THE TASK FORCE
ON

PLANNING FOR HUMAN RESOURCES IN THE HEALTH SECTOR

REPORT

GOVERNMENT OF INDIA
PLANNING COMMISSION
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FOREWORD

During the last few decades there has been considerable achievement in the development of human resources in the health sector in terms of number of teaching institutions and availability of medical and paramedical professionals. However, the country is faced with the problem of non-availability of doctors and paramedical professionals for rendering the primary and secondary level health services in rural areas. Where the health personnel are in place, whether in the public or the private sector, their quality of delivery is a matter of serious concern. There is also regional imbalance in the growth of medical and dental colleges in the country. Availability of reliable and accurate data on health manpower is another cause of concern. Thus, there is a need of developing data bank so that proper health manpower planning and development can be made.

The present report of the Task Force on Planning for Human Resources in the Health Sector highlights various issues pertaining to demand and supply of health manpower and development in the country. A Framework of Human Resource Development Plan for Indian Health Sector for different categories of health personnel along with strengthening and restructuring education is presented for consideration in the 11th Five Year Plan. The human resource development needs due to growth of health tourism, pharmaceutical industry and biotechnology are also highlighted.

This task force report on Planning for Human Resources in the Health Sector is the result of discussions and consultations with stake holders and experts. I would like to thank all the members of the Task Force for their inputs. Without their valuable contribution and guidance, the important task of preparing this report could not have been accomplished.

Sd –

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EXECUTIVE SUMMARY

Introduction

Human Resources for Health are the critical ingredients for building an effective health system. They include a wide array of doctors, nurses, pharmacists, laboratory technicians, physiotherapists, community based workers etc. However, the availability of adequate number of trained health personnel alone may not necessarily lead to optimal functioning of the health services; their appropriate distribution, deployment as well as knowledge base and attitudes are also essential.

Human resources for health are inequitably distributed throughout the world, with severe imbalances between developed and developing countries. The overall shortages are commonly aggravated by skewed distribution within countries and movement of health workers from rural to urban areas, from public to private-for-profit sector, or to do jobs outside the health sector.

Human Resources for Health in India

The human resources for health in India range from highly trained bio-medical super-specialists at one end to community based and household based healers at the other. Almost one half of them consist of qualified doctors of allopathic or modern bio-medicine, dentists, nurses, a range of paramedical professionals such as, radiographers, pharmacists, laboratory technicians, and a number of allied personnel like health planners, health administrators, social workers, psychologists, health researchers, health educators etc. The other half is replete with the high richness of India's traditional healing systems comprising of qualified practitioners of the AYUSH systems. It also includes informally trained providers through apprenticeships, traditional and household birth attendants and a variety of folk healers.

Information on Human Resources for Health

Despite the recommendations of various Committees, health manpower planning in India has not received adequate attention. Efforts were made during the 9th and 10th Plans to collect reliable and accurate data on health manpower for planning. However, there has been limited progress in this effort due to non-availability of reliable data on health manpower working in the private & NGO sectors. The changing scenario of health services and strategies, especially the National Rural Health Mission, has led to an urgent need to develop new competencies and skills among the health personnel, in addition to increasing the critical mass of human resources at various levels. The opportunity for India to become an important destination for health care services and the emerging growth of health care industry are also contributing factors that point to the need for urgent action to create quality human resources in the area of health.

For any realistic planning of human resources, a valid, complete and reliable data on human resources is required. The weak knowledge base on the health workforce hampers planning, policy, development, and program operations. Existing deficiencies like sparse information, fragmentary data, and limited research - need to be remedied. There are no definite norms available for estimating the requirements of different categories of health professionals and para professionals in the country. In the absence of any valid norms, making health manpower projections in the country is difficult. The existing norms may not be valid in the light of the changes that have taken place in the country, especially socio-economic & technological developments. Health manpower requirements will also depend on the age-structure, population density and disease patterns of countries. Therefore, comparing norms (physicians per 1000 population) of India with other comparator countries may not be valid even though some countries are doing much better on health outcomes with a lower physician to population ratio than India. Similarly, using the same norms for projecting health manpower needs of all States in India is also not justified. Thus using unified norms as the basis for making future projections may not be appropriate in the Indian context. Studies are needed to assess the appropriate health manpower requirements in diverse contexts.

There are no comprehensive data available in the country on human resources for various health establishments in both public and private sector. Professional Councils

are the only source of information available on health manpower. In the case of allopathic doctors the data base maintained by the Medical Council of India (MCI) is the only information on the total numbers of doctors in the country.

Except the data provided by various professional councils, no information is available on private sector. Data on selected health manpower working in public health facilities in rural areas are regularly collected and published by the Ministry of Health & Family Welfare through its publication – Bulletin of Rural Health Statistics.

Availability of Doctors

The number of allopathic doctors possessing recognized qualifications (under IMC Act) and registered with State Medical Councils during the year 2006 was 6,68,131. This gives a doctor to population ratio of 1 for1665 persons In India (60 doctors for 100, 000 population). In comparison, doctors per 100,000 population in Australia, Canada, the United Kingdom and the United States were 249.1, 209.5, 166.5 and 548.9 respectively. The number of registered doctors, population coverage per doctor varies across States. The current rate of production and severe shortfall in the production of specialists is a major concern for achieving health goals in the country.

As of 1st January 2006, there were 7,24,823 AYUSH Practitioners registered with their respective councils. Like allopathic doctors, there are disparities in availability of AYUSH Doctors in various States. The combined strength of allopathic and AYUSH doctors was 13,92,954 making a doctor population ratio of 1: 798 (in 2006).

The number of dental surgeons registered with Dental Council of India up to 6th September 2006 was 78,103 making dentist population ratio of 1: 14,194. Number of dental surgeons working with the government is 3233. This makes the Govt. dental surgeon population ratio as 1: 3,44,010.

Availability of Nursing & Paramedical Staff

Nurses and Midwives are major health care providers. Overall, there is a shortage of nurses and midwives in India. As on December 2005, there were 9,08,962 nurses registered with Indian Nursing Council in the country. The nurse to population ratio in

India was 1:1205 as against 1:100-150 in Europe. There are huge differences in the availability of nurses in various States.

As on 31st December 2006, there were 5,78,179 pharmacists registered with the Pharmacy Council of India. About 3% are available in the rural primary health system. The ratio of one pharmacist for 1923 population in India (in 2006) is quite comparable to developed countries. However, there are variations across the States.

Availability of Health Manpower in Rural Areas

The manpower is important prerequisite for the efficient functioning of the Rural Health Infrastructure. However, a significant proportion of positions are lying vacant at various levels including shortfalls. The major shortfall at sub-centre level is of health worker (male) resulting in overburdening of ANMs. Similarly, 7.5% PHCs were reported functioning without a doctor, about 38.9% without a lab technician and about 17.7 % without a pharmacist. In CHCs, about 54.5% of the sanctioned posts of specialists were lying vacant as on March, 2006. A shortfall of 9413 specialists was reported at CHCs as compared to the requirement of existing infrastructure on the basis of earlier norms. As on March, 2006 there was overall shortfall of 18,318 MPW(F) / ANM and 74,721 MPW (M). In case of Health Assistant (Female)/LHV, the shortfall was 5941 and that of Health Assistant (Male) was 7169. Even out of the sanctioned posts, a significant percentage of posts are vacant at all the levels.

Basic Education Infrastructure for Production of Human Resources

Medical Colleges

The medical education infrastructure in the country has shown rapid growth during the last 15 years. The country has at present 262 medical colleges. Out of these, 135 are government medical colleges and the remaining 127 are private medical colleges. The admission capacity in undergraduate colleges is about 28,928 students per year. There are shortages of medical colleges in States like Uttar Pradesh, Rajasthan, Madhya Pradesh, Orissa and Chhattisgarh.

There is also shortage of teachers in medical colleges entailing adverse impact on the quality of education. The situation is further compounded with transfers of teachers of

different specialties from one college to another on a temporary basis. The problem of shortage of medical teachers is particularly acute in pre-and para-clinical specialties such as Anatomy, Pharmacology, Forensic Medicine and Community Medicine. There are no uniform standards of medical education, at both graduate and the post-graduate levels. The Medical Council of India (MCI) and State Councils have not been able to universally ensure quality education in all medical colleges.

AYUSH Institutions

There were 461 AYUSH colleges with admission capacity of 25,555 students in 2006. There is disparity in availability of AYUSH colleges/institutions in different States in the country. While Maharashtra has as high as 107 AYUSH colleges/institutions, States like Jharkhand (3), J & K (3) and Himachal Pradesh (2) have very few AYUSH colleges / institutions.

Dental Education

The country has in all 240 BDS colleges with admission capacity of 18,180 (2006-07) as against only 77 dental colleges with admission capacity of 1987 in 1994-95. As in the case of medical colleges, there is a regional imbalance in the establishment of dental colleges. There are 43 dental colleges in Karnataka followed by Maharashtra (28), UP (28), Andhra Pradesh (20) and Tamil Nadu (17). State of Orissa has 4 colleges and West Bengal has only 3 dental colleges. The availability of dental colleges in other States is even lesser. There is a need for opening of new dental colleges in the remote and underserved areas after suitably modifying the regulations. Suitable partnerships with private players to move into this arena of education should be encouraged to overcome the shortages, especially in rural areas.

Nursing Education

As on March 2006, there were 1312 institutions available for training of General Nursing Midwives in India, with an admission capacity of 50, 628. The quality of Nurses training is affected by number of constraints such as inadequate number of nurse teacher specialists, inadequate infrastructure, non-adherence of the Indian Nursing Council teacher student norm, budget etc. With globalization and growth of private health sector, the county requires more nurses. There is also a growing demand for nurses with specialized training. There is a need for continuation of diploma course in general

nursing and the same may be continued as long as they are satisfactorily fulfilling the requirement of general nursing services in the country.

However, efforts should be put in and encouraged to increase the number of nursing colleges so as to produce additional B.Sc (Nursing) qualified nurses. This in turn will render additional teaching staff and provide higher/accredited standards of nursing care.

Paramedical Education

The Pharmacy Council of India regulates the education and training of pharmacists under the provision of Pharmacy Act. The training of these categories has been unregulated and many centres for training these personnel have opened up all over India, with permission of State Governments. As on August 2006, there were 261 degree granting institutions in India with admission capacity of 14,790 and 461 institutions with admission capacity of 27,735 providing diploma in pharmacy.

Production of Paramedical Personnel

As on March, 2006, a total number of 336 ANM/MPW (female) schools with an admission capacity of 13,000 and 42 promotional training schools for LHV/Health assistant (female) with an admission capacity of 2600 were established by the Department of Health and Family Welfare, Government of India. For training of multi-purpose health worker (male), there are 56 training centres. The number of such schools vary across the States.

At present, there is no statutory Regulatory Council to supervise and control the growth and standard of education of paramedical professionals. In the absence of reliable data about the availability and deployment of paramedical professionals no firm policy can be evolved for development and equitable distribution of paramedical staff. It is, therefore, recommended that the government should evolve a suitable mechanism with adequate funds for providing training and upgrading the knowledge of paramedical personnel working at PHCs, Secondary and Tertiary level health institutions.

Public Health Education

Currently, a number of institutions are engaged in imparting public health and related education in the country. Besides, medical colleges, the notable institutions imparting

such training are the National Institute of Health & Family Welfare, National Institute of Communicable Diseases, All India Institute of Hygiene and Public Health, Sree Chitra Tirunal Institute of Medical Sciences, Institute of Health Management Research, Centre of Social Medicine & Community Health, Jawaharlal Nehru University, Centre of Community Medicine, AIIMS etc.

In addition, various medical institutions are now in the process of starting new Public Health Courses at the Masters level, namely ICMR, AIIMS, PGIMER etc. The supply position is bound to improve after institutions of Public Health under PHFI and new Public Health Schools are set up within the existing Medical Institutions.

Assessment of Health Manpower Requirement in India

Allopathic Doctors and Dental Surgeons

Using the norms for doctors as 1:2000 population recommended by the Bhore Committee, the requirement for the number of doctors has been worked out to be 5,64,261 by 2007 and 6,04,058 by 2012. The Bhore Committee set the norms 60 years ago. Going by these norms and presuming that the ones registered by State Medical Councils are alive, there is no shortage. However, all State Medical Councils do not maintain such a live register. These norms also do not take into account the emerging opportunities for India such as health tourism, health insurance, bio-technology etc. Nevertheless, there is a shortage of doctors at the Primary Health Care level. At present 7.5 % PHCs are without a doctor and 54.5% of the sanctioned posts of specialists at CHCs are vacant (MOHFW,2006).

The dentist population ratio is not good and there appears to be acute shortage of dental surgeons in the country. As per the norms of 1 dentist for 4000 population recommended by Bhore Committee, the number of dental surgeons actually required would be 2,82,130 in 2007 and 3,02,029 in 2012. If the present trend continues, the number of dental surgeons likely to be available in 2007 and 2012 would be 73,271 and 1,16,960 respectively and there will be a gap of 2,08,859 dental surgeons in 2007 and 1,85,069 in 2012.

Nurses & Pharmacists

The requirement of nurses for the 11th Plan has been worked out for the States and country using the Bhore Committee norm of 1:500. The number of nurses actually required for 2007 and 2012 would be 21,88,890 and 23,41,756 respectively. However, as per the current trend, number of nurses likely to be available in 2007 and 2012 would be 10,32,518 and 13,86,498 respectively. The gap in nurses for 2007 and 2012 will be 11,56,372 and 9,55,258 respectively.

Keeping in view the norm of one pharmacist per 2000 population suggested by Bhore Committee, the requirement of pharmacists has been worked out to be 5,64,261 by 2007 and 6,04,058 by 2012 (as against 5,78,179 pharmacists available in 2006). The number of pharmacists appears quite adequate. However, efforts should be made to deploy pharmacists in rural areas of the country, as at present 19.48% sanctioned posts of pharmacists are lying vacant at PHC and CHC level.

Opportunities in India

The demand for health manpower in India is increasing tremendously with various emerging opportunities like the growth of health tourism, increasing awareness of health insurance, growth of medical industry, growth of pharmaceutical industry, bio-technological development, growing need for research in AYUSH systems, and migration of doctors and nurses to developed countries etc.

Categorization of Health Manpower

The human resources for health include well trained and qualified doctors, nurses, a range of paramedicals and allied personnel. It also includes a range of informally trained providers including traditional birth attendants and folk healers. These human resources can be broadly categorized as public sector and private sector. However, there is no reliable data on such diverse human resources in India.

National Classification of Occupations – (2004) has been developed in India based on the International Standard Classification of Occupations (ISCO-88). This classification covers a wide range of health personnel ranging from specialized surgeons to faith

healers, which are classified into 19 sub groups. However, in the classification, community health workers of different kind, anganwadi workers, Dais/TBAs etc. are not reflected.

Recommendations

Matching the Basic Demand with Supply

The manpower and infrastructure shortages exist for all the categories of health personnel working at primary and secondary health care level in the country. Adequate measures need to be taken during the 11th Plan period to solve the problem of shortage of infrastructure and manpower. The following are the recommendations:

☞ In order to ensure availability of medical professionals in rural areas on a permanent basis, posting of doctors with adequate incentives (both monetary as well as non-monetary benefits) such as improved infrastructure facilities of health care institutions, suitable accommodation, preferential school admissions for children of doctors living in remote areas, transfer or posting of a choice after a stipulated length of stay and training opportunities etc.

☞ A series of one-year duration Certificate Courses for MBBS graduates should be drawn up and launched in the deficit disciplines for strengthening primary health care services. The areas may include Pediatrics, O & G, Anesthesia and Radiology. These courses would provide additional skills to graduate MBBS doctors to independently provide health services. The private sector may also be encouraged to participate in this venture.

☞ The National Board of Examinations (NBE) has been conducting examination in many specialties and awarding the 'Diplomate of National Board' degrees to successful candidates. Various hospitals including those in the private sector have been accredited by the NBE for imparting training in different specialties. Such efforts need to be enhanced for overcoming the shortage of specialists and also to improve the quality of training.

☞ Efforts should be made by respective councils (Medical Council of India, Central Council of Indian Medicine, Central Council of Homeopathy, Dental Council of India, Indian Nursing Council, Pharmacy Council of India) to create a scientific data bank of health professionals, details of placement of students after their graduation, and number of graduates/PGs entering government versus the private sector.

☞The re-registration of all medical & dental practitioners including specialists after every 5 years needs to be enforced uniformly.

☞Establish new medical and dental colleges in the underserved areas. As recommended by the NCMH (2005), priority should be given to reducing the existing inequality by establishing 60 medical colleges in deficit States. Public private partnership could go a long way strategically to bridge this gap.

☞ Age of retirement of doctors may be increased from 60 years to 62 years. State public health doctors can be retained on contract basis for further period of three years (till the age of 65 years), especially in the notified hardship areas.

☞ The pool of medical practitioners may be expanded to include a cadre of Licentiates of Medical Practitioners (LMPs) as also practitioners of Indian Systems of Medicine and Homeopathy to particularly tackle the problem of shortage of MBBS doctors in rural areas. Similarly, in areas where there is acute shortage of doctors, qualified nurses and mid-wives can be permitted to provide simple primary health services.

☞ The LMPs, qualified nurses, mid-wives and other paramedical professionals may be permitted to provide simple and basic primary health service after receiving adequate training and subject to monitoring their performance by professional councils. Central Council for Research in Unani Medicine has designed a 500 hours training capsule for traditional birth attendants/traditional practitioners which can provide them requisite knowledge and training for handling common ailments. However, it is pertinent to mention that these categories of healthcare personnel should be considered only to overcome the shortage of doctors and permitted to practice /provide their services only in the rural areas. They should get their licenses / permits renewed every 6 years.

Improving the Quality of Medical Education

☞ Evaluate the experiences of University of Health Sciences set up in various States during the 10th Plan, against medical colleges that are part of the general universities before more such universities are set up during the 11th Plan.

☞ Expedite the effort to set up a Medical Grants Commission on the pattern of UGC for development of infrastructure, facilities and to implement uniform pay-scales for medical and dental teachers.

☞ In order to equip medical graduates with the skill mix essential for providing broad based community health care, students should be allowed to learn most of the time in hospital and field rather than in class rooms. Medical training should largely be in a decentralized setting outside a tertiary hospital, in close proximity with public health & social environment.

☞ In view of the high rate of attrition of academicians, there is a need to make teaching in professional colleges attractive. It is time to deliberate if there is a need to enhance the salary structure as also to have innovative programmes of incentives, perhaps by allowing them to conduct private OPDs in the medical colleges. Another way could be to use the Honorary Consultant System so that the selected leading private practitioners and retired teachers can be inducted in to replace the depleting academic workforce.

☞ In order to solve the acute shortage of teachers in dental colleges, there is a need for increasing the intake capacity in the various postgraduate dental courses and to offer attractive and uniform pay-scales for the teachers. Government may also consider setting up a National Institute of Dental Sciences for postgraduate courses.

Strengthening of Nursing and Paramedical Services

☞ Promote graduate nursing courses for meeting the increasing demand for specialized nurses in the specialty and super-specialty departments. This would provide additional qualified teaching staff and also provide higher /accredited standards of nursing care.

☞ Train more MSc (Nursing) personnel to solve the problems of shortage of nursing teachers.

☞ Additional skills could be provided to the nurses in the form of a Certificate Course of short duration. The contents could include hands-on-training in maternal and child health, training in skilled birth attendance as well as newborn care and training in integrated management of new born and child illness.

☞ Create Statutory Councils for Paramedical Staff

☞ Promote, regulate and encourage paramedical training particularly for technicians in laboratory medicine, radiology, OT techniques, dental techniques etc.

☞ Encourage training courses for licentiate physicians in rural areas. Training should be suited to local context and be conducted in the local languages. The curriculum and text-books for these courses must be carefully prepared to provide optimal information and generate appropriate social attitudes.

Skill Development of Medical & Paramedical Professionals

☞ Implement CME Programme of 150 credit hours akin to as planned by Delhi State Medical Council all over the country.

☞ Introduce IT - based "e-health" for health manpower data collection /collation and information analysis. This would also assist the country in obtaining the requisite information on-line or at short-intervals.

