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How Might India's Public Health Systems Be Strengthened?

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Abstract

The central government's policies, though well-intentioned, have inadvertently de-emphasized environmental health and other preventive public health services in India since the 1950s, when it was decided to amalgamate the medical and public health services and to focus public health services largely on single-issue programs. This paper discusses how successive policy decisions have diminished the Health Ministry's capacity for stewardship of the nation's public health. These decisions have introduced policies and fiscal incentives that have inadvertently enabled states to prioritize medical services and single-issue programs over broader public health services, and diminished the capacity of the public health workforce to deliver public health services. Diseases resulting from poor environmental health conditions continue to impose high costs even among the more affluent, and hinder development.

There are many approaches to strengthening the

public health system, and the authors suggest one that may require relatively little modification of existing structures and systems. They suggest establishing a focal point in the Health Ministry for public health stewardship, and re-vitalizing the states' public health managerial cadres as well as the grassroots public health workers. The central government could consider linking its fiscal support to states with phased progress in four areas: (1) the enactment of state Public Health Acts; (2) the establishment by states of separate public health directorates; (3) the re-vitalization of grassroots public health workers; and (4) health department engagement in ensuring municipal public health. The central focal point could provide the needed support, oversight, incentives, and sanctions to ensure that states build robust public health systems. These measures can do much to help governments use public funds more effectively for protecting people's health.

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How might India's public health systems be strengthened?¹

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Focusing on clinical services while neglecting services that reduce exposure to disease is like mopping up the floor continuously while leaving the tap running

(Paraphrased from Laurie Garrett 2001, *Betrayal of Trust: The Collapse of Global Public Health*)

Introduction

India suffers a staggering toll of ill-health from communicable diseases, largely resulting from poor environmental health conditions. Outbreaks of diseases such as dengue, diarrhoeas, hepatitis, and even cholera are commonplace, affecting all from the richest to the poorest. This imposes heavy costs on people and on the economy. Economic losses arise from many sources, such as lost labor-force productivity, business disruption, and the costs of treatment for people who should not have been exposed to disease in the first place. The World Bank estimates that the costs of communicable diseases amount to several percent of GDP in developing countries.¹

The WHO estimates that improved sanitation in developing countries would sharply reduce overall morbidity and child mortality (Pruss-Ustin et al 2008). They also estimate that half of malnutrition is attributable not to lack of food but to infections arising from poor sanitation. Half of India's children are stunted (IIPS 2007: Table 10.1), and the fact that 25 percent of those in the highest wealth quintile are stunted reflects the burden of disease even among the more affluent.

Health systems have three major sets of services, of which the first two constitute public health services: (1) *population-wide preventive services* to reduce exposure to disease through measures such as implementing health and sanitary regulations to ensure environmental health, monitoring health conditions, acting to avert potential health threats, and controlling outbreaks if they occur; (2) *clinical preventive services* provided to individuals, such as screening and vaccination for maternal and child health; and (3) *medical services* to care for and treat individuals with injuries and disease. In this paper, the first two of these sets of services together are referred to as 'public health', while the first alone is called 'environmental health'.

India's Health Ministry and states' health departments have done much to improve health services, building an enormous infrastructure of publicly-funded medical services, medical education facilities, high-quality laboratories, and research institutions. However, central public health interventions are focused largely on single-issue programs for controlling specific diseases, delivering maternal and child health services, disease surveillance, etc.² This approach does not adequately address the need for development of public health systems, capable of planning and implementing a much broader range of services to *anticipate* and reduce exposure to disease.

This can be detrimental for health outcomes as well as for the prospects for economic development. Public health services in general, and environmental health services in particular, constitute a pure public good, and form a basic part of a country's developmental infrastructure. Countries with limited health budgets per capita need to

focus their resources primarily on these services, which protect against the externalities of communicable diseases.³

In developed countries, environmental health services form the core of health services, underpinned by a framework of public health regulations.⁴ Public health authorities are responsible for planning and implementing services to anticipate, monitor, and avert health threats of all kinds. One of their core functions is to assure environmental health by monitoring other agencies' services — for example in the United States, health authorities' core responsibilities include assuring that the water supply is safe, solid waste and sewage is safely managed, and establishments meet public health standards before being licensed.⁵ Similarly, the duties of Environmental Health Officers in Europe include assuring water safety, food safety (including food vendors, processors, food storage, slaughterhouses, & markets), management of solid & liquid wastes, housing, housing, vector control, investigating disease threats, disinfection (WHO 1978, Annex 1).

In the developed world, intensive efforts to strengthen these services resulted in rapid improvements in health outcomes from the late nineteenth century, as countries shifted from simply responding to disease outbreaks to actually averting their occurrence (Figure 1).⁶ Constant vigilance helps keep the incidence of communicable disease low — for example, malaria was eradicated in the Southern United States by the 1940s, but the health authorities continue to monitor environmental management and vector breeding, to prevent resurgence.⁷ Developed countries regularly upgrade their public health systems,⁸ and citizens have come to expect their governments to protect them from exposure to major communicable diseases.

India's Health Ministry recognized its role in supporting population-wide public health services in the early 1950s. The central role of environmental health services was mentioned in India's first two Five-Year Plans which covered the period 1951-61, but not thereafter. The National Health Policy of 2002 (para 2.24) explicitly states that while environmental health conditions are critical for good health outcomes, they fall outside the purview of the Health Ministry.⁹ Strangely, this view is shared by donor agencies, despite the fact that health agencies in donor countries view assuring environmental health as central to their work.¹⁰

By re-assessing this fragmented approach to public health systems and services, health resources in India could be used more cost-effectively to protect the health of the population. India could follow the lead of the developed world — and some settings in the developing world, such as Tamil Nadu and Sri Lanka — in building strong public health systems capable of addressing potential health threats proactively *before* they lead to outbreaks, instead of merely controlling outbreaks once they occur. This requires the Health Department to directly provide many services, as well as giving technical support to other agencies and regularly monitoring their services to assure that they meet health standards.

The costs of these services typically form a small fraction of a country's total public expenditure on health, and of its GDP. For example, Sri Lanka spends less than 0.2% of GDP on its well-organized public health services, which contribute to its high levels of

health equity and life expectancy, despite relatively low GDP per capita.¹¹ Sri Lanka's Public Health Inspectors address environmental and public health issues similar to those described above for the developed world (see Appendix 1).

Rapid urbanization further increases the urgency for building strong public health systems, because of the massive potential for disease outbreaks in urban areas. Diseases can spread easily in urban areas because they are crowded, generate huge quantities of waste, and have a high density of food vendors, markets, factories, and other activities that can create health hazards. Migrants bring new diseases, often to slums that are already vulnerable due to poverty and poor infrastructure. Sanitary infrastructure needs not only to be developed, as the Urban Renewal Mission did, but their maintenance must also be monitored for compliance with health standards. Assuring urban public health benefits greatly from health department involvement — as is routine in the developed world — since local bodies have many other priorities that are not always compatible with protecting public health.¹² However, the National Health Policy of 2002 underlined the need for extending public medical facilities for improvement of urban health, rather than building of public health systems. The upcoming central outlays on the National Urban Health Mission could be effectively used for strengthening public health systems rather than just providing incentives for creating more medical facilities.¹³

We discuss how some of the policies of the Health Ministry have not been helpful in building up the capacity to plan and implement public health services at both central and state levels — in particular anticipatory preventive public health services, and compliance with health regulations and health standards — and shifted the use of available resources away from them. Building on the argument made by Das Gupta (2005), we start with a discussion of the central policies that — while seeking to improve health systems and outcomes — inadvertently marginalized public health services, followed by discussions of the consequences for the Health Ministry's own capacity for stewardship in this area, and for state health departments. We then discuss the evidence that better-organized public health systems help protect health, including illustrations from Tamil Nadu and the developed world. We conclude with some policy suggestions.

1. Central health policies have marginalized public health services

Constitutionally, public health and sanitation are primarily the responsibility of the states.¹⁴ However, the central (federal) Health Ministry has a major influence on the states' public health policies because of its fiscal leverage, convening power, technical resources, and ability to draw and disseminate lessons across states. The central government's policies have inadvertently de-emphasized public health services, through a series of policy decisions since the 1950s.

