HHR for UHC: A Roadmap

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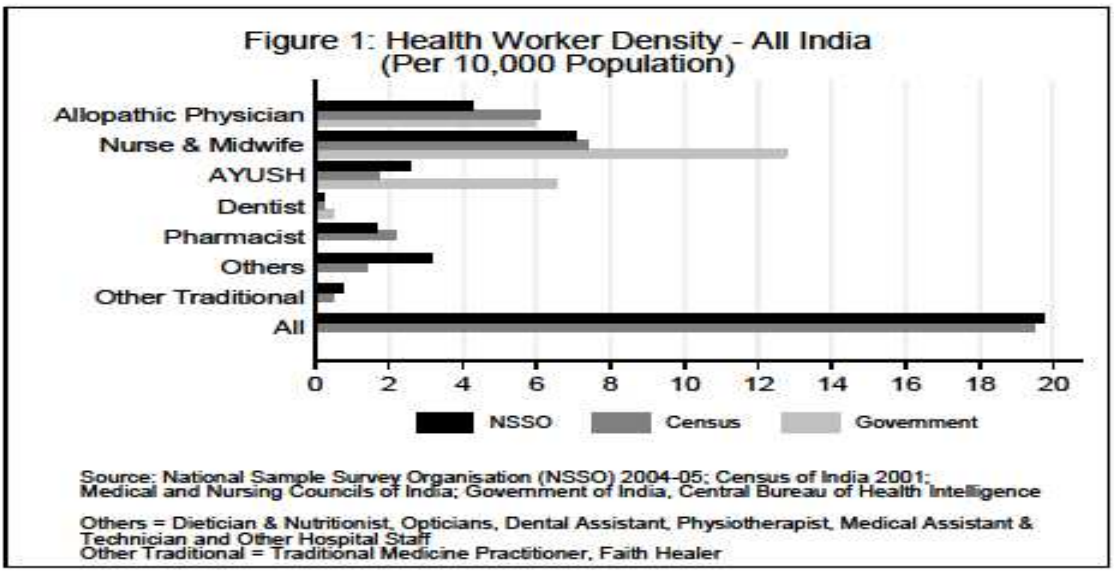
Overview of HHR in India

Optimal HHR (Health Human Resources) is a precondition to any good health system and favourable outcomes. We need the right HHR numbers, team composition, placement and supportive working conditions. However India's public health system has been facing serious problems on all these fronts of HHR, more so in some states than others and in rural more than urban situations. The HHR is also largely (70%) segregated in the private sector, and hence is not available to the public health sector.[1]



The Indian HHR data sources are not reliable and updated, a large number of unregistered health workers are operating in private and rural sector and some of them get included in Census & NSSO data. I have liberally used the above-mentioned PHFI and NHSRC[2] reports which are drawing from sources like MOHFW, Census, NSSO and WHO. The recent HLEG report on universal care, though not published, was available from mfc sources and has been helpful in updating and completing the larger picture of HHR, so also the Lancet paper by Mohan Rao et al has been helpful for cross checking and buttressing some issues.

Table 1: HHR Situation in Some Countries: NHSRC as per Endnote

HRH Density per 1000 pop: WHO 2007					
COUNTRY	Doctors	Nurses—MW	Pharmacists	lab workers	Other HWs
India	0.6	1.3	0.6	0.02	1.13
China	1.6	1.03	0.3	0.02	0.93
Cuba	5.9	7.4	-	0.07	2.75
USA	5.5	7.7	0.7	2.30	16.1
UK	1.7	5.6	0.6	0.34	3.79

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The PHFI study group has given a comparative statistics of HHR and suggests that HW (Health Worker) density in India is about 1.9 (doctors and nurses) per 1000 people and the 12th FYP uses the same figure while advocating the need for 2.5 HHR per 1000. But if we include other health workers also, the HHR tally is 3.65 per 1000 population (see Table 1). The composition of HHR in the countries listed in table 1 varies considerably, obviously due to historical development of each health system. For instance, China has its million plus rural doctors counted in the HHR. USA seems to have a HHR-heavy health system. India looks a minimalist on HHR in all the categories. The architecture of the 'HHR pyramid' and the relative size of various layers are all important and strategic to the making of a health system. For India it is already high time for important choices/shifts about the size and role of 'primary HW layers' in India or allow the drift to a specialist-centered health care system (which will come with its own demands of technology, costs and infrastructure). It is also pertinent that we have not given much role to ASHA as care providers.

HHR Norms, Estimating Needs and Shortfall

As a caution, we must remember that HHR estimates can vary widely on the type of model we use for health care and the mix of HHR for each model. The HLEG model, submitted to the Planning Commission, may be finalised with modifications and can substantially alter the HHR needs and projections.

HHR is an ever expanding list and the simple doctor: population ratios are not enough. The Technical Report by PHFI (2008) using NSSO and Census studies explains the coding system for various HHR as shown below:

Allopathic physicians/surgeons - 2221; Health Professional (except nursing) - 2229
Dental Specialists - 2225; Ayurvedic physicians/surgeons - 2222;
Homeopathy physicians/surgeons - 2223; Unani physicians/surgeons - 2224
Nursing Professionals - 2230; Nursing Associate Professional - 3231
Sanitarians - 3222; Midwives - 3232; Pharmaceutical Assistants- 3228;
Medical Assistants - 3221; Medical Equipment Operators - 3133; Life Science Technicians (Lab technicians); Dieticians & Nutritionists - 3223; Optometrists - 3224
Dental Assistants - 3225; Modern Health Associate Professional (except nursing) - 3229
Health Professional except Nursing - 2229 (80%); Traditional Medicine Practitioners - 3241
Faith Healers - 3242;

The absence of ASHA and Anganwadi workers in this coding system is obvious. Each of these categories has several subcategories, for instance the allopathic doctors will include several branches of specialties.

