

The Public Health System in Uttar Pradesh

Systemic Malaise, Diagnostics, and a Set of Prescriptions

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Uttar Pradesh (UP) has among the worst health indicators of any state in India. If UP does not achieve the global health-related Sustainable Development Goals (SDGs), India will not; if India will not, nor will the world. This is because if UP was a country, its population would make it the sixth most populous country in the world.

UP's public health system will need to address different kinds of challenges in the near future. First, UP is undergoing multiple health-related transitions. There is a dual challenge that UP faces. These relate to premature mortality, morbidity, and disability underlying a sharply rising non-communicable disease (NCDs) conditions, but at the same time ongoing communicable disease conditions. Second, as per the latest 2014 report of National Sample Survey Office (NSSO), nearly 80 per cent of all outpatient visits and about 60 per cent of all hospital episodes occur in the private sector. However, critical public health services such as immunization, provision of maternal and child health services, prevention of communicable diseases programmes, management of outbreaks, epidemics, and disasters and surveillance continue to be delivered largely through the public health system. This is yet another reason why the

state is at a critical juncture, as it tries to rebuild the public health system, and, with this objective, has in 2018 prepared a draft State Health Policy (SHP).¹

This chapter addresses three issues in respect of UP's health system—infrastructure, human resources, and governance—with a greater focus on governance. But it begins with the first two issues because if the severe shortages of public health infrastructure and health-related human resources are not resolved first or at least simultaneously, systemic change in the governance of the health system cannot convert a poorly functioning public/private health system into an optimal one. While the focus of this chapter is on the governance system in the health sector, we need to put the governance issues in UP in context.

This chapter is organized as follows. The first section begins with a conceptual framework that is the basis of the rest of the analysis (see Mehrotra and Delamonica, 2007; Mehrotra, 2016). Section two examines very briefly the health and nutrition outcome indicators for UP, and compares them to those prevailing

¹ As of January 2020, this is still a draft document.

in the rest of India. The focus is on the comparison with other poorer states (mostly northern and eastern states of India). The next section briefly discusses the infrastructure shortages relative to norms that exist in UP, and how those compare with other states. The fourth section discusses the human resource shortages in UP, again comparing with other states, as well as the national average. Section five examines the fragmentation of the public health delivery system, created by the multiplicity of institutions that deliver public health services. The next section discusses the dysfunctionality that arises from the lack of cross-sectoral coordination among ministries/institutions whose effectiveness will largely be responsible for how the social determinants of health outcomes play out (favourably or adversely). Section seven examines how data collection and use, and e-governance generally, could improve the governance of UP's health system. The chapter concludes with five policy recommendations.

THE SYNERGY AMONG SOCIAL SERVICES

Interventions in health, nutrition, water and sanitation, fertility control, education, and income complement each other—and positively affect the life of an individual. This increases the impact of any one from investments in any other (see Figure 18.1).

Figure 18.1 represents this notion of synergy. On the horizontal rows, the various social services are

represented as inputs or interventions—education, family planning, health, nutrition, and water and sanitation. The vertical columns represent the human development outcomes or outputs—knowledge, family size, health status, nutrition status, and healthy living conditions. The dark-shaded cells show the direct and obvious relationship between inputs and outputs. The light shaded cells are the ones where there is a relationship—but an indirect one—between a certain intervention and an outcome,—for example, the use of contraception (that is family planning), by helping the spacing of children, indirectly benefits the health status of the mother as well as the child.

The arrows represent feedback effects from human development outcomes to the inputs/processes. For example, the improved health status of a child improves her ability to learn, just as improved nutritional status does. Similarly, reduced family size improves the chances that a poor family will be able to afford education for all the children rather than merely the boy(s) in the family, and so on.

Since the connections presented here are central to our arguments about synergies, a more in-depth review of these connections is needed. First of all, it has to be recognized that all these relationships are based on evidence discovered several years ago. However, probably in part due to overspecialization within the disciplines represented on the matrix, they are all too often presented separately. By integrating them, it becomes clear that their separate effects, the ones often reported, are only partial. In fact, the impact of any one form of investment is increased in the presence of the others, proving the advantages of integrated approaches.

Notice that *educational inputs* have an impact on all types of human development outcomes. The positive effects of education are intuitive and well known. First, parents, especially mothers, make better use of information and reproductive healthcare facilities if they are more educated. Thus, more widespread education is associated with a lower fertility rate. Better nutritional and healthcare is provided by educated parents for themselves and their children. Various routes ensure this result. The general knowledge acquired at school increases understanding of modern health practices and scientific beliefs, which make mothers (and fathers) more open to using healthcare centres. Households with educated mothers spend a higher proportion of their income on food and health services. In addition, the capacity to acquire new knowledge and change

		Human development outcomes/outputs				
		Knowledge	Family size	Health Status	Nutritional Status	Healthy living conditions
Social services inputs/processes	Education		↙	↙	↙	↙
	Family Planning	↙				
	Health	↙	↙		↙	↙
	Nutrition	↙	↙	↙		
	Water and sanitation					

Figure 18.1 The First Synergy between Social Service Inputs and Human Development Outputs

Source: Mehrotra and Delamonica (2007); Mehrotra (2016).

behaviour accordingly is higher among those who attended school, as evidenced by the differential diffusion of HIV/AIDS among educated and uneducated women (Vandemoortele and Delamonica 2000). As a result, health investments are more efficient in the presence of a more literate population (Caldwell 1986).

In countries where parents have been exposed during their school years to nutrition information combine different foods to obtain better nutritional outcomes. Also, mothers take better care of their nutritional needs during pregnancy, avoiding low birth weight (ACC/SCN 2000). Basic education also facilitates the rapid adoption of improved hygienic behaviour. This not only improves health outcomes but also enhances the impact of investments in water and sanitation systems.

In summary, education, and in particular girls' education, contributes to enhance the impact of other sectoral interventions. All of these, in turn, result in good nutrition and health, increasing the likelihood children will attend school and become better students. For instance, with lower fertility, parents can devote more attention to their children's studies and afford more food and school supplies which improve learning. In addition, access to clean water and safe sanitation (that is healthy living condition) helps girls—when girls need less time in household chores like fetching water, they have more opportunities to attend school. Also, they have more time and energy to study and do well in school, avoiding repetition or dropping out.

Family planning, by providing easy access to contraceptive means, enables the mother to space births, thus lowering the health risk to herself and the child, reducing infant and maternal mortality, and improving the healthy development of the child. Thus, lower fertility has a positive implication for improving health and increasing life expectancy. Another important complementary outcome of intervention in health, education, water/sanitation, and family planning is the rapid demographic transition. As children survive, families voluntarily curtail the number future births. This is not the place to enter the debate on the relative impact of supply of contraceptives versus desired family size in family planning (Bongaarts 1994; Cassen 1994; Pritchett 1994). However, it is clear that lower infant and child mortality plays a major role in reducing fertility rates (Caldwell 1986), as does education, the availability of information on reproductive healthcare, and its accessibility (Cochrane 1979).

As population growth slows down, school systems find it easier to absorb all children. Teacher–pupil ratios

can be reduced without unduly burdening budgets and construction costs can also be reduced releasing resources for other measures to enhance school quality.

As in the case of the health and nutrition sectors, the availability of information on and access to family planning services will not, on their own, reduce fertility as much as it might be needed or desired. They are more effective when couples are more educated and child survival rates are higher.