(a) Amalgamation of medical and public health services, eroding career incentives for the latter

The first major change came with the central government decision to amalgamate the medical and public health services as recommended by the Bhore Committee Report of 1946,¹⁵ and to instruct the states to follow suit. Most states followed this instruction. This was compounded by the recommendations of the Jungalwalla Committee in 1967 that health services should have a unified cadre, with common seniority.¹⁶ Prior to these changes, there were separate structures for each of these services — since they require very different orientation and activities — and each service had its own career ladder.

For example, a report summarizes organizational changes in West Bengal’s health department:

“The post of the Director of Health Services was created after amalgamation of the functions of the previous posts of Surgeon-General, Bengal, and Director of Public Health, Bengal, which was subsequently included in the Special Selection Grade of the unified cadre of West Bengal Health Service. The Director of Health Services was the ex-officio Secretary of the Department of Health till the year 1962 when this arrangement was terminated and the Secretariat was placed in charge of a senior I.A.S. officer. (Government of West Bengal 1970:2)

The amalgamation was intended to increase efficiency and coordination between the medical and public health services. However, it opened the way for the public health services to be gradually eclipsed by the medical services, which attract far more political and public attention. It also diminished the career incentives of the public health staff, as described below. Gradually, public health services fell off the radar screen of the Health Ministry and of most state health departments, and their capacity for public health policy and planning was weakened, as discussed below. In an interesting exception, Tamil Nadu chose not to amalgamate its medical and public health services, and this has facilitated its public health planning and implementation (see below).

None of this is to deny the many flaws of the pre-Independence public health systems, especially their primary focus on protecting the European population and the army (Ramasubban 1989, Guha 1993). However, this goal required reducing the prevalence of highly contagious diseases in the whole population — and separating the medical from the public health services allowed the latter to offer good career incentives, build world-class technical institutions, and maintain services effective at meeting the limited policy goals (Harrison 1994, Das Gupta 2005).¹⁷ This spare but systematic colonial approach sharply reduced mortality from killer diseases such as cholera, while diseases such as malaria and gastro-enteric infections continued to take heavy tolls.¹⁸ As Figure 2 shows, India in 1940 was a slightly negative outlier in life expectancy for its level of caloric availability.

(b) Single-focus programs that erode public health systems

A second change came with the decision to focus the Health Ministry’s public health resources on single-focus programs — typically sponsored and supported by international agencies —, beginning with the malaria eradication program of the 1950s. As discussed below, the way these programs are financed and monitored encourages states to use their public health resources primarily for them (along with some state-specific single-issue programs), instead of on organizing broader environmental/preventive public health

services. Most state health departments now focus essentially on implementing the single-issue public health programs, and providing curative medical services.¹⁹

Nor is the single-issue approach necessarily always successful. It can be spectacularly successful for addressing diseases for which simple and highly-effective medical interventions are available, such as smallpox vaccine. It has proved much less effective for other diseases such as malaria, whose control depends also on more complex management of the disease environment.²⁰ International agencies' emphasis on 'measurable results' has created incentives for international and national policy-makers to design more narrowly-focused programs that may be *less effective* than broader ones but *whose outputs/outcomes can more easily be measured*.

A sharp reminder of the pitfalls of prioritizing single-issue programs over other preventive services is the fact that the polio eradication program has faltered in Uttar Pradesh and Bihar because poor sanitation causes such a high burden of gastro-enteric illness that some children's digestive tracts are unable to absorb the vaccine. They therefore contract polio despite repeated vaccination, and the disease spreads to other parts of India and the world, necessitating re-vaccination programs where the disease had been controlled (WHO 2009: 11-12).

(c) Separation of Public Health Engineering from health services

A third change came with the decision in the early 1970s to separate Public Health Engineering services from the Health Departments. This fractured the provision of public health services, and undermined the capacity of the Health Department to undertake crucial interventions to assure environmental health. Public health engineers can contribute to a wide range of environmental health activities such as managing subsoil water drainage to control vector breeding, and safe disposal of solid waste. Instead, the activities of the Public Health Engineering Departments narrowed sharply, such that today they typically limit themselves to the provision of water supply and, in some cases, sewerage. Public health will be better protected if these departments broaden their range of activities to cover a more comprehensive set of public health engineering needs, and coordinate more closely with the Health Department.

(d) Amalgamation of all male grassroots staff, eliminating environmental health services

A fourth change came with the decision in the 1970s to amalgamate all grassroots male health workers into one cadre of "Multi-Purpose Workers".²¹ This combined all the erstwhile Sanitary Inspectors with other staff such as smallpox and malaria workers, and put them all to work on implementing the priority programs of the day. The environmental health services provided earlier by the Sanitary Inspectors fell by the wayside. Assuring environmental health involves a very wide range of activities (see Appendix 1 for Sri Lanka, and WHO 1977 for European countries). The implications of this are discussed further in Section 3.

2. Implications for central government capacity for public health stewardship

The Health Ministry's capacity for public health planning and stewardship could perhaps be strengthened. This manifests itself in several ways.

(a) No focal point in the central Health Ministry for public health services

The Health Ministry has focal points for dealing with many issues, including each of its single-issue programs. However, there is no focal point for environmental health, that is, population-wide preventive health services. The same applies to the Directorate-General of Health Services, which is the technical wing of the Health Ministry. Without a focal point, the Health Ministry is poorly-placed to provide stewardship for proactive population-wide health services.

The lack of attention to public health stewardship is indicated by the recent addition of a post entitled "Special Director-General of Health Services (Public Health)". Disappointingly, the job is primarily to oversee the Health Ministry's single-focus programs, and is to be filled on the basis of seniority regardless of whether the person is a medical or public health specialist.

Lack of public health advocacy is one of the many consequences of a lack of focal point. Advocacy helps increase citizens' awareness about public health issues and builds demand for services that reduce their exposure to disease. Public health authorities in the developed world see advocacy as a key part of their work (IOM 1988). It is fundamental to building political pressure for public health services — instead of only for the medical services for which there is always political demand since their benefits are immediate and hence easily understood.²²

(b) Health Ministry expertise in public health planning could be strengthened

The Health Ministry is staffed with professional administrators and technical people who are highly qualified, but might benefit from more exposure to the needs of public health planning. The Ministry is headed by people from the administrative services,²³ deeply experienced in public administration from the districts upwards. This is an elite cadre of highly effective administrators, tightly networked across the central and state governments. However, they are rotated between line agencies, so they do not necessarily have prior exposure to the health sector.

The central government has a cadre of public health specialists (unlike most state governments), who are highly-qualified. However, their career path does not offer hands-on experience of actually planning or managing public health services on the ground. Such experience is limited to people who work in the very few states that have separate public health departments. Moreover, the cadre is small and poorly-utilized, because promotion above the Deputy Director-General level is based on seniority, regardless of public health qualifications. Limited scope for career advancement reduces incentives to join the central public health cadre.²⁴ This reduces their ability to provide technical backing for the states.

3. Implications for state government capacity for public health planning and implementation

(a) Fiscal incentives for states that inadvertently weaken public health systems

The central government influences state public health policy through the fiscal leverage of the “Centrally Sponsored Schemes” under the Five Year Plans, which have been used to launch many single-issue public health programs. The central government typically covers a substantial part of the costs for the first Plan period (usually 5 years), and the states are expected to cover all the costs thereafter.²⁵ Although states are free not to participate in these programs, the fiscal leverage of the large initial central contribution makes them attractive. This is similar to the mechanisms whereby donors influence government policy in developing countries.

Single-issue public health programs do not make for efficient public health financing. This approach is at odds with the need for continuity in policy and programming for public health services. The hallmarks of effective public health service delivery are planning and action to avert *potential* outbreaks, and continuing vigilance to ensure non-recurrence of disease as long as the potential threat remains — regardless of how long it has been since the disease last manifested itself. This requires unwavering attention to a broad range of activities, and is very different in nature from campaigns to address a specific disease, or to contain a specific outbreak.

