a movement for collaboration and implementation and is expected to grow as a movement of learning facilitated by a network of capabilities. Tools and techniques include quality tools and social science techniques for dialogue and alignment.

Reverse Mortgage

Reverse mortgage is a loan that enables a borrower to convert part of the equity in their home into cash. It is also called home equity conversion loan. If a senior citizen owns a home and has equity in it, he is entitled for the loan. In reverse mortgage no principal or interest payments are required on the home while the borrower occupies the property. Repayment is needed if the borrower sells the home or moves out of the property.

The reverse mortgage loan is available to borrowers of 62 years of age or more. (The age varies from country to country.) Reverse mortgage is a means to help aged people with limited income to use the money they have put into their home to pay off debts and cover their other necessary expenses. There are no restrictions on the use of reverse mortgage proceeds. As against the conventional mortgage, in a reverse mortgage, the lender makes the payment to the borrower. Under this scheme one always retains title or ownership of one's home. The lender never owns the home, even after the last surviving spouse leaves the property.

Even in developed countries, there are a large number of persons who do not have enough preparation for post retirement life. As the life expectancy has increased, they have to spend more years in need of money to meet their expenses. Reverse Mortgage serves a valuable function in such cases. ❑

(Compiled by Hasan Zia, Sr. Editor, E-mail: hasanzia14@gmail.com)

Health Equity in Public Health

Dhananjay W Bansod
Sarang P Pedgaonkar

To monitor these inequities, generation of high quality reliable data regarding health status and health care utilization by periodic surveys is mandatory. Surveys like NFHS (National Family Health Survey), DLHS (District Level Household and Facility Survey), NSSO (National Sample Survey Organization) and SRS (Sample registration system) are providing useful data in this regard. HMIS (Health management information system) is a new initiative by government to provide service information which will prove to be very valuable in the near future

EQUITY MEANS social justice or fairness; it is an ethical concept, grounded in principles of distributive justice. Equity is not the same as equality. The concept of equity is inherently normative, that is, value based while equality is not necessarily so.

Health equity refers to the study of differences in the quality of health and health care across different populations. It is a political concept which differs from health equality (which is any measurement of difference in health outcome). Equity in health can be—and has widely been—defined as the absence of socially unjust or unfair health disparities. 'Equity' implies some kind of social injustice, whereas 'equality' does not (1). The concept of health equity focuses attention on the distribution of resources and other processes that drive a particular kind of health inequality—that is, a systematic inequality in health (or in its social determinants) between more and less advantaged social groups, in other words, a health inequality that is unjust or unfair.

There are always some differences or inequalities among health status of different people and different communities. But not all health inequalities are unjust or inequitable. If some improvement in health condition is not possible, it is unfortunate but not unfair. Whenever inequalities in health are avoidable, yet are not avoided, they are inequitable. Here is an example-women, in general, live longer than men. This is likely to be a consequence of biological sex differences, and is not, therefore, inequitable. However, in cases where women have the same or lower life expectancy as men – that is, where social conditions act to reduce the "natural" longevity advantage of women – this inequality is a mark of gross inequity (2).

These differences may include differences in the "presence of disease, health outcomes, or access to health care"[3] across racial, ethnic, sexual orientation and socioeconomic groups. [4] Similarly, the term 'disparities' may be used instead of 'differences' to indicate a moral valuation.[5]

Health equity can be defined as follows:[6]

Horizontal equity: The equal treatment of individuals or groups in the same circumstances.

Vertical equity: The principle that individuals who are unequal should be treated differently according to their level of need.

Dhananjay W. Bansod is Assistant Professor, Department of Public Health & Mortality Studies, International Institute for Population Sciences, Deonar. Sarang P. Pedgaonkar is Assistant Professor, Department of Population Policies and Programmes, International Institute for Population Sciences, Deonar.

Causes of Inequity

Inequities in health are not only the unequal distribution of health but also the unfair distribution of health due to unfair or inadequate social arrangements. Key features of health inequities are that they are socially produced, systematic in their distribution across the population, and unfair (7). Health inequities emerge from a systematically unequal distribution of power, prestige and resources among groups in society.

Defining and identifying health inequities, thus, involves analysis with respect to social justice and the social determinants of health. To enhance the understanding of how inequities in health are rooted in societal structures, the Commission on Social Determinants of Health (CSDH), WHO developed a conceptual framework of the social determinants of health inequities (8).

The most important social determinants i.e. structural determinants of health inequities are Income, Education, Occupation, Social Class, Gender and Ethnicity. These structural determinants of health inequities operate through a set of intermediary determinants of health to shape health outcomes.

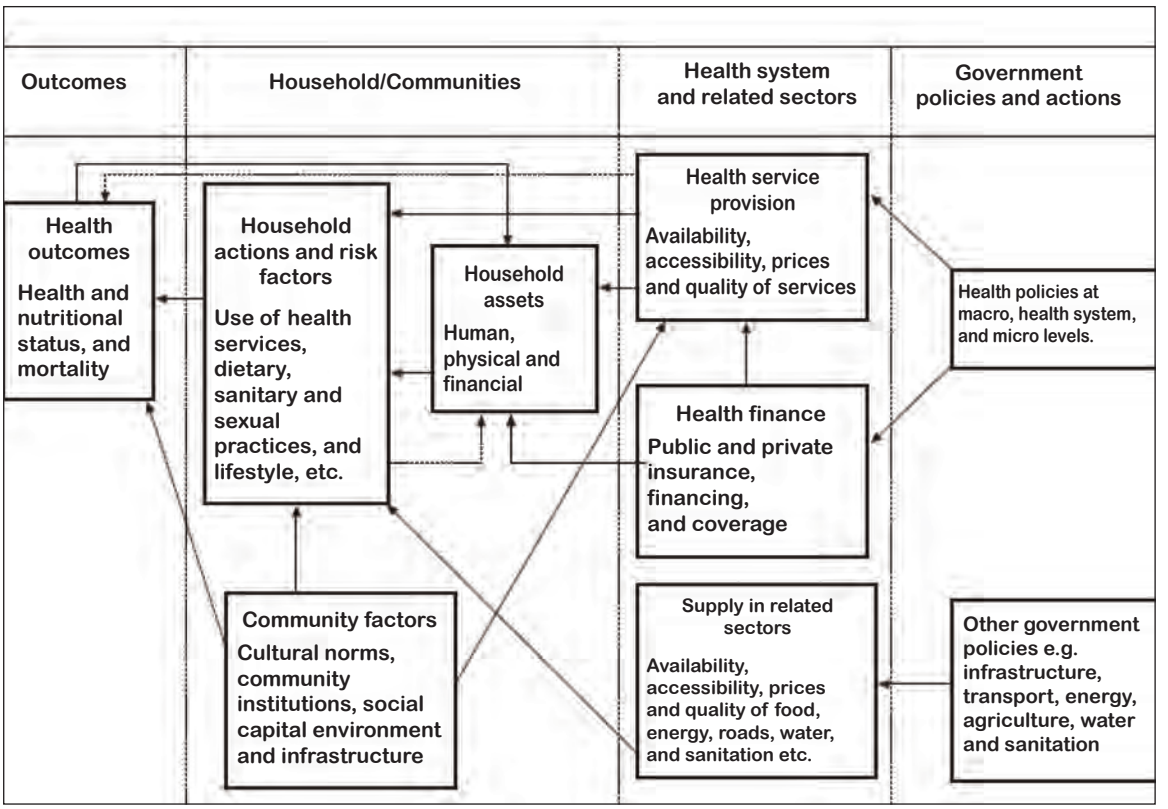
The main categories of intermediary determinants of health are: material circumstances; psychosocial circumstances; behavioral and/or biological factors; and the health system itself as a social determinant. Material circumstances include factors such as housing and neighbourhood quality, consumption potential (e.g. the financial means to buy healthy food, warm clothing, etc.), and the physical work environment. Psychosocial circumstances include psychosocial stressors, stressful living circumstances and relationships, and social support and coping styles (or the lack thereof). Behavioural and biological factors include nutrition, physical activity, tobacco consumption and alcohol consumption, which are distributed differently among different social groups. Biological factors also include genetic factors.(8)

Economic Status and Health Financing

Usually, the lower an individual's socioeconomic position, the worse their health. Poverty and poor health are inseparably linked.[12] The spectrum of health status and outcomes goes hand in hand with the socioeconomic status. In general, people have worse health than those above them but better health than those below them.

Poverty has many dimensions – material deprivation (of food, shelter, sanitation, and safe drinking water), social exclusion, lack of education, unemployment, and low income – that all work together to reduce opportunities, limit choices,

Fig. 1: Determinants of Health Outcomes



undermine hope, and, as a result, threaten health.[2] Poverty has been linked to higher prevalence of many health conditions, including increased risk of chronic disease, injury, deprived infant development, stress, anxiety, depression and premature death.[13]

Government health spending is around 1 per cent of GDP, while the total spending on health in India is around 5 per cent of the GDP. India has one of the highest levels of out-of-pocket payments for health care in the world, which imposes a large financial burden on individuals and households (9). Thus, it puts more strain on families when they are in a situation having highest need for money. This has been argued to be one of the reasons for the inequities in health observed across the country (10).

Regional and Rural/urban Differences in Health Based on Economic Status

It is usually seen that utilization of health services as well as health status indicators are always better in urban population than slums and rural or tribal population. Also, differences are also seen across different regions in India. The inequities are still higher among EAG (Empowered Action Group) states as compared to Non-EAG states.

Gender

Socioeconomic inequality is often cited as the fundamental cause for differential health, outcomes among men and women. Gender as a structural determinant of health operates through different intermediary determinants that influence the maternal and reproductive health of women and their access to care. Gender norms have also been shown to influence attitudes towards the use of contraceptives and women's ability to make decisions on family planning. Early marriage and early pregnancy results in high fertility and puts woman in danger of anemia and pregnancy complications. Infant mortality is also high among the children of these young mothers. A weak health system, including weak information systems, discontinuity of care, unsupported health workers and limited referral and accountability mechanisms, has implications for the ability to prevent maternal mortality among women seeking care during delivery.

Education

Education, particularly woman's education, makes significant difference in utilization of RCH services and health seeking behaviour. Children of uneducated mothers are more likely to be malnourished. Effects of education can also be seen on other determinants of health like income, employment and living conditions.

Social Class

Socially backward groups like SC/ ST and OBC are usually associated with lower use of reproductive health services and poorer health outcomes. According to the NFHS(National Family Health Survey) 3, the likelihood of receiving any type of ANC(anti-natal care) is lowest among women belonging to SC or ST. Only 18 per cent of the births among these women are conducted at a health facility, compared to 51 per cent among women, who do not belong to SC, ST, or any OBC. (11).

Occupation

Occupation is one of the key determinants of socio-economic status. Poor employment conditions expose individuals to health hazards, which are more likely in low-status jobs.

Environmental Factors

Disparities can be seen in environmental factors such as inadequate water and sanitation, indoor air pollution, overcrowding, poor housing conditions and exposure to vectors of disease.

It should be noticed that factors like malnourishment and nutritional deficiencies are distributed lopsidedly among different socioeconomic strata and so are the preventive measures for, diseases.

In utilization of health care services, one can observe various barriers faced disproportionately by marginalised/ vulnerable groups like-

- Economical barrier- user fees, hidden cost of utilizing services like travel cost, wage loss, consumables and bribes, opportunity cost of long waiting period, inconvenient timings
- Absence of female doctors, referrals to higher services
- Behaviour of staff like lack of regard for privacy and dignity particularly of women and adolescents, verbal abuse, bribe
- Lack of accountability, flexibility in public sector and its over bureaucratic nature

Health Equity in India-Facts and Figures:

Various sources of reliable data on health and health care in India like NFHS, DLHS(District Level Household Survey), SRS(Sample Registration System), NSSO, etc are used to gather information on indicators of health status. Various indicators of health status can be used to measure the inequities in distribution of health by different parameters like socioeconomic status, gender, region, caste, etc.

When we think of Infant Mortality Rate (IMR), a good indicator of overall health situation of a particular society, as well as other mortalities below 5 years, the rural area is always at the receiving end for any caste or income group. The decrease in mortality indicators follows the pattern of social ladder in Indian society, barring few exceptions.

Among various castes, scheduled castes (SCs) are having the worst indicators for neonatal and infant mortality. Scheduled tribes (STs) are having greater under 5 mortality, particularly in rural areas, as compared to any other caste groups. In case of wealth quintile, it is found that all

Table 1: Disparities of Mortality Indicators Among Caste in Wealth Index

	Neonatal Mortality			Infant Mortality			Under-five Mortality		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
Castes/Tribes									
Scheduled Caste	46.3	35.0	49.6	66.4	50.7	71.0	88.1	65.4	94.7
Scheduled Tribes	39.9	29.0	40.9	62.1	43.8	63.9	95.7	53.8	99.8
Other Backward Classes	38.3	26.4	42.1	56.6	42.2	61.1	72.8	54.5	78.7
Others	34.5	27.5	38.1	48.9	36.1	55.7	59.2	42.1	68.2
Wealth Index									
Lowest	48.4	39.4	48.8	70.4	64.8	70.7	100.5	92.1	100.9
Second	44.6	40.8	44.9	68.5	62.4	69.2	89.6	82.5	90.4
Middle	39.3	32.0	41.2	58.3	49.8	60.6	71.9	65.3	73.6
Fourth	31.9	31.3	32.4	44.0	46.2	42.3	51.2	53.9	49.1
Highest	22.0	21.1	24.3	29.2	27.4	33.6	33.8	32.8	36.2
Total	39.0	28.5	42.5	57.0	41.5	62.2	74.3	51.7	82.0
NFHS-2	43.4	31.7	46.7	67.6	47.0	73.3	94.9	63.1	103.7
NFHS-1	48.6	34.1	52.9	78.5	56.1	85.0	109.3	74.6	119.4

Source: National Family Health Survey (NFHS-3) 2005-06

three mortality indicators are higher among lowest income quintile group and decreases steadily with rise in income quintile. Disparities of urban rural residence and that of caste are faced to a greater extent by people in lower income groups.