It is also very well established that lack of good *nutrition* critically interacts with *health*. For instance, control of diarrhoea and measles is very important not only for health outcomes but also in reducing malnutrition (by improving the capacity to absorb and retain caloric intake). By the same token, an insufficient intake of total calories, vitamins, and proteins weakens children's immune systems. This would make them vastly more vulnerable to the onset and consequences of infectious diseases. Interventions in health promote good nutrition and interventions in nutrition promote good health.

Moreover, micronutrient deficiencies and illness can have devastating consequences for the cognitive development of a child. For instance, iron deficiency or anaemia reduces cognitive functions, iodine deficiency causes irreversible mental retardation, and vitamin A deficiency is the primary cause of blindness among children. Girls are unfairly disadvantaged in many of these cases because they have to undergo monthly menstruation cycles, when they lose blood, sometimes excessively, without having counselling support or medical advice. They are more likely to suffer from iodine or iron deficiency.

While it is clear that good health and nutrition have benefits which reinforce each other, the above examples also show that they impact positively on fertility control and education. But it is also clear that good health, the protection against disease, and proper nourishment cannot be produced by health services or food alone.

Safe water and adequate sanitation also play a fundamental role in determining health conditions. Access to safe water and sanitation dramatically reduces the incidence of diarrhoea and many other diseases that kill millions of children and adults each year. Another effect of better access to water takes place through the reduced effort in carrying water, a burden that is usually unduly borne by females. Given the traditional roles they play in most societies, when women have more time, they can apply it to better infant and child care.

This leads to positive health results. Finally, especially for women, more time is available for pecuniary productive activities. This direct impact of water and sanitation improvements positively affects productivity not only through improved health outcomes, but by releasing time, thereby enabling women to undertake economic activities, even if these activities are home based. This is less publicized than the effect of higher levels of education and better health on productivity.

The presence of toilets, safe water, and hygienic conditions at school can reduce some constraints on sending children, especially girls, to school. Separate toilets for girls are known to be a consideration for parents because of privacy and security concerns for post-pubescent girls. Backed by proper hygienic behaviour such as hand-washing and the use of soap, access to safe water and adequate sanitation reduces morbidity from infectious diseases and increases the nutritional status of children, which furthers their learning abilities.

In summary, each intervention has ramifications which lie outside its 'sector' and adds up to a virtuous circle of social and economic development. This is different from the existence of an externality, although they are, of course, present. Unlike the traditional treatment of externalities, which are usually exceptions, these interactions are pervasive.

This is a multi-dimensional synergetic system. No wonder it results in a complex process, at which most developing countries have not yet succeeded. From an instrumental point of view, the benefits do not automatically accrue to all and markets alone would not ensure universal access, hence there is a need for the public sector to step in and finance these services, and also to probably provide them, especially at the most basic/primary levels in rural areas, where quality private services are missing.

In sum, interventions in health, nutrition, water and sanitation, fertility control, education, and income complement each other and positively affect the life of an individual. This increases the impact of any one form of investments in any other. It is because there have been serious shortcomings in respect of each one of these dimensions of basic social service delivery in UP that its health outcomes are much worse than in the rest of even the poorer states in India. Although these problems are prevalent nationwide (Rao 2017), they are more exaggerated in UP. This is discussed in the next section.

HEALTH OUTCOMES IN UP: MUCH WORSE THAN INDIA

Table 18.1 presents data for outcome/process indicators for UP, India, and other poorer states. The outcome indicators presented (infant mortality rate [IMR], under-five mortality rate [U5MR]) for UP were worse than not only India, but also other major poorer states in 2005–6 (National Family Health Survey or NFHS-3), but remain worse in 2015–16 (NFHS-4). For process indicators such as share of children fully immunized too there is little cause for cheer, as only half of all UP's children are immunized. The female fertility has shown a sharp decline between 2005–6 and 2015–16, from 2.7 births per woman of age between 15 and 49 years (the reproductive years) to 2.2 births, and this is the only outcome indicator in which UP (2.7) is now doing better than Bihar (3.5).

In respect of nutrition indicators (see Table 18.2), UP is doing better than Bihar, but only slightly. The situation remains grim in 2015–16—40 per cent of children are still underweight, 46 per cent are stunted, and 18 per cent are wasted, and only stunting has seen a 10percent-age point fall over the 10 years between NFHS-3 and NFHS-4. These rates are only worse in Bihar, though not much different than in UP.

These health and nutritional outcome indicators are the result of a combination of factors: (a) shortages in infrastructure of public health; (b) shortages in human resources in public health; and (c) serious governance failures. We discuss each of these in turn in the next few sections.

SHORTAGES IN HEALTH INFRASTRUCTURE, EQUIPMENT, AND SUPPLIES

UP suffers from a shortfall in functional sub-centres, primary health centres (PHCs), and community health centres (CHCs) as per its population, as Tables 18.3, 18.4, and 18.5 show. These tables present the grim reality of the state of health infrastructure in UP. Table 18.3 shows that only a quarter of sub-centres, PHCs, and CHCs are in place, compared to the norms. Table 18.4 shows that the situation is even worse on the ground because according to the Ministry of Health and Family Welfare (MoFHW), none of the sub-centres are as effective and functional as they could be, and under 5 per cent of the PHCs (based on the Indian Public Health Standards [IPHS] norms) are functional. Table 18.5 demonstrates that the number of sub-centres, PHCs,

Table 18.1 UP vs Poorer States: Key RMNCH+A* indicators

S. no	Indicators	India			Uttar Pradesh			Bihar			Madhya Pradesh			Rajasthan		
		NFHS-4	NFHS-3	Diff	NFHS-4	NFHS-3	Diff	NFHS-4	NFHS-3	Diff	NFHS-4	NFHS-3	Diff	NFHS-4	NFHS-3	Diff
1	IMR	41.0	57.0	-16.0	64.0	73.0	-9.0	48.0	61.0	-13.0	51.0	69.0	-18.0	41.0	65.0	-24.0
2	U5MR	50.0	74.0	-24.0	78.0	96.0	-18.0	58.0	84.0	-26.0	65.0	93.0	-28.0	51.0	85.0	-34.0
3	%age of mothers who had full antenatal care	21.0	11.6	9.4	5.9	2.7	3.2	3.3	4.2	-0.9	11.4	4.7	6.7	9.7	6.3	3.4
4	%age of institutional deliveries	78.9	38.7	40.2	67.8	20.6	47.2	63.8	19.9	43.9	80.8	26.2	54.6	84.0	29.6	54.4
5	%age of children aged 12-23 months fully immunized (BCG, measles, and 3 doses each of polio and DPT)	62.0	43.5	18.5	51.1	23.0	28.1	61.7	32.8	28.9	53.6	40.3	13.3	54.8	26.5	28.3
6	%age of female sterilization married women 15-49 yrs	36.0	37.3	-1.3	17.3	17.3	0.0	20.7	23.8	-3.1	42.2	44.3	-2.1	40.7	34.2	6.5
7	%age of total unmet need for FP for married women 15-49 yrs	12.9	13.9	-1.0	18.1	23.1	-5.0	21.2	23.9	-2.7	12.1	12.1	0.0	12.3	15.7	-3.4
8	%age of unmet need for spacing married women 15-49 yrs	5.7	6.1	-0.4	6.8	9.0	-2.2	9.4	10.4	-1.0	5.7	5.4	0.3	5.7	7.3	-1.6

*RMNCH+A refers to Reproductive, Maternal, Newborn, Child and Adolescent Health.

Source: Respective NFHS surveys.