These programs can crowd out other public health priorities of the states, both because of the large budgetary demands after the initial period, and because the states are required to send regular progress reports on these programs to the center. These programs therefore become high priority activities for the states. In the process, states are tempted to focus their public health resources on these programs and neglect other essential aspects of population-wide health services. States spent only 8.9% of their health budget on public health programs in 2001-02 (Government of India 2005: Table 2.1.10), and this includes the states’ significant budgetary contribution to the single-issue programs. By contrast, they spent over 40% of their budget on tertiary and secondary care services, illustrating the power of the curative sector to capture public budgets for health. Single-issue programs can also weaken state health systems in other ways, for example by bypassing the state’s normal arrangements for fund flows and implementation.²⁶

(b) Lack of a Public Health Act

Most states lack the most basic legislation to underpin public health services. In 1955 and again in 1987 the central government developed a Model Public Health Act, but did not use its very considerable fiscal clout to encourage states to adopt them.²⁷

A Public Health Act enables proactive measures to avert threats to the public health *before* an emergency occurs. Firstly, it specifies the legal and administrative structures under which a public health system functions, assigns responsibilities and powers to different levels of government and agencies, and specifies their source of funding for

discharging these duties (Hamlin and Sheard 1998). Secondly, it sets out powers for taking action for protecting the public health, including powers of regulation and of inspection — and the responsibility to use these powers to monitor *any* situations or activities (“public health nuisances”) that could potentially threaten public health, and seek to redress them if needed.²⁸ Thirdly, public health laws set standards, such as those for food hygiene, slaughterhouse and market hygiene, water quality, and local government activities for sanitation and environmental health. They also specify who is responsible for assuring that these standards are met, as well as the procedures for ensuring that they are met.

Without a Public Health Act, states must depend on very blunt instruments such as the Epidemic Act of 1897 and the Indian Penal Code of 1860, which can be used if a severe health threat has *already occurred*. Local body Acts such as the Municipalities Act and Panchayati Raj Act offer much less comprehensive provisions than a Public Health Act, and they (by definition) do not apply uniformly across a state.²⁹

This places much of India in a situation with some analogies to that of Europe before its public health revolution. As Hamlin and Sheard (1998:587) point out:

“The 1848 Public Health Act for England and Wales marked the start of a commitment to proactive, rather than a reactive, public health in which the state became guarantor of standards of health and environmental quality.... That public action can substantially improve the health of the general population now seems obvious, and it also seems obvious that public authorities owe their citizens that improvement. Both were controversial in the 1830s and 1840s. For centuries European governments had reacted to epidemics with decrees. With medical boards to advise them, they set their military forces to protecting borders and ports, whitewashed towns, fumigated dwellings, and burnt bedding. The threat of unusual disease prompted these reactions, and they were relaxed when the epidemics passed. Normal disease — infant mortality of more than 50% in inner city wards, annual mortality of over 30/1000 in some towns — prompted no such reactions.”

Some efforts are now underway to strengthen public health legislation in India. The National Health Bill 2009 drafted under the National Rural Health Mission seeks to encourage states to prepare Public Health Acts. The draft Public Health Emergency Act updates the Epidemic Act of 1897. Some states, such as Gujarat and Karnataka, are working on drafting Public Health Acts.³⁰ Properly designed, such Acts provide the fundamental legislative underpinning for public health action and service delivery — as they do in Tamil Nadu and Sri Lanka (Das Gupta et al 2009). The very fact of having a regulation in place can raise awareness and compliance, as evidenced by drivers’ increased use of helmets and seat belts.

In drafting public health legislation, it will help to pay careful attention to implementation mechanisms. Regulatory enforcement carries inherent risks, such as the potential for harassment and corruption. In India, the credibility of regulatory enforcement is undermined also by the slow judicial processing of cases in courts with large backlogs. Some of the key issues for effective regulatory implementation are (1) setting reasonable standards; (2) disseminating information on the regulations; (3) designing mechanisms to

facilitate compliance; (4) minimizing the scope for corruption and harassment; and (5) minimizing reliance on the judiciary. Models for transparent and quick implementation methods are available from both the developed and developing world.

(c) Diminishing of public health managerial cadres

The amalgamation of medical and public health services reduced the career incentives for public health personnel in the state governments, just as it did for the central government (see above). In colonial times, the public health cadre had faster promotions and better pay than the medical cadre (Harrison 1994:19-26). These incentives were sharply reduced after the medical and public health cadres were amalgamated. The decision to grant promotions by seniority — so senior public health positions could be held by clinical specialists — reduced public health specialists' inputs into decision-making on public health programs, and curtailed their promotion prospects.

Following amalgamation, the public health cadre was abolished in most states — depriving the states of public health planning and management capacity.³¹ Some states have sought to partially redress this situation, but the success of such efforts is severely limited while the medical and public health services remain amalgamated. For example, West Bengal established a public health administrative cadre in 2004, but their job is to oversee the medical facilities up to the secondary level, as well as public health services (the latter defined essentially in terms of the group of single-focus programs). Training in public health management is not required. This is quite different from managing a public health system.

Public health management training atrophied, in response to the diminished demand. Medical training capacity was vastly expanded, but public health training capacity did not increase commensurate with the growing needs of population growth and urbanization. The erstwhile world-renowned All-India Institute for Hygiene and Public Health received inadequate attention. A program was started for teaching MD (Community Medicine), but the numbers of graduates are very limited. Some Public Health Institutes are now being set up, to offer training for public health managers, but demand for such training will remain low unless career incentives improve.

(d) Diminishing of grassroots workforce responsible for Environmental Health

The main category of staff responsible for grassroots delivery of public health services was effectively undermined with the creation of the Multi-Purpose Worker (male) cadre, merging Sanitary Inspectors with workers from disease-specific and other programs.³² This merged cadre of male health workers is not tasked with supporting population-wide health services, as were the Sanitary Inspectors. Their main charge is to help implement the national programs, and provide other miscellaneous support that the health department may ask for.

The central government also decided to fully support the salary and training of the grassroots female health workers (ANMs). This is because they are charged with

implementing the family planning and maternal and child health program, which occupies a very high position in the government's list of priorities. States were left to pay for the male health workers — except for those hired for a new national program, whose salary is covered for the first Plan period.

The states have little incentive to invest in their male health workers, given the eclipse of public health services in the states, the fiscal incentives introduced by the national programs, and the perennial political demand to expand publicly-financed medical services. As a result, the male cadre has growing proportions of vacancies in most states, unlike the female cadre.

Male workers have been heavily disincentivized in various ways. Their cadre is used for accommodating people who have become redundant elsewhere, such as smallpox workers, and many of these do not meet the qualifications required from direct recruits. Their training programs have withered in most states, while the ANMs continue to receive a full 18 months' training according to a standardized curriculum.

Male workers have also increasingly lost status relative to their female counterparts (ANMs). Since the ANMs are in place and well-trained, the central and state governments encourage them to perform their services efficiently, and give them various forms of support and status. ICDS workers and male health workers are asked to help them, and the NRHM provides them with assistants (ASHAs). They are placed in high status local positions such as helping manage the funds of the Village Health, Water and Sanitation Committees set up under the NRHM.

In response to this succession of disincentives, the male health workers in many states started agitating. They then came to be viewed as unproductive and difficult to manage. Many states have taken to underfilling these posts, so there are increasing numbers of vacancies.

4. Do better public health systems improve health outcomes?

Descriptions of the functioning of public health systems illustrate how those that are more systematically organized work better than others. In the companion paper (Das Gupta et al 2009), we describe how Tamil Nadu's Health Department maintains a Directorate of Public Health separate from those for medical services, with its own budget and workforce, and underpinned by a Public Health Act. This enables the Directorate to conduct long-range planning without fear of budgetary capture by the politically-attractive medical services. It also enables it to offer career incentives to its workforce and maintain a well-trained and professional cadre of public health managers — as well as the legislative authority to undertake preventive public health action. By separating the medical from public health services, the state enables both sets of service to improve their efficiency by gaining from their respective economies of scope.

These organizational factors underlie Tamil Nadu's better capacity than most Indian states to conduct long-term planning to avert outbreaks, manage endemic diseases, prevent disease resurgence, manage disasters and emergencies, and support local bodies to protect public health in rural and urban areas. This better capacity is illustrated in many ways. For example, the state was able to respond to a major natural disaster like the tsunami without the disease outbreaks that commonly accompany even lesser disasters in other states. This is helped by the annual district-level exercises in planning for the event of a river flooding, which serve like fire drills to remind the whole public health team of what must be done in a natural disaster. Another example is that the state maintains services to ensure that plague does not break out near the wild plague focus around Hosur — enabling that area to now seek to become an industrial hub. When the 1993-4 plague outbreak took place in Maharashtra and Gujarat, Tamil Nadu sent its team to help, being among the only repository of plague management skills in the country at the time. Having a separate budget enables the Directorate of Public Health to maintain its plague control services without being told that the absence of plague deaths makes these services cost-inefficient. Like their counterparts in the developed world, Tamil Nadu's public health managers are in a position to maintain services as long as there is a serious *potential* threat — not merely the manifested threat that the lay public is able to perceive.