Infant mortality is not uniform across the country. It ranges from 12 in Kerala to 56 in Madhya Pradesh. Underdeveloped states like Uttar Pradesh, Rajasthan, Odisha, Assam and Madhya Pradesh bear great burden of Infant mortality whereas developed states like Kerala, Tamil Nadu and Maharashtra have lower IMR (Figure 2 as well as Table 2)

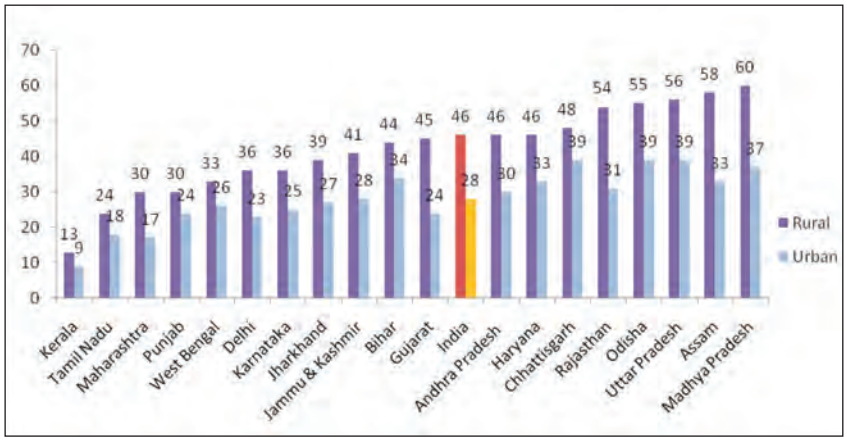
The inequities in maternal health services in India can be seen when we look for full Ante Natal Care (ANC), institutional deliveries and unmet need for family planning. The coverage of full ANC and institutional deliveries is very less in rural areas as compared to urban areas. Unmet needs for family planning, both for spacing as well as limiting, are greater in rural areas.

The coverage of full ANC as well as institutional deliveries is lowest among women belonging to STs followed by SCs. The social ladder pattern is also seen in these two indicators with women belonging to other castes having highest coverage of maternal health services and lowest unmet needs for family planning.

Similar pattern is seen for all indicators for maternal health services across wealth quintiles. The coverage of full ANC as well as institutional deliveries is lowest among women belonging to lowest wealth quintile and gradual increase is seen with rise in income.

The coverage of immunization is lower in rural areas as compared to urban areas. The immunization coverage was lowest among Scheduled Tribes (46 per cent) as compared to others (63 per cent). Nearly 73 per cent of the children belonging to the highest wealth quintile households received the full vaccination package, whereas it was less than half of that (36 per cent) among children belonging to

Fig.2: State-wise Infant Mortality Rate, 2012



Source: SRS Bulletin, 2013

Table 2: Infant Mortality Rate across Different States in India, 2012

States	Total			Rural			Urban		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Kerala	12	10	13	13	11	14	9	8	10
Tamil Nadu	21	21	22	24	23	25	18	17	19
Delhi	25	24	26	36	35	37	23	22	23
Maharashtra	25	24	26	30	30	31	17	16	19
Punjab	28	27	29	30	29	31	24	22	26
Karnataka	32	30	34	36	35	37	25	22	28
West Bengal	32	31	33	33	32	35	26	25	27
Gujarat	38	36	39	45	44	47	24	23	25
Jharkhand	38	36	39	39	38	41	27	24	30
Jammu & Kashmir	39	38	40	41	40	42	28	27	30
Andhra Pradesh	41	40	43	46	45	47	30	27	33
INDIA	**42**	**41**	**44**	**46**	**45**	**48**	**28**	**26**	**29**
Haryana	42	41	44	46	44	48	33	32	34
Bihar	43	42	45	44	43	46	34	33	36
Chhattisgarh	47	46	47	48	47	49	39	38	39
Rajasthan	49	47	51	54	52	56	31	29	33
Odisha	53	52	54	55	53	56	39	38	40
Uttar Pradesh	53	52	55	56	54	57	39	37	41
Assam	55	54	57	58	57	60	33	31	35
Madhya Pradesh	56	54	59	60	58	62	37	35	39

Source: Sample Registration System, 2012

Figures of IMR also provide the evidence about gross disparities met by female infants. IMR is greater for females all over India despite their natural advantage of survival. Gender disparities are greater in rural areas than compared to urban and this gap is more in EAG states.

Table 3: Use of Maternal Health Services in India, 2008

	Full ANC	Institutional delivery	Unmet need for Family Planning		
			Spacing[1]	Limiting[2]	Total
Residence					
Rural	14.7	37.8	8.0	13.8	21.8
Urban	29.5	70.4	5.5	12.0	17.5
Castes/Tribes					
Scheduled Caste	15.1	41.9	7.5	12.6	20.1
Scheduled Tribes	14.7	32.5	8.1	13.3	21.4
Other Backward Classes	19.2	47.8	8.0	14.2	22.2
Others	23.7	58.9	5.4	12.3	17.7
Wealth Index					
Lowest	6.0	19.1	9.8	18.8	28.6
Second	9.0	28.7	9.1	15.6	24.7
Middle	15.9	42.1	7.5	12.7	20.2
Fourth	23.5	57.6	6.6	11.2	17.8
Highest	36.2	80.1	4.9	10.9	15.8
India (15-49)	**18.8**	**46.9**	**7.2**	**13.3**	**20.5**
India (15-44)†	**18.8**	**47.0**	**7.9**	**13.4**	**21.3**

† Represents figures for currently married women aged 15-44 years.
Source: District Level Household Survey (DHLS-3) 2007-08

Table 4: Child Health Indicators by Place of Residence, Caste and Wealth Index in India, 2008

	Exclusive breast feeding 0-5 months	Full Immunization[1]	Children suffered from diarrhoea	Children given ORS	Children suffer from ARI
Residence					
Rural	47.1	50.0	11.9	30.8	12.0
Urban	42.3	62.5	11.2	44.0	9.8
Castes/Tribes					
Scheduled Caste	43.5	52.6	12.8	32.5	12.0
Scheduled Tribes	59.7	45.5	9.9	38.4	7.9
Other Backward Classes	42.7	51.8	12.2	29.0	12.2
Others	42.4	63.1	11.7	42.5	11.8
Wealth Index					
Lowest	47.5	35.6	12.2	21.5	13.5
Second	46.3	41.1	12.0	24.9	13.0
Middle	46.7	49.5	12.2	30.9	12.1
Fourth	45.4	60.1	12.1	39.0	10.9
Highest	43.0	73.1	10.6	51.2	8.5
India (15-49)	**45.9**	**53.5**	**11.7**	**34.2**	**11.4**
India (15-44)†	**46.8**	**54.0**	**11.7**	**34.2**	**11.4**

† Represents figures for currently married women aged 15-44 years.
[1]BCG, three injections of DPT, three doses of Polio (excluding Polio 0) and measles
Source: District Level Household Survey (DHLS-3) 2007-08

Table 5: Prevalence of Anaemia and Nutritional Status in Children under 5 years by Background Characteristics, India, 2007

Background Characteristic	Anaemia Status By Haemoglobin Level				Nutrition Status		
	Mild (10.0-10.9 g/dl)	Moderate (7.0-9.9 g/dl)	Severe (<7.0 g/dl)	Any anaemia (<11.0 g/dl)	Underweight	Stunting	Wasting
Sex							
Male	25.7	40.2	3.2	69.0	41.9	48.1	20.5
Female	27.1	40.2	2.7	69.9	43.1	48.0	19.1
Residence							
Urban	25.6	34.2	3.1	63.0	32.7	39.6	16.9
Rural	26.5	42.1	2.9	71.5	45.6	50.7	20.7
Caste/tribe							
Scheduled Caste	24.9	43.7	3.6	72.2	47.9	53.9	21.0
Scheduled Tribes	26.3	47.2	3.3	76.8	54.5	53.9	27.6
Other Backward Classes	26.7	40.5	3.0	70.3	43.2	48.8	20.0
Other	26.9	34.8	2.1	63.8	33.7	40.7	16.3
Wealth Index							
Lowest	27.7	45.8	3.0	76.4	56.6	59.9	25.0
Second	26.9	43.4	3.3	73.6	49.2	54.3	22.0
Middle	26.2	39.7	3.4	69.3	41.4	48.9	18.8
Fourth	24.9	37.3	2.6	64.8	33.6	40.8	16.6
Highest	25.0	29.2	2.1	56.2	19.7	25.3	12.7
Total	**26.3**	**40.2**	**2.9**	**69.5**	**42.5**	**48.0**	**19.8**

Source: National Family Health Survey (NFHS-3) 2005-06

the households with the lowest wealth quintile.

Gender differentials can be observed in full immunization coverage. Fifty-five per cent of boys were fully immunized as against 52 per cent of girls.

Contrastingly, exclusive breast feeding is higher in rural areas, STs and those in lowest wealth quintile as compared to their counterparts. This is most probably due to lack of resources to opt for any substitute. Morbidities like diarrhoea and respiratory tract infection are more in rural, lowest wealth quintile and SCs and also receiving of treatment like ORS therapy is less amongst them.

Upto 5 years of age, gender based differential in anemia is very less but great disparities are seen, rural areas, STs, SCs and among those belonging to lower wealth quintiles.

Three standard indices of physical growth that describe the nutritional status of children:

- Height-for-age (stunting)
- Weight-for-height (wasting)
- Weight-for-age (underweight)

Almost half of children under five years of age (48 per cent) are stunted and 43 per cent are underweight. About one fourth (24 per cent) children are severely malnourished by height-for-age and almost one sixth (16 per cent) by weight-for-age while about one fifth are wasted. Very few children under five years of age are overweight. Undernutrition is substantially higher in rural areas than in urban areas. Hindu and Muslim children are about equally likely to be undernourished, but Christian, Sikh and Jain children are considerably better nourished. Children belonging to scheduled castes, scheduled tribes or other backward classes have relatively high levels of undernutrition according to all three measures. Children from scheduled tribes have the worst nutritional status on almost every measure and they also show high prevalence of wasting. Children from households with a low standard of living are twice as likely to be undernourished as children from households with a high standard of living. Undernutrition is most pronounced in Madhya Pradesh, Bihar, and Jharkhand.

Nutritional status of women can be assessed by Body Mass Index (BMI). The BMI is defined as weight in kilograms divided by height in metres squared (kg/m2). A cut-off point of 18.5 is used to define thinness or acute undernutrition.

About one third women are acutely malnourished and more than 50 per cent are anaemic.

Undernutrition and anaemia among women is considerably higher in rural areas than in urban areas. ST followed by SC women and those in lower wealth quintile are found to have higher levels of anaemia and undernourishment. Anemia among pregnant women also shows great differences in rural areas as compared to their urban counterparts (Fig.3). Nutritional disparities among women closely follow the social and wealth ladder.

Though, maternal mortality ratio is on the decline (254 in 2004-06 to 212 in 2007-09) in India, still vast differences are seen across states. EAG (Empowered Action Group) states and Assam are still lagging behind compared to non-EAG states and carry greater burden of maternal deaths.

Monitoring of Equity

To monitor these inequities, generation of high quality reliable data regarding health status and health care utilization by periodic surveys is mandatory. Surveys like NFHS (National Family Health Survey), DLHS (District Level Household and Facility Survey), NSSO (National Sample Survey Organization) and SRS (Sample registration system) are providing useful data in this regard. HMIS (Health Management Information System) is a new

Table 6: Nutritional Status of Women in India

Background Characteristic	Acute Under-nutrition BMI <18.5	Anaemia
Residence		
Urban	25.0	50.9
Rural	40.6	57.4
Caste/Tribes		
Scheduled Caste	41.1	58.3
Scheduled Tribes	46.6	68.5
Other Backward Classes	35.7	54.4
Others	29.4	51.3
Wealth Index		
Lowest	51.5	64.3
Second	46.3	60.3
Middle	38.3	56.0
Fourth	28.9	52.2
Highest	18.2	46.1
Total	**35.6**	**55.3**

Fig. 3 Prevalence of Anaemia in pregnant women aged 15-49 years in India, 2007

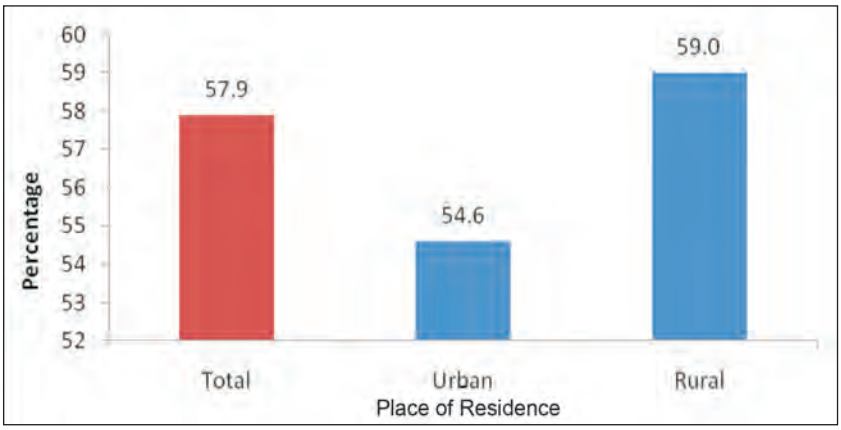
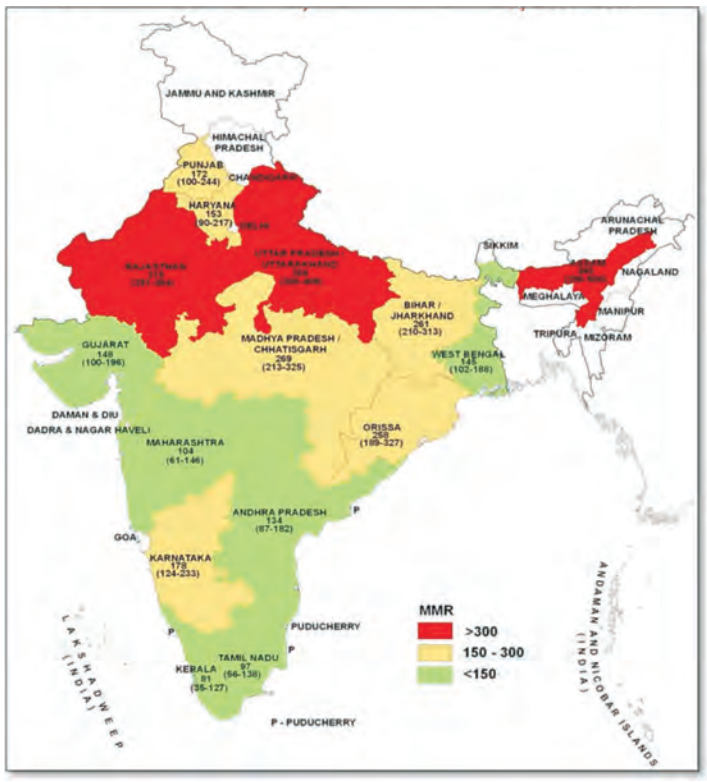


Fig. 4: Maternal Mortality Ratio (MMR) Along with 95 per cent confidence interval, India and States, 2007-2009.



initiative by government to provide service information which will prove to be very valuable in the near future.