Table 18.2 UP vs Poorer States: Key Nutrition Indicators

S. no	Indicators	India			Uttar Pradesh			Bihar			Madhya Pradesh			Rajasthan		
		NFHS-4	NFHS -3	Diff.	NFHS-4	NFHS-3	Diff.	NFHS-4	NFHS-3	Diff.	NFHS-4	NFHS-3	Diff.	NFHS-4	NFHS-3	Diff.
1	%age of mothers who consumed iron and folic acid for 100 days or more	30.3	15.2	15.1	12.9	6.0	6.9	9.7	6.3	3.4	23.6	7.1	16.5	17.3	8.7	8.6
2	%age of all women aged 15–49 years who are anaemic	53.0	55.3	–2.3	52.4	49.9	2.5	60.3	67.4	–7.1	52.5	55.9	–3.4	46.8	53.1	–6.3
3	%age of children exclusively breastfed for 6 months of age	54.9	46.4	8.5	41.6	51.3	–9.7	53.5	28.0	25.5	58.2	21.6	36.6	58.2	33.2	25.0
4	%age of children aged 6–8 months receiving solid or semi-solid food and breastmilk	42.7	52.6	–9.9	32.6	41.2	–8.6	30.7	54.5	–23.8	38.1	46.0	–7.9	30.1	38.7	–8.6
5	%age of children under 5 years who are underweight	35.7	42.5	–6.8	39.5	42.4	–2.9	43.9	55.9	–12.0	42.8	60.0	–17.2	36.7	39.9	–3.2
6	%age of children under 5 years who are stunted (low height for age)	38.4	48.0	–9.6	46.3	56.8	–10.5	48.3	55.6	–7.3	42.0	50.0	–8.0	39.1	43.7	–4.6
7	%age of children under 5 years who are wasted (low weight for height)	21.0	19.8	1.2	17.9	14.8	3.1	20.8	27.1	–6.3	25.8	35.0	–9.2	23.0	20.4	2.6

Source: Respective NFHS surveys.

Table 18.3 Shortfall of Health Infrastructure in UP
(values in absolute numbers)

	Sub-centres	PHCs	CHCs
Required	31,200	5,194	1,298
Available	20,521	3,497	773
Shortfall	34%	33%	40%

Source: MoHFW (2017b).

Table 18.4 Non-Functionality of PHCs and CHCs in UP
(in numbers)

Sub-centres	Sub-centres functioning per IPHS norms	PHCs	PHCs functioning per IPHS norms
20,521	0	3,497	170

Source: MoHFW (2015b).

Table 18.5 Health Infrastructure in India, especially UP,
Bihar, TN, and Kerala

	India	UP	Bihar	TN	Kerala
Districts	640	75	38	32	14
Sub-centres	155,069	20,521	9,729	8,712	4,575
PHCs	25,354	3,497	1,802	1,368	824
CHCs	5,510	773	148	385	225

Source: MoHFW (2017b).

and CHCs is much smaller in UP compared to that in Tamil Nadu (TN) and Kerala. At the same time, the outcome indicators are much worse in UP than in these other states, in other words, the need in UP is greater, but the infrastructure, in sheer quantitative terms, is much less.

When compounded with the human resource shortages (the next section), it is hardly surprising that the outcome indicators shown in the previous section are among the worst in UP. The governance problems (the subsequent sections) in the public health system only serve to compound the problems for the patients.

HUMAN RESOURCE SHORTAGES AND THE RELATED QUALITATIVE ISSUES

In UP, as on 2017, the density of allopathic doctors is estimated to be 3.2 while that of nurses is 3 per 10,000 population. This translates to one allopathy doctor catering to a population of 3,185 in the state as against the norm of 1 doctor per 1,000 population. Similarly, one nurse caters to a population of 3,067 as against the

World Health Organization (WHO) norm of one nurse per 500 population.

The Quantitative Evidence in Respect of HR Shortages

This section examines the human resource shortages from a variety of perspectives in the form of tables. We discuss each of these tables and what they reveal separately.

Table 18.6 compares UP's doctor strength to that of India, and particularly of Kerala and TN. What is remarkable is that while UP has a population over twice as large as Kerala or TN, that it had less doctors in total than TN in 2007, and over the next seven years till 2014 TN had increased its doctors by a larger number than UP had.

A more worrying situation is revealed by Table 18.7, which normalizes the same data for doctors per 1000 population in each state. In 2007, the number of doctors was barely a third of the average in India, and a quarter of that of Kerala and TN. The ratio per 1,000 had barely improved in UP by 2017, while the ratio had improved significantly from already much higher levels in Kerala and TN.

Similarly, when we examine Table 18.8, it is clear that UP has a serious shortage of all kinds of personnel for the health system, whether it is doctors, specialists, or paramedics (particularly in the lower level facilities).

Table 18.6 State-wise Number of Doctors Possessing
Recognized Medical Qualifications

As of	UP	Kerala	TN	India
2007	51,978	35,109	78,574	731,439
2014	65,343	44,515	102,328	938,861
2016	65,343	51,063	118,275	1,005,281

Source: MoHFW (2017b).

Table 18.7 Ratio of State-wise Number of Doctors
Possessing Recognized Medical Qualifications to Population
(per 1,000 people)

As of	UP	Kerala	TN	India
2007	0.278	1.047	1.197	0.648
2014	0.309	1.263	1.490	0.758
2016	0.299	1.431	1.704	0.792

Sources: The population values for the year 2007, 2014, and 2016 are taken from the population projections for India and states. See MoHFW (2006, 2017b).

Table 18.8 Huge Gaps in HR at CHCs and PHCs in UP compared to India

Type of medical and paramedical staff	UP vs India	Required [R]	Sanctioned [S]	In Position [P]	Vacant [S – P]	%age of shortfall
Doctors at PHCs	UP	4,509	3,497	2,209	1,288	51.0
	India	34,750	25,308	27,421	–2,113	21.1
Surgeons at PHCs	UP	773	529	112	417	85.5
	India	5,396	3,320	896	2,424	83.4
Obstetricians & Gynaecologists (OB&GY) at CHCs	UP	773	524	115	409	85.1
	India	5,396	3,249	1,296	1,953	76.0
Physicians at CHCs	UP	773	523	103	420	86.7
	India	5,396	2,772	918	1,854	83.0
Paediatricians at CHCs	UP	773	523	154	369	80.1
	India	5,396	2,484	968	1,516	82.1
Total Specialists (Surgeons, OB&GY, Physicians and Paediatricians)	UP	3,092	2,099	484	1,615	84.3
	India	21,584	11,661	4078	7,583	81.1
Radiographers at CHCs	UP	773	230	82	148	89.4
	India	5,396	4,167	2,150	2,017	60.2
Pharmacists at PHCs & CHCs	UP	4,270	2,952	2,883	69	32.5
	India	30,704	28,268	23,131	5,137	24.7
Laboratory Technicians at PHCs & CHCs	UP	4,270	1,331	963	368	77.4
	India	30,704	22,626	17,154	5,472	44.1
Nursing staff at PHCs and CHCs	UP	8,908	4,497	4,412	85	50.5
	India	63,080	74,098	65,039	9,059	–3.1
Health assistants (Female)/ LHV at PHCs	UP	3,497	3,781	1,916	1,865	45.2
	India	25,308	22,993	13,372	9,621	47.2
Health Assistants (Male) at PHCs	UP	3,497	5,757	954	4,803	72.7
	India	25,308	23,505	12,616	10,889	50.2
Health workers (Female)/ ANM at sub-centres	UP	20,521	23,580	20,265	3,315	1.2
	India	153,655	178,480	193,191	–14,711	–25.7
Health workers (Female)/ ANM at PHCs	UP	24,081	27,334	23,731	3,603	1.5
	India	178,963	195,672	212,185	–16,513	–18.6
Health assistants (Male) at sub-centres	UP	20,521	9,080	3,152	5,928	84.6
	India	153,655	93,002	55,657	37,345	63.8

Source: MoHFW (2015b).