☞ Bring all medical colleges and institutions under computer networking so as to enable the input and retrieval of ail available medical information which will lead to improvement in the quality and coverage of cost effective CME programme.

☞ Interlink all medical libraries - networking of medical institutions with super-specialty hospitals in Government and private sectors may be promoted.

☞ Link tertiary care institutions in remote areas with major super-specialty institutions in other regions through Telemedicine (Tele-consultancy, Tele-radiology, Tele-pathology etc.)

☞ In order to meet the health manpower need in RCH and Public Health especially in the light of recent development of National Rural Health Mission, open universities should play a major role in periodically updating the knowledge of various categories of health personnel in a cost –effective and efficient manner.

☞ Reform ail Professional Councils to ensure that :

- New entrants to the profession have the reouisite training and demonstrable professional competence;
- Practicing professionals are in good standing; and that
- People have access to relevant information about health professionals in order to make informed choices.

Regulation of Private Health Sector

☞ In order to improve the services delivered by the health professionals, it is essential to establish a minimum set of basic regulations covering the licensing of private practitioners and institutions, measures to prevent the oversupply of services and appropriate action there on, provision of appropriate technology, quality of services, guidelines regarding pricing commensurate with the quality of services being provided in the private sector.

☞ Professional bodies of different specialties should develop guidelines and protocols for patient management.

☞ Bring informal health providers within the purview of minimum quality regulation through training courses and certification examinations.

Mainstreaming of AYUSH System

☛ Promote the inherent strength of AYUSH by instituting educational reforms for addressing the contemporary societal health needs in rural and urban areas for primary health care, public health, preventive and promotive health care.

☛ An integrative approach to AYUSH education is essential. Integration would essentially imply introducing additional features into AYUSH education like capacity related to the interpretation of modern diagnostic tools and tests, use of IT to develop AYUSH informatics, capacity related to understanding of pharmacological parameters and design of experiments etc.

☛ Reputed AYUSH institutions in the country should be supported to design and offer new PG courses on socially relevant subjects like AYUSH & Public Health, AYUSH Informatics, preventive cardiology and diabetes etc.

☛ Well designed CME courses using modern education technology like distance learning and internet are desirable for improving the quality of clinical practice. Such courses should be entrusted to AYUSH centers of excellence in the country.

☛ Set up an AYUSH telemedicine programme using Information and Communication Technology that links reputed community health organizations in rural and urban areas to AYUSH centers of clinical excellence.

Health Tourism, Pharmaceutical Sector and Biotechnology

☛ The increase in demand of health professionals and researchers generated by promotion of health tourism, growth of pharmaceutical industry and development of bio-technology must be assessed and catered to in the coming years.

☛ Introduce various policy measures to promote health tourism in the country. Based on it, the human resource requirements can be addressed. The State of Kerala has planned to announce a Health Tourism Policy in 2007.

☞ Encourage Pharmaceutical industries to promote their respective role in the 11th Plan period. The quality of drugs being manufactured in the country as also those being imported (raw materials and finished products) needs to be monitored to avoid usage of spurious /substandard drugs. In addition, regulatory and monitoring mechanisms to protect the population from the hazards of clinical trials are necessary. Besides, mechanism is essential for reporting and monitoring of the side effects of medicines. Appropriate human resources would be required to address all such issues.

☞ Develop human resource in biotechnology. Existing leading institutions in biotechnology need to be networked with advanced R&D laboratories of Central Government.

☞ Strengthen & equip medical colleges for promoting ethical biomedical research.

Development of Public Health & Related Disciplines

☞ The benefits of the knowledge and skills of modern Public Health should be made available at all levels. Staff skilled in modern Public Health & Family Medicine will be in a position to bring the advantages of current scientific knowledge to finding solutions and selecting the best option for health interventions in the community.

☞ Sizeable employment in the coming years is likely to be in public health and related disciplines like health administration, health information technology, health marketing, community health management, hospital management etc. In view of growing need of expertise in these disciplines, there is a need for raising the proportion of postgraduate seats in the disciplines related to 'public health'.

☞ For the development of public health, multiple independent centres with a common regulatory body appears to be a suitable approach. Some of these centres could be with the universities of health sciences and some with the usual multidisciplinary universities. This would allow for greater input from different disciplines to enrich the subject. New public health schools should be set up within the existing medical colleges.

☛ Public Health needs a team effort to function. The team needs to draw upon expertise from medicine, social sciences, communication, management, engineering and environmental sciences to formulate the broad canvas to sketch the scope of interventions required to provide a health promoting ambience for the community.

☛ Qualified Healthcare Administrators are few and India will need a large number of them in future. MBA Programmes specially tailored for the healthcare and MD (Hospital Administration) /DNB (H & HA) /MD (CHA) / MHA Programmes need to be encouraged. Capacities for Health Technology Assessment also need to be built.

Vocational Courses

☛ For the fast expanding healthcare sector, there is also a need to introduce more of vocational courses. The students could be introduced to the fundamentals of health and given an appropriate practical orientation towards addressing the issues related to the vocation. For example, a vocational course on general health care could equip the Class XII pass-outs in extending assistance to doctors and health professionals in managing patients.

Human Resource Development Policy for Health System

☛ At present, there are no clear policies for human resources development in the public health system. Health personnel need clear and transparent policies regarding recruitment, training, career development plan, transfers, performance appraisal, supportive supervision etc. Qualifications and eligibility criteria for different cadres of health personnel need to be reviewed in relation to their job requirements. Therefore, a comprehensive human resource development policy for health system should be developed by the Government.

Human Resource Management Information System

☛ Several Departments/Ministries are involved in planning, development and management of health manpower in the country. There exists, no co-ordination among the departments/Ministries in developing health manpower. An effective Human

Resource Management Information System is essential for projecting the future manpower requirements. In order to develop an effective human resource management information system in the country, a strong co-ordination of Ministries / Departments / Agencies engaged in production, recruitment and training & development of health man power is required.

Need for Comprehensive Studies

☞ Considering the importance of planning for human resources in the country and the need for specialized data, the Task Force felt that there is an urgent need of commissioning a series of state-level, district level and national studies to develop a data base for estimating India's future health manpower requirements.

☞ The Task Force also recommends setting up of an Expert Group (from public and private sectors) to provide inputs for developing a system of human resources for health. Its purview should include rational assessment of levels of knowledge and skills for different categories of health personnel as well as the structure and content of professional education for imparting the same. The Expert Group should also suggest norms for projection of different categories of health manpower viz. allopathic doctors/specialists, dentists, AYUSH doctors, nurses, pharmacists etc keeping in account demographic transition, changing socio-economic scenario, attrition, migration and changing disease patterns.

Financial Requirements

☞ In India public financing for development of human resources for health is quite low. It is about 1% of total public health expenditure in India. In order to fill the current gaps in health manpower and to meet the future challenges, a manifold increase in public spending is necessary. The Task Force endorsed the financial requirements recommended by the National Commission on Macroeconomics and Health (2005). NCMH has recommended a five times increase in public spending on development of human resources for health, which includes establishments of new medical and paramedical institutions, training, research training of village level functionaries, and in-service training of health personnel. According to the Commission, a non-recurring

amount of amount of Rs.8,649 Crore and a recurring expenditure of Rs. 2,905 Crore every year will be required. The Commission also recommended a sum of Rs.5.0 Crore for enforcement of regulations by the professional councils (MCI, DCI, PCI, INC etc.). Besides the above, an amount of Rs.5 Crore may be required for commissioning studies/ collecting data on human resources for health at National, State and District level. For the systematic development of human resources in the health sector, this may be only a beginning. The resource requirements for development of human resource for health during the 11th Plan should be shared by the Centre and the States. The National Rural Health Mission should effectively contribute towards it. Efforts should also be made to mobilize additional resources through suitable partnership arrangements with the private sector and also through other available options.

CHAPTER – I

INTRODUCTION

1.1 Background

1.1.1 Health service delivery requires a vibrant health system based on strong foundation of well-trained, motivated and professional human resources, which include a wide array of doctors, nurses, pharmacists, laboratory technicians, physiotherapists, community based workers etc. However, the availability of an adequate number of trained health personnel alone may not necessarily lead to optimal functioning of the health services; their appropriate distribution, deployment as well as knowledge base and attitudes are also essential

1.1.2 Despite the recommendations of various Committees, health manpower planning in India has not received adequate attention. The norms for health infrastructure and manpower were laid down for the first time by the Bhore Committee. Sir Joseph Bhore (1946) recommended a population based norm for medical (1 doctor/population of 2000) and nursing personnel (1 nurse/population of 500). The Mudaliar Committee (1961) recommended that the nurse - population ratio should be 1:5000 by 1971, 1:2000 by 1981, and 1:1000 by 1991. The Bajaj Committee (1987) suggested that assessment of health manpower requirement should be based on multiple parameters including functionary to population ratio, inter-professional ratio and manpower mix. The Committee also recognized that health manpower requirements vary from region to region depending upon stage of epidemiological transition, the availability of institutions, income elasticity and public & private expenditure on health. The established norms of doctor: nurse ratio of 1:3 may apply to public sector but not to the private sector. The future estimates need to take this into consideration.

1.1.3 Efforts were made during the 9th Plan to collect reliable and accurate data on health manpower for planning. Central Bureau of Health Intelligence initiated efforts to obtain district-wise data on the number of medical, dental, ISM&H professionals, nursing and para-professionals and institutions. However, there has been limited progress in this direction due to non-availability of reliable data on health manpower working in the private & NGO sectors.

The 10th Plan also envisaged creation of data base at district level for district-based health manpower planning. However, again there has been very little progress in this effort.

1.1.4 In keeping with the growth of health infrastructure and expanding scope of the health services, human resource needs have been increasing. Several new programmes have been introduced or strategies of existing programmes revised. The changing scenario of health services and strategies, especially the National Rural Health Mission, has led to an urgent need to develop new competencies and skills among the health personnel, in addition to increasing the critical mass of human resources at various levels.

1.2 Task Force on Planning for Human Resources in Health Sector

1.2.1 Human Resources are the critical variables for the effective provision of health care to the population. With the implementation of the National Rural Health Mission, the requirement of the Public Health System in terms of medical, nursing and paramedical staff has received priority attention. The opportunity for India to become an important destination for health care services and the emerging growth of health care industry are also contributing factors that point to the need for urgent action to create quality human resources in the area of health. Accordingly, a task force under the Chairpersonship of Dr. (Ms) Syeda Hameed, Member, Planning Commission was set up in 2006 with the following terms of reference:

The Terms of Reference

1. To assess the current status of human resources for health establishments such as clinics, dispensaries, nursing homes and hospitals across the public and private sector at the primary, secondary and tertiary health care levels in the country.

2. To identify manpower needs for public health at all levels for diverse requirements, including enforcement of Public Health Regulations, disease surveillance, health service management and service delivery across public health facilities, laboratories, health programmes and research institutions, etc.

3. To assess the present availability and future needs of health manpower in the country including requirement of specialists and super-specialists in various categories, health

researchers and medical educationists, keeping in view diverse health care needs, migration of health professionals, growth of health industry and increasing importance of medical tourism.

4. To identify new needs and opportunities on account of health transition and globalization and the corresponding human resource requirements for emergent areas such as health informatics and bio-technology.

5. To identify human resource needs for pharmaceutical linkages, bio-medical products and equipments, health care business process operations etc. to health delivery.

6. To take stock of current national capacity including institutional mechanisms for training of para-medical staff, nursing personnel, technicians etc. (across the public, private, not for profit and corporate sectors) and identify gaps in human resource capacities for health care delivery, with a view to suggest remedial measures to fill up these gaps.

7. To suggest mechanisms for ensuring uniformity of standards amongst the entrants to all medical colleges and paraprofessional training institutions and for improving the quality of education imparted in such institutions.

8. To suggest methods for optimal utilization of available manpower across primary, secondary and tertiary health care through restructuring, redeployment etc., and suggest mechanisms for involving civil society and other methods for reaching health services to ' aam aadmi'.

9. To suggest mechanisms to facilitate:

    - Establishment of essential linkages between health manpower production, development and utilization;

    - Optimising health manpower management system with special reference to career development for various categories of professionals and para professionals;

- Periodic updating of knowledge and skills of medical and dental practitioners / para professionals (both public and private) for improving quality of care provided through CME Programmes / recertification;

- Optimal utilization of information technology for improving quality and coverage as well as reducing cost of continuing medical education.

6 Suggest major objectives, thrust areas, strategies & initiatives for human resource planning and education across primary, secondary and tertiary health care during the Eleventh Plan.

7 On the basis of critical evaluation of the above, formulate a Human Resource Development Plan for the Indian Health Sector.

8 To deliberate and give recommendations on any other matter relevant to the topic.

The composition of the task force is shown at **Annexure- I.**

1.3 The Present Report

The present report gives a summary of all issues related to the terms of reference given to the task force. The meeting of the members of task force was held on 2nd June, 2006, during which all major issues concerning human resources in the health sector were discussed and deliberated. The minutes of the meeting are at **Annexure – II**. Based on the points emerged during the deliberations, a detailed draft report was prepared initially; which has been vetted after stake-holders consultation.

1.3.1 Human Resources for Health – The Concept

1.3.1.1 All individuals engaged in the promotion, protection, or improvement of health, from both the formal and informal sector are commonly termed as human resources for health. This includes all personnel in both public and private sectors and different domains of health systems whose main activities are aimed at enhancing health of the population. Human

Resources for Health include the personnel who provide health services such as doctors, nurses, pharmacists, laboratory technicians... and management and support workers such as financial officers, cooks, drivers etc. Health promotion, prevention of illness, effective treatment of illness and rehabilitation etc., depend on skilled and dedicated workforce. Therefore, ensuring the right number of health manpower, with right skills, in the right place and at the right time is a challenging task.

1.3.1.2 Worldwide, there are 59.9 million health workers of which about two-thirds of them (39.5 million) provide health services; the other one-third (19.8 million) are management and support workers (WHO, 2006). Today, all countries face health workers challenges but type of problems vary across regions and countries. Health Workers are inequitably distributed throughout the world, with severe imbalances between developed and developing countries. The overall shortages are commonly aggravated by skewed distribution within countries and movement of health workers from rural to urban areas, from public to private-for-profit sector, or to do jobs outside the health sector. Other contributing factors include insufficient investment in pre-service training, migration, inadequate growth opportunities and work environment issues.

1.3.1.3 According to the International Standard Classification of Occupations (ISCO-88), health professionals comprise of:

(i) Life Sciences and health professionals like medical doctors, dentists, pharmacists, other health professionals (except nursing), nursing and midwifery professionals.

(ii) Technicians and associate professionals like medical assistants, sanitarians, dieticians and nutritionists, optometrists and opticians, dental assistants, physiotherapists and related associate professionals, pharmaceutical assistants, other modern health associate professionals (except nursing), nursing and midwifery associate professionals, traditional medicine practitioners and faith healers (ILO,1990).

1.3.1.4 In many countries, a systematic collection and compilation of data on health manpower is not being carried out regularly. Even, wherever data exists, there are country differences in data coverage, quality and definitions etc. Some countries provide information only on public sector workers, excluding private sector. Some countries, enumerate only

physicians and nurses, and not other workers. However, in some countries, information on all health workers including traditional practitioners, community workers and other informal workers is available.

1.3.1.5 The Joint Learning Initiative report on Human Resources for Health (2004) made a first attempt to estimate the stock of health manpower and Health Worker Density Index (HRH index) of various countries in the world using the data base compiled by WHO on major health personnel namely physicians, nurses, midwives, dentists and pharmacists. HRH Index is a composite index, combines density of physicians, nurses and midwives per 1000 population, with the aim of reflecting the overall level of health workers in each country.

1.3.1.6 The WHO report on Human Resources for Health in the SEA region (2005) revealed that there are great variations between and among countries of the region as far as the total number of the health service providers is concerned. It ranges from the lowest 15 in Nepal to as high as 110 in DPR Korea per 10,000 population. In India it is 33 per 10,000 population. On an average, there are 29 health service providers per 10,000 population available in the region, a figure which is well below the global average of 62 per 10,000 population.

1.3.1.7 In India, the health manpower data has not been compiled as per the International Standard Classification of Occupations. Neither the government nor private organizations ever made an attempt to collect and compile manpower data as per international classification. Although the Census of India collects a wealth of information on occupation of individuals in the family, no major effort has been made to classify health workers in different categories.

1.4 Methodology and Limitations for Assessment of Health Manpower

1.4.1 For any realistic planning for human resources, a valid, complete and reliable data on human resource is required. The weak knowledge base on the health workforce hampers planning, policy, development, and program operations. The comparability of data across States has to be viewed with caution as some States seem to have done much better in terms of registration of doctors, nurses etc., whereas others have not. Existing deficiencies like sparse information, fragmentary data, and limited research - need to be remedied.

1.4.2 There are no definite norms available for estimating the requirements of different categories of health professionals and para professionals in the country. In the absence of any valid norms, making health manpower projections in the country is difficult. The existing norms may not be valid in the light of the changes that have taken place in the country, especially socio-economic & technological developments.

1.4.3 Health manpower requirements will also depend on the age-structure, population density and disease patterns of countries. Therefore, comparing norms (physicians per 1000 population) of India with other comparator countries may not be valid even though some countries are doing much better on health outcomes with a lower physician to 1000 population ratio than India. Similarly, using the same norms for projecting health manpower needs of all States in India is also not justified. Thus using unified norms as the basis for making future projections may not be appropriate in the Indian context. Any exercise on future projection of health manpower requirements needs to take this into consideration. The diversity of current health service providers and the multiple models of health manpower development of various countries must be studied to assess the optimal health manpower requirements in diverse contexts.

1.4.4 In the absence of revised norms for health manpower projection in the country, the available norms have been used for the present report. The requirement of different categories of health personnel such as medical, dental, nurses and paramedical staff has been assessed using the norms recommended by the Bhore Committee, whereas the requirement of health manpower and infrastructure in rural areas has been estimated using the methodology recommended by the Expert Committee (Bajaj Committee). While the requirement of health manpower need of the public services is easier to compute, the actual requirement of health manpower in private and NGO sectors may, in fact, be very difficult without a reliable and complete data base.

1.4.5 The old norms would have been based on assumptions regarding health-seeking behaviour of India's population at that time. Using that as the basis for making future projections may not be appropriate and adequate. One can expect, for instance, that as incomes rise, education expands, and access to medical and health facilities improves, and life expectancy increases, people will seek more health care.

1.4.6 Though there may be extraordinary employment potential in the health sector, absence of specialized data prevents the task force in doing justice to the terms of reference.

1.4.7 Before recommending for implementation, the recommendations made by several members need to be studied in greater detail. This would require time and resources beyond those at the disposal of the task force.

CHAPTER – II

CURRENT STATUS OF HUMAN RESOURCES FOR HEALTH

2.1 Human Resources for Health in India

2.1.1 The human resources for health in India range from highly trained bio-medical super-specialists at one end to community based and household based healers at the other. Almost one half of them consist of qualified doctors of allopathic or modern bio-medicine, dentists, nurses, a range of paramedical professionals such as radiographers, pharmacists, laboratory technicians, and a number of allied personnel like health planners, health administrators, social workers, psychologists, health researchers, health educators, health technologists etc. The other half is replete with the high richness of India's traditional healing systems comprising of qualified practitioners of the AYUSH systems. It also includes informally trained providers through apprenticeships, traditional and household birth attendants and a variety of faith/ folk healers (WHO, 2007).

2.2 Information on Human Resources for Health

2.2.1 One of the terms of reference for the Tack Force was to assess the current status of human resources for health establishments such as clinics, dispensaries, nursing homes and hospitals across the public and private sector at the primary, secondary and tertiary health care levels in the country. However, there is no comprehensive data available in the country on human resources for various health establishments in both public and private sector.

2.2.2 Professional Councils are the only source of information available on health manpower. In the case of allopathic doctors, the data base maintained by the Medical Council of India (MCI) is the only information on the total numbers of doctors in the country. There are two major problems with this data. First, as the various State Councils (except Delhi), have not been able to establish a periodic renewal of registration, the MCI data is cumulative and does not reflect attrition (due to death, retirement etc), being out of practice or migration of doctors (within the country or oversees). Moreover, a doctor may be registered with more than one

State council in the case where one is practicing in a State other than the one where s/he is first registered. This may lead to duplication of registration of doctors. Under these circumstances, the actual numbers of practicing doctors in the country would be less than the given figures.