The interesting feature is that Tamil Nadu's Health Department achieves this within the same overall organization (and resources) as that of other states, with medical and non-medical staff organized into a similar network of services at state, district, and sub-district levels. The difference is that Tamil Nadu separates out a mere 1% of its government medical doctors to be public health managers in the Directorate of Public Health, and trains and incentivizes them accordingly. Tamil Nadu's system also has some key flaws which need to be addressed in order to use this organizational capacity to greater effect — including frayed capacity of grassroots workers in both rural and urban areas to ensure environmental health (Das Gupta et al 2009).

Tamil Nadu's per capita public expenditure on health is similar to the Indian average — and private expenditures are considerably lower — but its health outcomes are superior, as reflected in more rapid infant mortality decline than that of India (Figures 3 and 4). Figure 4 could be viewed as indicating that Tamil Nadu has benefited from not participating fully in the health policy changes undertaken by the central government between the 1950s and the 1970s. The data on expenditures and outcomes suggest that the public expenditures are efficiently used, reducing the need for citizens to spend on private health care. Of course, part of the superior health outcomes may be attributable to more rapid economic growth. However, this causality works both ways and is hard to disentangle, since improvements in health conditions improve the prospects for economic growth, not only by raising labor productivity but also by creating development infrastructure and helping attract investment.

It is widely recognized — in a large literature spanning many disciplines — that good public health services are key to improving health outcomes in the both the developed and developing world.³³ That public health interventions in the developed world helped

sharply reduce mortality from communicable diseases before the advent of mass access to antibiotics is well-known (Figure 1).

The power of strong public health systems is suggested by the results of Japan's intensive efforts — as part of its preparation for becoming a world power — to study European public health systems and emulate them at home and in its colonies (Korea and Taiwan). The Japanese worked to improve the health of the whole population through expanding access to medical services, and public health measures to radically reduce exposure to disease. McGuire (2001: 1687) and describes some of these measures:³⁴

“To deal with plague, all ships from infested areas were inspected and subjected to rat-extermination. To deal with cholera, the Japanese established more effective methods of sewage and garbage disposal, launched a campaign against the house fly, and strictly regulated food handling and distribution. In urban areas, the Japanese dug new wells, insisted that the residents keep them covered, piped in water from mountain streams, supervised the construction of sewers and septic tanks, and systematized the process of removing sewage.... Taiwanese were required to clean their houses and streets twice a year.”

Johansson and Mosk (1987) have argued that reducing the toll of communicable diseases raised labor force productivity and life expectancy in Japan, despite lack of rise in wages and consumption. This is consistent with the fact that life expectancy rose to around 50 in Japan and its colonies by 1940, far above the 32 years in India, although caloric consumption was broadly similar (Figure 2).³⁵ The Japanese sought to build a Greater East Asia Co-Prosperity Sphere, so they rapidly expanded education in their colonies, and invested in their health. In India, as discussed above, the goals of the colonial public health system were more limited to protecting the health of the European population.³⁶

Formal evaluation of the impact of better public health systems is inherently very difficult, because of the complex interactions between health outcomes and economic factors, as well as ecological factors that cause variations in levels of exposure to disease. Health and economic outcomes often work in tandem, with improvements in each contributing to improvements in the other. Recognizing the strength of these relationships, the present-day developed countries have invested heavily in public health for over 125 years and in the process have built a strong basis for economic growth. Consider how draining Washington DC's heavily malarial swamps (and maintaining the drainage) enhanced the area's potential for economic growth. It may remain virtually impossible to formally prove the case for public health services, but the case has been compelling enough for all developed countries to invest in them continuously for well over a century.

5. *Conclusions: What Could Be Done?*

The central government's policies, though well-intentioned, have inadvertently weakened the capacity to deliver population-wide preventive health services in India since the 1950s, when it was decided to amalgamate the medical and public health services. The benefits of keeping these services separate are illustrated in the companion paper on Tamil Nadu. Successive policy decisions have diminished the Health Ministry's capacity for stewardship of the nation's public health. At the state level, they have introduced policies and fiscal incentives which have inadvertently de-prioritized public health systems and the public health workforce's capacity at both managerial and grassroots level.

What can be done about this? There are many possible ways of organizing effective public health systems. Here we offer some suggestions that may require the least modification of existing structures and systems.

Firstly, the central Health Ministry could build its capacity to support public health systems across the country. A simple step would be to *establish a focal point for public health in the Health Ministry*. Since the Ministry staff has no hands-on experience of managing such systems, they require some training in this. This focal point would need to be supported by institutions with the autonomy to function effectively. The Indian Council of Medical Research (ICMR) has considerable autonomy, but the National Institute of Communicable Diseases (NICD) has constrained ability to incentivize its staff and hold it accountable. As the NICD is converted into India's Center for Communicable Diseases, increased autonomy will enhance its effectiveness.

Through this focal point, the Ministry could encourage the state governments to build up their public health systems, and to report on their progress in doing this. A basic requirement for this is a Public Health Act as outlined above. Many models of such Acts are available from elsewhere. The Ministry could also encourage innovations in public health approaches and create a platform where such innovations can be encouraged, discussed, rewarded and replicated. More broadly, there is a need for continuous advocacy for building public awareness.

The existing intersectoral coordination mechanisms could also be put to better use, from the federal level down to local level. India's good record of responding to public health emergencies shows that the coordination mechanisms are highly effective. However, they are typically used only when a serious threat has already arisen, and would be far more effective if they were used regularly to assess potential health threats and avert them. The health sector could also play an important role in guiding other public and private agencies in ensuring against public health risks as they implement their projects. This could, for example, help ensure that urban development projects ensure adequate arrangements for drainage, sanitation, and solid waste management.

The health agencies at all levels could also facilitate and monitor services provided by other agencies that are essential for good health — such as drinking water and sanitary infrastructure — through setting and implementing public health standards and

regulations. They could also take the lead in encouraging resource mobilization from different sectors and other stakeholders — such as the Rural and Urban Departments and local bodies — for reducing public health hazards caused by poor planning, human actions, or natural disasters.

Secondly, *the states might usefully re-establish separate services for public health and medical care*, each with its own budgets and workforce, oriented respectively towards population-wide and clinical services. Each service needs to have its own career ladder and incentives, as they do in Tamil Nadu and Sri Lanka. The burden of additional training to revitalize the public health managerial cadre is not onerous since the numbers required are small — this cadre comprises only 1 percent of Tamil Nadu's government doctors. The training curriculum could draw on those of other developing settings with successful public health systems, which work within financial and administrative constraints closer to those of India — and not only those of the developed world. New public health training schools are being opened in India by the Public Health Foundation, and could draw on the good models available from developing countries (including Tamil Nadu and Sri Lanka) for training public health managers. These train managers to respond to routine health hazards as well as freak events like a tsunami, needing only to be updated with new technical information as it becomes available.

Thirdly, *the government might consider revitalizing the grassroots male health worker cadre*, and define their duties to focus primarily on ensuring environmental health and other population-wide health services. States where this cadre is dying out could consider establishing a new cadre of Health Inspectors, well-trained and well-managed for optimal performance.³⁷ Men are best suited for the task, since it involves much mobility and entering unfamiliar (and occasionally hostile) places for inspection. A standardized training curriculum can be developed for Health Inspectors, drawing on existing ones such as that used in Sri Lanka, and training schools identified. Detailed job descriptions, manuals, and supervisory guidelines can be drawn up. Adding greater scope for career progression will also help, for example by rewarding those who obtain additional educational qualifications in public health.

The central government could also consider financing male Health Inspectors so that balance is maintained in terms of providing an overall basket of public health services by male and female workers. Countries such as Sri Lanka pay for both their female cadre (Public Health Midwives) responsible for maternal and child services, as well as their male cadre (Public Health Inspectors), which is responsible for population-wide and environmental health services. Currently, India's central government pays the costs of the female cadre (Auxiliary Nurse Midwives or ANMs), and the budget has recently been raised by 50% to provide for second ANMs and performance-linked incentives for auxiliary staff (ASHAs).³⁸ A condition for receiving part of these supplemental funds is that states should fill some male cadre posts.³⁹ The central government currently offers little financing for the male cadre. This lopsided arrangement ignores the staggering costs to the country of poor environmental health.