While there are shortages in India generally, there is a systematic pattern showing shortages being worse in UP. Moreover, UP shows a pattern of not filling sanctioned posts. It is equally important that the numbers of human resources required as per norms is well above those that have been sanctioned by the state government. So when the filled posts are much lower than even the sanctioned

posts, one can see how serious the crisis is in respect of shortages of medical staff in UP.

Table 18.9 shows that the number of AYUSH² doctors in UP is much more respectable compared to both

² AYUSH refers to Ayurveda, Yoga and naturopathy, Unani, Siddha, and Homoeopathy.

Table 18.9 State-wise Numbers of AYUSH Registered Practitioners, 2014

Stats	UP	Kerala	TN	India
Total	81,320	36,836	33,783	771,468
Per 1,000 population	0.373	1.033	0.487	0.608

Note: The population for the year 2016 has been arranged from the population projections for India and states.

Sources: MoHFW (2006, 2017b).

India as well as the high-performing states of Kerala and TN (even though per 1,000 population even AYUSH practitioners are too few in UP relative to India and high-achieving states). This has implications for how they are currently deployed, and we discuss this issue in the next section on governance within the public health system.

Tables 18.10–18.11 reveal that the situation is rather grim in respect of para-medical staff in UP compared to not only Kerala and TN but also on average in India. Although UP has a much larger population there are only a fifth of the registered nurses or midwives as there

Table 18.10 State-wise Number of Auxiliary Nurse Midwife, Registered Nurses/Midwives, Lady Health Visitors, and Pharmacists

State/India	ANM	RN and RM	LHV	Pharmacists
UP	48,542	52,080	2,763	30,276
Kerala	30,047	231,457	8,507	29,487
TN	56,434	251,704	11,178	58,466
India	821,147	1,900,837	56,264	741,548

Notes: ANM = Auxiliary Nurse Midwife; RN/RM = Registered Nurse/Registered Midwife; LHV = Lady Health Visitors.

Source: MoFHW (2017b).

Table 18.11 Ratio of State-wise Number of Registered Nurses and Pharmacists in India to the Population (per 1,000 people)

State/India	ANM	RN and RM	LHV	Pharmacists
UP	0.222	0.239	0.127	0.139
Kerala	0.842	6.488	0.238	0.826
TN	0.813	3.627	0.161	0.843
India	0.647	1.498	0.443	0.584

Notes: (a) The population for the year 2016 has been arranged from the population projections for India and states.

(b) ANM = Auxiliary Nurse Midwife; RN/RM = Registered Nurse/Registered Midwife; LHV = Lady Health Visitors.

Sources: MoHFW (2006, 2017b).

are in Kerala or TN. The same applies to lady health visitors or pharmacists.

Measures Required to Address the Human Resource Issues in UP

One can see that fixing the governance issues in the public health system in UP will not resolve the serious structural problems that beset the government-funded health sector. In fact, it is obvious that without solving the infrastructural and human resource problems of the system, addressing the governance issues will be like tinkering at the margins of the problem. The following actions could be considered.

Utilizing AYUSH Doctors

In order to meet the shortage of doctors it could be considered that the government can recruit the existing AYUSH doctors and offer them a foundation course. AYUSH doctors should be used to man the national health programmes. Even the PHCs should be staffed by AYUSH doctors. The system needs specialists only at the CHC level. The AYUSH system, especially Ayurveda and homoeopathy, play an important role in the health-care delivery system of Kerala. As of now most of these AYUSH institutions function as stand-alone facilities and have not been co-located within PHCs, CHCs, and district-level facilities (MoHFW 2014). In a similar way the co-located AYUSH systems within PHCs, CHCs, and district level facilities can help in a better delivery of health services in the state. In Madhya Pradesh and Odisha, AYUSH human resources are being effectively used to plug human resource gaps at PHCs and efforts have been made towards building their competencies and multi-skilling. Both states report positive feedback from such multi-skilling. In other states an average of 10–14 per cent outpatient load is taken care of by AYUSH systems and most of the states report adequate availability of AYUSH medicines.

In UP, the public health system currently employs 3,000 AYUSH providers, working at the PHC and CHC levels to provide specialized services in their domain. In the past year, nearly nine million patients received care through AYUSH providers, illustrating the widespread demand and acceptability for these services. Recently, an additional 2,800 have been recruited for placement at PHC and CHC levels to fill in the critical gap at frontline facilities, to address the shortage of allopathic doctors.

Provision of Walk-in Interviews

Doctors' appointments are caught up in the bureaucracy and procedures of the Public Services Commission. There should be a provision for walk-in interviews in order to speed up the process. There was provision for walk-in interviews even for such highly skilled professionals as Air India pilots. For sanctioned posts the budget normally exists and therefore appointments can easily be made. There is a very large number of sanctioned posts that remain unfilled in UP. With unfilled posts, it is not possible for health facilities such as the PHCs, CHCs, and district hospitals to function 24×7. If public health facilities do not function 24×7, there is little prospect of their getting utilized more than they are currently utilized. A very important reason for private or out-of-pocket (OOP) expenditure on health is high is because the private facilities normally have 24×7 services, which (at least in 2012) was true for only 50 per cent of all government facilities. Walk-in interviews for appointment to doctor positions should become a regular practice.

Deployment and Transfers of Doctors

A new system of transfers of doctors will emerge now. Four new categories of districts for purposes of transfers of doctors—A, B, C, and D—have been created. If a doctor is currently located in C or D category district (less preferred), in the next posting, he/she will get preference to be located in district A or B (which are more preferred by doctors in terms of posting). There is now also an online application process for transfer. This should improve the deployment of doctors to less preferred districts, while serving as a dampener upon the 'transfer and promotion industry' that operates marked by widespread corruption. Another method that has been used—if a doctor has a rural posting for three years he will get up to a 30 per cent weightage in promotion consideration. Moreover, to fill the sanctioned posts faster, the state government has undertaken two steps in 2017: first it has increased the retirement age from 60 years to 62 years. Second, there is now cabinet approval for walk-in interviews for doctors. As a result, 1,000 vacant posts of doctors are to be filled by conducting such interviews.

Special Incentive-Based Salary for Specialists

The Provincial Medical Service (PMS) has found it difficult to retain specialist doctors in the cadre. General

doctors with an MBBS and specialist doctors are paid the same in the PMS, with the result that the PMS tends to lose specialists. They are not permitted to do private practice in government. Therefore, there is a case for offering special incentive-based salary for specialists so that the PMS does not lose specialists.

Timely Hiring of Personnel

Our consultations with a number of policymakers as well as stakeholders in the public health revealed a number of additional concerns. There are 13 medical colleges in UP but only three have regular principals. The rest are all appointed on a temporary and ad hoc basis. In the absence of full-time regular appointment of principals, it is hard to see how medical colleges can be governed effectively. All principals in medical colleges must be appointed on a regular basis within three months of the post falling vacant.

Much infrastructure has been built but human resources needed to run the hospital or facilities are not hired. Several actions are necessary. First, the number of seats in medical colleges need to increase but the Medical Council of India (MCI) has to approve this increase. It is not clear why there is need for an MCI approval; this is a job of the state government and professional bodies within the state rather than the MCI. Second, there is scope for introducing a public health course to man lower level staff positions. Third, there are not enough specialists with Doctor of Medicine and Master of Surgery qualifications and more posts need to be created for them. Finally, just like in the education sector we have lower level contractual teachers called Shiksha Mitra who are locally hired, it is essential that the auxiliary nursing midwives (ANMs) must be also locally hired so that absenteeism rate is lower and attendance higher.