Conclusion

Far-reaching health, health care and its utilization inequities still persist in India across socioeconomic status, caste, gender, place of residence and region. Any combination of these determinants further deteriorates the condition. To minimize these inequities, continued surveillance of health and health care utilization is necessary.

References

1. "Glossary of a Few Key Public Health Terms". Office of Health Disparities, Colorado Department of Public Health and Environment. Retrieved 3 February 2011.
2. Sen A (2003). Missing women – revisited. BMJ, 327(7427):1297–1298.
3. Kawachi I., Subramanian S., Almeida-Filho N. A glossary for health inequalities. J Epidemiol Community Health 2002;56:647–652;56:647–652
4. Goldberg, J., Hayes, W., and Huntley, J. "Understanding Health Disparities." Health Policy Institute of Ohio (November 2004), page 3.
5. U.S. Department of Health and Human Services (HHS), Healthy People 2010: National Health Promotion and Disease Prevention Objectives, conference ed. in two vols (Washington, D.C., January 2000).
6. Paul L. Hebert, Jane E. Sisk and Elizabeth A. Howell (March 2008). "When Does A Difference Become A Disparity? Conceptualizing Racial And Ethnic Disparities In Health". *Health Affairs* **27**(2): 374–382. doi:10.1377/hlthaff.27.2.374. Retrieved 5 December 2011.
7. Withhead M, Dahlgren G. Levelling up (part1): a discussion on concepts and principles for tackling social inequities in health. Studies on Social and Economic Determinants of Population Health No. 2. Report number WHOLIS E89383. Copenhagen: WHO Regional Office for Europe; 2006, p. 44. Available from http://who.int/social_determinants/resources/leveling_up_part1.pdf [cited 2 July 2012].
8. Solar O, Irwin A. A conceptual framework for action on the social determinants of health. Social Determinants of Health Discussion Paper 2 (Policy and Practice). Report number WA 525. Geneva: World Health Organization; 2010, p. 75. Available from:http://www.who.int/sdhconference/resources/ConceptualframeworkforactionSDH_eng.pdf [cited 2 July 2012].
9. World Bank. World Development Report 2012: Gender Equality and Education. (Washington DC: World Bank, 2012). 84.

10. An Analytical Framework for the Study of Child Survival in Developing Countries. W. Henry Mosley and Lincoln C. Chen; Population and Development Review, Vol. 10, Supplement: Child Survival: Strategies for Research (1984), pp. 25-45. Published by: Population Council; <http://www.jstor.org/stable/2807954> http://www.jstor.org/stable/10.2307/2807954

11. Iyengar K, Iyengar SD, Suhalka V, Dashora K. Pregnancy-related deaths in rural Rajasthan, India: exploring causes, context, and care-seeking through verbal autopsy. J Health Popul Nutr 2009; 27: 293–302. PubMed Abstract | PubMed Central Full Text

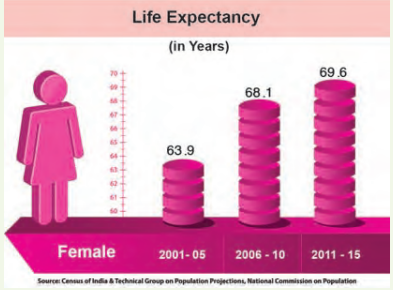
12. Health Organization. Commission on Social Determinants of Health. Closing the Gap in a Generation- Health equity through action and the social determinants of health. Geneva: World Health Organization. 2008. <http://whqlibdoc.who.int/publications/2008/9789241563703_eng.pdf> Accessed 14 March 2012.

13. International Institute for Population Sciences (IIPS) and Macro International. 2007. *National Family Health Survey (NFHS-3), 2005–06: India: Volume I*. Mumbai: IIPS.

14. International Institute for Population Sciences (IIPS), 2010. District Level Household and Facility Survey (DLHS-3), 2007-08: India. Mumbai: IIPS.

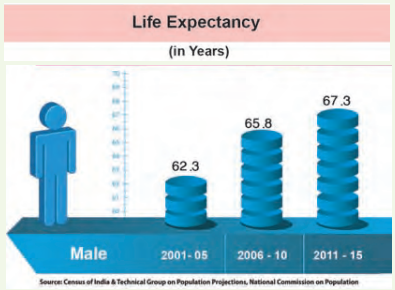
15. SRS Bulletin (2013): Sample Registration System, Registrar General, India, Vital Statistics Division, New Delhi, India. ❑

(E-mail: dbansod@gmail.com drsarangpedgaonkar@yahoo.co.in)



Healthcare

Allocation in the 12th Plan for the Health Sector has been increased to Rs 3 lakh crore from the 11th Plan level of Rs 90 thousand crore, an increase of 335%. To improve the general health of children, allocation for the Integrated Child Development Scheme has been increased four-fold in the 12th Five Year Plan over the llth Five Year Plan.



With health interventions during pregnancy and at birth, Infant Mortality Rate (IMR) has reduced from 58 per 1000 Live Births in 2004 to 44 per 1000 Live Births in 2011.

Special Programmes for mothers and children have led to better longevity of the citizens during the last 9 years. Indians are living longer and life expectancy has increased by more than 5 years for both men and women during last decade.

Absence of new endemic Polio cases for the last two years is an achievement that has been hailed at international forums.

Health and Development

Shankar Prinja

The moral motivation to direct health policy in a certain equitable way thus, becomes paramount under the rights-based approach, particularly in poorer countries seeking to decide on the most appropriate distribution of limited resources. Regardless of whether one is moved by the efficiency or the equity argument, the desirability of the goal of achieving better population health status remains undisputed

WHY SHOULD countries invest in health? What makes it important for stakeholders to include health in the developmental agenda of the state? Answers to these and some of other questions are what we seek to answer in this article. Ministries of Finance, in both rich and poor income countries, are blatantly reluctant to invest in health. One of the first few sectors to face funding cuts in the wake of recession, are health and education. Two prevailing, yet different, arguments of human capital and social justice are used here to argue that health is essential for broader development and this calls for greater investment.

In the next section, the tone for discussion on the relationship between health and wealth is set. First, evidence on how wealth influences health using a variety of cross-country and national analyses is presented. Later, the role of health in the context of the overall development of the economy is revisited. In the subsequent section, attention is shifted from health as an outcome of economic growth to health as a critical dimension of development, giving considerable leverage to the health sector in national and international development agendas today. Finally, the case for greater investment in health, using theories of social justice as propounded by Amartya Sen is put forth.

Health -Wealth Relationship

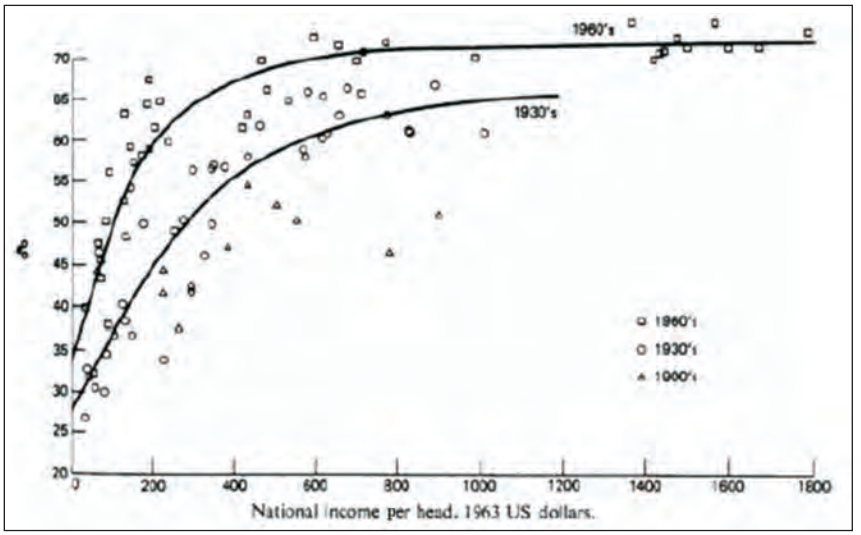
Wealth Leads To Health

It is widely acknowledged that higher incomes enable individuals to lead healthier lives (by virtue of better nutrition intake, access to safe drinking water and better access to good quality health services). This thinking was influenced by a seminal paper [2] by Samuel Preston published in 1975 for three different decades of the twentieth century. He demonstrated that life expectancy in the 1900s, 1930s and 1960s exhibited a non-linear relationship with per-capita national income. This is depicted in the figure 1 below.

Above a certain threshold, gains in life expectancy were not related to higher levels of average income. In addition, the relationship between income and life expectancy had shifted upwards during the twentieth century. Preston made several points in discussing these findings. First, he proposed that upward shifts in the life expectancy–income association were mainly due to 'exogenous' factors that strengthened the public health infrastructure (immunization, technological advances and specific disease- control campaigns) rather than income growth per se. Second, he suggested that over time, life expectancy had become progressively more dissociated from absolute income level and that at least some of the

Dr. Shankar Prinja, Assistant Professor of Health Economics at the PGIMER School of Public Health, Chandigarh, is a health economist and public health professional. He is a medical doctor with doctorate in Community Medicine followed by masters in Health Policy, Planning and Financing from the London School of Economics. His main research interests involve economic evaluation of health care interventions and programs as well as analysis of distributional benefits of health financing policies.

Figure 1: Scatter diagram of relationship between life expectancy at birth & national income per head for nations in 1900s, 1930s, 1960s

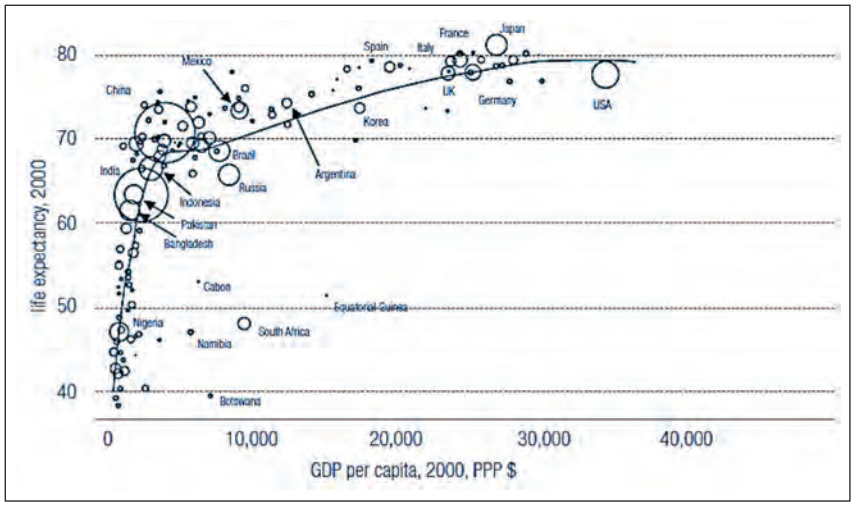


Source: Preston SH, 1975 [2]

variation in life expectancy at the upper-income levels was likely due to variations in income distribution between countries. Preston could not examine this issue in detail because the available data were inadequate. But he concluded that 'the distribution of income is clearly a likely source of variance in the basic relation between national life expectancy and average national income'. Later Wilkinson (1992) demonstrated important associations between income inequality and differences in mortality between industrialized countries [3].

Preston curve was redefined using the 2000 GDP per capita at Purchasing Power Parity (PPP) for different countries [4]. At low levels of national income there is a steep relationship between income and life expectancy at birth (LEB). However, there are two caveats in making inference here. Firstly, at income levels in excess of US$ 5000 PPP, the curve flattens and there is little or no relationship between income and health. Secondly, Sri Lanka, Costa Rica and Kerala state of India offer a situation which cannot be explained by this simple relationship as these nation states have achieved better health status without much greater national wealth. This also draws attention to various social policies which govern an area which also play a significant role in determining health status of population. This findings are also validated by other recent reports [5].

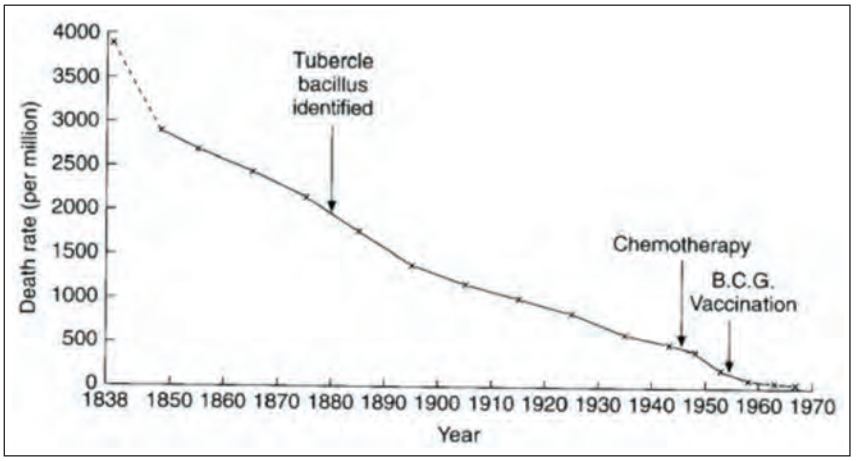
Figure 2: Preston Curve Redefined in 2000



In another major research undertaken by Thomas Mckeown, during the late twentieth century, effectively demonstrated that overall development, rather than advances in medical science played the major role in the late nineteenth century mortality decline from the principal infectious diseases [1]. Mckeown studied the death rates in United Kingdom during the period from 1900s, and related it to the gain in knowledge and discovery of treatment and prevention technologies for tuberculosis. He demonstrated that nearly half of the decline in TB mortality occurred during a period before the Mycobacterium tuberculosis was discovered as is illustrated in figure 3. Moreover, nearly 80 per cent decline had occurred before streptomycin drug or BCG vaccine was discovered. Overall, he claimed that the major influence on the decline in mortality was a steady rise in 'living standards' and the associated rise in average nutritional intake. Mckeown also identified 'municipal sanitation' and 'hygiene improvements' as a positive but very much secondary factor, which only assumed importance during the last third of the nineteenth century. His theory faced criticism from Szreter [6] who pointed out that tuberculosis mortality could have fallen because people were less weakened by other infections whose incidence declined in response to public health measures. Szreter argued that the elimination of typhoid and cholera testified to the effectiveness of large-scale preventive health measures. In his view, mortality decline was the result of human agency, in the form of expanding preventive public health provisions and services. Without engaging in a debate between Mckeown and Szreter, we can safely conclude that although the preventive health provisions cannot be discredited, however, the gains in standards of living such as sanitation and hygiene did have a significant impact on the health of UK citizens.