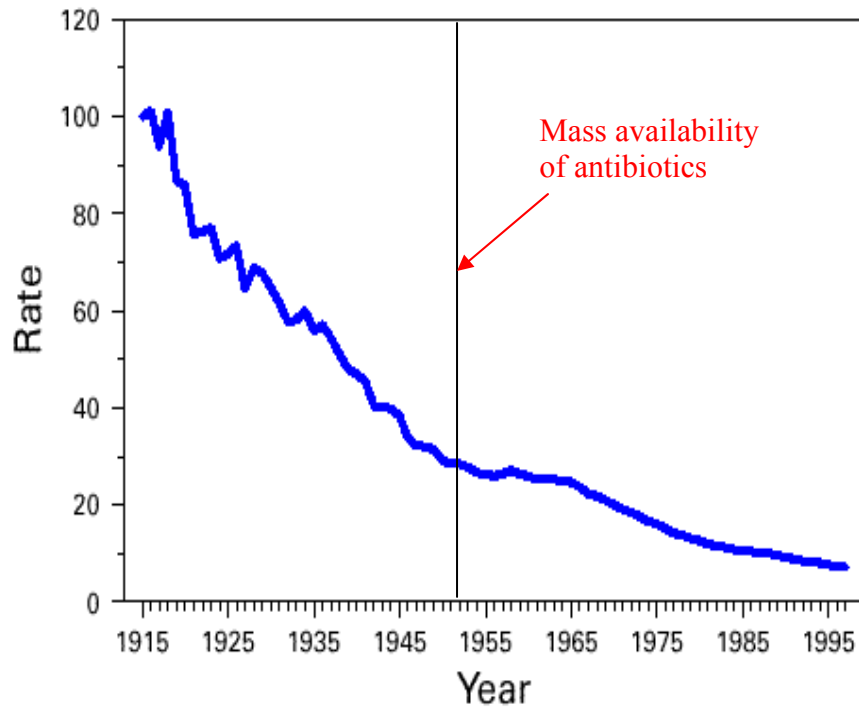
More broadly, the use of public funds for health needs re-evaluation. Tamil Nadu offers a useful model for protecting people's health, illustrating what is possible when states exercise their constitutional responsibility to design their own public health systems. Tamil Nadu's approach hinges on better administration and management of resources that are within the reach of most states, within the administrative structures of most states and India's average health budget. Better use of their grassroots male health workers could further enhance public health outcomes.

Under the NRHM, the central government has informally encouraged the states to consider the Tamil Nadu public health system,⁴⁰ and Gujarat state has begun to send some doctors for graduate training in public health. Elsewhere (Das Gupta et al 2009), we distil lessons from the design of Tamil Nadu's public health system, to facilitate their use as a model by other states.

Much is possible, especially given the scope for innovation offered by the large central outlays for rural and for urban health — the National Rural Health Mission (NRHM) and the upcoming National Urban Health Mission (NUHM). The NRHM has achieved much, for example sharply increasing the utilization of health facilities. The NUHM could do much to improve urban health outcomes, if it focuses on environmental and public health, and not only on expanding the network of public clinics.

The central government could consider linking its fiscal support to states' health budgets to phased progress in (1) the enactment of state Public Health Acts; (2) the establishment of separate public health directorates in states; (3) the re-vitalization of grassroots public health workers; and (4) health department engagement in assuring municipal public health. Creating a strong focal point for public health at the center would help to support states in setting up robust public health systems, as well as provide oversight, incentives, and sanctions to ensure that they do so. Such a body could also support other needed institutional reforms for strong public health systems — such as strengthening mechanisms for fund flows and program implementation; upgrading public health management capacity; delegation of powers and accountability for results. These measures could do much to help use public funds more effectively for protecting people's health.

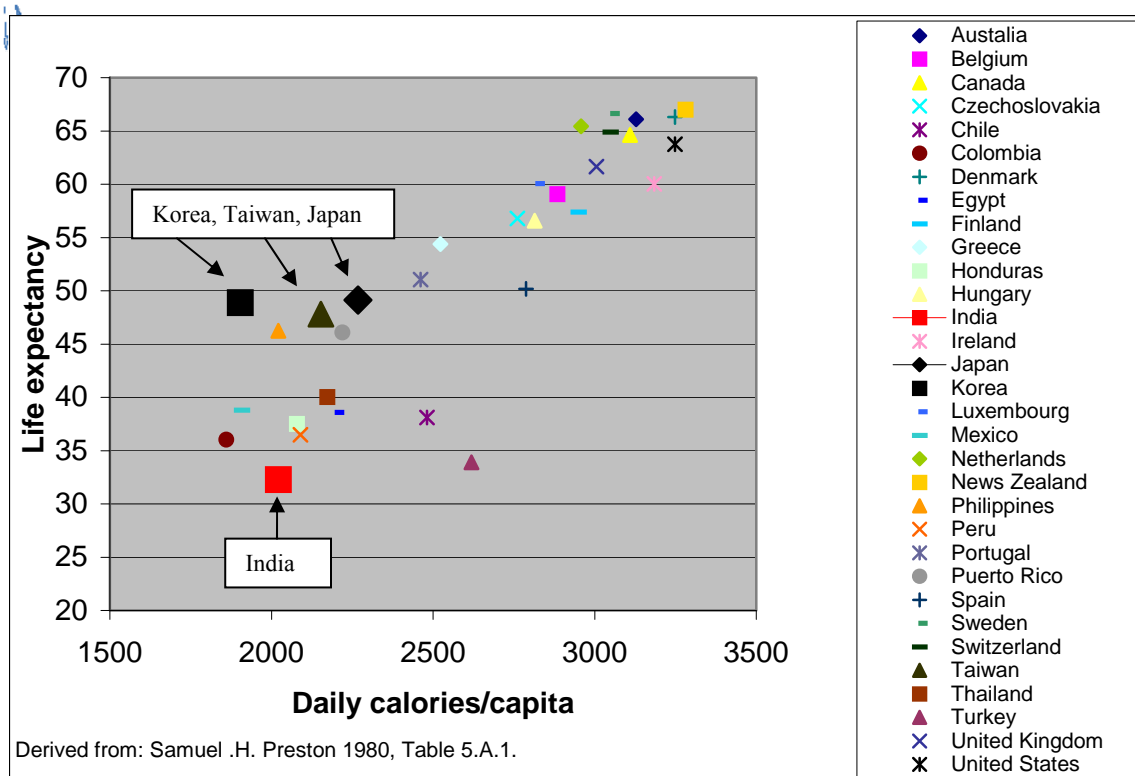
FIGURE 1. Infant mortality rate,* by year — United States, 1915–1997



*Per 1000 live births.

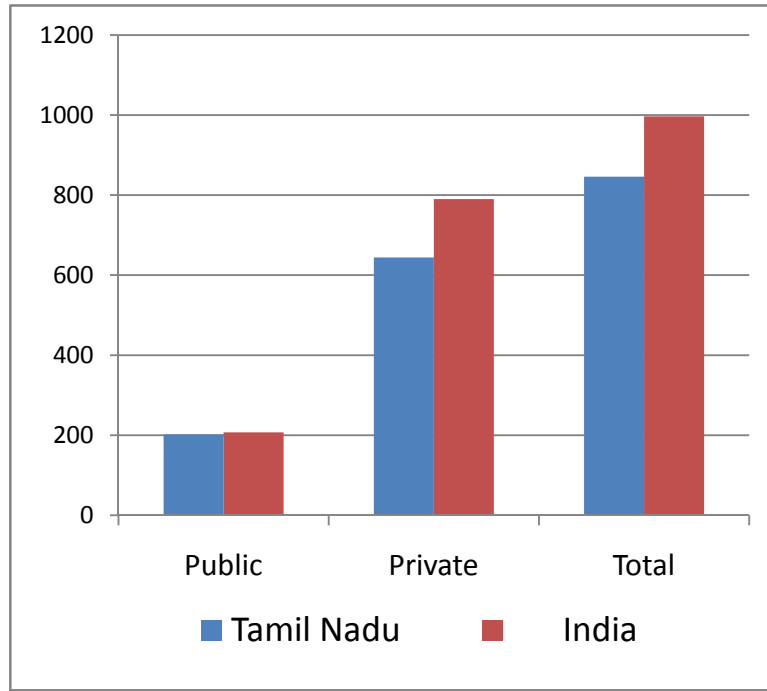
Source: US Centers for Disease Control MMWR Weekly 1999, 48(38): 849-858