Longer Tenures for Director Generals

Most director generals of health have a tenure which does not normally exceed beyond six months as they tend to retire soon thereafter, as they tend to be appointed at the end of their careers, or they are shunted through political pressure. This is not good for the administration of the directorate and for morale generally within the directorate. The director general of health must have a minimum tenure of two years. Some mechanism should be found to accommodate those who have the seniority but do not have a length of service left over to

allow them two years in the position of director general of health.

Change in Hospital Administration

Chief Medical Officers (CMOs) who are doctors usually turn out to be administratively not very proficient in administrative matters. They normally come to a meeting with administrative staff and it is the latter who, on account of their institutional memory and networks, are able to control their CMOs. Some administrative staff in fact have a reputation of being a 'law unto themselves'. Hospital administration, if it is to improve, cannot be run by such people. There is a case now for appointing professionals in hospital management to run hospitals. In fact, the administration of medical colleges, community health centres and district hospitals could then become more professional.

Hiring of Contractual Staff

Paramedics belongs to the category of class III and class IV employees, and like all regular hospital staff have job security for life. They cannot be held to account by doctors, and it is next to impossible to discipline them. It was the view of several stakeholders that it is essential that paramedic appointments must be made contractual. If the fear is that there are no good agencies that will perform this task of finding paramedic contractual staff on a regular basis and transparently, then one can expect such agencies will develop over a period of time. They can help to hire paramedics for the public health system.

Similarly, there is no reason for UP to have regular nursing staff since it has been very difficult to discipline them. A class III nurse gets a salary of Rs 25,000 per month. By contrast, in a corporate private sector hospital a nurse may get a salary of Rs 10,000 per month. Despite the difference in salary, unfortunately the nurses in government hospitals do 'little work'. Hence the suggestion that nurses could be hired in larger numbers on a contractual basis. It is very difficult to discipline regular staff. Contractual staff could be hired with the promise that if they perform well, they could become tenured into regular jobs over a period of time. That would require human resource policies to be altered—performance would have to be objectively measured, and good performance would be rewarded with increasingly longer contracts and higher pay, eventually culminating in regular positions.

ADDRESSING COORDINATION FAILURE WITHIN THE HEALTH DEPARTMENTS

Until the early 2000s in UP (and in other states of India) there was only one department in the health sector. The division into two departments came in 2002 at the instance of a Government of India directive. All states now have a Department of Medical Education and a Department of Health. This has created fragmentation in the governance of the public health system.

In UP, however, the fragmentation is even greater. As though the fragmentation resulting from the 2002 action of the Indian government was not bad enough, we now have for the last several years a third department dealing with health which is the Department of Family Welfare that does not exist as a separate entity in other states. The finances of the National Health Mission (NHM) are much higher than the state government's own resources, and are routed through the Department of Family Welfare. Yet, within the Department of Health there is no institutional mechanism for ensuring that the five or six institutions (Health Directorate, the NHM, the Technical Support Unit, the State Innovations in Family Planning Services Project Agency, and the State Institute of Health and Family Welfare) which are part of the department can coordinate with each other.³

We would therefore recommend that there should ideally be one commissioner for health who would supervise all three secretaries of the three different health departments. This arrangement would be comparable to what is prevailing in the agriculture department in UP. There is an agricultural production commissioner who has 13 departments reporting to him. Similarly, there is an industrial development commissioner which has the following departments reporting to him—small industries, heavy industries, labour, and udyog bandhu. Similarly, there is a social welfare commissioner, who looks after the interests of backward classes, scheduled castes (SCs) and scheduled tribes (STs).

The above action may not still solve the problem if there is an absence of coordination mechanisms between various institutions within the departments.

³ The Common Review Mission to UP in 2017 noted the following: 'The state needs to make an effort for convergence between National Health Mission and Directorate' (MoHFW 2017: 22). Unfortunately, the 8th Common Review Mission had also recognized the same problem in 2014: 'In UP integration within Directorate appears as a problem, manifesting itself at state and district management' (MoHFW 2014: 152).

Hence, it will be essential to introduce a mandatory meeting of the heads of institutions to be presided over by Commissioner for Health Services (the post for which has to be created by a Cabinet decision). In Kerala, convergence between Directorate of Health Services and the State Health Mission is commendable. District Programme Managers (for NHM) are selected from Kerala Medical Services (MoHFW 2014: 171). The state's approach discourages parallel systems of service provision and programme management. This is reflected across all levels with increased integration and ownership of NHM initiatives within the health department/directorate of the state (MoHFW 2014). Clearly, UP will need to adopt the Kerala model with regard to intra-department convergence/coordination.

Separate Public Health Management Cadre

There is fragmentation within the Department of Health, with all its varied institutions⁴ having very different reporting structures. In addition, there is the Rashtriya Swasthya Bima Yojana (RSBY) (now Ayushman Bharat), which has its own reporting structure. With such multiplicity of organizations dealing with public health, half the time of officers at the senior level is taken up with administrative issues. For the doctors particularly this is a problem because administration detracts them from their medical practice. A separate public health management cadre is necessary for administering the public health system.

In certain public facilities a position of hospital manager was created, and once appointed, they are performing well. They mostly come with a background of Master of Public Health and not Bachelor of Medicine and Bachelor of Surgery (MBBS), or sometimes they are AYUSH doctors. Appointing such administrators will take the pressure away from current doctors who are finding it difficult to combine medicine practice along with hospital administration. There are too few doctors in any case, as we have noted earlier. The appointment of these new hospital managers was resisted by some PMS doctors but most are quite happy.

⁴ Technical Support Unit, State Institute for Family Planning, the National Health Mission (NHM), UP Health Systems Strengthening Project (funded by the World Bank), State Institute of Health and Family Welfare, and the Directorates for Health and for Family Welfare.

Adoption of the Discom Model

UP is the most populous state in the country, and its health profile changes in different parts of the state. It is very difficult for a single directorate of health to manage a large system, which is dealing with some of the worst health and nutrition outcome indicators in the country. India needs four directorates of health in a state as large as UP. There are four electricity distribution companies (also called discoms) in UP responsible for different regions of UP. In other words, the discom model has to be similarly adopted for the health sector. The health system administration has to be seen to be more accountable, and closer to the people. A decentralization of the apex organization in the state, like the directorate, needs to benefit from decentralization.

Issues in the Financing of the UP Public Health System

The overall health budget in UP is one of the lowest in the country at Rs 790 per capita, which stands in sharp contrast to the national average of Rs 1,538 per capita. With over 15 per cent of the country's population, UP accounts for only 9 per cent of India's public health spending which gets reflected in the adverse health outcomes. Some other states such as Bihar have recently significantly increased their health sector funding by using the flexibility allowed by the 14th Finance Commission recommendations (which devolved greater central tax revenues to the states 2015 onwards). However, the UP government seems to be unwilling to use a larger part of the additional revenue now available to increase its abysmally low health spending. UP's public health expenditure should at least be brought to levels of the national average per capita spending. The UP SHP commits to increasing its own allocation to health, in the light of the increase of 14th Finance Commission funds to each state, including UP. This is essential because of the very poor outcome indicators in UP, especially compared to poorer states.

Additionally, the financial allocation system within the state is very inflexible, and does not allow local level leeway in use of resources. There should be flexibility in granting funds to different institutions with differing needs. For instance, every CHC is given a similar grant across the board of Rs 200 million (20 crore) per annum. Similarly, most CMOs are ignorant of the flexibility they can exercise in the use of funds and in what areas there remain constraints. Regular training of CMOs is needed with regard to financing issues.