The specialist (SP) and Super-Specialist (SSP) categories include about 10 and 20 subcategories respectively and there are no norms about how many of which are necessary for the population. Adding the complexity of private: Public mix and urban-rural divide, it is difficult indeed to work out such norms for India. However, I have made some suggestions on the basis of a pyramidal model for UHC for a district as in Figure 2.

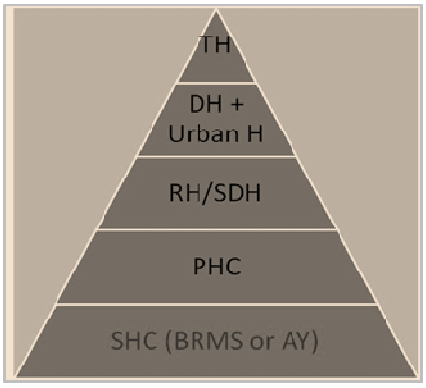


Fig 2: Health facilities model for a 30 lakh district: TH denotes a Tertiary Hospital with medical college.

Basic UHC model for HHR needs Estimation

I am suggesting here one model that integrates the 12th FYP suggestions[3] of having a health subcentre in each panchayat cluster, and I support the PHFI/HLEG suggestion of also putting a Rural/Ayush doctor for a 5000 population under each subcentre. Assuming that a typical district has about 30 lakh population, with its main city having 10 L population and remaining population spread over about 1000 villages (and some small towns), I am suggesting a pyramidal model peaking in a tertiary hospital with medical college. I assume that the city will have almost similar health infrastructure like the rural clusters. I am for the present ignoring that 80-90% doctors are in private Sector and that there is some way of bringing them all in some public sector through contracts or PPPs or social insurance.

This model builds on the current public health care model of India and includes two components hitherto missing (a) Urban health care system almost parallel to the rural one (b) a BRMS doctor or Ayurvedic physician at each existing SHC (5000 cluster) and a paramedic center at each panchayat (1000 population). Here is an estimation of HW needs of this model. I assume that super specialist (about 20 categories) will be available only in the tertiary hospital that is also a medical college which also has teachers in various pre and Para clinical branches.

Table 2: Estimating health facilities for a 30 lakh pop district

Category (pop served)	Beds	Urban units	Rural units
Tertiary Hospital (30L)	1000	1	0
District/Municipal hospital	300	2	2
RH/Ward Hospital (1 lakh)	30	10	20
PHC/UHC (30000)	0	20	50
SHC (5000)	0	200	300
Panchayat (1000)	0	0	700

As for the urban model, I assume that there will be a TH (Tertiary Hospital with a medical college). With medical college, a Municipal hospital of 300 beds for 10 lakh population of the city, a ward hospital for each 1 lakh population. An urban health center for 50,000 population and a health post for 5,000 population (subcentres).

The rural structure, in addition to what we have today, should have panchayat level subcentres and a day care center at 5000 cluster. I have suggested two district level hospitals since one is already there and the second one accounts for 2-3 sub-district hospitals of 50-100 beds. The urban hospitals, including the medical college hospital add up to 1900 beds and rural for 1500 beds, hence about 3400 beds for 30 lakh people; yielding 1 bed for 882 people. The recommended norm is about 2 beds for 1000 People (PHFI). We have to account for some presence of private Sector even if in PPP domain, making about 2 beds for 1000 population.

Table 3 is my construct from the 30 lakh district model and a projection for India. It offers 1 HHR for 251 population, hence 4 per 1000 and includes all health workers. Here I have also tried to work out the need of specialists, super specialists, other docs and paramedics.

The 882 population: 1 bed ratio arrived at in this model is about the public sector. The HLEG report desires that the beds in public facilities should be 2 per 1000 population, besides the private sector.[4] It is not clear whether the HLEG report is 'inclusive' about the private sector hospital beds, which are currently about 3 times the public sector.

From the numbers angle, it seems India has just enough doctors. There is a shortfall of 22 lakh paramedics including nurses. The urban sector will need 7.5 lakh USHAs. There is some confusion about the statistics of nurses: varying from 8 lakh (NSSO 2004-5), 12 lakh (MOHFW 2008) and 19 lakh as per the NCI website 2011.[5] Therefore it is difficult to say if nurses numbers are enough or not. Besides we have a seriously skewed distribution of doctors and paramedics in favour of Southern and Western states, private sector and cities. Hence mere numbers cannot answer the need, it is how we place and utilize them.

The HLEG report, available to the author from some sources (report yet to be published), uses a different and more exhaustive model for health care pyramid for a 10 lakh population, and recommends 3 ASHAs and 2 AWWs for a 1000 population cluster, and a rural doctor for subcentre. I am not clear if the HLEG report estimates only for its public sector model or for both private and public sectors, however it says that by 2025, only 80% of care will be free from OOPE.

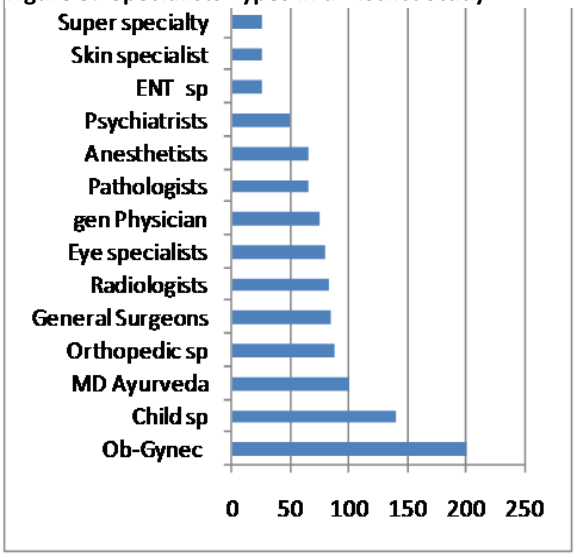
Table 3: HHR Requirements for a 30-Lakh District and Projection for India								
The District Model					India			
HHR for 30L dist	Rural	Urban+ Med col	Total	pop per unit	Country need	HLEG 2011**	Actual	shortfall *
(A) Beds (public sector)	1500	1900	3400	882	1360000			
(B) HHR-category-doctors								
SSP	0	50	50	60000	20000	209091	676756	
Sp	240	350	590	5085	236000			NA
MM-MO	280	200	480	6250	192000	417119		
Ay MO/BRMS	410	410	820	3659	328000	314547	196488	
Dentists	100	100	200	15000	80000		22962	74649
Admin MOs	10	10	20	150000	8000			
Total doctors	1040	1120	2160	1389	864000		896206	+32206
(C) Other HWs								
Nurses+Midwives	2120	1110	3230	929	1292000	11 Lakh	823588	468412
Other PM	820	800	1620	1852	648000		23276	624724
Ward Asst etc	1860	1800	3660	820	1464000			
Support staff	660	600	1260	2381	504000			
Total of other HWs			9770	307	3908000	20 Lakh	846864	
All HWs			11930	251	4772000		1743070	3028930
ASHAs			3600	833	1440000		9000000	+7560000
(+ plus sign shows surplus HHR) ** HLEG makes different assumptions[6]								