Pritchett and Summers (1996) used data on health indicators (infant and

Figure 3: McKeown's Hypothesis



child mortality, and life expectancy) and per capita income, to estimate the effect of income on health [7]. They argue that poor countries should focus on economic growth, and that health improvements will come about on its own as a result of increases in income. According to these authors, in 1990, more than half a million child deaths in the world could have been prevented with better economic performance. However, some believe that the causal direction from health to economic performance is stronger. We will assess the reverse link at both the macro and the individual level paying heed to the effect of ill health at the same time.

Health Leads to Wealth: Evidence at Macro Level

Over the years, there has been a radical shift in thinking about health as an outcome of economic growth to it being seen as an essential ingredient in the development process. One of the widely cited works is by Fogel [8] whose seminal studies have shown improved nutritional status to be critical determinant of secular declines in mortality in Britain over the period 1790 to 1980. Further he attributed about 30 percent of Britain's per capita growth rate during Industrial Revolution to better calorie intake (key for increased labour productivity). But the current evidence is accumulating that other health-related variables, when viewed over a long time span, also have a marked effect on macroeconomic growth. Robert Barro (1997), among others, has shown that life expectancy is significantly correlated to subsequent economic growth [9]. According to his estimates, a 10 per cent increase of life expectancy could raise economic growth by 0.4 per cent yearly. The difference in annual growth, therefore, accounted for by life expectancy between a typical high income country (taking life expectancy at 77 years) and a typical least-developed country (life expectancy at 49 years) is about 1.6 percentage points per year, which cumulates to enormous effects over time [10]. This has a very important implication as it suggests that a large part of the differences in growth rates between countries is attributable to differences in their health status. This relationship holds true for inter-state variations as well. According to an analysis, if the residents of Uttar Pradesh were to have Kerala's life expectancy (nearly 15 years greater in 1995-99), the net effect on the State's output would be 60 per cent higher than its current levels [11]. Various other studies lend support to the above line of thought [12].

Association at the Individual Level

Income effects of health are observed not only at the macroeconomic level but also at the individual level. Improved health contributes to greater income through the following mechanisms. First, the channels for health improvements may be direct, when control of avoidable disease results in higher labour productivity of workers. Several studies have demonstrated that there is a causal effect of iron deficiency on reduced work capacity. Iron plays an essential role in oxidative energy production. Iron-deficiency anaemia (IDA, with a low level of haemoglobin in combination with low iron stores) is associated with, inter alia, a greater susceptibility to disease, fatigue, and reduced cognitive development. IDA affects physical activity through two main pathways. As the haemoglobin level declines, the maximum amount of oxygen the body can use (aerobic capacity) also declines. As iron stores become depleted, the amount of oxygen available to the muscles declines, reducing the individual's endurance and causing the heart to work harder for the same activity.

A number of studies provide evidence for improved work capacity, efficiency and productivity at individual level as a result of nutritional improvement [13]. In a randomized controlled study, female cotton mill workers in China who received iron supplementation for 12 weeks, were found to have a 5 per cent increase in gross and net energy efficiencies, compared to the controls who received a placebo. Treatment led to significantly reduced heart rates and a 17 per cent increase in production efficiency. Similarly, female tea plantation workers in Sri Lanka who received iron supplementation did not increase their output but showed an increase in other voluntary activities. A longitudinal study of male rubber workers in Indonesia provides the strongest evidence that iron status causally affects economic productivity. These results suggest that iron supplementation can raise the output of workers with IDA by around 20 per cent. This is a very large effect.

Second, there is also clear evidence that health improvements result in increased learning, with good health contributing to school attendance and better educational performance; eventually, this translates into greater productivity of a more educated workforce [14]. This relationship is supported by empirical evidence. Bhargava (1997) analysed a comprehensive longitudinal survey of Tanzanian school children and found that the health and nutritional status were important predictors of cognitive and educational achievement

test results. Balasz et al. (1986) and Pollitt (1997; 2001) have reviewed the studies that link nutrition and brain development in children. In most of these studies, deficits in key nutrients (iron, vitamin A) are associated with deficits of cognitive ability [10].

The Economic Costs of Poor Health

Health is the only productive asset of the poor and any disease is likely to hit them the hardest. Poor health reduces the productivity of the individuals; leads to higher number of absent days from work, both working to reduce the lifetime earnings of the households. Not only that, given that in most low and middle income countries, individuals themselves have to bear health expenditures (as risk pooling mechanisms are not well developed) poor health falls as a double-edged sword on the impoverished. A recent study from North India reported that the hospitalization expenditure accounted for 19 per cent to 24 per cent of total annual consumption expenditure for the household [15]. The same study reported that nearly 37 per cent to 55 per cent households incur health expenditure which is in excess of 10 per cent of total consumption expenditure, which is considered as catastrophic health expenditure leaving little with the household to fend off other basic subsistence needs. Another recent analysis found that out-of-pocket spending raises the population living below poverty line (at US$ 1.08 per capita) by 3.7 per cent households, which translates to nearly 37 million individuals [16]. Overall, 4.7 per cent of total household expenditure is spent out-of-pocket on health spending [17]. To add to it, owing to the debilitating impact of health expenditures, the poor are most likely to not seek care unless it is absolutely necessary. As per NSSO estimate, nearly 30 per cent rural and 20 per cent of urban households who did not seek health care for a recent self-reported morbidity, cited lack of financial resources as the reason for non-utilization of medical care [18].The economic consequences of a disease episode on an individual household can be magnified if the cost of dealing with the illness forces a household to spend so much of its resources on medical care that it depletes its assets and is forced to incur debts. It is estimated that more than a third (33.7) of hospital treatment costs are paid by borrowing money [19].

Health care expenditures have a catastrophic impact on the household. Because of incurring high health care costs, poor households have little money left to meet other basic subsistence needs which are essential for development such as education, housing, transportation etc. In a recent analysis for the impact of health care expenditures for non-communicable disease in India, it was found that about 25 per cent of families with a member with CVD and 50 per cent with cancer experience catastrophic expenditure and 10 per cent and 25 per cent respectively are driven to below poverty line [20]. The odds of incurring catastrophic hospitalization expenditure were nearly 160 per cent higher with cancer than the odds of incurring catastrophic spending when hospitalization was due to a communicable disease.

The costs of disease are humungous when analysed at the macro level. An econometric study by Bloom et al. found that more than half of Africa's growth shortfall relative to the high-growth countries of East Asia could be explained statistically by disease burden, demography and geography, rather than by more traditional variables of macroeconomic policy and political governance [21]. High prevalence of diseases such as malaria and HIV/AIDS are associated with persistent and large reductions of economic growth rates. High malaria prevalence, for example, has been shown to be associated with a reduction of economic growth of 1 percent per year or more [10].

A U.N. study [22] estimated HIV/AIDS would cost the Cambodian economy $2 billion by 2006. Much of this economic decimation results from a huge decline in labour force (90 percent of Cambodia's AIDS cases are between the ages of 20 and 49 years of age). Losses are therefore not limited to any one sector as a result – the country will likely see a significant decline in the production of export crops, weakening the Cambodian agricultural sector and reducing foreign capital flow. A recent study [23] measuring the burden of disease and economic consequences of tuberculosis in the Philippines estimated the loss in wages to the country annually from TB to be approximately $142 million. Furthermore, $485 million per year are estimated to be lost in foregone income because of premature TB deaths in the country. The Philippines report estimated treatment costs (including cost of TB drugs, physician fees, and lab tests) for the entire affected population to be approximately $9 million – a mere fraction of the total economic losses.

The Commission on Macroeconomics and Health observed that even though there are only a few identifiable diseases afflicting individual lives, for which low cost interventions are available; what is worrisome is that they remain beyond the reach of the poor. As a result, a million lives are lost each year imposing staggeringly high social and economic costs on the society. Because disease weighs so heavily on economic development, investing in health is an important component of an overall development strategy. This is especially true in poor countries where the burden of disease is very high.

A recent review of evidence for macroeconomic impact of non-communicable disease in India found significant economic losses reported at national and state level as found by different studies enlisted in the table 2 [24].

Overall, in macroeconomic terms, most of the estimates suggest that the NCDs in India account for an economic burden in the range of 5-10 per cent of GDP which is significant and slowing down GDP, thus, hampering development.

Health as a Human Right

Apart from the economic case for investing in health, there is a strong moral justification that is particularly appealing. Health is valuable in its own right as it directly affects the well-being of the individual. The Millennium Poll, a huge worldwide

Table 2: Macroeconomic Impact of Non-Communicable Diseases (NCDs) in India

Study	NCD	Geographic Area	Methods	Findings
Gupta I et al (2006) [25]	CVD	Kerala	Direct and Indirect Cost of Illness	Economic burden amounts to 20 per cent of State Domestic Product
Leeder et al (2004) [26]	CVD	Brazil, India, China, Russia and South Africa	Used WHO Burden of Disease data to estimate economic burden	CVD losses amount to USD 30 billion per year
Popkin et al (2001) [27]	CVD, cancer and diabetes	India	Used NSSO (1995) and Mahal et al (2002) data	Health care costs for three conditions amount to USD 13.9 billion in 1995-96, or 0.4 per cent of GDP
Abegunde et al (2007) [28]	CVD, diabetes, cancer and respiratory diseases	India	RGI mortality statistics and Mathers and Loncar (2006) projections	GDP loss amounting to USD 1.35 billion in 2006; cumulative loss of USD 17 billion by 2015
EIU (2007) [29]	Diabetes	India, US, UK and Denmark	Direct medical costs and productivity loss	GDP lost as a result of diabetes amounting to 2.1 per cent in India, 1.2 per cent in USA, 0.4 per cent and 0.6 per cent for UK and Denmark respectively
Shobhana et al (2000) [30]	Diabetes	Chennai, Tamil Nadu	Primary OOP analysis of 600 patients	Hospitalization expenditure per case of INR 5,300.
Grover et al (2005) [31]	Diabetes	North India	Primary analysis of 50 patients	INR 10,000 is the average cost of care for a patient
Murthy et al (2005) [32]	COPD	Hyderabad, Andhra Pradesh	Large scale community study	Treatment costs for a severe COPD case was INR 33,000 in 2001; overall COPD leads to aggregate national health care costs of INR 169 billion in 2001.
Mohan (2004) [33]	Road Traffic Injuries	India	Adjusting previous estimates for undercount of burden	Economic effects of RTI amount to 3.2 per cent of GDP
Gumber (1995) [34]	Road Traffic Injuries	Five Indian states	NSSO (1986-87) data	Average OOP cost per hospitalization range from INR 621 to INR 1740
Thomas et al (2004)	Road Traffic Injuries	Bangalore, Karnataka	Household survey	Average expenditure/ loss of earnings per case of INR 18,000
Mohanan (2008) [35]	Road Traffic Injuries	Karnataka	Secondary data analysis	Households cut on other consumption and education spending

Source: Thakur JS et al (2011) [24]

survey prepared for the Millennium Report of the Secretary-General of the United Nations, revealed that health consistently ranked number one in the things men and women desired in life. Recently, the international community has begun to devote more attention to the right to the highest attainable standard of health ("the right to health"). The right to health is enshrined in binding international treaties and constitutions. Closer home, the National Health Bill is currently under consideration. The Bill aims to "…provide for protection and fulfilment of rights in relation to health and well-being, health equity and justice".

A chief advocate of the cause, Amartya Sen proposes as an ultimate criterion for development in society that we try to maximise people's freedom to live the lives they have reason to value, allowing them to choose their own 'life plan'. On the one hand, the freedom to be healthy determines other capabilities: as Sen puts it, "we can do very little indeed if we are not alive" [36]. On the other hand, the freedom to be healthy depends on other capabilities: on the freedom to be well nourished, to be educated, and to secure an income, and so on. In other words, 'different kinds of freedom inter-relate with one another and freedom of one type may help greatly in advancing freedom of another type' [36] . Since poor health is seen as an obstacle in achieving that freedom, it is deemed important to try and achieve an equal distribution of circumstances that influences an individual's probability of being healthy. He presents an example comparing the per capita incomes and survival rates of African Americans in USA vis-à-vis American white population and Indians in Kerala. He finds that even though the income per capita of African Americans in the United States of America is considerably lower than that of the American white population, they are, many times richer in income terms than the people of Kerala (even after correcting for cost-of-living differences). However, African Americans have decidedly lower survival rates than the even poorer Indians in Kerala. So, it is not only the case that American blacks suffer from relative deprivation in terms of income per head vis-à-vis American whites, they also are absolutely more deprived than the low income Indians in Kerala. Thus, he emphasizes that these contrasts are embedded in a society's structure and community relations such as medical coverage, public health care, elementary education, law and order, prevalence of violence, determining who enjoys and who is denied the freedoms.

The moral motivation to direct health policy in a certain equitable way thus, becomes paramount under the rights-based approach, particularly in poorer countries seeking to decide on the most appropriate distribution of limited resources [37]. Regardless of whether one is moved by the efficiency or the equity argument, the desirability of the goal of achieving better population health status remains undisputed. Health inequity i.e. unfair, unjust and avoidable causes of ill health, resulting in inequalities in the health functioning of individuals, social groups, and national populations, raises fundamental social justice questions [38].

Overall, to conclude there could be multiple arguments, for advocating greater investment of resources in health. While one set of arguments build the case based on economic benefits of investing in health sector, such arguments may still fall short in view of long standing nature of gains from investing in health, as compared to much near-term gains in investing in other sectors such as industries, agriculture, service sector etc., Hence the rights based arguments which dwell on the need for investing in health as a basic requirement for overall development remain very important and need to be mooted. Moreover, these arguments are necessary for bringing health into political agenda in future.