Similarly, medical colleges are given a grant but there is no flexibility in the use of funds; so electricity bills have been mounting and not enough money has been given for paying off the electricity bills. Money, however, is available under other heads but it cannot be utilized to meet the pending electricity bills. As a result, services are adversely impacted and public health is affected.

A big problem with regard to finance is that infrastructure has been built but there is no provision for meeting the recurrent cost or even hiring staff to make the infrastructure operational. Similarly, when infrastructure or a hospital building is created, the health department is never involved in the building plans of the hospital facilities. Never involving professionals during the planning phase and before these facilities are created results in underutilization of facilities. This is quite unlike the private sector where professional doctors are involved in the planning of hospital facilities, or when such infrastructure is created. The UP SHP should ensure that doctors must be involved in all future facility building plans. In addition, no facility should begin construction unless staff positions, departments to be opened, and operation and maintenance costs have been provided for in the Health Department budget for the year in which the facility is to become operational.

Also, Japanese encephalitis (JE) and acute encephalitis syndrome (AES) have been major causes of deaths in UP over the last few years. The number of children dying from these diseases in the last few years remains persistently high—661 deaths in 2014, 521 in 2015, and 694 in 2016. This was a 33 per cent increase in the deaths from 2015. One would normally expect a substantial hike in resources for 2017 to take care of expected patients as well as preventive efforts. The reality in UP is the exact opposite. The proposed funds as well as actual allocation provided by the Union health ministry to the state government under the NHM had been significantly reduced. The demands by UP for AES/JE for 2016–17 was Rs 304 million (30.4 crore), of which only Rs 101.9 million (10.19 crore) was approved by the Centre. However, in the year 2017–18 the budget demand was reduced to Rs 200 million crore but the amount approved by the Centre was further cut to just Rs 57.8 million (5.78 crore), which is 29 per cent of the proposed amount. For specific disease-related financial allocations, there is need for holistic planning, so that (a) financial allocations for addressing the sanitary conditions in the Terai belt of UP (where the AES/JE is most concentrated) are enhanced; (b) at the time of outbreak of the disease (which tends to be concentrated

in the monsoon months when the vector is able to breed easily) financial allocations are made to panchayats and to urban local bodies (ULBs), with strict monitoring of the use of funds through social audits.

Drug Procurement

The NSSO 2014 round of survey reported that patients visiting public health facilities in UP were receiving medicines free or partly free only to the extent of 42 per cent in the outpatient care facilities, while it was 54 per cent in inpatient care facilities. On the other hand, patients visiting public health facilities in TN and Rajasthan reported receiving medicines free in outpatient care settings to the extent of 92 per cent and 79 per cent respectively. In inpatient care settings, the respective shares for these states were 97 per cent and 92 per cent respectively, while the all-India average was reportedly nearly 60 per cent for outpatient and 68 per cent for inpatient facilities.

While UP health department has many institutions, the one institution that was needed on an urgent basis (and has been needed for decades) was a central drug procurement corporation (CDPC)—in 2017 it finally got one. Tamil Nadu has had one for decades, and it has made possible that all health facilities receive drugs from the central supply depot. In UP, by contrast, the system of drug procurement was decentralized to the district level. This has many disadvantages. First, it raises costs since bulk drug purchases can help the government to reduce unit cost of drugs. Second, it encourages decentralized corruption, which is impossible to control precisely because it is so decentralized across the administration at each location. In UP, procurement of drugs has faced problems, according to the NHM Common Review Mission (CRM) reports. Approximately 35 per cent to 40 per cent of the items remained unsupplied without any written communication by the suppliers (MoHFW 2014: 187).

Coordination can make procurement processes more efficient. There are lessons to be learnt from the experience of states like TN and Kerala. Kerala has a transparent and robust system of procurement through a central procurement agency. The Kerala Medical Services Corporation Limited has adopted e-tendering, pre-offer meeting, and payments through online bank transfers. District drug warehouses were available in all 14 districts. A CDPC in UP can promote the sale of only generic drugs, which are often deliberately in short supply in the current system. Moreover, there can be

provision for free drugs to those living below the poverty line (BPL), marginally deprived people, and emergency patients only. UP's plan is to follow the Rajasthan model for this purpose. The proposal is that services (for example, diagnostics) should also be part of procurement and not just medicines.

CROSS-SECTORAL COORDINATION FOR BETTER PUBLIC HEALTH OUTCOMES

We noted in the first section that health outcomes are the result of interventions in other 'sectors': nutrition, water and sanitation, family planning, and even education. As against the national literacy rate of 74 per cent, the literacy rate in UP was 67.7 per cent. Of that, male literacy was 77.3 per cent (national 84 per cent), while female literacy stood at 57.2 per cent (national 65 per cent).

India has worse nutritional indicators than the average sub-Saharan African malnutrition rate. UP has among the worst indicators for any state in India. The nutritional outcomes in UP have shown little improvement between 2005–6 (NFHS-3) and 2015–16 (NFHS-4).

Underlying poor nutritional outcomes is the social determinant of health—sanitation. Rural sanitation remains a serious problem in India, although very significant gains have been made since 2014, thanks to a new approach and much greater focus on it, especially but not only by the prime minister. India accounted for 60 per cent of the global population that defecates in the open; half of India's population defecated in the open in 2011. According to Census 2011, only 31 per cent of rural households had an individual toilet. According to the Management Information System of the Government of India, the share of rural households (which is where the problem is concentrated though not confined to rural areas) with individual household latrines (IHHL) has risen to 100 per cent in every state by 2019–20, on account of the Swachh Bharat Abhiyan (SBA), from 39 per cent in October 2014 to almost 100 per cent, enabling the UP government to declare the state as an Open Defecation Free (ODF) state.⁵ A Quality Council of India survey in late 2017 claims over 90 per cent use of toilets (Quality Council of India 2017), while the NSS 76th Round (2018)

shows a similar percentage of latrine users. However, the difficulty is that survey data offers a different picture from the administrative data regarding ownership of household latrines. In India, only 30 per cent of households draw their drinking water from a hand pump; in UP that share is 71 per cent (only in Bihar it is higher at 88). Only 46 per cent of households had a latrine in rural UP in December 2018, while that share is 63 per cent in India. In fact, despite the SBA, 48 per cent of UP households have no access at all to latrines—so inevitably they defecate in the open. In other words, there is clearly a long way to go in respect of achieving a UP free of open defecation.

Earlier the focus on sanitation programme used to be on building toilets but never was there a similar focus on community mobilization. Much greater attention is needed for creating and sustaining public level awareness about toilet use. That requires the triggering of behaviour change. Only 100 people have been trained in the community-led total sanitation methodology when in fact we need 100,000 people, one for every village. This is a very low-cost way of ensuring behavioural change; the state needs to pay only Rs 100 per person. Just as the government created a category for accredited social health activists (ASHAs) and anganwadi workers (AWWs) to work as service providers, we now need new people who will trigger behavioural change for improving the situation regarding to open defecation.

However, the matter of sanitation goes beyond mere building/use of toilets. If health outcomes are to improve, general cleanliness and hygiene are also important. For instance, one reason why the Gorakhpur district is overwhelmed by AES/JE just around the monsoon period is because of the appalling conditions of environmental health and sanitation, which is caused by water collecting in the Terai belt around the town. The SBA has to focus its activities in the Terai districts of UP, especially in the vicinity of Gorakhpur.