Issues Regarding Doctors, Specialists, AYUSH & Modern Medicine Systems

The category of doctors includes several subcategories and also the three systems of medicine (Allopathy, Ayurveda, Siddha and Homeopathy) in India. There are several serious issues regarding doctors.

- The Medical Council of India (MCI body of modern medicine (MM) doctors) is unwilling to even consider the non-allopathic doctors while discussing doctor: population ratio. In reality the GP (General Practitioner) sector consists mainly of non-modern medicine doctors and this trend will complete the replacement of MBBS, thanks to the lure of technology bringing more monetary returns. BAMS and BHMS doctors quite often use modern medicines for various reasons but there is no valid legal permission for this, implying that their practice of modern medicine almost illegal. More and more BAMS doctors are working as paramedics and house doctors in private hospitals including so called ICUs on quite low salaries. The regulating bodies like MCI and CCIM (Central Council of Indian Medicine) have so far turned a Nelson's eye to this problem.
- India has a huge number of 'quacks' - about 25 lakh by one estimate - and this has stymied the problem of non modern medicine doctors practicing modern medicine.

Figure 3: Specialists Types in a District Study



- Although we see Associations and bodies of modern medicine in denial mode about non-allopath doctors, the business nexus is growing from underneath thanks to cuts and commissions on medical bills.

Among the modern medicine doctors, the PG category is increasingly dominant. In fact about half of the specialist categories have already become 'primary care providers' (Gynec, Pediatrics, Ortho, Eye, ENT, skin, and dental) for better off clients. This has reduced the role for GPs/family Physicians in cities. This trend will grow as consultants will not entertain any patient not belonging to their specialty. This development will alter the desired population: doctor norms and make room for many more doctors. Some categories are already 'super' by now: joints, heart, kidney, liver, brain, spine, plastic surgery, hematology, endocrines, intensive care, infectious disease specialists, eye especially posterior chamber, imaging, gastrointestinal tract, urology, urosurgery, infertility, etc., have already reached the super status. We will have to factor these categories in the HHR. Most super-specialties have subcategories of physician and surgeon (like a neurophysician and neurosurgeon). Even eye-specialty is now splitting into anterior and posterior chambers, not to speak of optometrists jostling for space. This subspecialization is hitting many branches. In small townships, we find only the 4-6 basic specialties- gynec, pediatrics, physician, orthopedician, eye, dentist and may be a skin specialist. This specialization tree is going to branch out. There is no formal arrangement of referral from one specialist to other in the private sector, and patient-clients have to negotiate each transaction afresh except when in IPD.

The fees of super specialists (SSPs) are huge (Rs 500-1000 per consultation) and much more for procedures. That brings a lot of earnings to SSPs and this has strengthened the private Sector in a manner that public sector will never attract SSPs. The clinical outcomes of SSPs are presumably far better than mere specialists. This has also made many 'primary specialists' irrelevant and underutilized. Unless specialists conform to technology and business model, one runs the risk of falling out of business. There is indeed a fierce competition.

Many doctors migrate to developed nations - according to one study 54% of the AIIMS graduates leave the country, more so if they are from Open Category, still more if they have won some medals.[7] The Planning Commission cites WHO to show that about 100,000 Indian doctors work in the USA and the UK.[8]

The flip side SP and SSP concept has now a fragmented the 'human patient' into organs and systems with little attention to holistic health care. The family physician is in jeopardy. We might now need computer software to 'reconstruct the patient in his/her fullness' from profiles fed by various specialists and departments. The addition to life expectancy has ensured that organ-specialists are essential to human life and civilization. There seems no escape from the medical industry no matter if you are poor or rich. UHC will have to account for this huge change.

The Quacks

India has a huge quack problem (?), thanks to the (a) paucity of certified doctors in major parts of India especially North, and (b) lack of regulation of medical services. Viewed from the people's need angle, quacks have served a crying need. There are various names, the most famous being the 'Bengali doctor'. The practices are quasi-scientific since they get some kind of hands-on- training and have even some books to read. Since India has already a huge sector of 'cross practice', the quacks are only a notch away from the vagaries of the cross practice by registered Ayurveda and Homeopathy doctors indulging in modern medicine. The MCI

estimate of quacks is around 25 lakh.[9] They far outnumber the official doctors. MCI lodges occasional complaints but also admits that they are there because MBBS doctors are unwilling for working in rural areas.