Readings

1. McKeown T, *The Modern Rise of Population*. 1976, New York: Academic Press.
2. Preston SH, *The Changing Relation between Mortality and Level of Economic Development.* Population Studies, 1975. **2**: p. 231-48.
3. Wilkinson, R.G., *Income distribution and life expectancy.* BMJ, 1992. **304**(6820): p. 165-8.
4. Deaton, A., *Health, Inequality and Economic Development.* Journal of Economic Development, 2003. **41**: p. 113-58.
5. CSDH, *Closing the gap in a generation: health equity through action on social determinants of health. Final report of the Commission on Social Determinants of Health*. 2008, World Health Organization: Geneva.
6. Szreter S, *The importance of social intervention in Britain's mortality decline 1850-1914: A reinterpretation of the role of public health.* Soc Hist Med, 1988. **1**: p. 1-38.
7. Pritchett L, S.L., *Wealthier is healthier.* Journal of Human Resources, 1996. **31**: p. 841-68.
8. Fogel, R.W., *New findings on secular trends in nutrition and mortality: Some implications for population theory.* in M. R. Rosenzweig and O. Stark (eds.), Handbook of Population and Family Economics 1993 **1a**: p. 433-481.
9. Barro R, *Determinants of Economc Growth: A Cross Country Empirical Study*. 1997: MIT Press.
10. WHO, *Macroeconomics and Health: Investing in Health for Economic Development.*, in *Report of the Commission on Macroeconomics and Health*. 2001, World Health Organization: Geneva.
11. MoHFW, *Report of the National Commission on Macroeconomics and Health.* 2005, Ministry of Health and Family Welfare: New Delhi, India.
12. Mahal A and Duraisamy P, *Health, Poverty and Economic Growth in India*, in *Report of the National Commission on Macroeconomics and Health*. 2005, Ministry of Health and Family Welfare: New Delhi.
13. Thomas, D. and E. Frankenberg, *Health, Nutrition and Prosperity: a Microeconomic Perspective.* Bull World Health Organ, 2002. **80**(2): p. 106-13.
14. Bloom, D.E. and D. Canning, *Policy forum: Public Health. The Health*

and Wealth of Nations. Science, 2000. **287**(5456): p. 1207, 1209.

15. Prinja, S., P. Kanavos, and R. Kumar, *Health care inequities in north India: Role of public sector in universalizing health care*. Indian J Med Res, 2012. **136**(3): p. 421-31.
16. van Doorslaer, E., et al., *Effect of payments for health care on poverty estimates in 11 countries in Asia: an analysis of household survey data*. Lancet, 2006. **368**(9544): p. 1357-64.
17. Gupta I, *Out-of-pocket Health Expenditures and Poverty: Estimates from NSS 61st Round.Report of the Expert Group on Methodology for Estimation of Poverty. Chaired By Prof. Suresh D. Tendulkar*. 2009, Planning Commission: New Delhi.
18. NSSO, *Morbidity, Health Care and Condition of the Aged*. 2006, Ministry of Statistics and Program Implementation, Government of India: New Delhi.
19. Mahal A, Karan A, and Engelgau M, *The economic implications of noncommunicable disease for India*, in *Health, nutrition and population (HNP): Discussion paper*. 2010, World Bank: Washington, DC.
20. Mahal A, Karan A, and Engelgau M, *The Economic Implications of Non-Communicable Diseases for India. Health, Nutrition and Population (HNP) Discussion Paper*. 2010, World Bank: Washington, DC.
21. Bloom DE and Sachs JD, *Geography, Demography, and Economic Growth in Africa*. Brookings Papers on Economic Activity, 1998. **2**: p. 207-295.
22. UN, *Synergy Project-Cambodia and HIV/AIDS*. 2001: Washington, DC.
23. *Philippines TIPS Project.Measuring the Burden of Disease and Economic Consequences of Tuberculosis in the Philippines*. 2003, Philippines TB Initiatives for the Private Sector Project.: Pasig City, Phillippines.
24. Thakur, J., et al., *Social and Economic Implications of Non-Communicable Diseases in India*. Indian J Community Med, 2011. **Suppl (1)**: p. S13-S22.
25. Gupta, I., S. Kandamuthan, and D. Upadhaya, *Economic impact of cardiovascular diseases in India*. 2006, Institute of Economic Growth University of Delhi: New Delhi.
26. Leeder, S., et al., *A Race against Time: The Challenge of Cardiovascular Disease in Developing Countries*. 2004: New York.
27. Popkin, B., et al., *Trends in diet, nutritional status, and diet-related non-communicable diseases in China and India: The economic costs of nutrition transition*. Nutrition Reviews, 2001. **59**: p. 379-90.
28. Abegunde, D.O., et al., *The burden and costs of chronic diseases in low-income and middle-income countries*. Lancet, 2007. **370**(9603): p. 1929-38.
29. EIU, *The Silent Epidemic: An Economic Study of Diabetes in Developed and Developing Countries*. 2007, Economic Intelligence Unit: London.
30. Shobhana, R., et al., *Expenditure on health care incurred by diabetic subjects in a developing country-a case study from southern India*. Diabetes Research and Clinical Practice, 2000. **48**(1): p. 37-42.
31. Grover, S., et al., *Cost of ambulatory care of diabetes mellitus: a study from north India*. Postgrad Med J, 2005. **81**(956): p. 391-5.
32. Murthy, K. and J. Sastry, *Economic Burden of Chronic Obstructive Pulmonary Disease*, in *Background Papers: The Burden of Disease*. 2005, National Commission on Macroeconomics and Health, Ministry of Health and Family Welfare: New Delhi.
33. Mohan, D., *The Road Ahead: Traffic injuries and fatalities in India*. 2004, Transportation Research and Injury Prevention Program, Indian Institute of Technology: New Delhi.
34. Gumber, A., *Burden of injury in India: utilization and expenditure pattern*, in *Working Paper No. 88*. 1997, Harvard University: Boston, MA.
35. Mohanan, M., *Consumption smoothing and household responses: Evidence from random exogenous health shocks*. 2008, Harvard University: Cambridge, MA.
36. Sen AK, *Development as freedom*. 1999, New York: Knopf.
37. Venkatapuram S and Marmot M, *Epidemiology and Social Justice in Light of Social Determinants of Health Research*. Bioethics, 2009. **23**(2): p. 79-89.
38. Sen AK, *Why health equity?* Health Economics, 2002. **11**(8): p. 659-666. ❑

(E-mail :shankarprinja@gmail.com)

YOJANA WEB- EXCLUSIVES

Yojana has launched a new service named 'Web-Exclusives' for the benefit of its readers under which selected articles are put up on the website of Yojana : www.yojana.gov.in. Announcement about the articles under the Web-Exclusives section are carried in the Yojana magazine of the month but these articles are not published in the print version of Yojana.

We are carrying the following articles under the Web-Exclusives section of Yojana on its website:

1. Community Water and Sanitation Services - Udaybhanu Bhattacharya
2. Healthcare Systems & Services: Implications for Marginalised - Archana Sinha
3. Cyberspace: New Security, Law & Order in India - Sachin Kumar
4. School Education for the Disabled - Dr Raman P. Singh

Please send in your comments and suggestions to us on ***yojanace@gmail.com, www.facebook.com/yojanaJournal***

Patents and Beyond

Rory Horner

The history of public health awareness of the impacts of patents in India is a key factor for the success of India's pharmaceutical industry today and for the low prices of medicines in much of the global South. From a public health standpoint, however, the impact of patents has to be considered alongside other key factors which have shaped and continue to influence access to medicines within India

FEW PEOPLE today, particularly in India, would doubt the relevance of pharmaceutical patents for public health. During the late 1990s and early 2000s, amendments were made to India's Patent Act to comply with the World Trade Organization's (WTO) Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement. Global debate ensued, with particular attention to the subsequent impact on India's pharmaceutical industry, known as the "pharmacy of the developing world" for its low-cost supply of medicines across the global South. Here, I suggest that patents continue to be of great significance for the public health consequences of India's pharmaceutical industry. Amidst the hype surrounding intellectual property issues, it is important to be precise about the impact of patents and to avoid overlooking other factors contributing to, and inhibiting, the domestic pharmaceutical industry and access to medicines.

Public Health and Pharmaceutical Patents

Public health within India has benefited considerably from the awareness of the broader impact of patents and the consequent setting of policy in that regard. A succession of post-independence government reports, including the Patents Enquiry Committee 1950, the Pharmaceutical Enquiry Committee 1954 and the Ayyangar Report 1959, recommended that patent protection should be set in line with the level of technical development of the country. Pharmaceutical patents were given special attention due to their key social implications by way of their impact on public health. Ultimately, these recommendations culminated with the 1970 Patents Act, which came into force in 1972, removing product patents and only providing for a short period (five years) of process patents. As is now well known (e.g. Chaudhuri 2005), a substantial domestic pharmaceutical industry emerged from the mid-1970s onwards, leading to a cheaper supply of medicines within India.

The level of awareness of the public health impact of patents, which has involved both government and civil society groups within India, has been almost unparalleled elsewhere and globally influential. In much of the world, the public health impact was relatively overlooked for a long time, with patents seen as a technical issue. India was, however, a leading place of resistance to the global patent law agreement, partly owing to the growing strength of its domestic pharmaceutical industry and also due to the campaigning from the late 1980s of, in particular, the National Working Group on Patent Laws. Although, ultimately the resistance did not prevent

The author is Lecturer in Globalisation, Institute for Development Policy and Management, University of Manchester. An economic geographer by training, his interest is in global production networks, intellectual property rights and the role of the state in development. His dissertation research explored the political economy of the development of India's pharmaceutical industry.

the signing of the TRIPS Agreement in 1994, subsequent developments in South Africa and India led to wider awareness and ultimately formal recognition by the WTO of the public health impact of patents. A legal case between pharmaceutical multinational companies (MNCs) and the South African government, over the latter's efforts to make medicines more affordable, attracted global attention. Then, in early 2001, a leading Indian pharmaceutical company, offered to provide a year's generic supply of anti-retrovirals for US$350 a year as opposed to the $10,000 they had cost until that point. Combined with considerable global mobilization around access to medicines, this initiative highlighted the price difference of generic medicines and has helped transform AIDS from being a killer disease to an issue of chronic management. Shortly after, in November 2001, the Doha Declaration on the TRIPS Agreement and Public Health clarified that the agreement "can and should be interpreted and implemented in a manner supportive of WTO Members' right to protect public health and in particular, to promote access to medicines for all".

In the run up to and since the final amendments in 2005 to make India's Patent Act TRIPS-compliant, the public health connection with patents has continued to command widespread global interest. The pre-TRIPS Indian experience of benefiting from the absence of product patents has been widely invoked as evidence to support arguments against the expansion of patent protection in other developing countries.

In the run up to and since the final amendments in 2005 to make India's Patent Act TRIPS-compliant, the public health connection with patents has continued to command widespread global interest. The pre-TRIPS Indian experience of benefiting from the absence of product patents has been widely invoked as evidence to support arguments against the expansion of patent protection in other developing countries. Policy makers and activists in India and elsewhere have been monitoring potential TRIPS-plus measures, for example those included in the proposed EU-India Free Trade Agreement (FTA), which could provide for more extensive patent protection. Recent policy decisions have also demonstrated a willingness to make use of the public health provisions in India's TRIPS-amended patent law. In 2012, the Indian Controller of Patents issued a compulsory license to a pharmaceutical firm to produce a generic version of the liver and cancer drug, Nexavar. Instead of the original price of Rs. 280,000, the Indian firm is now able to sell the drug at Rs. 8,800 for a month's treatment. In another case involving a multinational, the long-running Novartis-Glivec case, section 3(d) of India's Patent Act was upheld in April 2013, minimising the granting of secondary patents. This reinforced the original 2006 decision to reject the patent on the drug imatinib (for treating a blood cancer), which had allowed Indian generic companies to sell the drug for Rs. 9,000-11,000 for a month's therapy, compared to the previous Rs. 120,000.

Public health interpretations of India's pharmaceutical patent law continue to be reviewed around the world, both by those campaigning for greater patent protection and those looking for more flexibility. Pfizer's Chief Intellectual Property Counsel, Roy Waldron, recently testified before the US House of Representatives that "since many other countries look to India as a leader and as an example, India's actions reverberate far beyond its borders" (Waldron, 2013, 8-9). Evidence is also emerging of learning elsewhere from India's example. The South African Department of Trade and Industries has followed India by incorporating provisions for pre- and post-grant opposition to patent applications in its Draft National Policy on Intellectual Property 2013. Proposals have also been made for reform of the Brazilian patent law (Brazilian Center for Strategic Studies and Debates 2013) by eliminating patent extensions in a manner comparable to India.

The history of public health awareness of the impacts of patents in India is a key factor for the success of India's pharmaceutical industry today and for the low prices of medicines in much of the global South. From a public health standpoint, however, the impact of patents has to be considered alongside other key factors which have shaped and continue to influence access to medicines within India.

Pharmacy to the Developing World

As well as the removal of product patent protection, the creation of a domestically-owned pharmaceutical industry has involved a wider array of factors and strategies. Many other countries (e.g. Brazil) did not have pharmaceutical product patent protection yet did not develop domestic pharmaceutical industries to the same degree as in India. The presence of *domestic capabilities*, arising out of earlier efforts to develop public sector units (most notably Indian Drugs and

The presence of domestic capabilities, arising out of earlier efforts to develop public sector units (most notably Indian Drugs and Pharmaceuticals Limited (IDPL)), was crucial to take advantage of the 1970 Patent Act. Many smaller and medium-sized firms also benefited from the broader institutional environment that emerged with such 1970s initiatives as the 1973 Foreign Exchange Regulation Act (FERA) and the subsequent New Drug Policy (1978), both of which limited the activities of foreign pharmaceutical MNCs within India.

Pharmaceuticals Limited (IDPL)), was crucial to take advantage of the 1970 Patent Act. Many smaller and medium-sized firms also benefited from the broader institutional environment that emerged with such 1970s initiatives as the 1973 Foreign Exchange Regulation Act (FERA) and the subsequent New Drug Policy (1978), both of which limited the activities of foreign pharmaceutical MNCs within India. Policy initiatives in patent law and foreign investment did not require extensive bureaucratic resources to be implemented, yet acted as significant policy favours to the domestic industry.

The states also suffered from a lack of resources in both drug quality control administration and environmental control. Charged with enforcing drugs standards, the regional states were responsible for some very variable implementation. Consumers potentially benefited from the decline in prices of medicines, but the state lacked capacity to implement price and quality controls and thus, struggled to fully translate industrial development into an improved supply of medicines for the Indian population.

As a result and unlike other industries in India, pharmaceuticals was less affected by the state's limited capacity to implement its industrial policy. Although, some recent accounts of the industry can overlook these broader factors, the absence of product patents and the fostering of a domestically-owned pharmaceutical industry must be situated within a broader context of what, in retrospect, can be seen as a "*strategic decoupling*" from foreign pharmaceutical MNCs during the 1970s and 1980s.