2.2.3 Except States of Assam and Sikkim, none of the northeastern States have State Councils. Doctors in these States are likely to be registered with other State Councils. Distribution of doctors in these States is not currently available in the public domain. Furthermore, the MCI register does not provide specific information on number of distribution of different types of specialists in the country. The various Councils for health personnel are not able to enforce periodic renewal of registration. There is no mechanism available for collecting information on attrition, migration or drop-outs of health personnel once they are in the register. As a result, the available figures may represent inflated version of the numbers of workers that are currently available for the health system.

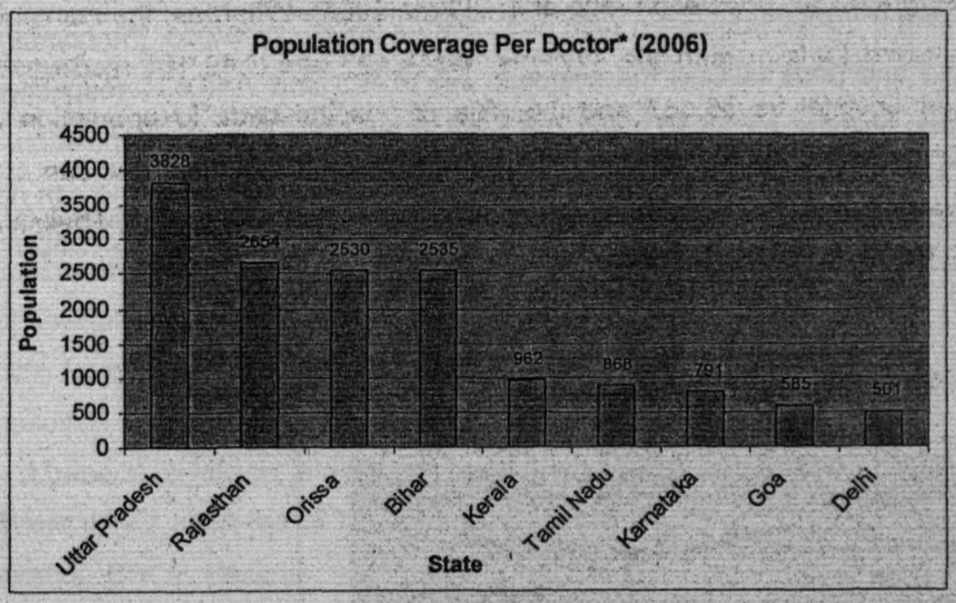
2.2.4 Except the data provided by various professional councils, no information is available on private sector. We also do not have reliable information on health manpower working in private and non-profit sectors. However, data on selected health manpower working in public health facilities in rural areas are collected and published by the Ministry of Health & Family Welfare through its publication – Bulletin of Rural Health Statistics.

2.2.5 Ministry of Health & Family Welfare through its Bulletin regularly publishes data on availability & shortfall of health manpower in respect of general surgeons, physicians etc (at CHC), MO (PHC), Obstetrician/Gyn, Paediatrician, Anaethetist, Public Health Programme Manager, Eye Surgeon, Nurse Midwife, Health Worker(F), Health Worker (M), Health Educator, Health Assistant (M & F), Lab Technician, Pharmacist, Radiographer, Ophthalmic Assistant and Voluntary Worker. However, information related to other workers like at Anganwadis, TBAs and other community based workers etc is not included.

2.3 Allopathic Doctors

2.3.1 The number of allopathic doctors possessing recognized qualifications (under IMC Act) and registered with State Medical Councils during the year 2006 was 6,68,131 (MOHFW, 2006). This gives a doctor to population ratio of 1 for1665 persons in India (60 doctors for

100, 000 population). In comparison, doctors per 100,000 population in Australia, Canada, the United Kingdom and the United States were 249.1, 209.5, 166.5 and 548.9 respectively (NCMH,2005). State-wise details on the number of doctors registered with State Medical Councils from 1995 to 2005 are at **Annexure – III**. The data shows that there has been an increase in the registration of allopathic doctors by 45.3% during the last 12 years. The total number of registered doctors (working in both public and private sectors) varies considerably across different States councils, from 1407 doctors in Haryana to 96,563 doctors in Maharashtra. Going by these figures, the number of persons per doctor (based on projected population in 2006) is less than 1000 for the States like Delhi (501), Goa (585), Karnataka (791), Tamil Nadu (868) and Kerala (962). Total population coverage per doctor is highest for the State of Haryana (1:16,570), if the figures of those registered with the State Council alone are to be relied upon. Nevertheless, doctor population ratio in India is skewed. The rural, tribal and hilly areas are extremely underserved as compared to urban areas (NCMH,2005).



* On the basis of doctors registered with respective State councils

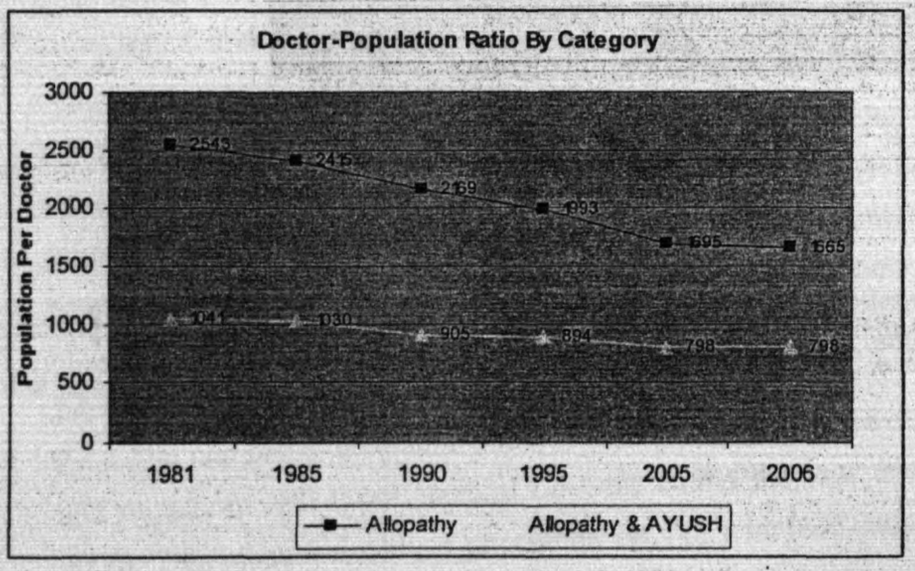
Source: National Health Profile, 2006, MOHFW (GOI).

2.3.2 External migration of doctors further reduces the number of available allopathic doctors in the country. It has been estimated that 50% of students from AIIMS have migrated overseas as well as internally to the private sector (NCMH, 2005).

2.4 AYUSH Doctors

2.4.1 As of 1st January 2006, there were 7,24,823 AYUSH Practitioners registered with their respective councils. They include 4,43,634 Ayurvedic, 46,230 Unani,17,560 Siddha, 2,16,858 Homeopathy and 541 Naturopathy Practitioners. State-wise details of number of registered AYUSH doctors in India are shown at **Annexure - IV**. The States of Bihar (1,62,490), Uttar Pradesh (1,02,637), Maharashtra (93,663) registered the highest numbers of AYUSH practitioners in the country. Going by these figures, Bihar has almost 5 times more AYUSH practitioners than allopathic practitioners. Uttar Pradesh has about 2.5 times more number of AYUSH doctors.

2.4.2 The combined strength of registered allopathic and AYUSH doctors for the year 2006 was 13,92,954 making a doctor population ratio of 1: 798 (in 2006). Whereas, the combined strength of hospitals and beds in both the systems was18,493 and 7,49,911 respectively giving population per hospital as 55,567 and the ratio of hospital beds to population as 1:1370 (Planning Commission, 2005). Viewing India with comparator countries one can note that India has the lowest number of hospital beds per 1000 population (China -2.4, Thailand - 2.0, Malaysia -2.0 & Brazil -3.1) (WDR, 2004).



Source: Health Information of India, Various Years & National Health Profile, 2006, MOHFW (GOI).

2.5 Dental Surgeons

2.5.1 The number of dental surgeons registered with Dental Council of India up to 6th September, 2006 was 78, 103 making dentist population ratio of 1: 14,194. Number of dental surgeons working with the government is 3233. This makes the Govt. dental surgeon population ratio as 1: 3,44,010 (MOHFW, 2006). Year-wise registration of dental surgeons and their State-wise distribution are given in **Annexures-V & VI**. The data in the Annexures show that number of dental surgeons registered with Dental Council of India increased by 99.72% between 2000-2006. States like Karnataka (19,730) and Maharashtra (14,105) had registered a higher number of dental surgeons in the country. Whereas States like Orissa (307) and Himachal Pradesh (469) and J & K (536) had registered very less number of dental surgeons.

2.6 Postgraduate, Specialists and Superspecialists

2.6.1 The number of postgraduate degree/diploma awarded in various disciplines of medical sciences by the universities during an academic session was 3181 and 1316 respectively - **Annexure-VII**. Of these only 58 and 11 were postgraduate degrees and diplomas respectively in Community Medicine/Public Health.

2.6.2 The rate of production and severe shortfall in the production of specialists is a major concern for achieving health goals. According to NCMH (2005), out of the existing production of specialists, 10% migrate to other countries, 30% opt for the private sector and leaving just 60% for public sector. Even this available 60% of specialists are concentrated in large urban hospitals. As per earlier norms, Community Health Centres should have had four specialists – a general physician, a general surgeon, a paediatrician, and an obstetrician-gynaecologist. There was a short-fall of 70.7% in the number of specialists as compared to requirement in existing CHCs. Besides, out of the sanctioned positions, 54.5% are lying vacant (MOHFW, 2006). There is an urgent need to create the required number of positions at all levels of care, and fill up the vacancies by rationalizing and simplifying the recruitment procedures and developing incentive packages to retain them.

2.6.3 The details of specialists and super-specialists registered with Medical Council of India were not available. There appears to be no system of registration of specialists and super-specialists. In the absence of data-bank for such personnel, it may be difficult to work out the

gap against the requirement of such personnel. Due to these reasons, the Task Force could not undertake the exercise on future requirements of specialists, super-specialists, health research and medical educationalists etc.

2.7 Doctors in Public & Private Sectors

2.7.1 Ministry of Health & Family Welfare provides data on the number of allopathic doctors employed within the public health system in different States. The number of allopathic doctors in Government service in different States is 73, 549 while the number of dental surgeons in Government service in different States is 3,233 in number (MOHFW,2006). In rural areas, 26,257 doctors were in position in public network of PHCs and CHCs across country (MOHFW, 2006) These include 972 general surgeons, 832 physicians, 1338 obstetricians & gynaecologists and 837 paediatricians. This implies that rural public health sector employs a very small proportion of allopathic doctors in the country.

2.7.2 In terms of health care providers, a majority of the qualified private provider market is concentrated in cities, towns and urban areas. The rural people are still unable to access the services of allopathic doctors. About 74% of graduate doctors live in urban areas, serving only 28% of the national population (Task Force Report on Medical Education,2006), while the rural population remains largely unserved. On the basis of surveys in 8 districts in the country, the NCMH (2005) reported that 75% of specialists and 85% of technology services were in the private sector. The survey also found that 75% of service delivery for dental health, mental health, orthopaedics, vascular and cancer diseases and about 40% of services for communicable diseases and deliveries were being provided by the private sector. Most importantly, there was a highly skewed rural-urban distribution with a majority of towns (88%) having a private facility as compared to 24% of rural areas. Various other studies have also reported that rural and urban slums are often served by private providers who do not possess a recognized qualification/registration.

2.8 Nursing Personnel

2.8.1 Nurses and Midwives are major health care providers. Overall, there is a shortage of nurses and midwives in India. As on December, 2005, there were 9,08,962 nurses registered with Indian Nursing Council in the country (MOHFW,2006). The nurse to population ratio in India was 1:1205 as against 1:100-150 in Europe (NCMH,2005). The nurse to doctor ratio in India is about 1.3:1 compared to ratio of 3:1 in most developed countries. Out of which 40%

are estimated to be active because of small number of sanctioned posts, poor working conditions, low pay scale and migration (NCMH 2005) State-wise data on number of registered nurses is at **Annexure – VIII**. There is incomplete information on nurses in various States. Like doctors in allopathic system, there are also inter-State variations in the availability of nurses. States of Tamil Nadu (1,59,843), Madhya Pradesh (93,106) and Gujarat (85,930) had higher number of registered nurses. Bihar has only 8883 registered nurses.

2.8.2 Most of the nurses who are in service are diploma holders and a few are graduates There are no specialist nurses in clinical areas such as Clinical Nurse Specialist, Nurse Anaesthetist in India. In the United States, the presence of advanced practitioner nurses has helped in timely treatment due to early diagnosis, shortening the length of hospital stay, reducing complications, and increasing patient satisfaction.

2.9 Pharmacists

2.9.1 As on December 2006, there were 5,78,179 pharmacists registered with the Pharmacy Council of India (MOHFW,2005). About 3% are available in the rural primary health system A State-wise list of number of pharmacists registered with Pharmacy Council of India is shown at **Annexure -VIII**. The ratio of one pharmacist for 1923 population in India (in 2006) is quite comparable to developed countries. However, there is a variation across the States. The States of Tamil Nadu (1,01,240), Maharashtra (1,06,220), West Bengal (89,630) had higher number of registered pharmacists in the country than States like Bihar (4,163), Haryana (874) and Goa (466). In rural areas, out of sanctioned posts of 22,816 pharmacists, 4,445 positions were lying vacant (MOHFW,2006).

2.9.2 Despite the presence of Pharmacy Council, there are numerous unregulated and unauthorized pharmacy training centers that produce diploma trained pharmacists. The skills of these pharmacists are likely to be short of the required standards of registered pharmacists. About 2% pharmacists were unaccounted for in the pharmacy workforce study in India (WHO, 2007).

2.10 Other Paramedical Professionals

2.10.1 Apart from the above mentioned health personnel, there exists a gamut of other health personnel like health workers (male and female), health assistants, block extension

educators, lab technicians, radiographers etc. As in the case of medical, dental, nursing and pharmacy education, there are no councils to regulate the growth and standard of para-medical education. In the absence of Regulatory Councils, there is no basic data available to assess the existing stock and manpower requirement in respect of paramedical professionals. Some States have initiated councils for para-medical personnel (e.g. Madhya Pradesh).

2.11 Infrastructure and Manpower in Rural India

2.11.1 Rural Health Infrastructure

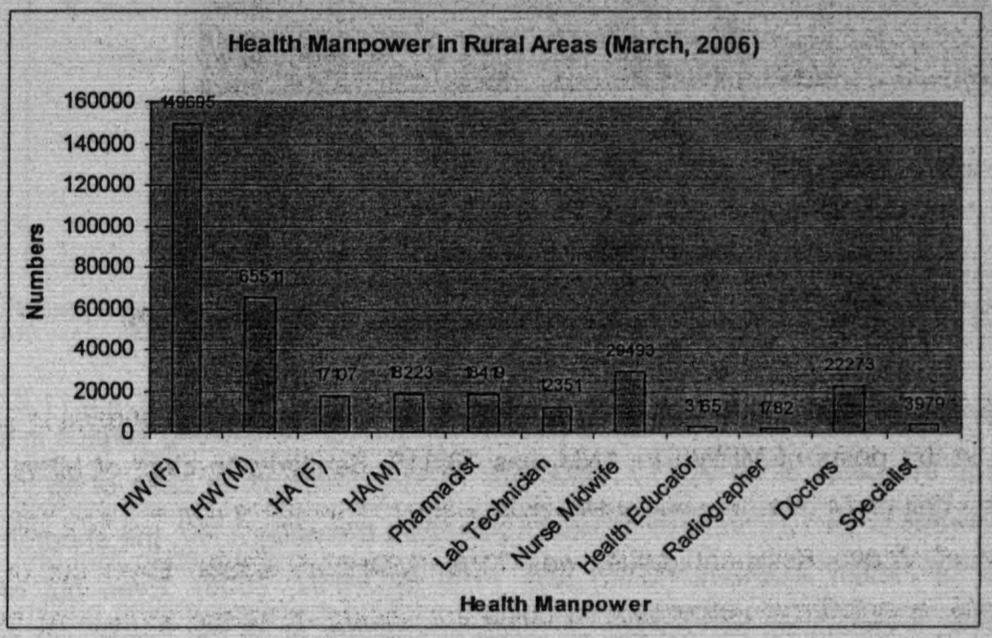
2.11.1.1 The health & family welfare programmes are being implemented through Primary Health Care system. The Primary Health Care infrastructure has a three tier system with Sub-Centre (SC), Primary Health Centre (PHC) and Community Health Centre (CHC) being the three pillars. As on March, 2006, there were 1,44,988 Sub centres, 22,669 PHCs and 3,910 CHCs in the country. In spite of increase in rural health infrastructure in different Plan periods, the shortfall continues to be there. As on March, 2006, there was a shortfall of 20,903 Sub centres, 4803 PHCs and 2653 CHCs in the country (MOHFW,2006).

2.11.1.2 It should be mentioned that India's health infrastructure and allocation of health workers is planned on population-size based norms rather than the specific health needs and demands at the community level. Shortages are quantified as the difference between the required number of facilities/providers as per the norms and those that are functioning or in position. This method of determining norms and shortages does not take into account the varying epidemiological, geographical and socio-demographic patterns across different States, across different communities, and between rural and urban areas within States. Neither does it take into account the actual availability of different types of providers or the extent of private sector and voluntary sector involvement in health care delivery at the community level.

2.11.2 Rural Health Manpower

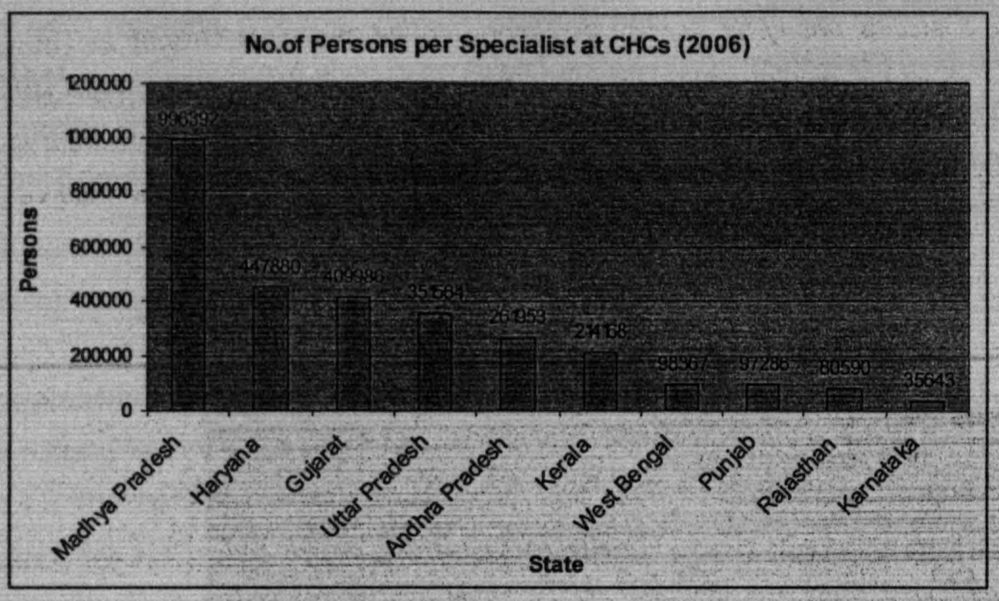
2.11.2.1 The manpower is important prerequisite for the efficient functioning of the Rural Health Infrastructure. In most of rural areas, formally trained and qualified doctors are available mainly through public health care system. The ratio of rural doctors to total rural population is far less than the ratio of total doctors to total population. A significant

proportion of positions are lying vacant at various levels including shortfalls. The major shortfall at sub-centre level is of health worker (male) resulting in overburdening of ANMs. Similarly, 7.5% PHCs were reported functioning without a doctor, about 38.9% without a lab technician and about 17.7 % without a pharmacist (MOHFW,2006). The State-wise vacancy position in all cadres is at **Annexure-IX.**



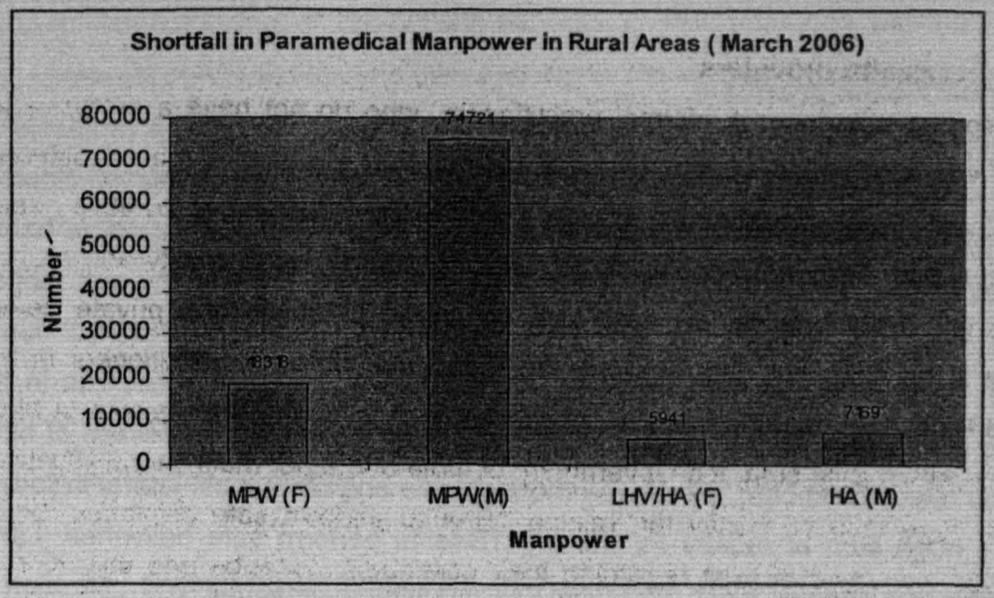
Source: Bulletin of Rural Health Statistics in India, Special Revised Edition, MOHFW (GOI), 2006.