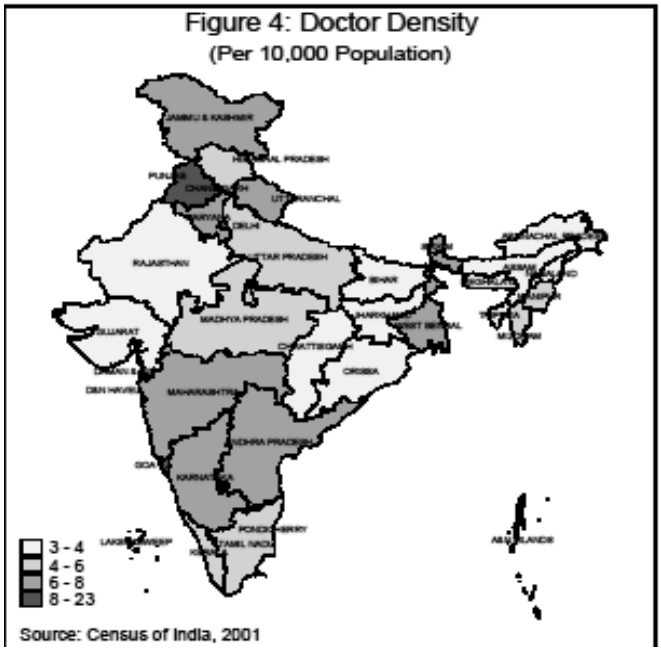
What is the answer? We must first answer the need in a rational and scientific manner. Training paramedics and equipping them with some essential primary medicines is the quickest and surest way of overcoming the problem. Putting an Ayurveda doctor or BRMS at every subcentre is another option. A mere ban is no answer. Trained doctors are unwilling to work in rural areas is a fact of life, and they perhaps cannot sustain in the average village of India. It is rightly argued that quacks can take a formal entry to BRMS courses or perhaps the legally trained paramedics.

It is necessary to look upon quacks as a solution to a problem, not a problem by itself. The important concern is to prevent irrational use of medicines and exploitation of people. Legal and academic support is the best remedy. That MCI is even unwilling for BRMS courses is not a sign of pragmatism.

Nurses and Midwives

India is severely short of nurses especially in the private sector. The update on numbers of nurses (close to 19 lakh) is a significant improvement on the 2008 figures of 13 lakhs referred in the HHR figure.

- The equation for NMs/MWs (nurse midwives to midwives) is somewhat quirky. India will target for a 2 bed/1000 people density (hence 21 lakh beds and at least 7 lakh nurses. In view of our commitments to further provide 1 ANM per 1000 population (panchayat level); we shall need 5 lakh ANMs in the next FYP to add to the current figure of 5.75 lakhs. We have already some 19 lakh registered nurses and midwives. Yet we find them in short supply, this needs further enquiry.
- Like the doctors, nurse's distributions also follow the imbalances of Urban: Rural sectors and across states. HLEG report places total need of nurses at 2.53 lakhs and ANMs 8.14 lakhs.
- On the backdrop of this 'surplus nurses' it is not clear why the INC (Indian Nursing Council) asks for 2.4 million more nurses.[10]
- The **training institutes** are clustered in 5 southern states (TN, Kerala, AP, Karnataka, and Maharashtra) with 57% of nursing institutes and 28 others states/UTs having 43% institutes.
- Out of the nearly 11.75 lakh **working nurses,** 54% are in the five southern states, with rest of India having 46% nurses. On the whole India has a shortage of nurses, with a nurse for 625 people. The very same states also have major share of doctors and hospital beds, hence the nurses will follow this pattern. However, **even in these states**, private hospitals often work without qualified nurses. Nurses from Kerala are found working in many metros.
- The quality of training in nursing institutes, especially private ones and of the ANM schools is questionable. Corruption in granting private ANM schools is rampart.



- Nursing council, unlike other councils, also conducts its examinations. Independent universities must be in charge of educational administration and examinations. Nursing councils grant licenses and also conduct exams, which is not the best practice. Separation of these tasks is necessary.
- It must be noted that countless small to medium private hospitals in India are operating without qualified nurses; this is partly due to HR shortages, and also due to unwillingness of owners to pay good salaries to nurses. Nurses prefer government jobs for reasons of better payment, security and safety. Lack of effective regulation of health facilities only adds to these factors. Graduate nurses get better jobs in corporate and overseas locations.
- It is quite difficult to get qualified PG teachers for nursing institutes and this is a constraint on expanding training facilities.
- It is possible to expand this HR sector with flexi-learning strategies coupled with better assessment techniques. Without this, it is indeed difficult to expand the numbers.

Other Paramedics

In most countries paramedics are those who respond to medical emergencies out in the field for the purpose of stabilizing the victim's condition so s/he can be transported to medical facilities and function as an emergency medical technician (EMT). In India, this term is used loosely to define ALL allied health providers.

In India the health delivery apparatus and its underlying ethos has been is entirely doctor-centric. The organization and methods of the delivery system have therefore developed along the physicians training, work and career path. Logically, the principle should be to allocate tasks to the workers with the lowest level of training and salary cost compatible with quality of care.

For too long Government of India did not even start action on the paramedic front. However some states started paramedic bodies - Kerala, MP and HP. The Kerala paramedical council bill includes ECG Technician, EEC Technician, EMC Technician, X-ray Technician, Medical Laboratory Technician or Ophthalmic Assistant as Para Medical Technicians. The Madhya Pradesh Paramedical Council Act, 2003 and the Himachal Pradesh Paramedical Council Act, 2003 both cover professionals who practice traditional systems of medicine such as Ayurveda, Unani or Homeopathy as paramedics.