Given these sets of concerns it is natural we should be worried about effective coordination between the various departments that should be coordinating action if the requisite health outcomes are to be achieved in UP. Effective governance in the public health sector requires first, that there is effective coordination between major departments of the state government that impact health outcomes—the Department of Health and Family Welfare; the Department of Women and Child Development (important on account of Integrated Child Development Services [ICDS], which is supposed to

⁵ As per the website of SBA. See <https://sbm.gov.in/sbmReport/home.aspx>, last accessed on 15 January 2020. Similarly, the website states that UP became 99.27 per cent free of open defecation (self-declared by village pradhans).

impact nutritional outcomes of women and children); and Department of Drinking Water and Sanitation.

There is a second level of governance of the public health system that is critical for good outcomes—coordination between the State Department of Health on the one hand, and the local bodies on the other (Panchayati Raj Institutions [PRIs] for rural areas, and ULBs for urban areas). In fact, one of the reasons for Kerala's health sector success story is precisely this convergence of services at the local level of government.

There is a third level of governance of the public health system that is an issue across India—the existence of vertical national programmes (HIV/AIDS, malaria, tuberculosis, and so on) financed from central funds, and the more regular public health systems (financed largely by the state). These are all issues present in UP.

The larger political economy of UP is not the subject of this chapter; however, a brief digression on that subject here would not be out of place. I have argued elsewhere (Mehrotra 2006), that despite the rise of identity politics in UP in the last quarter century, it did not necessarily contribute to the improvement in social services—quite unlike other states such as TN and Kerala. The emergence of identity politics in these southern states in the twentieth century had resulted in social outcomes improving dramatically. Perhaps one important reason for that outcome in the south was that there emerged in those two states a two-party system in its electoral politics, each major party competing with the other to provide improved social services. However, unfortunately in UP the identity politics simply led to the fragmentation of the votes among four major parties. These parties, when in power, focused their energies upon using their power to merely distribute patronage to the caste groups supporting them electorally, with precious little positive outcomes for the rest of the population.

The NHM's CRM reports have also raised these issues repeatedly. It is imperative for the states to have a convergence across various departments in order to build a robust health system. It is seen that all the national programmes clubbed together present a very complicated picture at the field level, particularly in subcentres (MoHFW 2014: 159). Strong institutional convergence was not seen between village health nutrition and sanitation committees (VHNSCs) and gram panchayats (MoHFW 2017: 10). A number of actions would help in ensuring greater coordination between sectors, as the next few paragraphs show.

Better Linkage between Health Functionaries and PRIs and ULBs in UP

Not only has very little decentralization occurred in any sector in UP (unlike in Kerala), but the district staff are lacking in public health skills. UP District Programme Manager Unit (DPMU) staff is overburdened by the number of programmatic interventions for a variety of programmes. Lack of public health skills among district staff limits potential for health system strengthening in districts (MoHFW 2017: 225). Given the absence of accountability and lack of skills of district staff to local community, the DPMU gets overburdened.

The VHNSC in UP has not been functioning on a regular basis, nor is it effective. While effective convergence is reported from several states between ASHAs, ANMs, and AWWs for organizing VHNSC meetings, convergence between the health, ICDS and Jal Nigam (which incorporates the public health engineering function) departments appears to be a challenge at the block and district level. In UP an 'AAA' platform⁶ (for ASHAs, ANMs, and AWWs) is being implemented in 25 high priority districts for effective convergence between frontline workers (MoHFW 2014: 11), but not in other districts. The VHNSC is an important instrument to ensure coordination and synergy between state interventions in health, nutrition, and sanitation measures at the local level. This we know can work, and has been shown to work in other states.

Thus, PRIs play an active role in VHSNCs in many states, with Kerala reflecting the most well-defined and institutionalized systems. Involvement of the PRIs in the Rogi Kalyan Samiti (RKS) was seen in Odisha, Kerala, Chhattisgarh, Mizoram, and TN (MoHFW 2014: 10); but not in UP. So RKS needs to be revitalized in UP.

In Kerala, effective convergence was observed between health institutions and local governance structures (PRI/ULBs), as seen in the palliative care programmes (MoHFW 2014: 171). Convergence extends beyond programmatic efforts to additional financing—state funds to PRI are equivalent to the untied funds provided through the NHM (MoHFW 2014: 171).

In UP, the ULBs and PRIs are very weak. So while in other states such as Kerala they have been used effectively

⁶ The AAA platform, seen in UP as a form of convergence at the level of the sub-centre, has potential to serve as a site for coordinated service delivery, population enumeration, and screening.

to strengthen the public health system, it has not been successfully replicated in UP in the short run.

Decentralized governance in health system is possible. In Kerala, community health care and support is effectively integrated into the PRI system. In the palliative care initiative, a panchayat-appointed community health nurse, supported by the ASHA in the community and the junior public health nurse at the sub-centre, provides home-based care. In order to decentralize care for patients with mental illness, funds for drugs are routed through PRIs with follow-up care provided at the PHC. PRIs also provide mobility support for outreach services and facility maintenance (MoHFW 2014).

From the perspective of UP, the PRIs should conduct social audits of health services. The role that they can be given in the public health system is to carry out social audit at the village level of health services.

Other Cross-Sectoral Interventions Proposed

The communication of messages relating to health, nutrition, and sanitation for the community could be improved through the school system in UP. This will require collaboration between the Department of Health and the Department of School Education. States of TN and Kerala have their own school health programmes. The 8th and 9th CRMs note that there is little evidence of the involvement of education in imparting health messages in UP (MoHFW 2014, 2017).

Sanitation in and around hospitals is extremely poor. This issue is also important from the perspective of hospital-acquired infections, and more specifically the spread of antimicrobial resistance—UP's health systems are already overburdened. The sanitary conditions are terrible primarily on account of the much larger crowd in public health facilities than what the facility is capable to serve. A system study is needed. For instance, one result could be that registration of all patients should take place just outside the hospital, rather than inside the hospital which results in unnecessary overcrowding and creates unsanitary conditions.

Social practices among the population adversely impact health outcomes among illiterate and poor patients. There is a need for mapping out such practices. For instance, in a personal communication with a member of public health staff, it was discovered that the female baby is often bathed in cold water at birth, while the male baby is bathed in warm water. This kind of practice would result in premature neonatal mortality for female children but not for male children.

DIGITIZING THE HEALTH SYSTEM

Generating Intelligence

It was noted by senior staff that there is excessive data being generated—more than can be usefully analysed and used by decision makers. The lower-level staff have to fill hundreds of forms, often in different formats. But one of the major challenges to the health system is that the Health Management Information System and Mother and Child Tracking System data are not being used for planning and monitoring purposes (MoHFW 2017: 263). In UP it is seen that there is no institutionalized mechanism to track non-functional equipment (MoHFW 2017: 4). Governance is abstract in character, an architecture dealing with multiple organizations. It can be simplified by application of information and communication technology (ICT), which can enable health-related information being made available on the web, create PPP model, help customer contact, allocate patient to different levels of healthcare, provide electronic forum for patient interaction, and build an e-prescription system. Intersectoral coordination too is a problem that could be better addressed if each part of the governance system was 'talking to each other' through a platform where such information was regularly shared and available to each player in the system. That, however, would require that using such information available on the platform to solve health-system-related issues becomes incentivized in the HR performance evaluation system for the staff that will use the system. Other means for improving governance and efficiency through the use of information technology include:

1. Computerization of hospitals (registration, outpatient, inpatient, laboratory, imaging section, and record section) are initial steps that UP government could adopt. Quality assurance by total quality management, and medical and nursing audits supported by computerization of all processes such as store, pharmacy, finance and purchase section, inventory, and administrative machinery would save money, time, and transcend human error.
2. Automated information management tools such as internet, web-based libraries, electronic medical records (EMRs), electronic health records (EHRs), and computerized prescriptions are important components. EMRs or EHRs integrates patients' data with decision-making

system; these contain complete history by patient–computer interaction and records sensitive issues such as addiction, abnormal sexual behaviour, STD and HIV, mental illness, and suicidal tendency. Ultimately EMR leads to data mining for newer scientific developments. EMR also enables easy communication of patient data between different professionals like gram panchayat specialists, care teams, and pharmacies. Interoperability will be an issue if EMR formats and other aspects of health surveillance are not synchronized nationally and internationally—the UP government should work with the central government to deal with this issue.