2.11.2.2 In CHCs, about 54.5% of the sanctioned posts of specialists were lying vacant as on March, 2006. A shortfall of 9413 specialists was reported at CHCs as compared to the requirement of existing infrastructure on the basis of existing norms (MOHFW,2006). A State-wise vacancy position of total specialists is shown at **Annexure- X**. There is a wide variation in number of persons served by a specialist in rural areas.



Source: Bulletin of Rural Health Statistics in India, Special Revised Edition, MOHFW (GOI), 2006.

2.11.2.3 As on March, 2006 the overall total shortfall (excluding the existing surplus in some of the States) in the posts of MPW(F) / ANM was 18,318. Similarly, in case of MPW (M), there was a shortfall of 74,721. In case of Health Assistant (Female) /LHV, the shortfall was 5941 and that of Health Assistant (Male) was 7169 (MOHFW, 2006). Even out of the sanctioned posts, a significant percentage of posts are vacant at all the levels. At PHCs about 14% of the sanctioned posts of Female Health Assistant/LHV, 25% of Male Health Assistant and 21% of the sanctioned posts of doctors were vacant. At the Sub centre level, 5% Sub Centres were without Female Health Worker / ANM and about 43% without a Male Health Worker. This indicates a large shortfall in Male Health Workers, which may be resulting in poor male participation in family welfare and other health programmes and overburdening of the ANMs.



Source: Bulletin of Rural Health Statistics in India, Special Revised Edition, MOHFW (GOI), 2006.

2.11.2.4 Thus, the availability and quality of care across the rural areas appears to be dismal due to large number of vacant positions of doctors, nurses and other paramedical professionals. The major reasons for the vacancies are the unsatisfactory working conditions and lack of career prospects at various levels. As a result, a large proportion of population is visiting private providers for their health care needs who provide expensive services, though the communities should have access to subsidized or free public health services.

2.11.2.5 Due to lack of willingness on the part of MBBS doctors to work in remote and rural areas for various reasons, the State Governments have been allowed to expand the pool of medical practitioners to include a cadre of licentiates of medical practice as also practitioners of Indian Systems of Medicine and Homeopathy. The simple services/procedures can be provided by such practitioners as part of the basic primary health service in underserved areas. Similarly, in areas where there is acute shortage of doctors, qualified nurses and mid-wives can also be permitted to provide simple primary health services. However, all these personnel need adequate training, subject to monitoring their performance by professional councils.

2.11.3 The Informal Health providers

There is a widespread presence of informal practitioners, who do not have a professional qualifications in any recognized system of medicine but they practice a mix of different systems of medicine. These practitioners provide a significant proportion of curative health care to rural population. They are popular due to their availability, accessibility and rapport with the community. They provide low cost care compared to public and private health facilities. There is no clear cut data available on magnitude of such practitioners in the country. Trained Birth Attendants in villages provide assistance during the process of birth. Recognizing their role in child birth, the Government of India and other multi-lateral initiatives have invested a huge sum of money for training TBAs to perform safe deliveries. Large number of studies and reviews exist regarding their continued presence and utilization of services etc.

2.12 Initiatives under the National Rural Health Mission

2.12.1 In order to overcome the constraints of non-availability and shortages of health personnel, the Mission recommends the following actions – local preference; contractual appointment to a facility for filling short-term gaps; management of facilities including personnel by PRI Committees; training and developing local residents of remote areas with appropriate cadre structure and incentives; multi-skilling of doctors/paramedics and continuous skill upgradation; convergence with AYUSH; involvement of RMPs and partnerships with non-Government stakeholders amongst others.

Major strategies for Implementation:

- The Mission aims to increase the availability of trained human resources in rural areas through provision of trained women as ASHA/Community Health Volunteers (resident of same village).

- Provide minimum 2 Auxiliary Nurse Midwives (ANMs) against one at present at each sub health centre. Similarly against the availability of one staff nurse at the PHC, it proposes to provide 3 staff nurses to ensure round the clock services in every PHC.

☞ Strengthening of out-patient services in PHCs through posting / appointment on contract of AYUSH doctors over and above the Medical Officers posted there.

☞ Provision of 7 specialists at CHCs against the 4 at present and 9 staff nurses against the present 7 staff nurses.

☞ Contractual appointment of AYUSH doctors for special AYUSH set up at CHCs.

☞ To increase the availability of health personnel in rural areas, the following measures have been suggested:

- Incentives for compulsory rural posting of doctors
- Fair and transparent transfer policy
- Involvement of medical colleges by linking teaching with service delivery institutions at secondary & tertiary levels
- Improved career progression for medical and paramedical staff, for instance, the medical professionals serving in rural areas be sponsored for post-graduation
- Strengthening of nursing / ANM training schools and institutions training paramedical staff
- Partnership with non-governmental stakeholders to widen the pool of institutions

2.12.2 Accredited Social Health Activist (ASHA) - The new face of the community health worker / community health volunteer / village health guide: A trained female community health volunteer-ASHA –is being provided in each village in the ratio of one per 1000 population. She would be selected by the Gram Sabha following an intense community mobilization process. ASHAs would reinforce community action for universal immunization, safe delivery, newborn care, prevention of water borne and other communicable diseases, nutrition and sanitation. She will also help the villagers promote preventive health by converging activities of nutrition, education, drinking water, sanitation etc. In order that

ASHAs work in close coordination with the Anganwadi worker, she would be fully anchored in the Anganwadi system. ASHAs would also provide immediate and easy access for the rural population to essential health supplies like ORS, contraceptives, a set of ten basic drugs and the would have a health communication kit and other IEC materials developed for villages.

CHAPTER – III

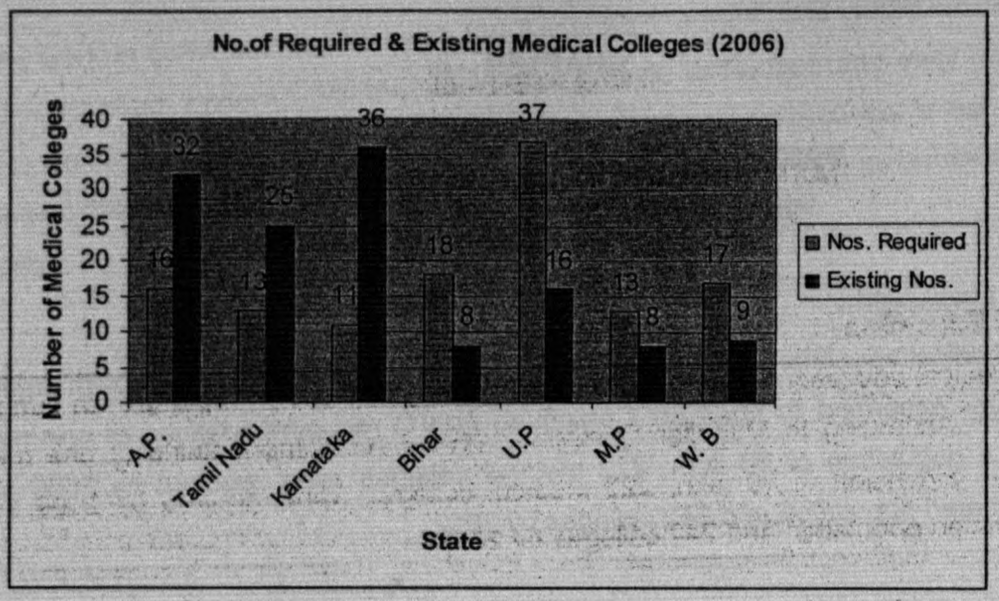
BASIC EDUCATION INFRASTRUCTURE FOR PRODUCTION OF HUMAN RESOURCES

3.1 Medical Education

3.1.1 The medical education infrastructure in the country has shown rapid growth during the last 15 years. According to Mudaliar Committee (1961) recommendations of one medical college for a population of 50 lakh, 223 medical colleges were required by 2006 as per current estimated population and 242 colleges by 2012.

3.1.2 According to the available information with MOHFW (GOI), the country has at present 262 medical colleges. Out of these, 135 are government medical colleges and the remaining 127 are private medical colleges. The admission capacity in undergraduate colleges is about 29,522 students per year. The admission capacity to PG courses is appx.8000 students per year in various disciplines. Year-wise number of medical colleges with admission capacity (1991-2006) are at **Annexure-XI.** The growth in number of medical colleges over the period is partially due to rapid privatization of medical education, particularly in southern and richer States.

3.1.3 At present, there is a wide inter-State disparity in the number of medical colleges concentration in different States **(Annexure-XII).** About 51% of medical colleges are concentrated in four States of Maharashtra (39), Karnataka (36), Andhra Pradesh (32) and Tamil Nadu (25). There are shortages of medical colleges in States like Uttar Pradesh, Rajasthan, Madhya Pradesh, Orissa and Chhattisgarh. These are also the States with adverse health indicators in the country. The direct result of concentrating medical colleges in one region will be easy availability of tertiary health centres in that region for the needs of population, whilst this would be lacking in other needy States. Therefore, there is a need for opening of new medical colleges in the underserved States. Public private partnership could go a long way strategically to bridge this gap.



Source: Medical Council of India, 2006

3.1.4 There is also shortage of teachers in medical colleges entailing adverse impact on the quality of education. The situation is further compounded with transfers of teachers of different specialties from one college to another on a temporary basis. The problem of shortage of medical teachers is particularly acute in pre-and para-clinical specialties such as Anatomy, Pharmacology, Forensic Medicine and Community Medicine.

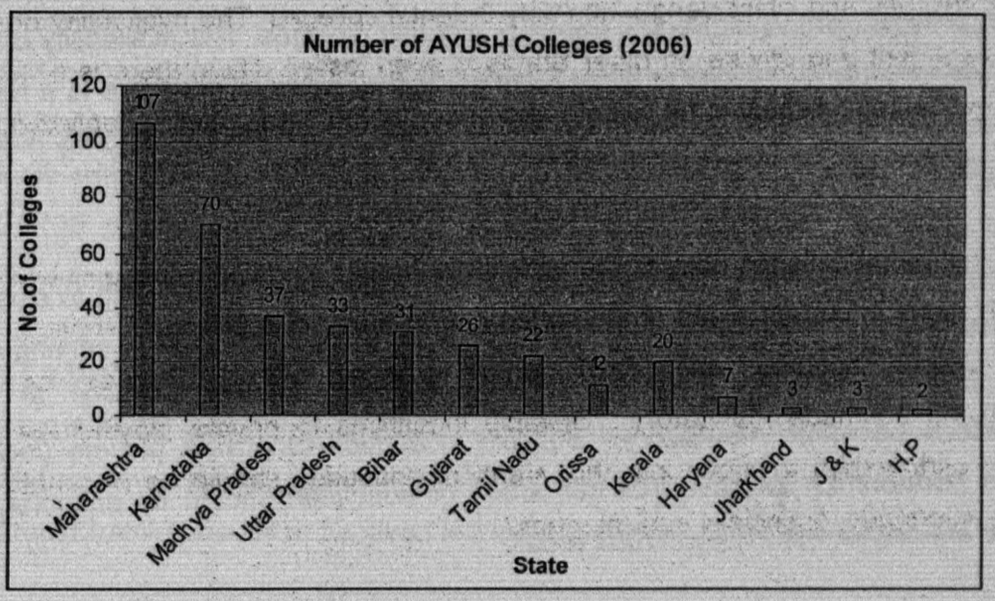
3.1.5 There are no uniform standards of medical education, at both graduate and the post-graduate levels. The Medical Council of India (MCI) and State Councils have not been able to universally ensure quality education in all medical colleges. There is an urgent need to have suitable mechanisms to ensure quality in medical education through more stringent regulation at entry and also enforcing re-registration of medical practitioners after every five years.

3.1.6. The medical education needs to be linked to all levels of health care – primary, secondary and tertiary. The present undergraduate medical curriculum and the internship are inadequate to turn out well trained and competent medical professionals to serve the rural community. Medical education is mostly in tertiary institutions. This forecloses the opportunity for the trainee to learn to deal with 80% of medical problems within the primary and secondary level settings. This might be one of the reasons for doctors not opting for primary health care. Therefore, the Graduate Medical Education curriculum needs to be reoriented to

make it more responsive to the needs of the community so that the health care provider can function effectively in the rural underserved environment. In this context, the initiatives like training specialists in Family Medicine and Rural Surgery Programme by the National Board of Examinations should be encouraged.

3.2 AYUSH Colleges / Institutions

3.2.1 There were 461 AYUSH colleges with admission capacity of 25,555 students (MOHFW,2006). State-wise distribution of AYUSH colleges/institutions with admission capacity is shown at **Annexure –XIII.** There is disparity in availability of AYUSH colleges/institutions in different States in the country. While Maharashtra has as high as 107 AYUSH colleges/institutions, States like Jharkhand (3), J & K (3), Himachal Pradesh (2) has very few AYUSH colleges/institutions.



Source: National Health Profile, 2006 MOHFW (GOI)

3.2.2 AYUSH systems of medicine have been in existence in the country for several decades. They cater to the need of large section of population. Modern medicine has ignored these systems as they were not scientifically evaluated. It is time for the medical institutions to evaluate some of the well established therapies in these systems and incorporate them into the health care system. This may prove cost effective in the present situation. Besides the specific therapies, these systems have the advantage of some basic principles that can strengthen modern medicine by providing a more holistic understanding of human health. Health personnel at all levels, including medical graduates, must be sensitized

about these systems. Strengthening of research and growth of these systems should be a priority.

3.3 Dental Education

3.3.1 The country has in all 240 BDS colleges with admission capacity of 18,180 (2006-07) as against only 77 dental colleges with admission capacity of 1987 in 1994-95 **(Annexure-XIV).** Although the admission capacity of BDS doctors has increased more than 8 times since 1994-95, the shortfall in availability of BDS doctors continues (considering the norms of 1 dentist per 4000 population recommended by Bhore Committee). A State-wise number of dental colleges is at **Annexure- XV.** As in the case of medical colleges, there is a regional imbalance in the establishment of dental colleges. There are 43 dental colleges in Karnataka followed by Maharashtra (28), UP (28), Andhra Pradesh (20) and Tamil Nadu (17). State of Orissa has 4 colleges and West Bengal has only 3 dental colleges. The availability of dental colleges (government and private) in other States is even lesser. Thus, there is a need for opening of new dental colleges in the remote and underserved areas after suitably modifying the regulations.

3.3.2 Too many dental colleges have come up without proper planning leading to clustering of dental institutions in certain areas of the states and irregular distribution of serving dental manpower. Before opening any new dental college, Dental Council of India recommendations be made mandatory. Suitable incentives to private players (including public private partnership) to move into this arena of education should be encouraged to overcome the shortages, especially in rural areas.

3.3.3 There has been an increase in the number of dental colleges with admission capacity over the years. The number of dental colleges for MDS course has increased from 32 in 1994-95 to 100 in 2007-08. The admission capacity for the course has increased from 225 to 1958 in the same period - **Annexure- XIV**.

3.4 Nursing Education

3.4.1 As on March 2006, there were 1312 institutions available for training of General Nursing Midwives in India. The figure for admission capacity was not available. The quality of Nurses training is affected by number of constraints such as inadequate number of nurse teacher specialists, inadequate infrastructure, non-adherence of the Indian Nursing Council

teacher student norm, budget etc. With globalization and growth of private health sector, the county requires more nurses. There is also a growing demand for nurses with specialized training. There is a need for continuation of diploma course in general nursing and the same may be continued as long as they are satisfactorily fulfilling the requirement of general nursing services in the country. Simultaneously, efforts should be put in and encouraged to increase the number of nursing colleges so as to produce additional B.Sc (Nursing) qualified nurses. This in turn will render additional teaching staff and provide higher/accredited standards of nursing care.

3.5 Paramedical Education

3.5.1 Production of Pharmacists

3.5.1.1 The Pharmacy Council of India regulates the education and training of pharmacists under the provision of Pharmacy Act. The training of these categories has been unregulated and many centres for training these personnel have opened up all over India, with permission of State Governments. As on August 2006, there were 261 degree granting institutions in India with admission capacity of 14,790 and 461 institutions with admission capacity of 27,735 providing diploma in pharmacy (MOHFW, 2005). A State-wise list of institutions providing diploma and degree courses in Pharmacy are at **Annexure –XVI.**

3.5.2 Production of Paramedical Personnel

3.5.2.1 ANM/Multi-purpose health worker (female) and LHV/Health Assistant (Female) play vital role in maternal and child health as well as family welfare services in the rural areas. Proper training needs to be given to them to provide quality services to the rural population.

3.5.2.2 As March, 2006, there were 336 ANM/MPW (female) schools with an admission capacity of 13,000 and 42 promotional training schools for LHV/Health assistant (female) with an admission capacity of 2600, established by the Department of Health & Family Welfare, Government of India (MOHFW,2006).

3.5.2.3 In order to develop required number of multi-purpose health worker (male) to work at sub-centres along with ANM, 56 training centres – through Health & Family Welfare Training Centres and through basic training schools of multi-purpose health workers (male) are functioning. All these training schools are funded by the Government of India. The numbers of such schools vary across the States.

3.5.2.4 Besides availability of training facilities, there is a shortfall of these personnel at Sub Centres, PHCs and CHCs.The notable shortfall was of male health workers, as 29,437 positions were lying vacant as on March, 2006 (MOHFW,2006).

3.5.2.5 At present, there is no statutory Regulatory Council to supervise and control the growth and standard of education of paramedical professionals. In the absence of reliable data about the availability and deployment of paramedical professionals no firm policy can be evolved for development and equitable distribution of paramedical staff. It is, therefore, recommended that the government should evolve a suitable mechanism with adequate funds for providing training and upgrading the knowledge of paramedical personnel working at the Primary, Secondary and Tertiary level health institutions.

3.6 Public Health Education

3.6.1 Currently, a number of institutions are engaged in imparting public health and related education in the country. Besides, medical colleges, the notable institutions imparting such training are the National Institute of Health & Family Welfare, National Institute of Communicable Diseases, All India Institute of Hygiene and Public Health, Sree Chitra Tirunal Institute of Medical Sciences, Institute of Health Management Research, Centre of Social Medicine & Community Health, Jawaharlal Nehru University, Centre of Community Medicine, AIIMS etc.