Precise statistics for AHP (Allied Health Professionals) Requirements in public systems are not available. Routine sources of information are fragmented and generally unreliable. According to the RHS bulletien-2009, the country has a 59% shortage of Radiographers in the CHC's, while a shortage 54% in case of Laboratory technicians at PHC and CHC. There is a shortage of 31 % in case of the Health worker (male) while it is 32% in case of Health assistant (female). As per WHO statistics, the Lab Tech per 1000 population in India is 0.02 where as in countries like USA, UK and China it varies from 0.16 to 2.15. These are figures based on in-position against sanctioned posts in the Public health system in the country and as such do not reflect the real picture. However as part of the UHC discussions, the following projections has been developed relevent to the year 2020 :

Table 4: Paramedic/Allied Health Professional (AHP) Requirements

Category	Required	Available	Additional Required
Pharmacists (Allopathy)	1,36,869	20,967	1,15,902
Lab. Technician	1,36,869	12,904	1,23,965
Radiographer / DRA	37,681	1,867	35,814
O T Technician	46,563	NA	46,563
Ophthalmic Technician	66,478	NA	66,478
Physiotherapist	66,478	NA	66,478
Source: Dr. D. Thamma Rao, Public Health Foundation of India, New Delhi			

As per the International Standard Classification of Occupations (ISCO), Paramedical practitioners provide advisory, diagnostic, curative and preventive medical services for humans more limited in scope and complexity than those carried out by medical doctors. They work autonomously/with limited supervision of medical doctor. Broadly the AHPs are mandated to address the following needs:

Table 5: Categories for AHPs:

Diagnostic	Cardiovascular technologists
	Medical and clinical laboratory technologists
	Radiologic technologists and technicians
Medical services	Dental assistants
	Emergency medical technicians and paramedics
	Medical assistants
Non-direct care	Dental laboratory technicians
	Medical appliance technicians
	Pharmacy technicians
Rehabilitative	Occupational therapists
	Speech-language therapists
	Respiratory therapists
Community related	Community based rehabilitation therapists
	Home based care workers/Home Aides
	(ASHAs and AWWs??)

It may be useful to classify the levels of AHPs as (a) AH professionals (degree/PG) (b) AH provider (UG diploma) and (c) AH workers (Certificate Holder). This nomenclature will help fix salaries and career paths for AHPs.

The MOHFW is now working on the Paramedic initiative (called AHPs or Allied Health Practitioners) which has the following components: (a) setting up the central apex body: National Institute of Allied Health Sciences or NIAHS at Najafgarh to look after regulatory and academic functions especially regard PG posts (b) Set up 8 regional institutes for AHS undertaking graduate and PG programs (c) State training institutes will mainly implement Grad and diploma courses. There are serious issues regarding the academic administration of facult - will they come under UGC or NCHRH-Health universities? The resistance to open distance learning by AHP institutes smacks of elitism because it will keep thousands of working AHPs to suffer without any formal academic recognition.

Other Support staff

The support-staff in clinical facilities, ambulance drivers, office assistants and data managers etc are necessary to improve the content and context of health care. They need good induction training and continuous support. This facility is currently available only for corporate hospitals. They have some hands-on-training, but will need better training in many areas to improve health care. And we also need to train new workers for the expanding health sector. The private Health sector generates a lot of employment in this, but their terms and working conditions are not favourable, many get payments below minimum wages. One way to improve this is certificate courses and better regulation of hospitals.

ASHA

ASHA, the Accredited Social Health Activist of NRHM, is a recent addition to HHR (nearly 9 lakhs) on the backdrop of the 1978 CHW program that failed. As someone involved with the consultations about ASHA program, I get a feeling that GOI-MOHFW were wary of granting any worker-status to this 'cadre' and preferred the 'activist' nomenclature to avoid issues regarding use of medicines and salary implications. The Accreditation never came though some of them could enter the ANM cadres' by local selection for ANM training. This leads us to the next question: who will be the authorized health worker for India's 6 lakh villages? If the 12th FYP suggestion of having a subcentre in each panchayat/1000 population cluster with an ANMs is any clue, the ASHA may be a disposable element in India's HHR, a false step! The villages will have to wait to get a subcentre and an ANM for some time, but the ANM herself may not be able to deliver comprehensive services unless her role and tasks are redefined for comprehensive care. The ubiquitous quack and the semi-quacks therefore will hold the ground for some time to come.

Distribution of HHR

Inter-State Variation

Fig 4 represents the variation of doctors' density across states based on Census 2001 estimates. In general it shows that Punjab has a high density (8-23 per 10000) of doctors, followed by J&K, Sikkim, Haryana, Maharashtra, Karnataka, AP, W.Bengal, Uttaranchal and Goa (range of 6-8 doctors per 10,000). The third group having 4-6 doctors per 10,000 includes MP, UP, Mizoram, TN and Kerala. The last group includes Orissa, Bihar, Jharkhand, Chhattisgarh, Rajasthan, Assam, Arunachal and surprisingly Gujarat. This picture nearly conforms to the number of medical colleges in each state except Gujarat.

So also is the picture of nurses, which follows the doctors' density and hence about 56% registered nurses and midwives are in the 5 southern states (Maharashtra, Karnataka, Kerala, Tamilnadu and AP). It is notable that Goa and NE states except Assam also have high density of nurses.

Uptake of HHR in Public: Private sectors

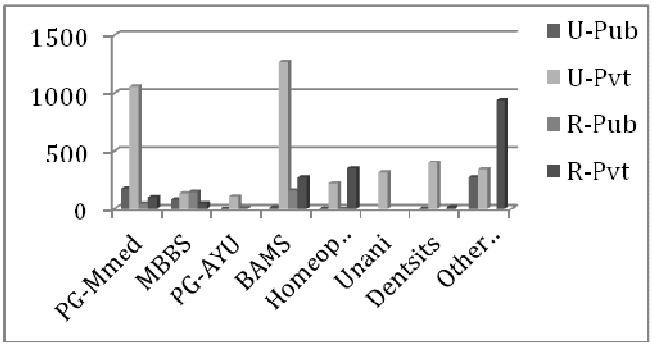
"Overall, the majority (70%) of health workers work in the private sector in both urban and rural areas. This pattern generally holds across health worker categories though there are some important exceptions." (PHFI's Technical Report on HHR 2008). The report further states that, "In contrast, around 50% of the nurses and midwifes in both urban and rural areas are employed by the public sector." My study of Nashik district reports that out of 6,160 doctors of all types, barely 10% are in the public health sector. That gives a staggering 90% uptake by the private sector. This statistics includes unregistered doctors. This private: public sharing of doctors will vary from state to state. Also there is the factor of private practice by many government sector doctors that vitiates the statistics.