The recruitment process in several states such as Kerala, Punjab, and Odisha have been streamlined by adopting innovative measures such as a web-enabled procedures, decentralized recruitments, direct walk-in interviews, and the constitution of specially empowered committees for expediting recruitment processes. UP should adopt the same methods to improve transparency in recruitment processes.

Digitalized office procedures through digital document filing system at district health societies have enhanced financial and administrative efficiency in Kerala, for example (MoHFW 2014). Kerala uses IT in several initiatives—Jatak and Janani Software for community-based management of severely/ acutely malnourished children, and HR Apps to manage employee leave status at district level (MoHFW 2014: 171). The same digital document filing system can be adopted in UP.

A few states such as TN, Maharashtra, and Delhi have taken initiatives using ICT in the health system and achieved progress. UP needs to follow suit by adopting the good practices, for which examples are discussed in the next few paragraphs.

Wipro for Delhi Municipal Corporation (DMC)

Wipro provided Hospital Information System (HIS) to six hospitals of DMC. This HIS has 28 modules meeting the hospital needs. Automating these functions has helped DMC handle large numbers of patients and helps them in providing better patient care. An electronic patient folder will enable the doctors to have ready access to past episodes and information of the patient, thus ensuring efficient patient care.

Tata Consultancy Services (TCS) for the TN Government

The TN government has allotted funds to TCS to develop a suitable solution to maintain EMR. ICT is employed in medical college hospitals in TN to manage inpatient and outpatient details, medical records, office automation, and lab and pharmacy services. Such electronic dataflow lends accuracy.

In TN, a chart of all pregnant women is maintained to monitor and follow up on each mother to invite her for delivery in a primary health facility through ‘Phone to Heart Touch Approach’ wherein the 108 staff calls the expecting woman a week before and a week after the expected date of delivery to motivate her for institutional delivery (MoHFW 2014: 66). Though there has been an increase in the rate of institutional deliveries in UP to 68 per cent of all births (NFHS-4, 2015–16), the Kerala share is 100 and TN share 99 percent; in India the share is 79 per cent. Following these practices can encourage better engagement of women with the public health system.

Hewlett Packard in Maharashtra

In January 2007 with Rs 10 billion (100 crore) funding, automation project of 19 government hospitals and 14 medical colleges started. Private tech companies were engaged by the government for system integration and doctors’ training. There has been remarkable change in patient experience towards e-healthcare and computerization (Mahapatra et al. 2007).

Equipment Management and IT

Rajasthan’s equipment management software e-Upkaran sets a good example (MoHFW 2017: 4). E-Upkaran is a comprehensive software to improve the inventory management and maintenance services of equipment in hospital. This covers all the 2,500 facilities in Rajasthan, including medical colleges and hospitals across all districts. Mapping has been completed in the state (MoHFW 2014). These measures can improve efficiency and effectiveness in UP as well.

Tracking of the Health System

The health system began tracking health inputs, processes, and outputs in UP about 10 years ago. Before the NRHM, there was no tracking at all, but now it has become excessive. The pro forma of monitoring formats is complex. For instance, district ranking is

carried out and shared in a booklet with the district magistrate of each district of UP. There is no explanation for the criteria used for the ranking and why the district magistrate needs it. Rather what would be much more useful is a one-pager which consists of a few key indicators, which could be used by senior administrators at district headquarters and in Lucknow for monitoring purposes. What is needed in fact is simple data in one format and digitized so that the district magistrate can make use of that data. The ANM could be trained to fill out and submit this data so that it could be regularly collated for passing on to higher level.

UP's poor health outcomes are due to a combination of limited infrastructure, serious human resource shortages, and governance failures, which this chapter has examined. Given this combination of problems with the health system per se, and the underlying social determinants of health (nutrition, sanitation), as well as the much lower educational levels of the population, the synergies that we explained in at the start of the chapter do not operate in the case of UP. Following the diagnosis of the malaise of the public health system, this chapter also made a number of suggestions or 'prescriptions' with respect to each of these weaknesses in the public health system, which account for the overwhelming share of the private sector in health provisioning and financing.

After the NHP was announced by the Union government in 2017, the UP government decided to articulate its own health policy. Given that the State Health Policy, two years later (at the time of writing in January 2020) still not a public document, there is a case for all these suggestions to be implemented.

The medical college in Gorakhpur—BRD Hospital—has seen an increase in the number of deaths of children in the 2010s; this is tragic because any government medical college/hospital stands at the pinnacle of the public health system of any Indian state, sitting at the peak of a 5-tier system (sub-centre, PHC, CHC, district hospital, medical college). Patients should reach a medical college after they have exhausted all possibilities at lower levels of care; it is a tertiary level referral facility. Most deaths in Gorakhpur were and are occurring in the case of neonatals, which suggest that the neonatal units are not functioning effectively. By contrast, the CRM have noted that the special new-

born care units (SNCU) in Kerala, Odisha, Telangana, and Madhya Pradesh have good infrastructure and functionality. In Madhya Pradesh, 30 SNCUs out of 53 have been accredited by the National Neonatology Forum. UP needs to follow suit.

Another observation from the Gorakhpur case is that lower level facilities in UP's public health system are dysfunctional or non-existent in large parts of the state. Naturally, the higher-level facilities get overburdened with case load. However, CRMs (of NHM) have noted that in India, in almost all states the utilization of district-level facilities (district hospitals, general hospitals) is high due to availability of a complete range of primary and secondary care services at the district level. Availability of comprehensive secondary care is at the level of the district hospitals in most states, but in TN and Kerala secondary care services is available at sub-district/taluka level (MoHFW 2014: 3). In Kerala, sub-centres conduct NCD clinics, demonstrating a model for the non-high focus states to move towards the provision of a more comprehensive primary health care package. If a similar situation does not begin to prevail very soon in UP, the tertiary-level hospitals are going to get overwhelmed, a problem compounded by a shortage of staff.

Unfortunately, the risk is that the way decisions are playing out, the shortage of funds may prevent any but the most limited reforms from being implemented. The Union government in early 2018 announced the extension of the hospitalization insurance (RSBY) from just over 100 million members to 500 million over the next few years. However, given the dysfunctional state of the public health system, it is unlikely that public providers will be able to meet the needs even of hospitalization, thus benefiting the private sector clinics and hospitals, and entrenching even further the predominant role that private provision plays.

Improving the sub-centres and calling them health and wellness centres may not solve the problem of preventive and basic curative care, given that multiple health transitions (growing NCDs, continuing high incidence of communicable diseases, high unmet need for family planning) are taking place in India and particularly UP. The public health system needs an effective referral system from these health-and-wellness centres to PHCs, CHCs, and district hospitals. If not, sick people will still clock up large and growing OOP costs on account of outpatient consultations, diagnostics, and medicines, quite apart from the curative care being mostly provided by private clinics.

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