3.6.2 Government of India has recently supported the launch of Public Health Foundation of India (PHFI) with one time grant of Rs.65.0 crore for setting up Schools of Public Health. PHFI, under the aegis of International Working Group is presently working on evaluating the public health manpower requirement for 4 States. Information is being solicited from other States on their plans to strengthen Public Health Workforce, particularly in the context of National Rural Health Mission and Indian Public Health Standards.

3.6.3 In addition, various medical institutions are now in the process of starting new Public Health Courses at the Masters level, namely ICMR, AIIMS, PGIMER etc. The supply position is bound to improve after institutions of Public Health under PHFI and new Public Health Schools are set up within the existing Medical Institutions.

CHAPTER - IV

ASSESSMENT OF HEALTH MANPOWER REQUIREMENT IN INDIA

As of today, there is no system available in the country for projecting the future supply of human resources for health. For planning for human resources, a systematic appraisal of human resources needs to be undertaken. Such appraisal should include assessment of current workforce and future requirements with respect to the needs and demands of the population and the health system.

4.1 Allopathic Doctors and Dental Surgeons

4.1.1 Using the norms for doctors as 1:2000 population recommended by the Bhore Committee (1946), the requirement for the number of doctors has been worked out to be 5,64,261 by 2007 and 6,04,058 by 2012. The Bhore Committee set the norms 60 years ago. Going by these norms and presuming that the ones registered by State Medical Councils are alive, there is no shortage. However, all State Medical Councils do not maintain such a "live register". These norms also do not take into account the emerging opportunities for India such as health tourism, health insurance, bio-technology etc. Nevertheless, with 80% doctors working in the private sector and mostly concentrated in urban areas, there is a shortage of doctors at the Primary Health Care level. At present 7.5 % PHCs are without a doctor and 54.5% of the sanctioned posts of specialists at CHCs are vacant (MOHFW,2006).

4.1.2. The dentist population ratio is not good and there appears to be acute shortage of dental surgeons in the country. As per the norms of 1 dentists for 4000 population recommended by Bhore Committee, the number of dental surgeons actually required would be 2,82,130 in 2007 and 3,02,029 in 2012. If the present trend continues, the number of dental surgeons likely to be available in 2007 and 2012 would be 73,271 and 1,16,960 respectively and there will be a gap of 2,08,859 dental surgeons in 2007 and 1,85,069 in 2012.

4.2 Nurses & Pharmacists

4.2.1 The requirement of nurses for the 11th Plan has been worked out for the States and country using the Bhore committee norm of 1:500. The results for the States are shown at **Annexure-XVII**. The results for the country shows that the number of nurses actually required for 2007 and 2012 would be 21,88,890 and 23,41,756 respectively. However, as per the current trend, number of nurses likely to be available in 2007 and 2012 would be 10,32,518 and 13,86,498 respectively. The gap in nurses for 2007 and 2012 will be 11,56,372 and 9,55,258 respectively.

4.2.2 Keeping in view the norm of one pharmacist per 2000 population suggested by Bhore Committee, the requirement of pharmacists has been worked out to be 5,64,261 by 2007 and 6,04,058 by 2012 respectively (as against 5,78,179 pharmacists available in 2006). The numbers of pharmacists thus appear quite adequate. However, efforts should be made to deploy pharmacists in rural areas of the country, as at present 19.48% of sanctioned posts of pharmacists are lying vacant at PHC and CHC level (MOHFW,2006).

4.3. Infrastructure and Manpower Requirement in Rural Areas

4.3.1 The demand of community health centres/ primary health centres/ sub-centres have been projected on the basis of norms in relation to population. The details are presented in Table 4.1.

Table 4.1 : Health Infrastructure Requirements in Rural Areas in 2007 & 2012

Type of Facility	Number functioning as on March, 2006	Requirement by 2007	Shortfall as per 2007 population	Requirement by 2012	Shortfall as per 2012 population
Health Sub-Centres	1,44,988	1,75,028	30,040	1,84,660	39,672
Primary Health Centres	22,669	28,544	5,875	30,105	7,436
Community Health Centres	3910	7,136	3,226	7,526	3,616

4.3.2 The Health Manpower requirement in terms of medical and paramedical for 2007 and 2012 has been worked out on the basis of staffing pattern norms provided under Indian Public Health System by the Ministry of Health & Family Welfare. The overall requirements for the country are shown in Table 4.2.

Table 4.2 : Number of Health Personnel Required & Shortfall up to the level of Community Health Centres in the Country

Sl. No.	Category	Number as on March, 2006	Requirement 2007	Shortfall 2007	Requirement 2012	Shortfall 2012
01	General Surgeon	972	7136	6164	7526	6554
02	Physician	832	7136	6304	7526	6694
03	Obstetrician/Gyn.	1338	7136	5798	7526	6188
04	Paediatrician	837	7136	6299	7526	6689
05	Anaesthetist	-	7136	7136	7526	7526
06	Public Health Programme Manager	-	7136	7136	7526	7526
07	Eye Surgeon	-	7136	7136	7526	7526
08	MO (PHC)	22273	57088	34815	60210	37937
09	Nurse Midwife (CHC & PHC)	29493	149856	120363	158049	128556
10	Health Worker(F) (PHC & Sub Centre)	149695	378600	228905	399425	249730
11	Health Worker (M)	65511	175028	109517	184660	119149
12	Health Educator	3165	28544	25379	30105	26940
13	Health Assistant (M & F)	35330	57088	21758	60210	24880
14	Lab Tech. (CHC & PHC)	12351	35680	23329	37631	25280
15	Pharmacist (CHC & PHC)	18419	35680	17261	37631	19212
16	Radiographer (CHC)	1782	7136	5354	7526	5744
17	Ophthalmic Assistant	-	7136	7136	7526	7526

CHAPTER – V

OPPORTUNITIES IN INDIA

This section highlights key opportunities for health care in India in terms of medical tourism, bio-technology, pharmaceuticals, etc.

5.1 Growth of Health Tourism

5.1.1 Health Tourism has gained momentum in India over the past few years. According to Confederation of Indian Industry-McKinsey report (2002), approximately 1,80,000 patients arrived in India in 2004 from across the globe for medical treatment. The medical tourism market in India is estimated at US$ 333 million in 2004, and in 2006 it was US$ 450 million. The number of patients arriving in India is growing 30 to 35% every year. It is expected to become a US$ 2 billion-a-year business opportunity by 2012. Medical tourism has become a major source of foreign exchange earnings.

5.1.2 The emergence of low-cost, good quality, short waiting time and high value specialist medical care territories in India are the main reasons for attracting foreign tourists. New Delhi has emerged as a prime destination for cardiac care, as has Gujarat. Similarly, Chennai has established a niche for quality eye care, while Kerala and Karnataka have emerged as hubs for State-of-the-art Ayurvedic-healing. Health Care packages with additional therapies like Yoga, Meditation, Ayurveda, Allopathy and other traditional systems of medicine are attracting tourists from European countries and the Middle East.

5.1.3 In order to promote health tourism, the Ministry of Tourism has introduced M visas, specifically designed for medical tourists. In January, 2007, changes were made to the M category visa to accommodate a medical tourist's visit to India for a year, which was earlier limited to six months. It can now be further extended by three years if a doctor treating the concerned patient recommends it.

5.1.4 Due to the surge in medical tourism, some of the major corporate hospital groups in India such as Apollo, Fortis, Max, Wockhardt, Jaslok and Manipal have made significant investments in setting up State-of-the-art hospitals in major Indian cities. Apollo Hospitals

Groups is looking to enhance its presence in the secondary healthcare segment by setting up 'First Med' hospitals, each operating 100-120 beds in mini-metros and smaller towns.

5.2 Medical Insurance

5.2.1 India offers tremendous opportunity for private medical insurance players. Increasing awareness levels and large-scale group insurance policies have pushed growth in the health insurance segment in recent years. Health insurance is making inroads in India. Health Insurance premium is set to touch US$ 777.8 million by 2007 (CII, 2002) and peak to US$ 3.8 billion (Rs.17,100 crore) by 2012 (Ernst and Young Report,2006).

5.2.2The Government of India has formed a task force consisting of experts from different Ministries with the objective of suggesting policy measures and norms for the National Accreditation Board to provide accreditation to all public and private hospitals to ensure quality and timely health services.

5.3 Employment Potential of Health Care Industry

5.3.1 Healthcare has emerged as one of the largest service sectors in India. In 2004, the market size of the healthcare industry was Rs.910 billion which is expected to grow at 13% a year and reach Rs.1900 billion by 2010 (CII, 2002). Ernst and Young analysis (2006) indicates the healthcare pie in India is Rs.1533 billion in 2006 and is likely to reach Rs.3537 billion by 2012.

5.3.2 Direct employment in the healthcare sector was 4 million in the year 2001-02 which is expected to grow and provide direct and indirect employment to 9 million by 2012 (Confederation of Indian Industries). Given the huge growth in demand for medical services, CII has estimated that additional 450, 000,beds are required which would entail nearly US $ 25 billion (Rs.1,100 billion) of investment (CII, 2002). Ernst and Young analysis (2006) has indicated that in 2006 there were 12,22,000 beds in India, with a requirement of additional one million beds by 2012.

5.4 Growth of Pharmaceutical Industry

5.4.1 The current revenue generation by Indian Pharmaceutical Industry is estimated at US $ 5.5 billion. The industry is poised to grow at compounded annual growth rate of 19% and US $ 25 billion in revenue by 2010 (Pharmacy Council of India,2006). Globally, Indian

Pharmaceutical Industry rank 4th in volume and 13th in value terms. India now has highest number of FDA approved plants (approx. 73). Nearly 15% of scientists in big pharmaceuticals in the United States working in discovery laboratories are of Indian origin. 40% of people that work on shaft floor of worldwide generic pharmaceutical industry are of Indian origin and the people who are the best developers of the generics are said to be of Indian origin. A significant number of Indian Pharmaceutical Companies and MNCs have R&D Centres in India.

5.4.2 According to the report of the Confederation of Indian Industry-McKinsey, the total healthcare market coupled with the growth of Pharmaceutical market will grow from Rs.1,03,000 crore (2000-01) to Rs.2,32,000 crore by 2012 (6.2% GDP). The Pharmaceutical market is estimated to grow from Rs. 17,000 crore to Rs. 38,000 crore by 2012.

5.4.2 Indian domestic pharmaceutical companies have made major inroads in to the highly competitive generic segments of the world market. The employment potential in this sector is increasing with steadily building an excellent infrastructure network around the world.

5.5 Growth of Biotechnology

5.5.1 The Indian initiative in biotechnology has already attained a critical mass, although not comparable to the huge resources in scientific manpower, technology and funds available in the advanced countries especially in the West.

5.5.2 The pivotal role of the Department of Biotechnology in institution building and infrastructure development, training and human resources development as well as major R&D support has resulted in the establishment of centers of world class excellence. The trickle down effect has enabled several States to take major initiatives in biotechnology, big established pharmaceutical companies as well as new Biotech companies have invested hundreds of crores of rupees in Biotechnology research and for pharmaceutical product development. Nutraceuticals, personal care products and traditional medicinal formulations have witnessed an upsurge in production and popular acceptance. Several enterprises in the States of Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu have biotech products in the market.

5.5.3 Thus, there is extraordinary employment potential in these sectors. However, in the absence of any systematic data, it was difficult to make any sensible analysis of the current assessment and future requirements of manpower for this sector.

5.5.4 There is also need to strengthen bio-medical research and to train our medical graduates to take up global challenges. A requirement of about 10,000 health researchers is estimated for around $5 billion industry by 2010 (Department of Bio-Technology, 2006). In order to meet this demand, we need to strengthen our medical colleges for Bio-medical research.

5.6 Research and Development in AYUSH

5.6.1 Post independence, the pioneer Government agency in the AYUSH research arena was ICMR which started trans-disciplinary research in 1964 via an all India coordinated Composite Drug Research Project. Since the 1970s, the Central Councils for Research in Ayurveda, Siddha, Unani, Yoga and Homeopathy have been responsible for the officially sponsored research activities. One of the socially important outputs of research in the AYUSH sector has been the pharmacopeias and formularies of the various systems of medicine. The popularization of the para-surgical technique of Kshara-shoothra for management of lower anal fistula is an example of a visible research output that has had social impact. Whereas several dozens of important research projects have been undertaken in the last three decades across the various AYUSH research councils, there is no critical report on the quality or impact of these projects on the health sector in India. In the non-government sector, there are a few institutions who have been doing pioneering research work. Some of this work has been published in internationally reputed peer reviewed journals but as in the case of government sponsored research, there is no report which provides a comprehensive assessment of the impact of this research. There is, however, evidence of commercialization of some of the research outputs of research councils as well as of the non-government research organisations. Some of the larger industries in the AYUSH sector however have their own in-house R&D establishments, which service their commercial programs.

5.6.2 In recent years there have been small but significant efforts in the area of AYUSH informatics. These efforts need to be stepped up and shared and used more widely in the sector. There are currently no research centers within AYUSH institutions wholly dedicated

and focused on fundamental research based on the theoretical foundations of AYUSH. This is a matter of concern for AYUSH because it can weaken the roots of the AYUSH sector.

5.6.3 There is no data available on the extent of private sector R&D investment in AYUSH. In the 10th Plan the Govt. R&D expenditure was on an average around Rs. 39 crore per year. The overall public and private investment on R&D in the AYUSH sector by any standards of investments in scientific research is *extremely* small and will need to be drastically stepped up if the country has to generate research outcomes that can impact the world of medicine.

5.7 Migration of Health Manpower

5.7.1 The rise in migration of health personnel for work abroad has gained attention in recent years. It has important ramifications for both countries of origin and countries of destination. There is already substantial movement of medical personnel from South to North and between countries. Developing countries – particularly form Asia – supply over half of all migrating physicians, with around 100,000 doctors of Indian origin settled in the USA and UK alone (WHO, 2007). Indian doctors, nurses, technicians amongst others deliver services in the Middle East on short-term bilateral contracts. Most of migration in health care sector is permanent. The main advantage is due to availability of low cost, well trained, high quality health care providers from India. Active international recruitment by national health systems has generated a particularly high level of cross-border mobility among nurses. From the available data for the year 2002, India was the most important source country for registered nurses under HIA category to the US, around 81,091 nurses compared to 15,838 for China and 5,509 for Philippines (WHO,2007).

CHAPTER – VI

HRD PLAN FOR INDIAN HEALTH SECTOR: A FRAMEWORK

6.1 Categorization of Health Manpower

6.1.1 The human resources for health in India include well trained and qualified doctors of allopathic system, dentists, nurses, a range of paramedical professionals – radiographers, pharmacists, laboratory technicians, and a number of allied personnel – policy makers, health administrators, health planners and managers, public health support personnel, social workers, psychologists, researchers, health educators and promoters etc. On the other hand, it includes professionally trained and qualified practitioners of Ayurvedic, Unani, Homeopathic, Siddha and Naturopathic traditions, informally trained providers through apprenticeships, traditional and household birth attendants and a variety of folk healers including community of household elders conversant with the art of traditional healing and indigenous remedies. These human resources can be broadly categorized as public sector and private sector. However, there is no reliable data on such diverse human resources in the country.

6.2 International Standard Classification of Occupations

As per the International Standard Classification of Occupations (ISCO-88), health professionals are categorized into:

(i) Life Sciences and health professionals like medical doctors, dentists, pharmacists, other health professionals (except nursing), nursing and midwifery professionals.

(ii) Technicians and associate professionals like medical assistants, sanitarians, dieticians and nutritionists, optometrists and opticians, dental assistants, physiotherapists and related associate professionals, pharmaceutical assistants, other modern health associate professionals (except nursing), nursing and midwifery associate professionals, traditional medicine practitioners and faith healers (ILO,1990).

Based on the ILO classification, detailed country specific classification of health manpower can be developed by respective countries.

6.3 National Classification of Occupations, 2004 (NCO)

6.3.1 The Government of India has recently developed a National Classification of Occupations (2004). This follows the ILO's 4 digit classification of Occupations. The NCO covers a wide range of health personnel ranging from specialized surgeons to faith healers, which are classified into sub groups. However, in the classification, community health workers of different kind, anganwadi workers, Dais/TBAs etc. are not reflected. The detailed classification as per NCO-2004 is at **Annexure – XVIII.**

6.3.2 The NCO- 2004 provides a starting point for developing a comprehensive system for health manpower planning and development in the country. However, a firm and robust occupational categorization is required.

6.4 A Broad Categorization of Health Manpower

A broad framework of different categories of health personnel is suggested as below:

Categories of Human Resources for Health

Sl.No	Category of Service	Type of Personnel
1	Basic/Primary Health Care (Preventive & Curative)	▪ TBAs (dais), Other Folk Practitioners ▪ Community Health Volunteers (CHW/ASHA) ▪ Paramedics (MPW, ANM, HA, PHN, LHV) ▪ Nurses (Staff, PHN) ▪ Allopathic Physicians (MBBS-MO,GP) ▪ AYUSH Physicians (BAMS, BHMS etc.) ▪ Non-physician AYUSH Practitioners (Yoga etc.) ▪ RMP Doctors (non-MBBS in communities)
2	Specialised Physicians, Nurses & Professionals	▪ Clinical Specialists, including Dentists and Super-specialists ▪ Para-Clinical Specialists (Pathologists, Microbiologists, Radiologists, etc.) ▪ Specialist Nurses (Surgery, Public Health, etc.).... ▪ Specialised AYUSH Physicians
3	Medical Care Support Personnel	▪ Pharmacists ▪ Laboratory Technicians ▪ Physiotherapists etc

4	Public Health Specialists and Health System Researchers	• Public Health Specialists • Interdisciplinary Health System Researchers (Epidemiology, Social Sciences, Management) • Epidemiologists & Social Scientists in Health Area • Legal Experts (Public Health & Law, Medical and Health Ethics)
5	Public Health Support Personnel	▪ Sanitary Inspectors ▪ Entomologists
6	Research & Teaching in Clinical, Non-Clinical & Bio-Medical Subjects	▪ Subjects linked to Medical Colleges (including AYUSH Systems) ▪ Non-Clinical Subjects in University Departments and Research Institutes (Biochemistry, Chemical engineering, Genetics, Biotechnology, Bioinformatics, etc.)
7	Hospital/ Healthcare Managers	▪ Doctors with qualifications in Hospital / Healthcare Administration and requisite on-job experience.

For the optimal development of categories of health personnel presented above, the following initiatives have been suggested:

- Coordinate with departments in other Ministries, such as Education, Bio-technology etc. for developing appropriate training, services and research agenda.
- Quantify the need for all categories of health personnel in public, private commercial and non-governmental / non-commercial institutions for the purpose of creating corresponding teaching and training capacities.
- The quality criteria for each category of personnel need to be laid down and should be based on technical requirements, effectiveness in the social context and affordability.
- Comprehensive review of existing curriculum, textbooks and teaching methods. Existing curriculum needs to be reviewed with respect to the components of the social sciences and epidemiology. It is also necessary to develop curriculum in accordance with the health situation and socio-cultural milieu of the majority of Indians who live in rural and low resource settings.
- Skill building in critical analysis towards appropriate solutions and quality regulation and innovation in teaching institutions.

- The progressive principles of personnel management need to be applied to change the work culture and stimulate professional responsibility.
- Ensure maintenance of standards, quality and professional accountability. Both administrative control and encouragement for good performance are essential.
- There must be transparent rules for transfers, promotions, selection for higher education etc. Community monitoring mechanism may also be introduced into health services systems.
- Creating a cadre of Indian Public Health Service will consolidate the experience of doctors serving in the government primary and secondary level institutions in rural areas who can be used for Health Sector Planning. Those performing well should be sponsored for specialization in public health.
- Qualified and experienced Hospital / Healthcare Managers would be able to manage the healthcare institutions effectively and efficiently.
- Strengthening the links of bio-informatics and bio-technology research institutions with the health sciences, especially public health, to ensure that the research is socially relevant and conducted with due sensitivity to ethical issues. Criteria for technology assessment must be evolved and the researchers sensitized to them through their curriculum.
- Institutional framework suggested above for medical education should be developed for AYUSH, i.e. colleges to be linked to service delivery at secondary and primary levels for under-graduate education and to specialized centres for post-graduate courses. Training of paramedical personnel should be imparted by these professionals. Support for research in both the formal and the folk knowledge system are also necessary for development of these systems.
- Strengthen Health systems research (HSR) capacities with active identification and greater support to existing institutions that have been conducting HSR for decades.