The huge presence of doctors outside public sector poses a special problem when and if India will design its UHC. If the private doctors are left out of UHC, they will outsmart the very UHC by sheer weight of their numbers. On the other hand If UHC tries to include them by contracting-in arrangements, they are simply far too many (in some states) to be included and supported in UHC. This will also present selection problems.

Rural-Urban

This problem is well known. As the PHFI technical report states, "overall and across most health worker categories, typically 60 percent of the health workers are present in urban areas. In contrast, only 28% of the country's population is urban (Census of India, 2001)." If we go by density of health workers per 10,000 population, urban Health Worker density is four times as compared to rural areas. In our study of Nashik district, the distribution of doctors is further evident, as post graduate (PG) doctors are mostly in urban private sector, as also the dentists and Ayurveda GPs.

Figure 5: The Urban Rural divide of doctors ->



In this study post graduate doctors are located in urban private sector; nearly half the district population that is rural gets a minuscule of PG doctors and even less in its public hospitals. Other doctors (mostly unqualified) abound in rural areas. Rural areas are not going to get qualified doctors except by some spillover, while the expanding urban areas are brimming with doctors. The ubiquitous *small village as a unit of population* is not going to get any doctor, even of the quack kind because of obvious economics of an average village if not its size per se. Therefore the essential village problem has to be solved with a trained paramedic with comprehensive

equipment and in the panchayat framework. The ASHA has utterly belied our hopes on this account (or rather the planners have belied the hopes).

Some Legal issues

In the context of HHR and using their capabilities, India has several legal issues to tackle. I am mentioning only some prominent ones here.

- The GP or family physician is not only losing the ground, but BAMS and Homeopaths are filling these positions (in lieu of MBBS doctors). Most of AYUSH GPs use modern medicines and going by existing acts, this is not tenable. It will be pragmatic to solve this problem by starting bridge courses in flexi mode followed by legal approval for limited use. Till this is done, quality of care is in serious jeopardy.
- The large number of other doctors in rural areas will not vanish unless alternative services are made available. One way is to start paramedic programs (nurse practitioners or physician assistants) with legal license to use a short list of medicines.
- There are now turf battles between some specialties and paramedics, especially between (a) pathologists versus lab technicians, (b) ophthalmologists and optometrists (c) doctors and pharmacists. These need to be resolved in time and clearly defined for regulation.
- The paramedic council is yet to appear at central level, though some states have enacted legislations in this regard. There are issues regarding inclusion of some categories, the educational and institutional framework to support the paramedic systems.
- The huge paramedic workforce in the private health sector is without legal training and may remain so unless the paramedic and nursing councils extend their helping hand through distance learning programs. However distance learning itself is abhorred by the medical and paramedic bodies.

HHR: Education, Training, CME

Modern Medicine Medical Colleges

India has roughly 270 medical schools, from which 28,158 doctors graduate every year. In all 52 private medical institutions have helped this rapid increase in medical education (Figure 4). In 1990, 33% of 135 medical schools were privately operated; nowadays, 57% are privately operated.[11]

The 5 southern states (Maharashtra, Karnataka, Kerala, Tamilnadu and AP) and Gujarat have together 35% of India's population[12] but have 172 (62%) modern medicine medical colleges, the rest of India has 105 (38%). Ayurveda and Homeopathy colleges may have a similar pattern. This variance leads to clustering and paucity of doctors in these states (except in Gujarat where there could be outmigration to Mumbai or other countries).

The starting of All India Entrance Examination (NEET) has somewhat overcome this imbalance by way of nationalizing entry to UG and PG Medical Education, but states still have a large quota of 85% seats.

The presence of private medical colleges has added a new twist to medical education in India, not so much because they are privately funded, but the very weakness of governance and regulation in India (even government colleges have several problems). Unlike engineering colleges, medical colleges require functioning hospitals with good occupancy ratio and rich clinical work exposure. This is often missing. The premium on PG seats (so also UG seats) is a huge problem, often touching Rs 2 crores for a radiology PG seat. NEET may be able to correct these issues by centralising the entry to all colleges. Many medical colleges cannot get enough teachers and cannot pay enough to hold teachers. Malpractices are rife about managing faculty positions, and there are websites that make open offers. MCI members get richer in this situation and scandals are quite possible in this situation. Dental education has similar problems and nursing and physiotherapy also has its share of the problems. Quality and ethics have taken a back seat in medical

education. Since the doctors from government and private streams of medical education mingle eventually in the dominant private sector, there is no scope for difference in earnings, moral-ethical practices or location preferences (rural-urban, etc). Hence there are three basic issues in medical education sector today:

- Needy states should get enough medical colleges and
- Quality medical education be developed as regards optimal content, relevance and ethics.
- Issues about how to achieve AYUSH sector integration.

MCI has relaxed the norms for medical education to suit opening of more medical colleges and increasing the number of UG-PG seats in colleges. There are some concessions for NE regions. The issue of BRMS education in states other than Assam, W.Bengal and CJ are still pending. The following points are important for reorganizing medical education for India:

- Central assistance for opening medical colleges in needy states (and discouraging this in other states), so that all revenue divisions get modern medicine and Ayurveda medical colleges. The 12th FYP should help this cause.
- Greater share of UG seats in NEET to backward states (but this is unlikely to happen).
- Reworking of the syllabus of UG medical education to serve public sector institutes: PHCs/Rural Hospitals, etc. as also optimizing the curriculum from the existing heavy load that is often decided by choice of books rather than rational needs. It is welcome that textbooks by Indian authors are increasingly replacing Western textbooks, but there is a need for MCI to be officially approve this.
- Fair share of PG seats (50%) to doctors having completed 5 years of rural/public services. The current PG selection process is loaded against candidates from health services. Integration of departments of medical education and health services will facilitate this process.
- Integration of AYUSH elements in MCI stream as a compulsory subject (and vice versa) with formal evaluation.
- Mandatory CME, formal test for credits and renewal of registration.
- Integration of health services with medical education departments in all states, so that rural services are not at a permanent disadvantage. Segregation has damaged this cause.
- Reservation of some UG seats (say 10%) for nursing professionals and BRMS.