In terms of maximising the benefits from having a domestic pharmaceutical industry, however, the state lacked – and to some extent continues to lack - the capacity to successfully implement the more directly public health-oriented policies affecting price and quality controls. Many firms diversified into non-essential products as part of a price control avoidance strategy. Such initiatives may have had some unintended consequences that proved beneficial for industrial development, yet, they failed to meet the intended public health objectives. The states also suffered from a lack of resources in both drug quality control administration and environmental control. Charged with enforcing drugs standards, the regional states were responsible for some very variable implementation. Consumers potentially benefited from the decline in prices of medicines, but the state lacked capacity to implement price and quality controls and thus, struggled to fully translate industrial development into an improved supply of medicines for the Indian population.

Pharmaceuticals and Public Health post-TRIPS

During the last decade, public health concerns arising directly out of the change in patent law do not appear to have been materialised to the extent that worst fears expected. Many drugs are already off patent in India. Considerable awareness of the broader impact of patents has also helped to bring in public health safeguards to the amended Indian Patent Act, and civil society pressure has helped to ensure that they are used. At the same time, the substantial level of technical capabilities built up in the pre-TRIPS period has facilitated the adaptation of the pharmaceutical industry.

Concerns have been raised for access to medicines from other developments in the post-TRIPS period, for example, as a result of a changed relationship between Indian and multinational pharmaceutical companies. With more extensive product patent protection in place in India, MNCs are now less concerned about losing their technology to, and are thus, engaged in greater collaboration with Indian companies. The involvement of MNCs, attracted to India by the growing market and the local skills and infrastructure available, has also been facilitated by broader processes of liberalisation, including the continuing easing of restrictions on inward investment in India. While partnering with Indian firms is one way to access these resources, acquisition is another route. Indian firms are increasingly supplying multinational pharmaceutical companies as part of a broader focus on global markets, particularly North America and Europe, which provide greater revenue-generating opportunities. With extensive patent protection already in place in those markets, such an orientation cannot be explained directly due to a change in patent law in India. However, with the increasing orientation of Indian pharmaceutical companies towards becoming 'the pharmacy of the developed world', the possibility arises that the degree of generic competition within India may be reduced, leading to higher prices, not only domestically, but perhaps across the developing world.

It is encouraging that the Health Ministry is therefore considering pharmaceutical foreign direct investment policy in relation to its significance for public health. History recognises the value of retaining domestic capabilities, and also suggests a cautionary approach not just for industrial development, but also for creating a more public-health oriented patent law.

In the light of recent acquisitions by pharmaceutical MNCs, the debate has resurfaced as to whether restrictions on foreign direct investment should be re-introduced (Maira Committee 2011). It is encouraging that the Health Ministry is therefore, considering pharmaceutical foreign direct investment policy in relation to its significance for public health. History recognises the value of retaining domestic capabilities, and also suggests a cautionary approach not just for industrial development, but also for creating a more public-health oriented patent law.

"Disciplining", or regulatory, functions at both the Centre and the State levels also need to be addressed, despite improved co-ordination in some support activities. The special export promotion agency, Pharmexcil, founded in 2005, and the special Department of Pharmaceuticals, set up in 2008, coordinate promotion activities for the industry. Yet, with respect to price and quality controls, the capacity of the state to effectively implement its desired policies remains inadequate, particularly in relation to public health concerns. Government reports continue to note a lack of coordination between different ministries in relation to public health policy (Working Group on Drugs and Pharmaceuticals 2011). A key area of concern is the possibility of a widening gap between the industrial success of pharmaceuticals and the level of access to medicines within India.

Patents in the Broader Context

Government, industry and civil society groups in India have been pioneering in awareness, enacting and responding to policies based on the public health impacts of pharmaceutical patents. However, to maximise the public health benefits of the thriving Indian pharmaceutical industry, policymakers need to consider and act upon a variety of issues. A wide range of factors, including, but not limited to patents, have historically played a role in the development of the industry and continue to pose both threats and opportunities for economic development and for improved access to medicines. With major multinational pharmaceutical companies having historically adopted a strategy of forum-shifting in relation to stifling generic competition from India, those seeking to encourage the provision of such medicines may need to go beyond the arena of patents. The relationship with multinational pharmaceutical companies is of particular interest today in this regard, with the maintenance of a domestic pharmaceutical industry of special importance.

For the potential benefit to public health, developing local pharmaceutical industries is now a key policy goal elsewhere, notably in Africa. The Indian experience suggests that these policy initiatives will need to focus not just on more public-health oriented patent law but on a wider array of industrial policy interventions to encourage the establishment of local capabilities. The capabilities present among Indian pharmaceutical firms, encouraged by wider industrial policies, were crucial in making use of the opportunity provided by the limited patent protection between 1970 and 2005, and also for subsequently adapting to the reintroduction of product patents and ultimately, contributing to public health in India.

Readings

BusinessLine (2013) US pharma firms lobby to protect patents in India, November 07th. Available online: http://www.thehindubusinessline.com/industry-and-economy/us-pharma-firms-lobby-to-protect-patents-in-india/article5265436.ece

Center for Strategic Studies and Debate (2013) *Brazil's patent reform: innovation towards national competitiveness*, Center for Strategic Studies and Debate, Brasilia.

Chaudhuri, S. (2005) *The WTO and India's pharmaceutical industry: patent protection, TRIPS and developing countries*. New Delhi: Oxford University Press.

Economic Times (2013) Health Ministry to check if Pharma FDI policy mars public health, July 15th. Available from: http://articles.economictimes.indiatimes.com/2013-07-15/news/40590627_1_pharma-fdi-fdi-policy-dipp

Maira Committee (2011) FDI Policy in Indian Pharma Sector, Draft for Discussion at the High Level Committee meeting on 27th September. New Delhi: Government of India. Accessed from: http://donttradeourlivesaway.files.wordpress.com/2012/06/maira-committee-report.pdf

Waldron, R. (2013) Testimony Before the House Committee on Ways and Means Subcommittee on Trade: hearing on US-India trade relations, House of Representatives, Washington D.C. March 13.

Working Group on Drugs and Pharmaceuticals (2011) *Report of the Working Group on Drugs & Pharmaceuticals for the 12th Five Year Plan*. New Delhi: Planning Commission, Government of India. ❑

(E-mail: rory.horner@manchester.ac.uk)

NATIONAL UNIVERSITY OF EDUCATIONAL PLANNING AND ADMINISTRATION

(Declared by the GOI under Section 3 of the UGC Act, 1956)
17-B Sri Aurobindo Marg, New Delhi-110016
Web: www.nuepa.org

ADMISSION NOTICE 2014-15

(i) M.Phil. Programme
(ii) Ph.D. Programme
(iii) Part-time Ph. D. Programme

The National University of Educational Planning and Administration (NUEPA), is engaged in capacity building and research in educational policy, planning and administration. NUEPA, which is fully funded by the Ministry of Human Resource Development, Government of India, offers M.Phil., Ph. D. and Part-time Ph. D. programmes in educational policy, planning and administration from a broader inter-disciplinary social science perspective. The research programmes of NUEPA cover all levels and types of education from both national and international development perspectives. NUEPA invites applications from eligible candidates for admission to its M.Phil., Ph.D. and Part-time Ph.D. programmes for the year 2014-15. While selecting the candidates for admission, NUEPA will follow all mandatory provisions in the reservation policy of the Government of India. Admissions to M.Phil., Ph.D. and Part-time Ph.D. programmes will be made purely on the basis of merit following the prescribed criteria of the University.

Fellowships

Selected candidates for the M.Phil. shall be offered stipend and those selected for Ph.D. shall be offered **NUEPA** fellowship. The NET qualified candidates, who have been awarded Junior Research Fellowship by the UGC and who fulfil the required qualifications, are encouraged to apply.

Eligibility Criteria

Full-time Programmes

(a) A candidate seeking admission to the M.Phil. and Ph.D. programmes shall have a minimum of 55% marks (50% marks for SC/ST candidates and Persons with Disabilities) or its equivalent grade in Master's Degree in social sciences and allied disciplines from a recognized university. Candidates possessing Master's degree in other areas may also be considered if he/she has teaching experience or experience of working in the area of educational policy, planning and administration. (b) A candidate seeking admission to Ph.D. programme shall have an M.Phil. degree in an area closely related to educational planning and administration and/or exceptionally brilliant academic record coupled with publications of high quality. (c) M.Phil. graduates of NUEPA will be eligible for admission to the Ph.D. Programme after due scrutiny by a Selection/Admission Committee, if they obtain a FGPA of 6 or above on the ten point scale.

Part-time Programme

A candidate seeking admission to Part-time Ph.D. programme is required to meet the following criteria: (i) Should possess the educational qualifications as mentioned in Para (a) above; (ii) Currently, should be in full-time employment;(iii) Should be a senior level educational functionary with a minimum of five years work experience in teaching/research in educational policy, planning and administration.

It will be compulsory to attend one-year full-time course work by all part-time and full time candidates.

Mode of Selection

The University reserves the right to decide the number of seats to be filled in the year 2014-15; the criteria for screening of applications; and the selection procedure of candidates for admission to its M.Phil. and Ph.D. programmes. The mode of selection of candidates will be as under:

Initial short-listing of applications will be carried out on the basis of relevance and quality of the brief write-up (in the prescribed format) in the proposed area of research to be submitted along with the application form. Short-listed candidates will be required to appear for a written test and those qualifying in written test will be subjected to personal interviews to assess their motivation and potential leading to final short-listing and preparation of panel of selected candidates, in order of merit.

Candidates must be possessing the eligibility qualification and submit marks statement latest by the time of entrance examination.

How to Apply

Candidates may apply in the prescribed form for admission to M.Phil. and Ph.D. programmes of the University along with three copies of the brief write-up (in the prescribed format) on the proposed research topic of a contemporary issue within the broad framework of educational policy, planning and administration. For further details, please refer to the M.Phil.-Ph.D. Prospectus, 2014-15 of the University.

The application form and the Prospectus can be obtained from NUEPA by remitting a sum of Rs.200/- (Rs.100/- for SC/ST candidates) by demand draft in favour of Registrar, NUEPA, payable at New Delhi if required by Post or purchased in person. The Prospectus can also be downloaded from our website: www.nuepa.org and demand draft of Rs.200/- (Rs.100/- for SC/ST candidates) should be attached with the application at the time of submission to NUEPA.

Last Date of Applications

Application should reach the Registrar, NUEPA, 17-B, Sri Aurobindo Marg, New Delhi-110016 on or before **12 May 2014**. For further details, please visit our website **www.nuepa.org**

Registrar

YE-244/2013

Child Health in India: Some Inconvenient Facts

Ranjan Ray

While in the wake of the recent Food Security Act, considerable attention has been paid to the distribution of food grains to large sections of the population at affordable prices, attention now needs to turn to policy interventions to improve child health and to preventing the transmission of ill health from the mother to her children

DESPITE IMPRESSIVE growth rates during the latter half of the 1990s and the first half of the new millennium, India's performance on health, especially maternal and child health, remains dismal. Good health is important not only as an end in itself, but also for allowing an individual to enjoy a high quality life and contribute productively to a country's economic and social progress. As Dreze and Sen report, as a share of GDP, and as a share of total health expenditure, public health spending in India is not only well below the world average, but more disturbingly, nearly half, that in Sub-Saharan Africa and in the Middle East & North Africa. The topic of health has never received the attention in public discourse and in the media in India that is consistent with its importance.

This article summarizes some salient features of child health in India. The importance of child health is derived from the fact that poor health of infant children, if not corrected in the early days, tends to persist into adulthood. The two features of child health in India that deserve special attention are: (a) India has recorded one of the worst performances on undernourishment and child health, and (b) India's failure to delink maternal health from that of her children that results in transmission of ill health from the mother to her children. Also, while we generally tend to discuss India as a homogenous entity, the regional dimension has been quite important with some regions exhibiting superior progress on child health than other regions. Let us now turn to empirical evidence on these aspects.

Child Health Statistics: Regional Disparities

The three most commonly used measures of child health[2] are height for age, weight for height and weight for age. Low values of these variables define, respectively, stunting, wasting and underweight. The height for age is expressed as a *z* score defined as the difference between the child's height and a recommended norm for a child of that age divided by the standard error of the height values. The weight for height is similarly measured by the *z* score defined as the difference between the child's weight and that recommended for a child with that height divided by the standard error. Traditionally, the recommended norm has been based on anthropometric data collected in the US by the National Center for Health Statistics (NCHS). In response to criticisms of basing the norm on the health data of US children, in recent years, the WHO has based the norm on a more representative sample.

The author is currently Professor of Economics at Monash University in Melbourne, Australia. He has previously been the Professor of Public Economics at the Delhi School of Economics and the Professor and Head of Economics at the University of Tasmania in Hobart, Australia. He is an Associate Editor of the Journal of Human Developments and Capabilities, and is on the editorial board of the Review of Income and Wealth.

Children whose *z* scores for height for age and weight for height fall below-2 are considered to be stunted and wasted, respectively. While height for age is a measure of the long run health status of a child, weight for height and weight for age are measures of the short term health status. Economists have usually taken the weight measures more seriously since low weight is regarded as exposing the child to death. A child is said to be under nourished if her/his *z* score is less than 2, and severely under nourished if her/his *z* score is less than 3. A child's status on under nourishment will depend on the *z* score that is being used. Svedberg

Svedberg (2000) argues that the reliance on only one measure will lead to an under estimation of undernourishment, since it misses children who are considered undernourished by other indices Svedberg (2000) proposes a composite index of anthropometric failure (CIAF) that incorporates all under nourished children, be they wasted and/or stunted and/or underweight. Nandy, *et al* (2005) have shown that for India, the use of CIAF suggests that 59.8 per cent of children in India in 1998/99 are undernourished, while 45.2 per cent , 15.9 per cent and 47.1 per cent children are found to be stunted, wasted and underweight, respectively.

(2000) argues that the reliance on only one measure will lead to an under estimation of undernourishment, since it misses children who are considered undernourished by other indices Svedberg (2000) proposes a composite index of anthropometric failure (CIAF) that incorporates all undernourished children, be they wasted and/or stunted and/or underweight. Nandy, *et al* (2005) have shown that for India, the use of CIAF suggests that 59.8 per cent of children in India in 1998/99 are undernourished, while 45.2per cent, 15.9 per cent and 47.1 per cent children are found to be stunted, wasted and underweight, respectively. In this study, however, we follow the tradition of using the conventional measures of stunting and wasting to measure under nutrition.

Neo-natal mortality (NM) is defined as the number of deaths during the first 28 completed days of life per 1,000 live births in a given year or period. Mortality during neonatal period is considered a good indicator of both maternal and newborn health and care. Infant Mortality (IM) is defined as the number of deaths (1 year of age or younger) per 1000 live births. IM reflects the state of medical services at the time of the birth of the child. Child Mortality (CM) is defined as the number of deaths of children (5 years of age or younger) per 1000 live births.