Figure 2 Life Expectancy and daily per capita caloric availability, 1940: Japan and its colonies compared with India and other countries

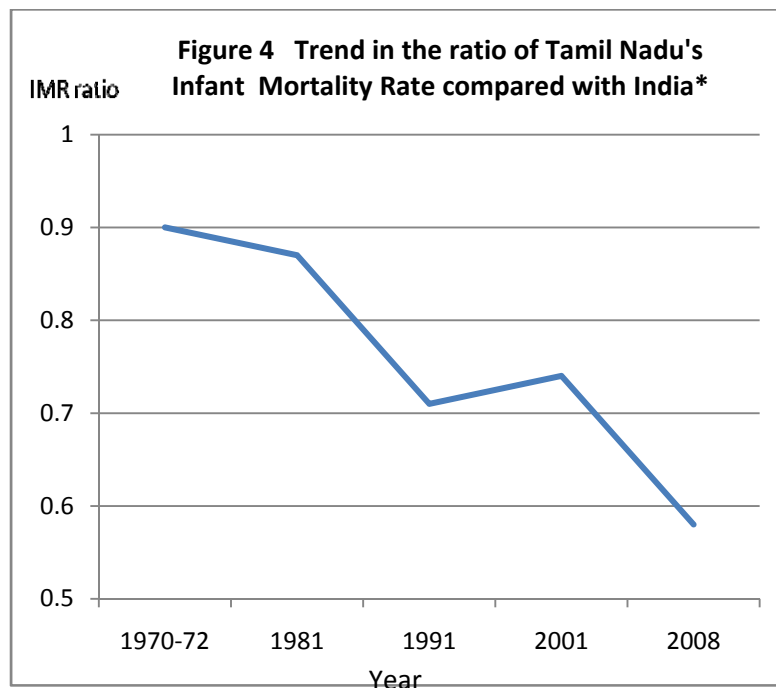


Derived from: Samuel .H. Preston 1980, Table 5.A.1.

Figure 3: Per Capita Expenditure on Health (Rs), Tamil Nadu and India



Source: Government of India (2005: Table 1.3)



* The value for India is 1 throughout.

Source: Registrar-General of India, Sample Registration System, various years.

Notes: The data for the individual years 1970-72 have been averaged to obtain the estimate for 1971, because the SRS began in 1970 and its data quality fluctuated somewhat at the start.

Appendix 1: Duties of Public Health Inspectors in Sri Lanka

General -

- shall gain the confidence and co-operation of the people of his assigned area;
- shall within 3 months of assuming duties in the area carry out a survey of the area and write a report according to departmental instructions, and prepare a programme of work for approval of the supervising officer.

Control of Communicable Diseases -

- shall investigate cases of communicable disease, keep contacts under surveillance and take appropriate action to prevent the further spread of disease;
- shall assist in immunization at clinics when instructed by the supervising officer;
- shall assist specialized campaigns in their disease control activities when called upon to do so;
- shall assist in tracing contacts of leprosy, tuberculosis and sexually transmitted diseases, and in tracing of treatment defaulters;
- shall visit medical institutions in his area and ascertain the communicable diseases treated at these institutions and take appropriate action;
- shall study the mortality and morbidity statistics of the area and submit proposals to the supervising officer;
- shall regularly inspect houses and advise on the requirements of sanitary latrines, water supply, refuse disposal, light and ventilation and maintenance of home garden, and ensure that improvements are carried out.

Housing: Shall report on building applications, inspect buildings under construction, and make recommendations on the issue of certificates of conformity for completed buildings; report and take action on unauthorized buildings.

Sanitation: Shall get latrines constructed, and recommend financial assistance, where appropriate, under the Aided scheme of Latrine Construction.

Water supply

- shall supervise the maintenance of public water supplies and ensure proper disinfection;
- shall send water samples for bacteriological and chemical analysis;
- shall inspect private and public wells and ensure that improvements are carried out.

Refuse Disposal: Shall supervise the scavenging services of local authorities and ensure collection and proper disposal of refuse.

Vector Control: shall undertake fly and mosquito control, anti-rat work and the abatement of nuisances of public health importance.

Rabies control: Shall ensure vaccination of dogs against rabies and the eradication of stray dogs.

Food Safety

- shall carry out a survey of all food handling establishments in his area, and regularly inspect food handling establishment and advise on improving their sanitary conditions;
- shall carry out the responsibilities of an Authorized Officer under the Food Act.
- shall pass animals for slaughter if asked by the supervising officer and ensure proper slaughterhouse sanitation;
- shall inspect fairs, markets and festivals and ensure maintenance of proper sanitation.

Sanitation of Medical Institutions: Shall supervise the sanitation of medical institutions and submit reports to the medical officer in charge of the institution.

School Health Work

- shall carry out a school health survey per departmental instructions and formulate a programme of work;

- shall assist the Medical Officer of Health/District Health Officer in carrying out School Medical Inspections and carry out medical inspections himself when directed to do so.
- shall carry out immunizations and worm treatment in schools.

Occupational Health (including Estate Health)

- shall inspect all factories and work-sites in his area, identify health hazards, and advise on remedial measures;
- shall inspect all estates in his area, advise on environmental sanitation and the control of communicable diseases.

Disasters and Epidemics: Shall organize and supervise health activities related to environmental sanitation and prevention of communicable diseases during disasters and epidemics.

Records and Reports: Shall maintain records and submit reports per departmental instructions.

Health Education: Shall plan and implement a programme of health education in his area and ensure community participation in health activities.

Team work

- shall work and maintain cordial relations with the public health nursing sister and public health midwife of the area as a member of the health team.
- shall carry out any other duties assigned to him by his superior officer.

Source: Sri Lanka Ministry of Health, Public Health Inspector's Training Program, Kalutara, also cited in Dalpatadu et al (2008).

References

- Arnold, David. 1989. "Cholera mortality in British India 1817-1947." In Tim Dyson, ed., *India's Historical Demography*. London: Curzon Press.
- Ashton, John, and Howard Seymour. 1988. *The New Public Health*. Philadelphia: Open University Press
- Barnett, Darryl B., Joe E. Beck, Worley Johnson, and Steven Konkel. 2003. "Environmental Health in Public Health", ch 23 in F.Douglas Scutchfield and C. William Keck (eds.) *Principles of Public Health Practice*, Clifton Park NY: Delmar Learning (second edition).
- Dalpatadu K.C.S., C.K. Shanmugarajah, Monica Das Gupta, H.M.S.S.D. Herath, Reggie Perera, and Tharanga Fernando. 2008. *The organization of public health and environmental sanitation services in Sri Lanka, and the role of the Public Health Inspector in its service delivery*, Report prepared for the World Bank, Colombo, Sri Lanka: Institute of Health Policy.
- Das Gupta, Monica. 2005. "Public Health in India: dangerous neglect", *Economic and Political Weekly* 40(49): 5159-65. A shorter version of this was published in Kaushik Basu (ed.) *Oxford Companion to Economics in India*, Oxford University Press, 2007.
- Das Gupta, Monica, and Lawrence O. Gostin. 2009. "Building Global Public Goods in Health: The Roles of Donors and International Agencies", *The Lancet* 373: 1395-7. (A longer version is available online as World Bank Policy Research Working Paper No 4907)
- Das Gupta, Monica, B.R. Desikachari, T. V. Somanathan, and P.Padmanaban. 2009. "How to Improve Public Health Systems: Lessons from Tamil Nadu", Washington DC: The World Bank Policy Research Working Paper 5073 (http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2009/10/13/000158349_20091013150143/Rendered/PDF/WPS5073.pdf)
- Dyson, Tim (ed). 1989. *India's Historical Demography*. London: Curzon Press.
- Donaldson, L.J. 2001. "125 Years of Public Health in the UK", *Journal of the Royal Society for the Promotion of Health* 121(3):146-151.
- Duffy, John. 1990. *The Sanitarians: a history of American public health*, Urbana and Chicago: University of Illinois Press.
- Easterlin, Richard.A. 1999. "How Beneficent is the Market? A Look at the Modern History of Mortality", *European Review of Economic History* 3:3:257-294.
- Easterlin, Richard.A. 2000. "The Worldwide Standard of Living since 1800", *The Journal of Economic Perspectives* 14(1):7-26.
- Flemming Konradsen, Wim van der Hoek, Felix P. Amerasinghe, Clifford Mutero, and Eline Boelee. 2004. Engineering and malaria control: learning from the past 100 years, *Acta Tropica* 89(2): 99-108
- Government of Gujarat. 2009. The Gujarat Public Health Act 2009 (draft), (http://www.gujhealth.gov.in/PUBLICHEALTH/pdf/THE_GUJARAT_PUBLIC_HEALTH_ACT__2009_-_26-02-2009.pdf)
- Government of India. 2005. *National Health Accounts: India 2001-02*, New Delhi: Ministry of Health and Family Welfare, National Health Accounts Cell
- Government of West Bengal, Department of Health. 1970. *Health Manual Vol 1 (Administration)*, Alipore, West Bengal: Superintendent, Government Printing.
- Guha, Sumit. 1993. "Nutrition, Sanitation, Hygiene, and the Likelihood of Death: The British Army in India c. 1870-1920." *Population Studies*, 47(3): 385-401.