CHAPTER – VII

RECOMMENDATIONS

On the basis of various issues raised in the terms of reference relating to human resources for public / private health system in terms of medical, nursing and support staff for the Indian Health Sector, the following are the major recommendations:-

7. 1 Matching the Basic Demand with Supply

7.1.1 The manpower and infrastructure shortages exist for all the categories of health personnel working at primary health care level in the country. Adequate measures need to be taken during the 11th Plan period to solve the problem of shortage of infrastructure and manpower.

7.1.2 The present policy adopted by some of the States making rural service compulsory for medical graduates may continue till such time sufficient number of doctors are available for posting in rural areas. However, posting of experienced doctors in rural areas with adequate incentives should be encouraged. Such incentives could include monetary as well as non-monetary benefits such as improved infrastructure facilities of health care institutions, suitable accommodation, preferential school admissions for children of doctors living in remote areas, transfer or posting of a choice after a stipulated length of stay and training opportunities etc. The Government of Tamil Nadu has made employment as medical officers in the PHCs attractive on the following counts:

- Allowing private practice under certain conditions
- Reservation of 50% of PG seats in all branches for those who have completed minimum 3 years in PHCs/ CHCs/ District Hospitals
- Reservation of 15% seats for medicine and dental courses for students from rural schools
- Recruitment of Doctors on zonal basis and work in the zone in which their residence is located for a minimum of ten years.

As appropriate to their context, such measures should be developed by the other States also. It is recommended that each medical graduate should be made to undergo a two-year stint in a rural setting before she/he can register for a PG course.

7.1.3 A series of one-year duration Certificate Courses for MBBS graduates should be drawn up and launched in the deficit disciplines for strengthening primary health care services. The areas may include Pediatrics, O & G, Anesthesia and Radiology. These courses would provide additional skills to graduate MBBS doctors to independently provide health services. The private sector may also be encouraged to participate in this venture.

7.1.4 The National Board of Examinations (NBE) has been conducting examination in many specialties and awarding the 'Diplomate of National Board' degrees to successful candidates. Various hospitals including those in the private sector have been accredited by the NBE for imparting training in different specialties. Such efforts need to be enhanced for overcoming the shortage of specialists and also to improve the quality of training.

7.1.5 In the absence of reliable and accurate data on medical and dental specialists and super-specialists, the requirement of such personnel in the country is difficult to ascertain. A policy to equitably develop and distribute the required specialists in the country is difficult to frame. Therefore, efforts should be made by respective councils (Medical Council of India, Central Council of Indian Medicine, Central Council of Homeopathy, Dental Council of India, Indian Nursing Council, Pharmacy Council of India) to create a scientific data bank of medical professionals, details of placement of students after their graduation, and number of graduates/PGs entering government service versus the private sector.

7.1.6 The re-registration of all medical practitioners including specialists after every 5 years needs to be enforced uniformly as this will provide accurate data on their availability. There is also a need for introduction of registration of MDS doctors and re-registration of dentists after every five years linked with attendance in CME for fixed hours annually like the MBBS doctors.

7.1.7 There is need for correcting the regional imbalance in the medical and dental colleges in the country. It is appreciated that there should be an equitable distribution of medical, nursing, dental and paraprofessional colleges across the States. During the 11th Plan, the

emphasis should be on establishing new medical and dental colleges in the underserved areas and in States/UTs where there are no such colleges. NCMH (2005) estimated that if India were to meet a hypothetical target of 1 allopathic doctor per 1000 population in 2012, the number of students in medical colleges will have to double. Justifiable revision of the MCI policy should be carried out taking into account availability of sufficient clinical material and minimum plot size for medical colleges, hostel, teaching hospital and other ancillary services, land area, etc. Wherever possible, public-private partnership arrangements should be made to address all such issues.

7.1.8 Currently, the distribution of the disciplines in the postgraduate medical courses is much in favour of clinical specialization. In view of the growing need for expertise in the areas of public health and family medicine, there is a need for increasing the proportion of postgraduate seats to accommodate these disciplines. Innovative programmes of education in these subjects must be encouraged in existing institutions, especially with a thrust on inter-disciplinarity approach with social sciences.

7.1.9 Age of retirement of doctors may be increased from 60 years to 62 years. State public health doctors can be retained on contract basis for further period of three years (till the age of 65 years), especially in the notified hardship areas.

7.1.10 The pool of medical practitioners may be expanded to include a cadre of Licentiates of Medical Practitioners (LMPs) as also practitioners of Indian Systems of Medicine and Homeopathy to particulary tackle the problem of shortage of MBBS doctors in rural areas. Similarly, in areas where there is acute shortage of doctors, qualified nurses and mid-wives can be permitted to provide simple primary health services.

7.1.11 The LMPs, qualified nurses, mid-wives and other paramedical professionals may be permitted to provide simple and basic primary health service after receiving adequate training and subject to monitoring their performance by professional councils. Central Council for Research in Unani Medicine has designed a 500 hours training capsule for traditional birth attendants/traditional practitioners which can provide them requisite knowledge and training for handling common ailments. However, it is pertinent to mention that these categories of healthcare personnel should be considered only to overcome the shortage of doctors and

permitted to practice /provide their services only in the rural areas. They should get their licenses / permits renewed every 5 years.

7.1.12 At village level, ASHAs should reinforce community action for universal immunization, safe delivery, newborn care, prevention of water-borne and other communicable diseases, nutrition and sanitation. She should be given repeated training to update her knowledge and provide immediate and easy access to essential health supplies like basic drugs, ORS, contraceptives etc. for the rural population.

7. 2 Improving the Quality of Medical Education

7.2.1 During the 10th Plan, few States have set up University of Health Sciences to bring in uniformity in the standard of medical education imparted in States and work as Centres for manpower policy planning. Experience of such universities needs to be evaluated against medical colleges that are part of the general universities before more such universities are set up.

7.2.2 During the 10th Plan it was envisaged to set up a Medical Grants Commission on the pattern of UGC for development of infrastructure, facilities and to implement uniform pay-scales for medical and dental teachers. However, no major initiative has taken in this direction. Therefore, this issue may be taken up during the 11th Plan.

7.2.3 The Graduate Medical Education curriculum needs to be reoriented to make it more responsive to the needs of the community so that doctors can work more effectively in the rural underserved environment. In order to equip medical graduates with the skill mix essential for providing broad based community health care, students should be allowed to learn most of the time in hospital and field rather than in class rooms. Medical training should largely be in a decentralized setting outside a tertiary hospital, in close proximity with public health & social environment.

7.2.4 In view of the high rate of attrition of academicians, there is a need to make teaching in professional colleges attractive. It is time to deliberate if there is a need to enhance the salary structure as also to have innovative programmes of incentives, perhaps by allowing them to conduct private OPDs in the medical colleges. Another way could be to use the

Honorary Consultant System so that the selected leading private practitioners and retired teachers can be inducted in to replace the depleting academic workforce.

7.2.5 In order to solve the acute shortage of teachers in dental colleges, there is a need for increasing the intake capacity in the various postgraduate dental courses and to offer attractive and uniform pay-scales for the teachers. Government may also consider setting up a National Institute of Dental Sciences for postgraduate courses.

7.3 Strengthening of Nursing and Paramedical Services

7.3.1 The diploma courses in General Nursing may be continued to fulfill the requirement of general nursing services in the country. It is recommended that the graduate nursing courses need to be promoted adequately in view of the increasing demand for specialized nurses in the specialty and super-specialty departments. This will also render additional teaching staff and provide higher/accredited standards of nursing care. Further, there is also a need for training more MSc (Nursing) personnel to solve the problems of shortage of nursing teachers.

7.3.2 Additional skills could be provided to the nurses in the form of a Certificate Course of short duration. The contents could include hands-on-training in maternal and child health, training in skilled birth attendance as well as newborn care and training in integrated management of new born and child illness.

7.3.3 There is a huge demand for nurses in this country. As recommended by the NCMH (2005), it is necessary to establish an additional 225 nursing colleges and upgrade the existing ones to become benchmarks of excellence. Efforts should be made to establish a College of Nursing in all Government and private medical colleges.

7.3.4 Hospitals in public & private sectors having at least 30 Obstetrics & Gynaecology beds may be encouraged to initiate ANM training. Considering a rapid expansion in infrastructure and manpower envisaged under NRHM, there is a need for encouraging public private partnership in training and skill upgradation. It is also recommended to adopt multiskilling as the main strategy for strengthening service delivery, both for doctors as well as the paramedical staff.

7.3.5 There is no reliable and accurate data with regard to the availability and deployment of various paramedical professionals in the country. It is recommended that after placing such categories in appropriate groups, they may be brought under separate statutory councils. These councils, besides ensuring data bank on the para-medical professionals, will also ensure that various paramedical courses will be taught with a uniform curriculum and a fixed duration throughout the country.

7.3.6 It is recommended that as in the case of nursing courses, both the Diploma and Graduate Courses in pharmacy need to be continued. The diploma holders in pharmacy can play a major role in assisting the medical professionals, particularly in the private sector and in the hospitals/dispensaries in rural areas.

7.3.7 Paramedical training particularly for technicians in laboratory medicine, radiology, OT techniques, dental techniques etc. needs to be regulated, enhanced and encouraged.

7.3.8 The training courses for licentiate physicians must be suited to local context and be conducted in the local languages. The curriculum and text-books for these courses must be carefully prepared to provide optimal information and generate appropriate social attitudes

7.4 Skill Development of Medical & Paramedical Professionals

7.4.1 To ensure quality services and upgrade skills of practitioners, CME Programme (of 150 credit hours) akin to as planned by Delhi State Medical Council may be implemented all over the country. The Government may also take suitable measures for extending the CME programme to cover the training needs of para-medical professionals working in PHCs and secondary & tertiary level of hospitals during the 11th Plan period.

7.4.2 In view of fast development in the field of medicine as well as information technology, it is essential to bring all medical colleges and institutions under computer networking so as to enable the input and retrieval of all available medical information which will lead to improvement in the quality and coverage of cost effective CME programme. Interlinking of all medical libraries initiated during the 10th Plan may be encouraged with provision of funds in the 11th Plan period. The networking of medical institutions with super-specialty hospitals in Government and private sectors may be promoted. Introduce IT-based "e-health for health

manpower data collection /collation and information analysis. This would also assist the country in obtaining the requisite information on-line or at short-intervals.

7.4.3 Telemedicine helps to partially bridge the infrastructure gaps and enable access to enhanced diagnostic and therapeutic care by specialists. It also opens up new possibilities for continuing medical education and training for health practitioners in rural isolated areas. Some States have already taken up on-line consultation service with other specialists within the country as well as abroad. Efforts should be made to link tertiary care institutions in remote areas with major super-specialty institutions in other regions.

7.4.4 In order to meet the health manpower need in RCH and Public Health especially in the light of recent development of National Rural Health Mission, open universities should play a major role in periodically updating the knowledge of various categories of health personnel in a cost –effective and efficient manner.

7.5 Reform Professional Councils

7.5.1 Effective regulation of professional practice is one of the crucial factors to deal with the problem of asymmetry of information between providers and consumers of health care. People need the assurance that a health care provider has the required professional competence and is bound by an enforceable professional code to act strictly in good faith and in the interest of the patient. Regulation of medical and other professions is a subject in the Concurrent List of the Constitution of India. The Ministry of Health and Family Welfare needs to pro-actively steer the regulation of medical and allied health professions in the country.

7.5.2 The professional councils in the health sector viz. Medical Council of India, the Indian Nursing Council, the Dental Council, the Pharmacy Council and the Central Council of Indian Medicine and Homeopathy must ensure that :

- New entrants to the profession have the requisite training and demonstrated professional competence;
- Practicing professionals are in good standing; and that
- People have access to relevant information about health professionals in order to make informed choices.

7.6 Regulation of Private Health Sector

7.6.1 The private health sector in India has grown without any regulatory framework. This has contributed in many ways to non-uniform quality of medical care, arbitrary pricing and the absence of either a minimum set of norms for setting up a clinic or nursing home, or systems for continuous quality improvement and assurance. There is an urgent need to establish a minimum set of basic regulations covering the licensing of private practitioners and institutions, measures to prevent the oversupply of services and appropriate actions thereon, provision of appropriate technology, quality of services, guidelines regarding pricing commensurate with the quality of services being provided in the private sector. Guidelines for the quality and standard of care being rendered are also to be put forth, appropriate to the size of the hospital/ nursing home. Professional bodies of different specialties should develop guidelines and protocols for patient management The type and level of care (primary, secondary or tertiary) and the disciplines being provided are to be taken into account. This also means examining existing laws that are outdated and making appropriate changes or devising new comprehensive legislation.

7.6.2 Whatever, regulatory framework exists in the country apply mainly to the formal and organized health sector, and their potential benefits can only reach a segment of the country's population who have access to the formal health sector. A large majority of rural and urban poor in the country seek services from informal health providers. It is important to bring this sector within the purview of minimum quality regulation.

7.7 Mainstreaming of AYUSH System

7.7.1 There is a dire need for educational reform in the AYUSH sector in order to orient AYUSH education to contemporary societal needs. An integrative approach to AYUSH education is essential. However it is very important to delineate the scope and limits of the integration. For instance, it would be very necessary to ensure that the basic principles of AYUSH theory and practice remain at the core of AYUSH education and are not diluted on account of the integrative approach. Integration would essentially imply introducing additional features into AYUSH education like, a) capacity related to the interpretation of modern diagnostic tools and tests, b) use of IT to develop AYUSH informatics, c) capacity related to understanding of pharmacological parameters and design of experiments, d) understanding the scope and limitation of combining the holistic systemic framework of AYUSH with the

structural framework of western biosciences, e) biostatistics, f) applications of GMP and modern pharmaceutical technology to AYUSH etc. Educational reform in AYUSH would also require addressing contemporary societal health needs in rural and urban areas in areas like primary healthcare, public health, preventive and promotive healthcare and management of particularly non-communicable diseases including mental health. It is also necessary to develop suitable courses for paramedics, since this level of education is at present absent in the AYUSH sector.

7.7.2 Reputed AYUSH institutions in the country should be supported to design and offer new PG courses on socially relevant subjects like, AYUSH & Public Health, AYUSH Informatics, preventive cardiology and diabetes, mental health, Pharmacology, AYUSH Nutraceuticals and cosmoceuticals, apart from the conventional areas of specialization like general medicine and surgery.

7.7.3 Well designed CME courses using modern education technology like distance learning and internet are desirable for improving the quality of clinical practice. Such courses should be entrusted to AYUSH centers of excellence in the country.

7.7.4 It is also very desirable to use Information and Communication Technology to set up an AYUSH telemedicine program that links reputed community health organizations in rural and urban areas to AYUSH centers of clinical excellence. The AYUSH telemedicine program may require very modest technological inputs essentially restricted to video communication since sophisticated data transfer or online diagnostic transmission are not involved.

7.7.5 Increase utilisation of practitioners under AYUSH systems working in Government, voluntary and private sector to improve IEC & counselling so that utilisation and completion of treatment in National disease control and RCH programme improves. Qualified AYUSH practitioners can also be trained to man the sub centres and PHCs. It is also essential to ensure availability of adequate drugs to these facilities. The Essential Drug Lists for AYUSH drugs at PHC, CHC and above levels should be developed.

7.8 Health Tourism , Pharmaceutical Sector and Biotechnology

7.8.1 The increase in demand of health professionals and researchers generated by promotion of health tourism, growth of the pharmaceutical industry and development of bio-technology must be assessed and catered to in the coming years.

7.8.1 Health /Medical Tourism (synonymous with Medical Value Travel) in India is contributing a lot in terms of revenue generation from abroad. Therefore, there is a need to promote health tourism in the country. With the view to promote health tourism in the country, the Government of India has set up a task force on Medical Tourism under the Chairmanship of Director General of Health Services, which will suggest measures to promote India as a healthcare destination. The State of Kerala has planned to announce a Health Tourism Policy in 2007.

7.8.2 Pharmaceutical industries may be encouraged to promote their respective role in the 11th Plan period. The quality of drugs being manufactured in the country as also those being imported (raw materials and finished products) needs to be monitored to avoid usage of spurious / sub-standard drugs. In addition, regulatory and monitoring mechanisms to protect the population from the hazards of clinical trials are necessary. Besides, mechanism is essential for reporting and monitoring of the side effects of medicines. Appropriate human resources would be required to address all such issues.

7.8.3 There is a need of building up and strengthening human resource development in Biotechnology. For this, the existing leading institutions in biotechnology need to be networked with advanced R&D laboratories of Central Government. A scheme can be evolved to establish networking, so that personnel and facilities of the participating institutions can be mobilized to train the faculty and mid career scientists in research institutions to enhance the capability in teaching and research.

7.8.4 We also need to strengthen our medical colleges for biomedical research, for both its technical dimensions and its ethics.

7.9 Development of Public Health & Related Disciplines

7.9.1 Public Health discipline has much to offer the community. The benefits of the knowledge and skills of modern Public Health should be made available at all levels. Staff skilled in modern Public Health & Family Medicine will be in a position to bring the advantages of current scientific knowledge to finding solutions and selecting the best option for health interventions in the community. This does not entail the creation of new posts. All those health care providers, including doctors and nurses, whose primary job description entails the provision of health care to the community, preventive and promotive interventions and first contact physicians can constitute the Public Health Cadre.

7.9.2 Sizeable employment in the coming years is likely to be in public health and related disciplines like health administration, health information technology, health marketing, community health management, hospital management etc. In view of growing need of expertise in these disciplines, there is a need for raising the proportion of postgraduate seats in the disciplines related to `public health'. Therefore, it is recommended that while sanctioning of postgraduate seats in future, it may be insisted upon that a certain number of seats may be allocated to "public health" & related disciplines. Specialization in public health may be encouraged not only for medical doctors but also for non-medical graduates in related natural sciences and social sciences. These non-medical specialists may be utilized for teaching and research activities.

7.9.3 For the development of public health, multiple independent centres with a common regulatory body appears to be a suitable approach. Some of these could be with the universities of health sciences and some with the usual multidisciplinary universities. This would allow for greater input from different disciplines to enrich the subject. New public health schools should be set up within the existing medical colleges.

7.9.4 Public Health needs a team effort to function. The team needs to draw upon expertise from medicine, social sciences, communication, management, engineering and environmental sciences to formulate the broad canvas to sketch the scope of interventions required to provide a health promoting ambiance for the community. As recommended by the NCMH (2005), an All-India Cadre of Public Health may be established on lines of the IAS/IPS.

7.9.5 Qualified Healthcare Administrators/Managers are few and India will need a large number of them in future. MBA Programmes specially tailored for the healthcare and MD (Hospital Administration)/DNB (H & HA) /MD (CHA) / MHA Programmes need to be encouraged. One way of improving the quality and usefulness would be to provide for a linkage between the universities which conduct these programs to hospitals &/or to have the base knowledge of such courses included in the repertoire of the medical colleges. Capacities for Health Technology Assessment also need to be built.

7.10 Vocational Courses

7.10.1 For the fast expanding healthcare sector, there is also a need to introduce more of vocational courses. The students could be introduced to the fundamentals of health and given an appropriate practical orientation towards addressing the issues related to the vocation. For example, a vocational course on general health care could equip the Class XII pass-outs in extending assistance to doctors and health professionals in managing patients.

7.11 Human Resource Development Policy for Health System

7.11.1 A good human resource development policy covers all factors that influence the performance and commitment of the workforce in any work situation. These include a minimum quality of institutions in which they are to function, appropriate incentives for performance, autonomy in decision making, career development opportunities, transparent policies for transfers and promotions, in-service training opportunities for career satisfaction and advancement, regular performance appraisals, monitoring and supportive supervision. At present, there are no clear policies for human resources development in the public health system. Qualifications and eligibility criteria for different cadres of health personnel need to be reviewed in relation to their job requirements. Therefore, a comprehensive human resource development policy for health system should be developed by the Government (by both the Centre & States).