Maitra and Ray's study (2013) was based on the information contained in the second and third rounds of the National Family Health Surveys (NFHS-2-3). NFHS-2 was conducted in 1998-99 in 26 states of India with extensive information on population, health and nutrition with an emphasis on women and young children. NFHS-3 was carried out in 2005-06 with added information on the anaemic status of children. The present study takes advantage of the disaggregated information by states to pay special attention to the nutritional status of women and infant children in West Bengal over the period spanned by NFHS-2 and NFHS-3 and compare the state's performance with that in the rest of India. The NFHS data sets also provide information on the educational status of the child's mother and the wealth status of the child's household. These are used to provide evidence on the questions on whether maternal education and household affluence have any impact on the child's health status.

Maitra and Ray (2013) have compared the average *z*- scores of children (0 – 3 years) in West Bengal with India (overall) and the different regions. They have also presented and compared the corresponding stunting and wasting rates between the various regions in India with special attention paid to how West Bengal fares with respect to the rest of the country. It is clear that, along with the rest of India, West Bengal experienced an improvement in child stunting and a worsening in child wasting during the period, 1998-1999 to 2005-2006. Neither in terms of stunting, nor in terms of wasting, does West Bengal fare any worse than the all India average. Indeed, West Bengal fares much better than the rest of Eastern India on stunting, though less so on wasting. Southern India fares the best among the regions especially on stunting, Eastern and Northern India fare the worst.

Maitra and Ray, have further presented the "height for age" and the "weight for height" *z*-scores in the various regions along with that in West Bengal and the country as a whole along with corresponding rates for child stunting and wasting in the last two rounds of NFHS. These statistics confirm a statistically significant improvement in child stunting in most regions including West

...along with the rest of India, West Bengal experienced an improvement in child stunting and a worsening in child wasting during the period, 1998-1999 to 2005-2006. Neither in terms of stunting nor in terms of wasting, does West Bengal fare any worse than the all India average. Indeed, West Bengal fares much better than the rest of Eastern India on stunting, though less so on wasting. Southern India fares the best among the regions especially on stunting, Eastern and Northern India fare the worst.

Bengal, and a statistically significant worsening in child wasting in most regions again including West Bengal. The improvement in stunting and the

deterioration in wasting in West Bengal during this most recent period, 1998-99-2005-06 was highly significant (at 1 per cent significance level), consistent with the all India picture. Note, however, that in terms of magnitude, while West Bengal's improvement in stunting was lower than that in the Eastern region as a whole, the deterioration in wasting outstripped that in the East and in India (as a whole).

The neo-natal, infant and child mortality rates in the two NFHS rounds, at all India level and disaggregated by regions along with that in West Bengal,

It is interesting to note that, while South outperformed the rest of the country, especially, West Bengal on child health, the mortality rates in the South with respect to NM, IM and CM, are no better than in West Bengal- in fact, marginally worse. This suggests that while the quality of medical services in the form of neo-natal and post-natal care in West Bengal compared quite favourably with the rest of the country recording some of the lowest mortality rates in all three categories, the same cannot be said of the state of child health in West Bengal vis a vis the rest of India, especially South India.

have been reported and analysed in Maitra and Ray (2013). The all India figures show a statistically significant improvement (i.e. decline) in all the three types of mortality rates between 1998-09 to 2005-06, as do North, South and East India. However, West Bengal is an exception. There was no noticeable change in either neo-natal or infant mortality rates and a very weak improvement in child mortality during this period. The silver lining was that for all the three types of mortality, the rates in West Bengal were much lower than in the country as a whole. It is interesting to note that, while South outperformed the rest of the country, especially, West Bengal on child health, the mortality rates in the South with respect to NM, IM and CM, are no better than in West Bengal- in fact, marginally worse. This suggests that while the quality of medical services in the form of neo-natal and post-natal care in West Bengal compared quite favourably with the rest of the country recording some of the lowest mortality rates in all three categories, the same cannot be said of the state of child health in West Bengal vis a vis the rest of India, especially South India. It shows that the mortality rates in West Bengal are no worse than in the rest of India- in fact, most significantly, they are marginally better than in South India which reverses the result on child health. Note, however, that while the South witnessed a sharp improvement in the mortality rates during the period spanned by the NFHS 2 and NFHS 3, there was hardly any change in West Bengal. There was a small increase in neo-natal mortality rates in West Bengal.

Child Health: India, China and Vietnam

Ray and Sinha (2011) have compared the child health statistics between China, India and Vietnam. Ray and Sinha (2011) present the head count rates of "stunted" and "wasted" children aged 0-36 months in the three countries, with a child defined as "stunted" and "wasted" if the *z*-scores for "height for age" and "weight for height" are less than-2, respectively. China does much better than both India and Vietnam on these measures of child health. Vietnam recorded an impressive reduction in the rates of stunted children over the period, 1992-98, for which the anthropometric information is available. However, this did not extend to the head count rates of wasted children where the situation worsened in Vietnam. India's record is the worst on both measures. According to our calculations on NFHS-3 data, nearly 2 in 5 children were "stunted" and 1 in 5 "wasted" in India in 2005-06. The accuracy of our calculations is confirmed by the fact that these rates of stunting and wasting are very close to the figures reported in International Institute of Population Sciences (2007) based on the same NFHS-3 data. These rates are much higher than those in China and Vietnam, and showed hardly any progress on child health in India during the period spanned by NFHS1-3. In contrast, both China and Vietnam recorded significant progress on child stunting. Note, however, that child stunting remains a serious issue in all the three countries with one in five Chinese children still suffering from stunting in 2006. The increase in child wasting in both China and Vietnam over this period is also of concern though, they are still below the high rates of child wasting prevailing in India.

Mishra and Ray (2011) present evidence on the intergenerational transmission of undernourishment from mother to child by reporting the correlation magnitudes at household level between mother's BMI and the proportion of children, aged 0–3 years, in the household who are stunted or wasted. A comparison

...the children of undernourished mothers in India are more likely to be wasted than other children. The strength of this correlation has increased in India over the period, 1998-99–2005-6. This reflects a policy failure in India to delink mother's health from that of her off springs through a nutritional program of antenatal and post natal care. India did not have in place the interventionist programmes like in China directed at nutrition such as the National Plan of Action for Nutrition

of the NFHS-3 figures with those from CHNS 2006 shows that there is evidence of a significant negative association between mother's BMI and child wasting in India, but not in

China. In other words, the children of undernourished mothers in India are more likely to be wasted than other children. The strength of this correlation has increased in India over the period, 1998-99 to 2005-06. This reflects a policy failure in India to delink mother's health from that of her offsprings through a nutritional program of antenatal and post natal care. India did not have in place the interventionist programmes like in China directed at nutrition such as the National Plan of Action for Nutrition.

Conclusion

This article presents some features of child health in India. This topic has, until recently, not received the sort of attention that its importance demands in the context of development. While in the wake of the recent Food Security Act, considerable attention has been paid to the distribution of food grains to large sections of the population at affordable prices, attention now needs to turn to policy interventions to improve child health and to preventing the transmission of ill health from the mother to her children.

Endnotes

1 This section is based on Maitra and Ray (2013).

2 See Svedberg (2000) for a comprehensive discussion of the measures of under nutrition.

3 Between the 2 weight measures, weight for age will show higher rate of malnourishment than weight for height since the latter, unlike the former, controls for age.

4 To be specific: *North* consists of Haryana, Himachal Pradesh, Madhya Pradesh, Punjab, Rajasthan and Uttar Pradesh; *South* consists of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu; *East* consists of Assam, Bihar, Orissa and West Bengal; and finally *West* consists of Gujarat and Maharashtra.

Readings

Jean Dreze and Amartya Sen, (2013), An Uncertain Glory: India and its Contradictions, Princeton University, Princeton and Oxford.

International Institute of Population Sciences (2007), ORC Macro International. National Family Health Survey (NFHS-3), 2005-06: India, Vol I and Vol II. Mumbai, India: IIPS.

Pushkar Maitra and Ranjan Ray (2013), Child Health in West Bengal: Comparison with Other regions in India, *Economic and Political Weekly*, Vol. VLVIII, No. 49, 50-58.

Ankita Mishra and Ranjan Ray (2010), Multi-dimensional deprivation in the awakening giants: A comparative study on micro data, Working paper no. 53-10. Melbourne:Economics Department, Monash University

S. Nandy, M. Irving, D. Gordon, SV Subramanian and DV Smith (2005), "Poverty, child nutrition and morbidity: new evidence from India", Bulletin of the World Health Organisation, 83(3), 210-216.

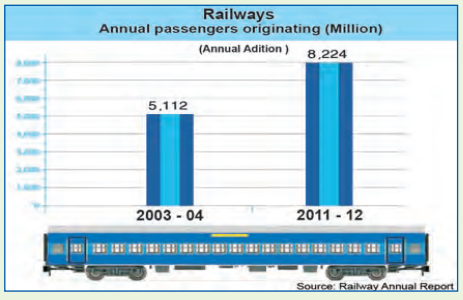
Ranjan Ray and Kompal Sinha. (2011), " Multidimensional Deprivation in China, India and Vietnam: A Comparative Study on Micro Data", Discussion paper, 06/11, Economics Department, Monash University.

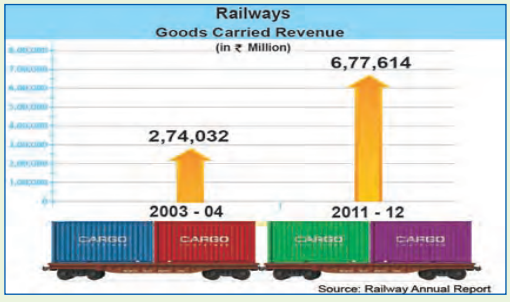
Peter Svedberg (2000), Poverty and Under nutrition: Theory, measurement and policy, Oxford India Paperbacks, New Delhi. ❑

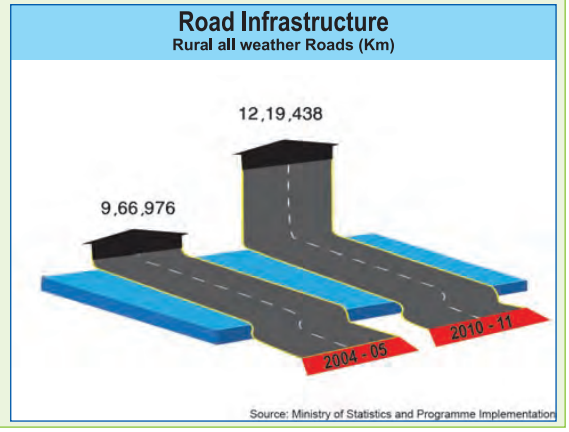
(E-mail :Ranjan.ray@monash.edu)

Infrastructure

- Indian Railways is one of the world's largest rail network systems today carrying 8,224 million people in a year.
- More than 2 lakh kilometers of new roads have been added to the rural road network.
- Allocation for Pradhan Mantri Gram Sadak Yojana has been increased by 88% in the 12th Five Year Plan to further improve rural connectivity.
- 17,394 kms of highways were built or upgraded in the last 9 years by the National Highways Authority of India.
- More than 20,100 km all-weather roads have been constructed/upgraded and an expenditure of over ₹6,450 crore has been incurred during 2012-13.







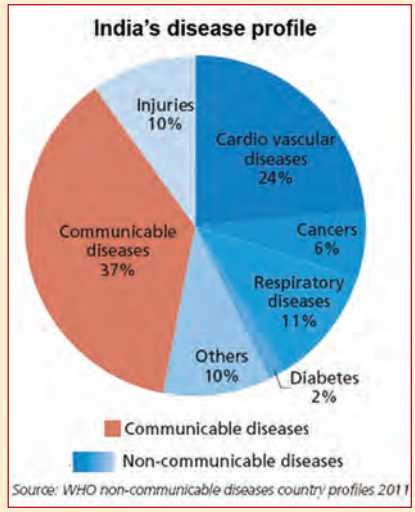
Non-Communicable Diseases and Development in India

The United Nations High Level Meeting on the Prevention and Control of NCDs in 2011 recognized NCDs as a major development issue in its political declaration. As an active contributor to this global meeting and its commitments, Government of India needs to sufficiently address NCDs in its development programmes.

Development in India

Despite being one of the ten fastest growing economies of the World, India is home to over one third of the world's poor people. India occupied 65th position out of 79 developing countries in the Global Hunger Index (GHI) in 2012. 43.5 per cent of Indian children under five years of age are underweight. India ranks 134 among 187 countries in the Human Development Index (HDI), which assesses countries in terms of their long-term progress in health, education and income indicators.

According to the United Nations Secretary General's Millennium Development Goals (MDGs) Report of 2012, which assesses the regional progress on the eight MDGs, India has made progress in some areas, but it is likely to fall short of the target related to maternal health. The report further reveals that as many as 237 million Indians continue to live in hunger even as the country strives to meet the first MDG of lowering extreme levels of poverty by half between 1990 and 2015.



Socio-economic Determinants of NCDs

Industrialisation & Urbanisation: According to the United Nations Department of Economic and Social Affairs' Expert Paper on obesity and chronic diseases, migration from rural to urban areas result in a shift away from producing one's own food, that was traditionally high on grains, fruits and vegetables and low in fat, to reliance on purchased, processed food that is high in energy, sugar, salt and fat. This also means moving away from rural societies where physical activity is needed for agricultural production, into urbanized, industrialized communities where the demand for physical labour, activity and energy declines. Thus, industrialization and urbanization, widely held as the indicators of economic development, could lead to changing lifestyles and dietary patterns, thus serving as key determinants of NCDs.

Poverty is a key driver for NCDs, which in turn exacerbates poverty, thus creating a vicious cycle. The NCD risk factors, such as tobacco use occur at a higher rate among the poor and marginalized people. In a cross sectional survey (1992-1994) of the Mumbai Cohort study, risks of tobacco use were higher among illiterate participants than among college educated participants; unskilled male workers and unemployed individuals were more at risk than professionals. Tobacco use displaces the limited income of poor-income households and reduces their purchasing capacity to secure more basic necessities such as food, shelter and education, perpetuating a cycle of poverty.

Globalization plays a critical role in altering the availability of goods and the living environment resulting in nutritional transitions, lifestyle changes and reduction in physical activity. The problem is accentuated in developing countries that suffer a 'double burden' from pre-existing undernutrition combined with the emerging burden of obesity and chronic diseases.