- Gupta, Devendra B. 2003. "National agencies and center-state relationships in public health in India" World Bank, Washington, D.C. Processed.
- Hamlin, Christopher, and Sally Sheard . 1998. Revolutions in public health: 1848, and 1998? *British Medical Journal* 317:587-591
- Harrison, Mark. 1994. *Public Health in British India: Anglo-Indian preventive Medicine 1859-1914* Cambridge: Cambridge University Press.
- IIPS (International Institute for Population Sciences) and Macro International. 2007. National Family Health Survey (NFHS-3), 2005-6: India: Volume 1, Mumbai: IIPS.
- Institute of Policy Studies. 2005. *Sri Lanka National Health Accounts 2000 – 2002*, Colombo: Institute of Policy Studies, Health Economics Policy Series
- IOM (Institute of Medicine). 1988. *The Future of Public Health*. Washington, D.C.: National Academy Press.
- Johansson, Sheila Ryan, and Carl Mosk. 1987. "Exposure, Resistance and Life Expectancy: Disease and Death during the Economic Development of Japan, 1900-1960." *Population Studies* 41(2): 207-235
- John, T. Jacob. 2009. "Public Health is Infrastructure for Human Development", *Indian Journal of Medical Research* 130: 9-11 (July)
- Lindsay, Steve, Matthew Kirby, Enis Baris, and Robert Bos. 2004. *Environmental Management for Malaria Control in the East Asia and Pacific (EAP) Region*, Washington DC: The World Bank, Health Nutrition and Population Discussion Paper.
- McGuire, James W. 2001. "Social policy and mortality decline in East Asia and Latin America." *World Development* 29(10): 1673-97.
- Milne, Thomas L. 2003. "The Local Health Department", ch 8 in F.Douglas Scutchfield and C. William Keck (eds.) *Principles of Public Health Practice*, Clifton Park NY: Delmar Learning (second edition).
- Ministry of Health and Family Welfare, Government of India. 2002. *National Health Policy 2002* (http://www.mohfw.nic.in/NRHM/Documents/National_Health_policy_2002.pdf)
- Misra, Rajiv, Rachel Chatterjee, and Sujatha Rao. 2001. "Changing the Indian Health System: Current Issues, Future Directions." Indian Council for Research on International Economic Relations, New Delhi.
- Novick, Lloyd F. and Cynthia B. Morrow. 2008. "A Framework for Public Health Administration and Practice", ch 2 in Lloyd F. Novick, Cynthia B. Morrow, and Glen P. Mays (eds) *Public Health Administration: Principles for Population-Based Management*, Sudbury MA: Jones and Bartlett Publishers
- Preston, Samuel H. 1980. Causes and consequences of mortality declines in less developed countries during the twentieth century, pp 289-360 in Richard A. Easterlin (ed.) *Population and Economic Change in Developing Countries*, Chicago and London: The University of Chicago Press.
- Preston, Samuel H. and Michael R. Haines. 1991. *Fatal Years: Child Mortality in Late Nineteenth Century America*. Princeton NJ: Princeton University Press.
- Pruss-Ustun, Annette, Robert Bos, Fiona Gore, and Jamie Bartram. 2008. Safer Water, Better Health. Geneva: World Health Organization.
- Ramasubban, Radhika. 1989. Imperial Health in British India, 1857-1900, in Roy MacLeod and Milton Lewis (eds.) *Disease, Medicine and Empire and the Experience of European Expansion* London: Routledge.

- Rosen, George. 1993. *A History of Public Health*, Baltimore: The Johns Hopkins University Press
- Schofield, Roger et al. 1991. *The Decline of Mortality in Europe*, Oxford: Oxford University Press
- United States Centers for Disease Control. 1999. Control of Infectious Diseases, 1900-1999, *Journal of the American Medical Association* 282(11): 1029-1032
- United States, Tennessee Valley Authority n.d. *Vector Control*
(http://www.tva.gov/environment/reports/ros_eis/4-12_vector_control.pdf)
- Utzinger, Jürg, Yesim Tozan, and Burton H. Singer. 2001. Efficacy and cost-effectiveness of environmental management for malaria control, *Tropical Medicine & International Health* 6 (9): 677–687.
- World Bank. 1993. *World Development Report 1993: Investing in Health*, New York: Oxford University Press
- World Bank. 2005. East Asia Update – Countering Global Shocks, Washington DC: The World Bank, East Asia and Pacific Region
(<http://siteresources.worldbank.org/INTEAPHALFYEARLYUPDATE/Resources/EAP-Brief-avian-flu.pdf>)
- World Bank (Brahmbhatt, Milan). 2006. Economic Impacts of Avian Influenza Propagation, Speech at the First International Conference on Avian Influenza in Humans, Institut Pasteur – Paris, France
(<http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20978927~menuPK:34472~pagePK:34370~piPK:34424~theSitePK:4607,00.html>)
- World Bank 2007a. “Sanitation Saves Lives”
(<http://intranet.worldbank.org/WBSITE/INTRANET/INTERCOMM/0,,contentMDK:21556637~pagePK:87937~piPK:87970~theSitePK:86000,00.html>)
- World Bank 2007b. Sri Lanka Poverty Assessment: Engendering Growth with Equity, Washington DC: The World Bank
- WHO (World Health Organization). 1978. *Role, Functions and Training Requirements of Environmental Health Officers (Sanitarians) in Europe*, Copenhagen: WHO Regional Office for Europe
- WHO (World Health Organization). 2006. *Preventing disease through healthy environments: Towards an estimate of the environmental burden of disease* (eds Prüss-Üstün, A. and C. Corvalán). Geneva: World Health Organization
- WHO (World Health Organization). 2009. *Global Polio Eradication Initiative Annual Report 2008*, Geneva: World Health Organization