7.12 Human Resource Management Information System

7.12.1 Several Departments/Ministries are involved in planning, development and management of health manpower in the country. There exists, no co-ordination among the departments/Ministries in developing health manpower. An effective Human Resource Management Information System is essential for projecting the future manpower

requirements. In order to develop an effective human resource management information system in the country, a strong co-ordination of the following is required :

- Ministry of Health & Family Welfare
- Professional Councils/Bodies
- Technical Councils
- Ministry of Home Affairs (RGI)
- Ministry of Human Resource Development
- Ministry of Statistics & Programme Implementation (CSO, NSSO)
- Ministry of Science & Technology
- Ministry of Chemicals & Petrochemicals
- UGC/Central/State Universities
- Public health Institutions

7.13 Need for Comprehensive Studies

7.13.1 During the next decade, medical and health education faces newer opportunities and challenges. The country has to train an adequate number of health professionals with appropriate knowledge, skill and attitude to meet the future health care needs of the population and increasing disease burden. Moreover, the opportunity for India to become an important destination for health care services and the emerging growth of health care Industry are also contributing factor for an urgent need for developing a quality health manpower in the country. This would require articulation of a vision of health provisioning in India, which would in many ways form the basis for any national estimation exercise.

7.13.2 For a realistic planning for human resources for health, a valid, complete and reliable data on human resource is required. There is lack of information on wide array of health manpower in the country. Any disaggregated data on health manpower by geographic location, age, gender, caste, qualifications and years of experience etc is not available.

7.13.3. Doing a more sophisticated analysis of health manpower projection would require more time and resources. Due to constraints of time and resource (particularly, manpower), the Task Force could not study all issues raised in the TOR in greater detail. Given the rising demand and growing need for expanding health services, the Task Force recommends that

systematic studies should be launched for estimating future health manpower requirements in the country.

7.13.4 Considering the need for specialized data, the Task Force felt that there is an urgent need of commissioning a series of State-level, district level and national studies to develop a data base for estimating India's future health manpower requirements. This data - base should be collated on time-bound basis so that the requisite information and analysis could be effectively utilized well within the 11th Plan itself (rather than being carried forward to the next Plan).

The proposed studies need to provide the following information:

(a) Basic Information

☞Disaggregated data on health manpower according to category, by districts/region, gender, caste, qualification, age, language and years of experience etc.

☞ Geographical distribution patterns of key health professionals like doctors, specialists, dental surgeons etc.

☞ Yearly number of migration and attrition of health manpower

☞ Manpower needs of the following:

- Specialists and super-specialists in various categories
- Service delivery across public health facilities & laboratories
- Enforcement of public health regulations
- Disease surveillance
- Health service management
- Health programmes
- Health research and medical education
- Health informatics and bio-technology
- Pharmaceutical linkages
- Bio-medical products and equipments
- Health care business process operations etc

(b) Deployment of Human Resources for Health

- Mechanism for proper deployment of health manpower including general medical officers and specialists in rural areas (re-structuring & re-deployment etc)
- Incentives and regulation/control measures
- Policy implication of compulsory rural placement programmes by States
- Review of health manpower financing system

(c) Production of Human Resources for Health

- Review the capacity of existing teaching and training system
- Factors contributing to shortage of health manpower and their deficiencies in skills
- Innovative mechanisms for proper development and distribution of competent workforce in rural areas

(d) Planning for Human Resources for Health

- Develop an appropriate occupational classification of health manpower in India
- Projecting the future requirements of health manpower including specialists, keeping in view the demographic transition, changing socio-economic scenario, attrition, migration and changing disease patterns.
- Estimation of optimal work force at primary, secondary and tertiary health care in both public & private sector (in urban & rural areas).
- How desired number of HRH be produced, design incentive mechanisms or institutional measures to make professionals stay in rural areas and reduce urban concentration problem.
- Development of training curriculum for different categories of health manpower.

7.13.5 Finally, the Task Force also recommends setting up an Expert Group (from public and private sectors) at the Centre to provide inputs for developing a system of human resources for health vis-à-vis the population's health needs and demands. The Expert Group should also suggest norms for projection of different categories of health manpower viz. allopathic doctors/specialists, dentists, AYUSH doctors, nurses, pharmacists etc keeping in account

demographic transition, changing socio-economic scenario, attrition, migration, changing disease patterns and rational assessment of optimal technical knowledge and skills.

7.14 Financial Requirements

7.14.1 One of the impediments in India to achieve health goals is the shortage of human resources for health. Public financing for development of human resources for health (which includes medical education, research, and training of health personnel including AYUSH systems, public health education, training in RCH etc.) is quite low. As per the National Health Accounts published by the Ministry of Health & Family Welfare (2005), public spending for development of human resources for health including training constituted about 1% of total public health expenditure in India in 2001-2002. In order to fill the current gaps in health manpower and to meet the future challenges, a manifold increase in public spending is necessary. The Task Force endorsed the financial requirements recommended by the National Commission on Macroeconomics and Health (2005). NCMH has recommended a five times increase in public spending on development of human resources for health, which includes establishments of new medical and paramedical institutions, training, research training of village level functionaries, and in-service training of health personnel. According to the Commission, a non-recurring amount of Rs.8649 Crores and a recurring expenditure of Rs. 2905 Crores every year will be required. Detailed estimates are at **Annexure- XIX**. The Commission also recommended a sum of Rs.5.0 Crore for enforcement of regulations by the professional councils (MCI, DCI, PCI, INC etc.). Besides the above, an amount of Rs.5 Crore may be required for commissioning studies on human resources for health at National, State and District level. For the systematic development of human resources in the health sector, this may be only a beginning. The resource requirements for development of human resource for health during the 11th Plan should be shared by the Centre and the States. The National Rural Health Mission should effectively contribute towards it. Efforts should also be made to mobilize additional resources through suitable partnership arrangements with the private sector and also through other available options.

Annexure-I

The Composition of Task Force on Planning for Human Resources in the Health Sector

1.	Dr. (Ms) Syeda Hameed Member, Planning Commission, New Delhi	Chairperson
2.	Secretary, Department of Health & Family Welfare, New Delhi	Member
3.	Secretary, Department of Ayush, New Delhi	Member
4.	Secretary, Department of Information Technology, New Delhi	Member
5.	Secretary, Department of Bio-Technology, New Delhi	Member
6.	DGHS, Ministry of Health & Family Welfare, New Delhi	Member
7.	Director, AIIMS, New Delhi	Member
8.	Dr. Jayaprakash Narayan, Member, National Advisory Council	Member
9.	Dr.A.K.Shiva Kumar, Member, National Advisory Council	Member
10.	President, Medical Council of India	Member
11.	President, Nursing Council of India	Member
12.	President, Dental Council of India	Member
13.	Secretary (Health and Family Welfare), Orissa	Member
14.	Secretary (Health and Family Welfare), Tamil Nadu	Member
15.	Secretary (Health and Family Welfare), Chattisgarh	Member
16.	Secretary(Health and Medical Education),J&K	Member
17.	Secretary(Medical Education), Maharashtra	Member
18.	Shri Analjit Singh, Chairman, Max Healthcare, New Delhi	Member
19.	Dr. Pratap C. Reddy, Chairman, Apollo Hospital, Hyderabad	Member
20.	Dr.Devi Shetty, Narayan Hridalaya, Bangalore	Member
21.	Dr.P.V. Majeed, Chairman, AM College of Pharmacy & Hospital, Kollam, Kerala	Member
22.	Dr. Ritu Priya, Centre for Social Medicine & Community Health, JNU, Delhi	Member
23.	Dr.Leena V. Gangolli, Cehat, Mumbai	Member
24.	Dr.Kirti Iyengar, Arth, Udaipur	Member
25.	Dr.V.K.Arora, HR Consultant, Jaipur	Member
26.	Representative, CII, New Delhi	Member
27.	Representative, FICCI, New Delhi	Member
28.	Adviser (Health), Planning Commission	Member Secretary

Annexure – II

Minutes of the First Meeting of the Task Force on Planning for Human Resources in the Health Sector

1. First Meeting of the Task Force on Planning for Human Resources in the Health Sector was held on Friday, 2nd June, 2006 at 10.30 am in Room No. 122, Yojana Bhavan, New Delhi under the Chairpersonship of Dr. Syeda Hameed, Member (Health), Planning Commission. List of participants is attached.

2. The Chairperson welcomed all the members and gave a background regarding the constitution of the Task Force. The Prime Minister has approved a proposal to set up a Task Force on Planning for Human Resources in the Health Sector. The Prime Minister has desired that the Task Force 'maps the gaps in the sector, identifies new opportunities and comes up with a Human Resource Development Plan for the Indian Health Sector'. The requirement of the Public Health System in terms of both medical, nursing and support staff needs to be given priority attention. The opportunity for India to become an important destination for health care services and the emerging growth of health care industry are contributing factors that point to the need for urgent action to create quality human resources in the area of health. The report of the National Commission on Macroeconomics and Health has also highlighted this issue.

3. The Chairperson informed the members of the Task Force that the Deputy Chairman is very interested in what recommendations come from this group. The Task Force is to work very closely with DCH and keep him informed step by step. This is extremely important because of the 11th Five Year Plan. Whatever is deliberated and decided, the Planning Commission will look into all this in the prism of 11th Five Year Plan. Basically it is something where inputs need to be provided by all the members, because in the Task Force there are some of the finest minds in healthcare who will be able to draw a plan for human resources in the health sector. Colleagues from the Planning Commission are here who will be able to give their strength to this venture.

4. The Chairperson also informed that the deadline for submitting the report is 31.10.2006 and the report has to be focused and short. By the beginning of October our work should be

done. The terms of reference are very long. The Chairperson said that she would like to listen and imbibe the inputs from the group so that a realistic and challenging road map is put up to the Prime Minister.

5. The Adviser (Health) elaborated on the terms of reference. He Stated that as far as the health services are concerned, human resource fall into three categories: for public health interventions, ambulatory care and hospital care. Besides, management and support workers are required for the health services. In addition, there are people who are linked with the health services. The terms of reference are very broad encompassing all categories in the health sector.

6. The Chairperson, thereafter, requested for focused interventions from every one and if necessary, a second round during the couple of hours of the meeting.

Dr. Rajesh Bhalla, Director - PPP, Fortis Healthcare Limited

7. Dr. Bhalla, representing FICCI highlighted upon the extreme shortage of health personnel. To overcome, we need optimal number of medical, dental and nursing colleges. The standards which have been laid down by statutory councils for setting up nursing, medical and dental colleges, in today's scenario, particularly for metros are not feasible because of shortage of land. These acreage norms have to be revised. Then, we can have more number of medical colleges. Earlier, the Medical Council specified 50 acres of land because at that time the spread was horizontal. Then they narrowed down to 25 acres. 25 acres in Haryana, Punjab and Delhi is difficult to get. The solution is to go vertically. Hence, it is suggested that a justifiable revision of the MCI norms should be carried out taking into account the minimum plot size for the medical college, hostel, teaching hospital and other ancillary services. FAR should be enhanced for the Medical Colleges to provide maximum extension vertically.

8. It is appreciated that there should be an equitable distribution of medical, nursing, dental and paraprofessional colleges across various States. To establish newer medical colleges-whether Government aided or private institutions, acquisition / provision of land and constructing / maintaining the infrastructure is an expensive proposition, both for the Government and the private institutions.

9. In the suburbs, the issue of quality, standards and infrastructure becomes important. The MCI norms were framed in 1999. Most of the medical colleges are planned within the cities / towns or in the suburbs of these areas. There is no doubt that the teaching hospital for the medical college has to be in close proximity to the Institution. However, to have a sufficient number of patients (teaching material) both outpatient and indoors, the teaching hospital has to be within the catchment area or commutable area of the population.

10. It is a known fact that at the MCI inspection, the medical colleges "hire" Doctors and Staff to show that the minimum staffing requirements is fulfilled. However, in reality and in practice, the staff is not available round the year. Hence, the standard and quality of education does suffer leading to substandard fresh graduate doctors. It is therefore suggested that these staffing norms should also be revised taking a pragmatic view of the availability of the number of teachers / Professors.

11. "The Fixation of Fees" Bill 2006 to control medical and nursing education fees is applicable from the academic year 2006-2007. The Bill says that fees structure will be on the following factors:

Location of institute, its curriculum, infrastructure (equipment, cost of land, building) and expenditure on faculty administration and maintenance. Government will also allow reasonable profit to the institution. To obviate malpractice by the Inspecting Team, certain detailed guidelines are necessary. To run a good accredited institute, it is necessary to have qualified staff and to retain their services. It is desirable to incentivise them by way of a modern library, internet facilities for updating knowledge and most importantly – a reasonable salary structure. This in turn would lead to stability of qualified teaching professionals to impart quality education.

12. The points put forth for the medical colleges would also be applicable to the nursing schools / colleges. In addition:

- To maintain a focus on quality and improvement in the skills of nursing profession, it is necessary to upgrade schools into colleges by 2010 (as projected by INC).

- Market grapevine indicates that this policy is unlikely to be implemented, and political pressure would postpone / advance this deadline by a few years for obvious vested interest under the garb of non-availability of teaching staff / finances to upgrade the schools, etc.

Hence, it is suggested that to achieve National / International Quality Standards, this timeline of 2010 should be adhered to.

13.The points mentioned have touched upon serial numbers 3 & 7 of the terms of reference. These aspects could ensure the future needs and availability of doctors and nurses (& paramedics as well) in optimal numbers in the years to come. This could also ensure and sustain the quality of education being imparted in such Institutions.

14. An inter-active discussion at FICCI with Mr. Hamid Mamdouh, Director, Trade in Services Division – WTO revealed that to understand the current State-of-play of the negotiations in WTO "Participation of private sector is a must (for the Government) for better / fuller involvement. The ministerial approach is undoubtedly highly valuable, but the private sector involvement could be complimentary to the Governmental issues".

Shri Daljit Singh, Chief Executive Officer, Fortis Healthcare Limited

15. Shri Daljit Singh mentioned that CII-McKenzie carried out a study on the health sector in the country. A lot of companies like Apollo, Wockhardt and MAX contributed in the study. It was the first organized study to reflect an additional 1.0 million doctors requirement over the next ten year period. It also mentioned that we require additional 1.2 million nurses. There is a large outflow of nurses to the West. Doctor: population and nurse: population ratio in the country is 1/3rd or 1/4th of what developed countries have. Health sector is slated to grow at a conservative estimate of 14 % per annum. Our production capacity in terms of nursing and medical colleges is grossly inadequate. Therefore, it is important not only to create capacity for internal requirement but going abroad also. I would say that our approach should be to probably put some data as to what would be our capacity for producing doctors.

16. We require almost 100,000 crore rupees. Of this 75 % can come from private sector. When people have to come for investment we have to make it worth while from the land

perspective, capital perspective and norms. The need is there, but availability of land etc., are other restrictions.

17. We should probably start of by putting information on the current situation, in terms of manpower, rules and regulations that should govern this sector and how do we really need to encourage investment, to ensure that the objectives are met.

Dr. Syeda Hameed, Chairperson, Task Force

18. The Chairperson emphasized that the twofold problem of doctors moving westwards and the requirement of doctors in the rural areas under the National Rural Health Mission; where we are trying to integrate the Indian Systems of Medicine with modern medicine, should be understood properly. How are we going to tackle the huge problem when one goes to Mirzapur, Badohi, Varanasi or other parts of the country where the healthcare is practically non-existent. Further, if India is becoming a health destination then what would be our total requirement.

Dr. Ramnik Ahuja, Consultant, CII

19. Dr. Ahuja opined that development of Para-medical as well as medical manpower for the rural areas should be taken up in a prioritized manner.

Shri Deepak Gupta, Additional Secretary, MoHFW

20. Shri Gupta Stated that there exists a great shortage of medical physicists both in public and private sector especially for treating chronic ailments like cancer etc. MoHFW has set up a Task Force to look into the manpower requirement of rural practitioners and para medical human resources both in public and private sector. Exploring the possibility of involving corporate sector in developing human resource in the health care arena should also be addressed. Through existing medical colleges making two shifts can reduce the shortage to some extent.

Dr. T.S. Rao, Adviser, Department of Bio Technology

21. Dr. Rao emphasized the need to strengthen bio-medical research and to train our medical graduates to take up global challenges. A requirement is of 10,000 health researchers for around $ 5 billion industry by 2010. In order to meet this demand, we need to introduce Masters in Clinical Science. We have to strengthen our medical colleges for Bio-medical research. Several technologies are coming from abroad .Collecting data requires skilled manpower. Majority of doctors may not be aware of how to conduct clinical trials.

Dr. Ritu Priya, Centre for Social Medicine & Community Health, JNU

22. Dr. Ritu Priya expressed the following points:

i) *Quantify the need for all categories of health personnel* in the public, private and civil society institutions and allow creation of teaching capacities accordingly.

- Add the numbers projected for immigration and medical tourism, since planning by ignoring the latter will be unrealistic and lead to shortages of service providers for the Indian population.

- Number of persons at higher levels of education should be estimated based on rational need, since they tend to add to unnecessary medical expenditures.

ii) *Quality criteria of each type of personnel* should be laid down based on the technical requirement, effectiveness in the social context and affordability. For instance:

- For doctors, good medical knowledge, ability to give effective treatment at low cost, human empathy, understanding of social dynamics in urban and rural, social skills and ability to interact with other sectors for inter-sectoral coordination should be important criteria.

- Initiate training programmes for upgrading and evaluating knowledge and skills of non-formally trained practitioners.

iii) For making medical education more suited to the rural and low resource setting

- Revamp the medical curriculum and teaching methods, making it problem-oriented, community based and with social science inputs.
- Identify good teachers in each subject in the country and create mechanisms for their interaction with others to improve the quality of pedagogy.
- Make the social base of the students at intake more inclusive. One way would be to give openings for good paramedics to go for medical graduation and good CHWs go for paramedic training.
- Locate medical colleges at secondary hospital level, especially for clinical teaching at under-graduate level. Post-graduate teaching and super-specialisations should remain at tertiary hospitals.
- Work culture of teaching hospitals and the institutions in which new graduates work first is a crucial part of education of any doctor. Therefore the quality of doctors will depend to a large extent on the nature of functioning of our health services. For instance, working in the private sector, patient friendly behaviour but competition and profit considerations are imbibed. In the public sector less commercial and more cooperative norms are learnt, but greater bureaucratic functioning. Developing mechanisms for combining the best of both is the challenge.
- Review PSM/public health teaching and strengthen it to give a sound public health understanding to all medical graduates.
- Quality assurance and regulatory mechanisms for the teaching institutions should be strengthened according to the defined criteria of quality. Regulatory mechanisms should encourage innovation in teaching.
- Monetary and non-monetary support will be needed for the revamping, which could be initiated in the Eleventh plan.

iv) *Create an Indian Public Health Cadre* (NCMH quoted in background note point 8) for those who perform as generalist medical officer and health team leader's role at the peripheral level. Some of these should be supported for public health specialization and move up for data analysis and planning roles.

Could the Eleventh Plan provide support this?

v) *The AYUSH health care providers* in the public health services should be encouraged to strengthen their respective sciences.

- Link teaching institutions to the public sector service delivery institutions at primary, secondary and tertiary levels, as for the allopathic system.
- Encourage public sector providers to practice their system and not the allopathic
- Support research in their systems.
- Create a mechanism for interaction across the systems– '*A Core Committee for Dialogue across Healing Systems*'.

The Eleventh Plan could specifically provide support for this.

Shri Shiv Basant, Joint Secretary, Department of AYUSH

23. Government of India has decided as a matter of policy to mainstream AYUSH. There is need for optimal utilization of manpower. We are not utilizing our existing manpower optimally. Figures show that we are having 500,000 institutionally qualified 4 1/2 year training plus one year practice qualified AYUSH practitioners, of these about 30000 are in government service. For the single doctor PHCs, we can train AYUSH practitioners. The legal issues arising out of Supreme Court judgments in Mukhtiar Chand case was on medical negligence. Under the existing law, there is no ban on cross system practice, but the onus lies with the medical practitioners. He should understand the system and medicine he practices. If he does not, it constitutes medical negligence. Allopathic companies are telling doctors if they prescribe, for example, Liv 52 then they will be held responsible for cross system medicine prescription.