HHR Institutions & Availability (NHP 2008 NHSRC HRH Division)

Institute	**Number**	**Annual uptake**	**Availability of HHR**	**HHR: pop ratio**
1. Medical Colleges	289	32,815	MOs 2,15,199 Spec. 1,52,437	1:1,667 Population-India
2. Dental Colleges	282	22,650	Dentists 14,499	1:35 Lakh – Bihar; 1:18,812 – Pondicherry
3. AYUSH Institutions	477	27,265	Drs. 70,202	1:798 Population - India
4. Nursing Schools	1,620	62,647	Nurses 6,90,564	1: 264 population – India; 1: 100-200 – Europe
5. ANM Schools	329	6,502	ANMs 5,24,283	1,42,655 - 2nd ANM; 43,966 - New SHCs
6. Health Worker - Male	102	5,334	2,28,946	No Registration from Council
7. Pharmacy - Degree	241	13,400	1,25,915	India 1 : 1,840;
Phramacy: Diploma	523	31,543		Europe 1 : 2,300
8. Lab Technician	97	2,193	1,44,990	No Registration Council
9. Radiographers	33	410	36,628	No Registration Council
10. Ophthalmic Tech.	41	426	46547	No Registration Council
Total	**4034**	**2,05,185**	**21,04,650**	

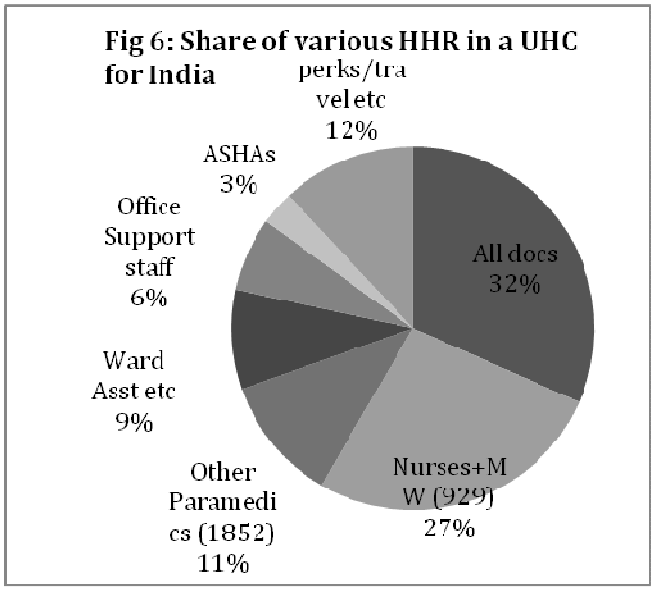
Courtesy: DR Thamma Rao & NHSRC

HHR: Cost Implications

A simple calculation for the national annual salary bill for the HHR at reasonable rates compatible with 6th pay commission is given below;

Table 6: HHR Costs

	Category (pop/HW)	Need for district of 30 lakh popln.	Country need	Monthly salary in Rs	12 months (in crore Rs)
1	SSPecialists(60000)	50	20000	150000	3600
2	Specialists(5085)	590	236000	80000	22656
3	MM-MO(6250)	480	192000	50000	11520
4	Ay MO/BRMS(3659)	820	328000	30000	11808
5	Dentists(15000)	200	80000	50000	4800
6	Admin MOs(1.5L)	20	8000	80000	768
	All docs(1422)	2160	864000	0	0
7	Nurses+MidWives (929)	3230	1292000	30000	46512
8	Other Paramedics(1852)	1620	648000	25000	19440
9	Ward Asst etc(1115)	2690	1076000	12000	15494
10	Office Support staff(2500)	1200	480000	20000	11520
11	ASHAs(833)		1440000	3000	5184
	Total annual salary		**5800000**	**Total**	153302
	perks/travel etc			Cr	15330
	Gross Bill annual		**All India**	**0**	168633
A	India GDP2010			7.50 lakh crore Rs	7500000
B	Ann HHR salary as % GDP				2.25



With a full HHR scenario and applying current salary rates, the share of various HHR categories is whon in Fig 6. The share of doctors is about 32% (add some perks etc). Nurses, paramedics, assistants etc come in that sequence.

HHR Management in India: Some Major Issues

Given the variation across states in HHR management, only some broad guidelines are possible here. In general, working in the public sector should offer a benefit of better working conditions and reasonable salary and perks and protecting long terms interests of HR. I feel that there are several HHR issues to note in this regard, starting from lowly subcentres to medical colleges.

The major issues in HHR are: Recruitment, transfers and promotions, salaries, working conditions, motivation, Compliance with rules and regulations, grievance redressal, etc. Profiling an all-India picture of these aspects of HHR, across various categories in the public sector involves a huge exercise. Apart from PHFI's report on some states, there is no source on this.

Broadly there are 5 sub-issues (apart from initial formal training) involved in HHR management: (a) selection and appointment, transfers, etc (b) In-service training and motivation (c) pays and perks (d) working conditions (e) administration and monitoring. The points that I can make from various interactions in some states include:

- In Maharashtra, about 25% of Medical Officers at PHCs are from AYUSH sector, most of them end up in tribal or backward PHCs.
- The contractual doctors and nurses get around less than 50% of salaries as regular staff get; the working contracts are far too unsatisfactory.
- In many states health center doctors are asking for arrears of 6th Pay Commission, and in some states it is even difficult to give 6th Pay Commission salaries to health staff.
- Bribes for appointment, transfers are common practice in many states, despite the fact that doctors are unwilling to work in public sector, especially in the rural parts.
- Most doctors and nurses would like to have a transfer to taluka towns once their children grow to the schooling age. Many often shift home to the town and start commuting.
- ANMs and NMs have sparse career options and work on the same post for a lifetime. They must be provided upward mobility; career path and we should also pick up the right candidates from ASHAs.
- 50% of the MPW posts are not filled and in some states have a worse record. MPWs have played and will play crucial role in disease control programs. Therefore they deserve career paths and crucial role in health care.
- PG doctors working in RH get 30-40% less salaries compared to that in a medical college, with much adverse working conditions and poor career options. This relative deprivation robs them of any motivation for public service.
- Home visits are part of the ANM's life and this model of work has sapped the strength of ANM. Things will improve only if every village gets its own subcentre.