Endnotes

- ¹ For example, the costs of poor sanitation are estimated to amount to more than 1% of GDP in Colombia, and 1.4% in Bangladesh (World Bank 2007a). Even more striking are the global costs of emerging diseases such as SARS and avian flu, which arise from poor oversight of livestock management hygiene. Although SARS led to only around 800 deaths (and thus no discernible impact on output), it resulted in economic losses estimated at around 2 percent of East Asian GDP in the second quarter of 2003 (World Bank 2005). The World Bank (2006) estimates that a severe avian flu pandemic among humans could cost the global economy around 3.1% of its GDP, or up to \$2 trillion.
- ² The Health Ministry's National Institute of Health and Family Welfare lists the National Health Programs (<http://www.nihfw.org/NDC/DocumentationServices/NationalHealthProgramme.html>). They are the programs for (1) controlling TB, AIDS, Vector Borne Diseases, Iodine Deficiency, Cancer, Diabetes, and Blindness; (2) eradicating Yaws, Leprosy, and Guinea Worm; and (3) programs for Reproductive and Child Health; Mental Health; Surveillance for Communicable Diseases; Nutrition; and Control and Treatment of Occupational Diseases.
- ³ The World Bank (1993:6) argues that public resources spent on health should be used for "compensating for markets failures and efficiently financing services that will particularly benefit the poor." This includes reducing "government expenditures on tertiary facilities, specialist training, and interventions that provide little health gain for the money spent", and financing and implementing "a package of public health interventions to deal with the substantial externalities surrounding infectious disease control."
- ⁴ Barnett et al 2002.
- ⁵ See for example Barnett 2003, Milne 2003, Novick and Morrow 2008.
- ⁶ See for example Easterlin 1999 and 2000, United States Centers for Disease Control 1999, and Ashton and Seymour 1988. Until the therapeutic advances of the mid-twentieth century, these were the most effective way for elites to protect themselves from diseases spreading from neglected groups or areas. See for example, Donaldson 2001, Duffy 1990, and Rosen 1993. See also WHO (1952, 1977) on environmental health services.
- ⁷ United States, Tennessee Valley Authority n.d. This contrasts sharply with the central government's shifting of attention away from malaria in the early 1960s, after it had succeeded in sharply reducing malaria incidence. This was followed by a resurgence of malaria, attended by with growing problems of drug resistance.
- ⁸ See for example the United States' radical analysis of its public health shortfalls (Institute of Medicine, 1988), and the formation of the European Union's Centres for Disease Prevention and Control to provide some federal order to a multiplicity of diverse national public health systems.
- ⁹ This position is shared by donors, although in the developed world environmental health services are considered fundamental to the work of the health authorities (Das Gupta and Gostin 2009). Other Ministries do provide some important inputs to environmental sanitation, such as those provided by the Ministry of Rural Development's Nirmal Gram Puruskar, and the Ministry of Urban Development's Urban Renewal Mission. However, much of this is infrastructure development, whose operation and maintenance needs to be monitored by health authorities.
- ¹⁰ Das Gupta and Gostin (2009).
- ¹¹ Total public expenditure on health is 1.8% of GDP (World Bank 2007b), and 9 percent of this budget is spent on preventive and public health services (Institute of Policy Studies 2005). This

includes the costs of program management, epidemiological and health monitoring, laboratory support, Public Health Inspectors, and the staff who provide reproductive and child health services. Nor is there heavy expenditure on sanitary infrastructure such as sewerage, as most of the population uses stand-alone latrines. Life expectancy in Sri Lanka approaches that of developed countries (World Bank 2007b).

¹² For example, the need to collect revenues can trump public health concerns — such as collecting license fees from food vendors and factories which do not meet the public health standards for licensing.

¹³ The NUHM has not yet formally announced its strategy, but the Minister Dr Ramadoss stated this ([The Hindu www.hindu.com/2008/02/23/stories/2008022360321700.htm](http://www.hindu.com/2008/02/23/stories/2008022360321700.htm))

¹⁴ Article 246 of the Indian Constitution sets out three lists, known as the Union List, the State List and the Concurrent List. Legislative and executive power lie with the federal government over subjects in the Union List, with the state governments for subjects in the State list, and with both federal and state governments for subjects in the Concurrent list. Union laws override those made by the states for items in the concurrent list. The health-related provisions in the Union list relate to port quarantine, research, and scientific and technical education. “Public health and sanitation, hospitals and dispensaries” form Entry 6 of the State List, thereby falling under the jurisdiction of state governments. The concurrent list includes the ‘prevention of the extension from one State to another of infectious or contagious diseases or pests affecting men, animals or plants’, and other issues with wider national ramifications such as food and drugs, family planning, medical education, and vital statistics. In practice, there is considerable overlap in the functions performed at the central and state levels (Gupta, 2003, Misra and others, 2001).

¹⁵ (http://www.nihfw.org/NDC/DocumentationServices/Committe_and_commission.html).

¹⁶ (http://www.nihfw.org/NDC/DocumentationServices/Committe_and_commission.html)

¹⁷ These issues are discussed further in Das Gupta (2005).

¹⁸ See Arnold 1989, and the other papers in Dyson 1989.

¹⁹ See for example Karnataka Health Department’s description of the health services it provides <http://stg2.kar.nic.in/healthnew/Services.aspx>,

²⁰ Lindsay et al. 2004, Flemming et al 2004, Utzinger et al 2001, World Health Organization 2006, Pruss-Ustin et al 2008.

²¹ This followed the recommendations of the Kartar Singh Committee of 1973 (http://www.nihfw.org/NDC/DocumentationServices/Committe_and_commission.html)

²² It is always much easier to perceive the benefits of being cured, than those of not falling ill in the first place, and the media rarely trumpet achievements such as the fact that (for example) New York has succeeded through vigilance in not having a typhoid epidemic for perhaps a century, although there are still 30-50 cases in the state each year because of foreign travel. The figures on current cases are from the website of the New York State Department of Health. http://www.health.state.ny.us/diseases/communicable/typhoid_fever/fact_sheet.htm

²³ In the past, Health Secretaries were members of the health services, at least in some states. The quote in footnote 19 indicates that this held in West Bengal till 1962.

²⁴ Currently less than 2 percent of the central government health cadre is specialized in public health, although they are expected to provide the technical backing for all the states.

²⁵ Even during the first 5 years, the state’s contribution (though smaller than the Centre’s) is in absolute terms substantial for the state’s budget.

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- ²⁶ We thank Jerry LaForgia and G.N.V.Ramana for pointing out the state public health expenditure data, and for raising the point about alternative arrangements for fund flows and implementation.
- ²⁷ The result is chaotic. For example, Karnataka and Kerala still have on their books the old Public Health Acts which came with each component region cobbled together to form the new states in the 1950s. They have never been consolidated and updated, and are in disuse.
- ²⁸ A key advantage of a Public Health Act over other available legislation in India with public health implications is that it includes a very broad definition of a public health “nuisance”. This includes any situation that poses a credible threat to the public health, a few examples of which are premises or animals kept in unhealthy conditions, stagnant water or ill-maintained drains, accumulation of refuse, and factories that are poorly designed or maintained.
- ²⁹ Moreover, local body Acts are enforced by local body officials, rather than state health officials. The lower incentives of municipal officials to implement public health regulations are discussed in the companion paper (Das Gupta et al 2009).
- ³⁰ Government of Gujarat 2009. For Karnataka, see Institute of Health Management Research, Bangalore http://www.ihmr.org/about_pc_project1_6.html. Gujarat’s experience suggests that regulation of medical services should not be appended to a Public Health Act, since this can evince strong protest from doctors’ associations. The Gujarat State Branch of the Indian Medical Association is incensed by the proposed regulation of medical services appended to the Public Health Act (<http://indian-medicos.blogspot.com/2009/04/gujarat-doctors-to-fight-proposed.html>)
- ³¹ The negative consequences of not having a separate public health cadre is widely recognized by public health specialists in India. See for example John (2009)
- ³² This added to the undermining implicit in the amalgamation of medical and public health services — as reflected in the fact that Sanitary Inspectors were mentioned as a core part of health services in the 1st and 2nd 5-Yr Plans, but dropped from the discussion after 3rd Plan.
- ³³ See for example United States Centers for Disease Control (1999), World Bank (1993:6), WHO (1978, 2006), Duffy (1990), Preston and Haines (1991), Rosen (1993), and the papers in Schofield et al (1991).
- ³⁴ He bases this description on a number of studies conducted in Taiwan around the time of Japanese de-colonization, from the 1940s and early 1950s.
- ³⁵ Johansson and Mosk (1987) argue that reducing the toll of communicable diseases raised labor force productivity and life expectancy in Japan, despite lack of rise in wages and consumption. See also McGuire (2001) on Taiwan.
- ³⁶ See for example Ramasubban (1989), and Guha (1993).
- ³⁷ This could be considered, for example, in Himachal Pradesh, where the Health Department has established a unit for Health Safety and Regulation (personal communication from Deepak Sanan, Health Secretary, Himachal Pradesh).
- ³⁸ Source: budget data, R Shukla
- ³⁹ Dr P. Padmanaban (Director of Public Health, Tamil Nadu, retired), personal communication.
- ⁴⁰ Dr P. Padmanaban (Director of Public Health, Tamil Nadu, retired), personal communication. This was at a workshop held in Puducherry (Pondicherry) during 2008, for state Health secretaries and the Mission Directors of the NRHM.