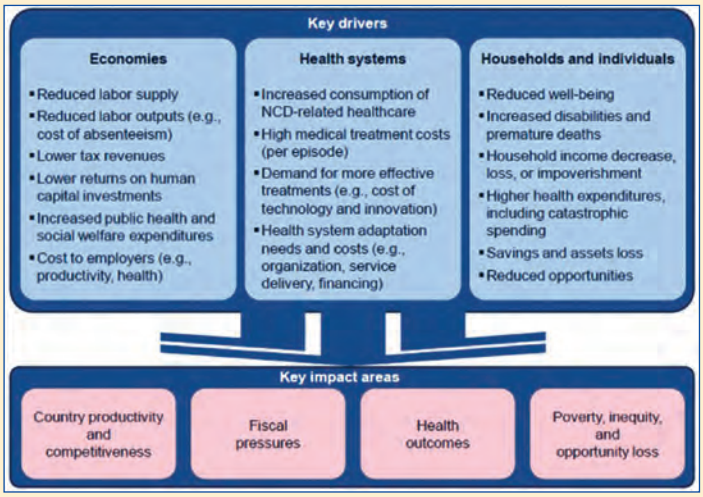
NCDs and Development Challenges

The chronic nature of NCDs has long-term developmental impacts on households' economy, children's nutrition and education, health care system, and national economy.

Households' Economy: NCDs have a negative impact on household economy. One measure is prevalence of catastrophic healthcare expenditures, i.e. any healthcare expenditure which amounts to more than 40% of total non-food consumption expenditure. It was found that 25% of families with a member with Cardiovascular Diseases experience catastrophic expenditure and almost 50% of households with a member with cancer experience catastrophic spending and 25% are driven to poverty by healthcare expenses.

Children's Nutrition and Education: NCDs negatively affect the educational and nutritional status of individuals and families. For instance, in the case of the poorest households, expenditures on tobacco can mean the difference between an adequate diet and malnutrition as the former displaces

Figure 2: Implications of NCDs for Development



***Source**: World Bank analysis in "Chronic Emergency: Why NCDs Matter. In Health, Nutrition, and Population Discussion Paper." 2011. Washington DC: World Bank*

money spent on food. In a study among street children in Mumbai, they spent far more on tobacco than on food. Similarly, unhealthy diet also leads to overweight and related morbidities (WHO Report). Children's education is often discontinued when poor households are affected by NCDs.

Health Systems: The growing burden of NCDs has led to increasing pressure on the country's health system. Treatment costs of NCDs are significantly higher compared to other diseases and they need long-term interventions. Country's health system requires significant resources for tackling the growing burden of NCDs. The proportion of hospitalizations and outpatient consultations as a result of NCDs rose from 32% to 40% and 22% to 35%, respectively from 1995 to 2004.NCDs account for an economic burden in the range of 5–10% of the Gross Domestic Product (GDP) of India which is slowing down its growth and impeding its development targets.

Productivity and National Economy: As a result of premature deaths and morbidity from NCDs, the country loses its workforce. The projected cumulative loss of national income for India due to non-communicable disease mortality for 2006-2015 is expected to be USD 237 billion. By 2030, this productivity loss is expected to double to 17.9 million years lost (WHO Chronic Disease Report 2005). The Economic Intelligence Unit estimated the economic costs of the diabetes epidemic in 4 countries, including India, taking into account direct medical care costs, productivity loss due to mortality, morbidity and disability. Direct medical care costs, productivity loss due to mortality, morbidity and disability associated with diabetes were taken into account. Their estimates of the costs for India were about 2.1 % of GDP.

(Excerpts from the fact-sheet on "Non-communicable Diseases and Development in India," produced by Health Bridge.
Email: sjohn@healthbridge.in)

Flags on the Health Map

Government of India has been implementing various programmes to ensure accessible, affordable and equitable healthcare services to all. The Planning Commission has increased the outlay for health and family welfare schemes in Eleventh and Twelfth Five Year Plan considerably with the objective of "establishing a system of Universal Health Coverage (UHC) in the country."

National Rural Health Mission

Launched in 2005, National Rural Health Mission is an overarching project in mission mode that strives to provide effective healthcare to rural masses in the country with a focus on states with poor public health indicators and/or weak healthcare infrastructure. The programmes under NRHM can broadly be categorised into two: Reproductive & Child Health Programmes (RCH) and National Disease Control Programmes. RCH programmes address the issues and challenges relating to maternal and child healthcare through a range of initiatives. The important initiatives include:

Janani Suraksha Yojana (JSY)

Launched in 2005 as a key component of NRHM and being implemented in all states and UTs with special focus on low performing states, JSY aims to reduce maternal mortality and neo-natal mortality by promoting institutional delivery among poor pregnant women. Under JSY, pregnant women from rural BPL families are provided Rs. 1,400 as incentive to use government healthcare facilities and also to cover travel costs and other expenses.

Janani–Shishu Suraksha Karyakram (JSSK) aims to provide free and cashless healthcare services to pregnant women including normal deliveries, caesarean operations (up to 30 days after birth) in public health institutions in both rural and urban areas.

Navajat Shishu Suraksha Karyakram (NSSK)

Launched in 2009, NSSK attempts to impart special training to healthcare providers at the District Hospitals, Community Health Centres and Primary Health Centres in the interventions at birth aimed at significantly reducing Infant Mortality Ratio. The programme is part of the policy of embedding child health strategy as an integral part of maternal health.

Rashtriya Kishor Swasthya Karyakram (RKSK)

Launched on 7 January 2014, RKSK is the nation's first comprehensive adolescent health programme. The programme is committed at promotion of adolescent health mission across India and would address the health needs of 243 million adolescents constituting 21 per cent of the total population in the country.

National Disease Control Programmes

Non-communicable diseases like cancer, diabetes, cardiovascular diseases, and chronic obstructive pulmonary diseases, are on the rise in the country due to changes in life style. Communicable diseases such as Tuberculosis, Leprosy, Vector borne diseases, HIV/AIDS among others also continue to be a major public health challenge. These endemic diseases result in high morbidity, mortality and adverse socio-economic impact. Therefore, national level programmes on diseases have been implemented with a renewed vigour and focus under National Rural Health Mission.

National Vector Borne Diseases Control Programme (NVBDCP)

A comprehensive programme for the prevention and control of vector borne diseases, NVBDCP covers diseases like Malaria, Filaria, Kala-azar, Japanese Encephalitis, Dengue and Chikungunya.

Revised National Tuberculosis Control Programme (RNTCP)

Launched in 1997 and implemented in a phased manner, Revised National TB Control Programme – an application in India of Directly Observed Treatment Short Course (DOTS) – is a revamped strategy to control Tuberculosis with the objective of curing at least 85 per cent of new sputum positive TB patients.

Table 1: Budget Support for Central Departments under MoHFM in Eleventh (2007-11) and Twelfth Plan (2012-17) projections (₹ in crores)			
Department of MoHFW	**Eleventh Plan Expenditure**	**Twelfth Plan Outlay**	**Percentage Increase**
Dept. of Health & Family Welfare	83407	268551	322%
Dept. of AYUSH	2994	10044	335%
Dept. of Health Research	1870	10029	536%
Aids Control	1305	11394	873%
Total MoHFW	89576	300018	335%

*Source: Draft Twelfth Five Year Plan, Planning Commission

National Leprosy Eradication Programme (NLEP)

With the use of Multi Drug Therapy (MDT), under NLEP, introduced in 1983, India achieved the goal of elimination of Leprosy defined as less than 1 case per 10,000 population at the national level in December 2005. For further reducing the disease burden, 209 districts in 16 States/UTs with Annual New Case Detection Rate (ANCDR) of more than 10 cases per 100,000 population have been identified for special action under NLEP.

National AIDS Control Programme (NACP)

NACP has the overall goal of "halting and reversing the epidemic in India" over the five year period. It places highest priority on preventive efforts while, at the same time, seeking to integrate prevention with care, support and treatment.

National Programme for Prevention & Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDCS)

Launched in 2010, NPCDCS is being implemented in 100 districts across 21 states, and attempts to control the targeted diseases through inducing behaviour and life style changes.

The National Programme for the Health Care for the Elderly (NPHCE)

Initiated in June 2010 with the main objective of providing preventive, curative and rehabilitative services to the elderly persons at various levels of healthcare delivery system, NPHCE is under implementation in 100 identified districts of 21 States. Eight Regional Medical Institutions (Regional Geriatric Institutions) have also been selected under the programme to provide separate and specialized comprehensive health care to senior citizens.

National Mental Health Programme (NMHP)

The National Mental Health Programme (NMHP) was introduced in 1982 with the objectives of ensuring availability and accessibility of mental healthcare for all in the foreseeable future, particularly to the most vulnerable and underprivileged sections of the population. It also aims to promote community participation in the mental health service development and to stimulate efforts towards self-help in the community.

National Programme for Prevention and Control of Deafness (NPPCD)

A programme on pilot basis in identified 25 districts of 10 states and one UT, the main objective of NPPCD is to train professionals in early identification, diagnosis, treatment of ear problem, development of institutional capacity and promote outreach activities and public awareness. The long term objective is to prevent and control major causes of hearing impairment and deafness, so as to reduce the total disease burden by 25 per cent of the existing level.

National Programme for Control of Blindness

Launched in the year 1976 as a 100 per cent centrally sponsored scheme, NPCB strives towards achieving the goal of reducing the prevalence of blindness from 1.4 per cent to 0.3 per cent by the year 2020. Its objectives are:

National Tobacco Control Programme (NTCP)

NTCP aims at creating public awareness against ill-effects of tobacco use, setting up of testing labs and monitoring adult tobacco surveys. The programme also strives to provide baseline estimates of tobacco prevalence and the status of implementation of Tobacco Control Law in the country

Pilot Programme for Prevention of Burn Injuries (PPPBI)

Launched in 2010 as a pilot project covering three states Haryana, Himachal Pradesh & Assam for two years, the programme aims at the establishment of burn's unit in one Medical College and two District Hospitals in each state.

Rashtriya Swasthya Bima Yojana (RSBY)

A comprehensive, smart card based, cashless and paperless social health insurance scheme for BPL families, RSBY provides annual hospitalisation cover up to Rs. 30,000 for five members in a family. The number of families that are enrolled in RSBY has gone up from 4 million on 3st March 2009 to 34.16 million on 28th February 2013.

Pradhan Mantri Swasthya Suraksha Yojana (PMSSY)

PMSSY was launched in the year 2006 to bridge the huge gap in the accessibility of healthcare services in the rural and urban areas. Under the programme, 6 institutions in the model of All India Institute of Medical Science would be set up along with the extensive upgrading of 13 government medical colleges. The locations would be Patna, Raipur, Bhopal, Bhubaneswar, Jodhpur, and Rishikesh. In addition to the above discussed programmes and schemes, the Twelfth Plan proposes an integrative and overarching project, National Health Mission (NHM) that covers both rural and urban poor. ❑

Compiled by Rajith Chandran M.R, Asst. Director, on behalf of the Yojana editorial team
(E-mail: rajithchandraniis@gmail.com)

Development Roadmap

New Health Programme for Adolescents

The Rashtriya Kishor Swasthya Karyakram – National Adolescent Health Programme was launched recently by the Ministry of Health and Family Welfare under the NRHM. The 250- crore programme is aimed at the 343 million adolescents(21 per cent of the country's population) in the age group of 10-19 years. It would mainly address their nutrition, reproductive health and substance abuse issues. The programme focuses on six priority areas of action – reproductive and sexual health, nutrition, mental health, injuries and violence including domestic and gender based violence, substance misuse and non-communicable diseases. It marks a paradigm shift from the existing clinic based care to community-based health promotion and prevention, reaching out to adolescents where they are i.e. schools and communities.

Programme for enhancing literacy among muslims

The Ministry of HRD has announced a Rs 600 crore scheme that aims at achieving higher literacy rates for the minority muslim community. The Maulana Azad Taleem-e-Balighan scheme aims at imparting literacy to one crore population in the age group of 15 years and above; basic education to 2.5 lakh adults and skill development programmes to cover around 3 lakh people. Also, it is proposed to set up 1000 additional adult education centres exclusively for women in gram panchayats exceeding 5,000 muslim population. The scheme would be launched in 61 muslim-concentrated sakshar bharat districts in 11 states. The first classes under this scheme will start in September 2014.

Social Security Scheme for Overseas Indian Workers

The Ministry of Overseas Indian Affairs has launched a social security scheme for overseas Indian workers called the Mahatma Gandhi Pravasi Suraksha Yojana (MGPSY). Overseas migrant workers holding ECR passports and a valid work permit or employment contract in an ECR country between the age of 18-50 years and holding a bank account in their own name are eligible to join the scheme. It provides a monthly pension in old age, return and resettlement savings and life insurance cover. The minimum saving per year for women workers is Rs 5000 per year for which the government countribution would be Rs 3900; the minimum saving for male workers is also Rs 5000 for which the government contribution is Rs 2900. The government contribution would be provided for a maximum period of 5 years or for the period of overseas employment, whichever is less. The service providers are Bank of Baroda, Indian Bank, Canara Bank, Corporation Bank, State Bank of Tranvancore, ESAF Microfinance & Investments Pvt Ltd, Alankit Assignments Ltd and IFMR Rural Finance Pvt Ltd.

National Cancer Institute in Haryana

The Union Cabinet has approved the setting up of a Rs 2000 crore National Cancer Institute (NCI) at the All India Institute of Medical Sciences at Jhajjar, Haryana. To be completed by 2018, the institute will operate on the lines of National Cancer Institute, USA and DKFZ, Germany as a nodal centre for indigenous research as well as preventive and curative aspects of cancer cure. The institute also aims to conduct research on cancers that are more specific to India, such as tobacco related cancers, cancer of the uterine cervix, gall bladder cancer and liver cancer with focus on understanding, analyzing the cause and genesis of these cancers. The NCI will have 710 beds for different facilities like surgerical oncology, radiation oncology, medical oncology anaesthesia and palliative care and nuclear medicine. It will have a tissue repository which would be the first of its kind in India.

Published on 23 January 2014
Posted on 25-26 January 2014

Regd. No. RNI 949/57
Licenced U (DN)- 56/2012-14 to post without pre-payment at RMS, Delhi (Delhi Post
Postal Regd. No. DL(S)-05/3230/2012-14

Printed & Published by Ira Joshi, Additional Director General and Head on behalf of Publications Division, Soochna Bhawan, C.G.O. Complex, Lodhi Road, New Delhi-110 003. Printed at Chandu Press, D-97, Shakarpur, Delhi-110 092 Phone: 22424396, 22526936.