How to bring the Private Sector HHR into 'Public Domain/UHC' ?

This is the most tedious issue of UHC—how to bring the right mix of HHR in right places in 'public' sector for UHC. Since 70-90% HHR and 70% services are in the private domain, a major debate among health planners and the private health sector is expected and there is no easy solution. There are 4 broad choices: (a) 'Nationalizing the health sector--the *hard option* and leaving little/no room for private operators to survive but join the public sector, (b) Expanding the public sector infrastructure 2-3 times, and 'democratically' forcing the private sector HHR into this new public sector by making the private sector unviable and unattractive - the *competitive* approach, (c) Contracting the private HHR for public services through *PPP approach* (d) Walking a long path for bringing both the existing sectors - public and private - under a SHI domain like in Germany with contributory payment from Government, families, etc. - the Social Health Insurance (SHI) approach.

How the medical doctors, especially the specialists and SSPs will perceive and respond on each option will decide the course of UHC in India. Also the political economy of the day has to throw up a suitable model for UHC with scope for federal adjustments. On the whole, the HHR dense states may prefer a course that protects their doctors' interests/incomes as state-payments could make a huge demand. On the other hand the States having poor HHR density, with central assistance may choose a UHC band that is more state run provided they get their HHR.

Bringing the huge private sector HHR in UHC is going to be the real battleground. The state of governance in most states and health departments is miserable, and it is necessary to bring on substantial reforms before we can hope to lure/force the private sector HHR into a 'public sector' of some kind. The governance front is also no small challenge, but this is where we can and need to begin in the earnest.

National Council for HRH Draft Bill, 2009

This proposed bill aims to bring together all streams and levels of medical, nursing and paramedic education and training under one system and will authorize and regulate courses, institutes and have power over all universities engaged in medical education. The NCHRH is a welcome step since it will end disparities and facilitate coordination among various levels and streams. A press release in October 2011 says it has been cleared by the cabinet and will be tabled in Lok Sabha soon. Under this secretariat, seven departments, each for separate categories like Medicine, Pharmacy, Nursing, Dentistry, Rehabilitation & Physiotherapy, Public Health & Hospital Management and Allied Health Sciences, will be established and headed by a director for regulatory purposes.

Recommendations

Since HHR is a precondition of UHC, I propose the following reforms in HHR: concepts, strategies, plan, etc.

- Train paramedics/Nurse Practitioners to take over forthcoming panchayat health facility (1000 population), may be ASHAs can be retrained to take this with due training, accreditation and authorization: A million such paramedics are necessary. We must steer clear of the prevalent doctor-centric/dominated model.
- BRMS or AYUSH doctor to be made available at each subcenter (5000 population) – one who is capable of using 40-60 modern medicine medicines and skills to handle epidemiologically relevant and common health problems.
- AYUSH doctors to be made available in all levels of care under the same roof, so that there is no discrimination and bias about pathy choice and HHR streams.
- Make available optional integration programs and legal registration for AYUSH doctors to strengthen primary care in public and private sector.
- Prepare district level databases to size up and map HHR, locate gaps and clustering, also undertake utilization studies to find out service adequacy, gaps and needs. Prepare a national and state level registry of in-service HHR.
- Start Umbrella Medical colleges in each district locality, with modern medicine, AYUSH, and Nursing, Paramedic institutes in one campus to being about functional and systemic integration in training and in health care delivery.
- Integrate the Medical Education Department and Public Health Department in each state and affix responsibility of HHR and management in the district to each district medical college. It may be useful to integrate the local body medical services also under the same administrative umbrella; however this seems unlikely at this stage given the vested interest of local body HHR.
- Ensuring adequate nursing and other paramedics in each health facility, making online info available for all registered facilities.
- Publish guidelines for salaries of HHR in private sector, educate HHR about minimum wages for skilled and semi-skilled workers, trainees, etc.
- Also publish a code of conduct for various HHR categories, coupled with an appellate tribunal for HHR in both private and public sector.
- Special packages and incentives for HHR working in rural/underserved areas., some states can bridge their HHR gap with from other surplus states with mutually agreed special packages.
- Compulsory CME/CHE made available online and/or face to face with credit accumulation.

Endnotes

[1] KD Rao, Bhatnagar Ashwini, HRH Technical Report #1, PHFI 2008, quoted from NSSO, p.22.
[2] Thamma Rao, Human Resources for Health, NHSRC-HR division, New Delhi.
[3] 12th FYP Approach Paper: Planning Commission: p. 117.

[4] High Level Expert Group (HLEG) on Universal Health Coverage – Progress Report - October 2010-January 2011 (unpublished)
[5] Indian Nursing Council website: accessed11-9-2011

[6] HLEG: Final Report 2011: Section on HRH (To be published, courtesy mfc sources)
[7] High-end physician migration from India. Kaushik M, Jaiswal A, Shah N, Mahal A., *Bull World Health Organ*. 2008 Jan; 86(1):40-5.

[8] Cross reference from article by Mohan Rao et al cited below in (11)
[9] http://articles.timesofindia.indiatimes.com/2011-04-17/delhi/29427730_1_quacks-mci-board-traditional-medicine

[10] *Bull World Health Organ* 2010;88:327–328 **|** doi:10.2471/BLT.10.020510

[11] Human resources for health in India. Prof Mohan Rao PhD, Dr Krishna D Rao PhD, AK Shiva Kumar PhD, Mirai Chatterjee MPH, Thiagarajan Sundararaman MD. *The Lancet* - 12 February 2011 (Vol. 377, Issue 9765, Pp. 587-598)