24. We have 500,000 qualified ISM&H practitioners. Those in 25-40 age group can be re-oriented and trained as public health specialists. The issue is how to integrate them in technical manner.

25. 10 +2 science students want more and more Allopathic stream. The issue is whether government should regulate colleges or end product. Working of the Statutory Councils leave

a lot to be desired. They are not able to do their job. Standards and forcing the standards is another issue. We have copied the British system. We should only have nominated councils. Election business is creating havoc in these councils. We have got AIIMS, JIPMER etc. Why can't we have their heads as members of the Medical Council of India. Let the government not get into regulation of colleges. They should have an examination before the fresh graduates are allowed to practice. The primary health care model is not working in this country. Create general practitioners. Subsidy should be given to those who go to rural areas. We should also build a long term solution for producing more general practitioners.

Dr. Narottam Puri, Executive Director-Medical Services, Max Healthcare

26. It is not sufficient to focus only on numbers, i.e., on quantity. We must also focus on the quality of resources. PPP in healthcare is a must considering that the government spending in healthcare is actually progressively declining. It will be prudent for the govt. to focus on primary health care whilst entering into mutually beneficial partnerships with the private sector in secondary & tertiary care. In primary models of healthcare, the involvement of GPs such as the one practiced in Gujarat in the Reproductive & Child Programme should be looked into.

27. Paramedical training particularly for technicians in Laboratory Medicine, Radiology, OT techniques, Dental techniques, etc. needs to be regulated, enhanced and encouraged.

28. Health Insurance for the largest possible numbers of our country's population must be encouraged through various means, for example, the 'Yashaswini Insurance Shelter' program of the Karnataka government. The freeing of the insurance sector in the field of health insurance and to provide incentives to the private sector in health insurance is also a must.

29. Encourage establishment of nursing colleges to provide high quality undergraduate & postgraduate nurse education. Terms & Conditions of the nursing college in metropolitan areas must be reviewed, particularly as regards the amount of land required. In addition, practical training in a 'non-hostile' environment is a must.

30. There is a general consensus that the quality of medical education is very variable. Whilst the top 20-30 medical colleges are bringing out excellent doctors, it is not true of the rest. Standardization of medical education is therefore necessary. In view of the high rate of attrition of academicians there is a need to look at the salary structure as also to have innovative programmes of incentivizing these teachers perhaps by allowing them to conduct private OPDs in the medical colleges. Another way could be to use the Honorary Consultant System so that the selected leading private practitioners and retired teachers can be inducted in to replace the rapidly depleting academic workforce.

31. Given the paucity of specialists at district levels, encourage the field of Tele-Medicine by equipping each medical college with a telemedicine centre and linking this to designated number of district medical centres.

32. Healthcare Administrators are few and India will need a large number of them in future. MBA Programs specially tailored for the healthcare and MHA Programs need to be encouraged. One way of improving the quality and usefulness would be to provide for a linkage between the universities which conduct these programs to hospitals &/or to have such courses included in the repertoire of the medical colleges.

33. One has forgotten the concept of family physician. Nobody today wants to remain an MBBS. Upgrade the system of family physician. Anybody who is not an MD, DM is looked down by his peers. Encourage a post graduate family medicine program such as the one of the National Board of Examinations (DNB). Perhaps the time has come to take out a leaf out of the US Model and start a diploma/degree (MD) program in family medicine. One of the systems worked well in USA is specialization in family medicine. They are primarily taught four major subjects. We can modify this system according to our needs in this country.Family physicians at district level can work wonders.

34. The quality of health care is falling. We do not have standardization. Variability is because of different medical colleges have different standards. We need to focus on these aspects. Paramedical institutions are non-regulated. Just as there is Nursing, Dental and Medical, there are no para medical councils. These are the people who work all over the place. Greater focus should be given to the para medical field.

Dr. Kirti Iyengar, Coordinator, Reproductive Health Programme, Arth

35.The mechanisms for training of paramedical staff tend to be very weak. The training of paramedics does not equip them to perform any functions independently, for example, it does not allow them to act as a skilled attendant at birth, provide basic treatment to sick children, etc. They are largely unable to do this partly because the training faculty of ANMs and GNMs are not provided any independent clinical roles. Most nursing tutors carry out classroom training, and are not able to perform very basic skills. For example, they may not have conducted a single pelvic examination, or IUD insertion, or cannot count respiratory rate of a child, but are meant to train on these aspects. In view of the changing program priorities and changed expected roles from paramedics, it will be worthwhile to consider the options of revising the curriculum for nurses, ANMs, MBBS doctors and ISM doctors. Practitioners of ISM are often available in rural areas, but are not equipped to provide basic RH services including services for obstetric first aid. Include skills that will allow the trainee to function as a skilled birth attendant and as a skilled provider of other essential RCH services. This would include life-saving obstetric skills and clinical skills that promote reproductive rights like pregnancy confirmation, medical abortion etc. Set new skill based curriculum for pre service training of ANMs & GNMs.

36. Also, create a space for practicing (having active clinical role) nursing tutors, who provide the services independently in a health centre that are permitted to be provided by ANMs and GNMs. This way they can be better clinical trainers and act as role model for nursing trainees.

37. The pre-service medical & nursing training does not train on practical aspects of counseling, management and gender issues, which are very crucial. They need to be covered in pre-service training by improving the curriculum and bringing it in the examination / assessment system.

38. Currently, there is a mismatch in the education in medical institutions and the role expected in a primary care setting (e.g. PHC, CHC). Medical college training tends to overmedicalise a service. For example, safe abortion services are provided very often under general anesthesia, which is not available in a PHC setting. As a result, a doctor trained

there is not able to function in a PHC setting, and refers even the simple cases. This seriously affects the provision of services in rural areas.

39. Several nursing training institutions are based in medical college hospitals that use more medicalised protocols and nurse-midwives and ISM doctors would get few practical learning opportunities in a hierarchical environment that privilege MBBS and MD/MS students over them.

40.One solution would be to designate district and sub-district hospitals and CHCs having adequate (current or potential) caseloads as training institutions for nurses, ANMs and ISM providers. Some of the staff posted at these facilities should be designated as teaching faculty

41. An independent body oriented more to rural service delivery should be constituted, which looks at the standards & protocols followed at the teaching institutions.

42. For improving the quality of education in medical & nursing institutions, following options need to be considered:

- It should become more skill based.The criteria for skills to be acquired suggested by MCI is not followed at present.
- The teaching should become more participatory rather than didactic.
- One major concern seriously affecting the quality of medical education are the textbooks. Currently, most of them are western textbooks, which do not give enough emphasis on health problems more prevalent in India. The diagnostic and treatment options suggested are such which are not available in India even at a State capital level, for example, diagnostic options suggested for reproductive tract infections. A doctor reading such textbooks gets confused about providing services at district / primary levels. A review of medical textbook carried out by Achutha Menon Centre of Health Sciences, Thiruvananthapuram has showed that several common textbooks are gender insensitive and often provide inaccurate information on public health aspects and national health programmes. There is a need to review and rewrite the textbooks. Moreover, generic service protocols are available from international agencies like WHO, and several have been adopted by the Government of India. On a periodic basis, these protocols need to

be adapted to the needs and capacities of different regions or States, simplified and translated in operational terms. All protocols for immediate care should become available in the form of local-language charts or posters to act as "standing orders".

- The medical colleges & nursing schools often do not follow recommended standard service delivery guidelines, e.g., medical colleges may insist on spousal consent for abortion, which is not required by the MTP Act.

43. A pre requisite for providing skilled attendance at birth in rural areas is that services of an ANM are available 24 hours. The outreach roles of an ANM make her availability unpredictable for women in the community. Women tend to avoid visiting the sub-centre because more often than not, it is closed. In order to ensure that doors of a sub centres are open daily, and to have services available at night (whether for home delivery or institutional delivery), the following options may be considered:

- Pairing ANMs (two ANMs should be posted at each sub centres) so that in rotation, one is always available at the sub-centre while the other is in field. This ensures reliable presence of staff so that even if one (ANM) is in field or on leave, the other is available. It also reduces the feeling of isolation among them, and allows for 24 hour delivery services to be provided at some SCs. If required, the field area of 2 sub centres can be merged. ARTH has been running 2 health centres covering 50,000 population in rural Rajasthan, that are managed by 5 nurses, and has conducted more than 1400 deliveries in last 6 years through its 2 health centres.
- Appointing an assistant ANM – in tribal areas this could be a local tribal girl supported through high school and a paramedical training course. The assistant ANM could be given the bulk of non-clinical and outreach roles, depending on her level of training.
- Restricting the ANM's outreach duties so that she is available daily for extended periods of time at the sub-centre. While this would not involve the cost of an additional person, it would require a trade-off between the ANM's outreach and clinic roles. Informal providers (rural practitioners) have used this approach effectively for primary curative services; the challenge would be to use it for preventive services within the formal system.

44. Similarly, in order to ensure 24 hour delivery services at PHCs, the operational management of these should be passed on to paramedical cadre (e.g. LHVs), who are more likely to stay in rural areas while doctors provide services during daytime. A team of 2-3 nursing staff (LHV, staff nurse/ ANM) should be given the responsibility to provide 24 hour delivery of services.

45. For involving civil society for reaching health services to the poor, attempts have been carried out to handover the management of PHCs to NGOs. However, barring a few successful experiments in the country, most NGOs do not have sufficient technical expertise in the area of health, and are unable to takeover the management of a PHC. It has been shown that an ANM needs support for her living conditions, safety, mobility, etc., and community support; these roles can be fulfilled by smaller grassroots level NGOs, who can be given the operational management of sub centres. An experience in Rajasthan with 3 grass root NGOs (without health expertise) has shown that they can successfully run NM based health centres in interior rural areas with good results.

46. Families from poor communities tend to seek care late, when complications have become well established. In such a situation they have to directly interface with a district, or teaching hospital, whose staff operate in a more medicalised way, and there is power imbalance, when undereducated, impoverished families seek higher medical care in a State of desperation, from hospitals in unfriendly cities. To assist families to negotiate hospital care, a 24-hour help counter staffed by social workers and operated by an NGO, should be set up in the hospital establishment. NGOs can also play a role of facilitating health care for the poor rural patients in urban government hospitals by acting as a link. The social workers of NGOs can take rounds of waiting areas, casualty and wards to identify and establish contact with indigent families, guide them through admission procedures, help them access available subsidies (for BPL families, etc), help on blood donation and surgery, advise on inexpensive (co-operative) drug stores etc, arrange for available stay and food arrangements for attendants. While acting as a bridge between hospital staff and families, they would help patients deal with uncooperative staff and avoid paying informal charges if demanded.

47. The staff at peripheral levels (PHC/CHC) tend to feel isolated and out of touch from new medical developments, new guidelines etc. This acts as a disincentive for doctors to

work there who look upon their city counterparts doing more exciting work and have more knowledge. The CME workshops need to be carried out at more peripheral levels, e.g. block level for PHC/CHC doctors & paramedics. This would improve the wider coverage of information & education, & make the job at peripheral levels more attractive for staff.

48. There is a large amount of evidence based literature, research findings and guidelines from the Govt of India and WHO. However, very little of this reaches the staff at district, CHC, PHC and SC levels, except to those few who attend the in service training programs. It should be ensured that guidelines related to service delivery at primary care levels by GOI(e.g. new guidelines for ANMs/LHV & doctors on skilled maternal care and IMNCI) reach providers and program managers. For these, they should be directly mailed to all health facilities.

Dr.P.V. Majeed, Chairman, A.M. College of Pharmacy, Kollam, Kerala

49. The requirement of lab technicians is not being met. The paramedical council needs to be set up immediately. The para medical people are dealing with the common people and thus, uniformity and enforcement has to be introduced. In USA there are 800,000 lab technicians. Geriatric care needs to be put in focus. We require Indian Health Services just like Indian Foreign Services. The doctors from Indian Health Services can be put in charge of the districts.

50. The requirement of nurses is large and in Kerala State these requirements are being met to a large extent. As there is a large demand for Indian nurses from abroad also, we need to upscale our efforts. There is also an urgent need to introduce geriatric care in the nursing curriculum.

Dr. S.K.Agarwal, Sr. Consultant, Indraprastha Apollo Hospitals

51. There is huge shortage of doctors, nurses and technicians in healthcare sector. Government is facing financial constraints for an expansion program. Existing facilities in Private superspeciality hospitals may be used to train the doctors in superspecialities. About 900-1000 additional seats per year can be accommodated in private

superspeciality hospitals without any additional financial burden for Central Govt. / State Govts.

52. Shortage of nurses is in alarming proportion throughout the world. Existing facilities in Govt. / Private Hospitals are yet to be fully utilized for training nurses. Govt./Private institutions should be encouraged to provide expansion program so that intake capacity of students is gradually increased. As on date there is a shortage of 1.2 lakhs nurses in U.S. and this will be about 8.0 lakhs in another decade. Similarly, Indian nurses are catering to the needs of Middle East, U.K. and other neighboring countries. Shortage of well training nurses is acute as on date and will be severe in the years to come. Diploma Nurses, Graduate Nurses & PG Nurses are in great demand throughout the world. Existing facilities in all Govt. / Private Hospitals are yet to be tapped fully. Govt. may increase the intake of nursing students in the existing institutions.

53. To train a technician, one needs medical equipment (say X-ray machine), patients, trained technicians and a Radiologist. All these facilities are available in all Govt. / Private Hospitals, but presently they are not being utilized to train technicians. These training could be organized in all Govt. Dist Hospitals as also hospitals in private sector. Leading medical educational institutes may be used to develop syllabus for technician courses so that there may be uniformity of standard. Paramedical Council of India should be established on priority basis.

Dr. Ananthanarayanan P.H, DDG (M), Directorate General of Health Services

54. There is a need for maximum utilization of space in laboratories, OTs, medical and nursing colleges. There is acute shortage of land in urban areas and there is a need for changing land requirement. The curriculum of nursing needs to be revisited and rural practitioners, care of elderly persons etc., needs to be included. There is shortage of faculty and this shortage can be met by colleges working in two shifts. The demand for the beds is increasing and it is expected to reach 750,000 in next 5-10 years. Government can provide only 150,000 and the remaining are to be from the private hospitals.

55. There is a need to make the nursing profession respectable by breaking the cultural taboos. There is acute shortage of medical specialists and para medicals. Para-medical Council of India is a great necessity and should be constituted at the earliest.

Shri G.V. Raghunathan, Director & HOD (HRD), Department of IT

56. The training programme for nurses on soft skills (Communication and IT Skills) needs focused attention because large number of these nurses are not getting suitable jobs because of incomplete / improper / irrelevant training. English, personality development, computers, telemedicine, e-learning, medical science etc., needs to be incorporated in all the training programmes.

Shri T. Dileep Kumar, President, Indian Nursing Council

57. There is acute shortage of nurses in India as well as abroad. In India itself we have different types of shortages. In RML and Safdarjung hospitals for one post we get 1000 applications. Whereas the public sector gives good salary say Rs. 15,000/- at entry level, the corporate sector gives only up to Rs. 6000/-. There is a gross mismatch of salary. Good practice methods should be evolved. Why they are going abroad should be examined. In Xth Plan, Rs. 10 lakhs were given for upgrading the nursing schools across the country. Under the National Rural Health Mission also 2 lakh ANMs have already been registered through 440 ANM training centres. In XIth Plan each State should have State Nursing Council and if possible at district level GNM training schools may be called for. Sound mid wifery services are needed at the PHC level through posting nurses in PHCs. The training modules of nurses should also include geriatric care, trauma care etc.

Maj. General (Retd.) P.N. Awasthi, Consultant, Dental Council of India

58. Dr. Awasthi made a presentation highlighting the past, present and future set up of Dental Council of India. He lamented that too many dental colleges have come up without any institutional and legal framework to regulate these colleges. He urged for strengthening of the Dental Council of India Act immediately.

Dr. Ved Prakash Mishra, Medical Council of India

59. 40 % of the medical colleges are in four southern States. So, it is utmost important to keep in mind the geographical criteria for allotting new medical colleges in future. In Maharashtra, there is no restriction of medical colleges in private sector. Therefore, proper accreditation of medical colleges in the private sector needs to be ensured.

Shri Shailendra Sharma, Adviser (LEM), Planning Commission

60. Shri Sharma stressed the need for career advancement of medical transcriptors, lab technicians, para medicals etc., as envisaged in vocational training in other sectors.

Dr. V.K. Arora, HR Consultant, Jaipur

61. Setting up of PHCs and CHCs etc., needs to be taken up keeping into account the geographical demands. He cited an example of Rajasthan where an auxiliary health workers course of 3 years was good enough for giving treatment at the village level itself. He also Stated that career path should be clearly visible for better retainment of medical professionals. Doctors and other medical professionals should also develop strong managerial capacities through training in public health management.

Dr. P. Padmanaban, Director of Public Health and Preventive Medicine, Govt. of Tamil Nadu

62. Dr. Padmanaban emphasized the need for dedicated public health cadre for better health care delivery system in the country. He also cited the example of Tamil Nadu, where three doctors model in a PHC to run 24 hours a day did not work. However, another option of posting three nurses in the PHC for having 24 hour services is working very well in that State. Such a model needs to be replicated with flexibility in other States also.

Dr. Vinayak Prasad, Director, MoHFW

63. Dr. Vinayak Prasad was of the view that there is acute shortage of specialists especially in cardiology, mental health etc. He also Stated that in the northern States there are no trained audiologists who can substantially reduce the hearing impairment. Also States have to find mechanisms to generate para medical professionals to meet the growing needs.

Shri Indrajit Bhattacharya, Additional Director, DOEACC Society

64. There has been a small experiment by DOEACC society in case of upgrading the skills of nurses. The Regional Institute of Paramedical and Nursing, Mizoram identified that the nurses trained there are not employed. Their employment potential is very low. The continuous upgradation of abilities of doctors and para medical professionals through e- learning methodology needs to be tried out and implemented in various States. Its efficacy is at research level. Department of IT has set up a Taskforce on Telemedicine with a view to integrate disease surveillance project at every district headquarter and government college through the satellite.

Members were requested to send a brief write-up on the points raised by them during the meeting for the compilation of the minutes and also on other Terms of Reference of the Task Force.

The meeting ended with Vote of Thanks to the Chair.

List of participants in the meeting of Task Force on Planning for Human Resources in Health Sector

Planning Commission

1. Dr. Syeda Hameed, Chairperson, Member (Health)
2. Prof. N.K. Sethi, Adviser (Health)
3. Shri Nagesh Singh,Adviser (PAMD),
4. Shri Ambrish Kumar, Director (H&FW)
5. Shri Rajeev Lochan, Director (H&FW)
6. Smt. Radha Ashrit, SRO (H&FW)

Ministry of Health & Family Welfare

7. Shri Deepak Gupta, Additional Secretary
8. Shri Shiv Basant, Joint Secretary, AYUSH
9. Dr. Ananthanarayanan P.H, DDG (M), Directorate General of Health Services
10. Shri T.Dileep Kumar, Adviser (Nursing) & President, Indian Nursing Council
11. Dr. Vinayak Prasad, Director

Representatives from other Departments, GOI

12. Shri G.V. Raghunathan, Director & HOD (HRD), Department of Information Technology
13. Dr. T.S. Rao, Adviser, Department of Bio Technology
14. Shri Indrajit Bhattacharya, Additional Director, DOEACC Society

Representatives from State Government

15. Dr. P. Padmanaban, Director of Public Health and Preventive Medicine Govt. of Tamil Nadu

Members from other Organizations / NGOs/Hospitals

16. Dr.P.V. Majeed ,Chairman, A.M. College of Pharmacy, Kollam, Kerala
17. Dr. Ritu Priya ,Associate Professor, Centre of Social Medicine & Community Health ,JNU, New Delhi
18. Dr. Narottam Puri, Executive Director-Medical Services, Max Healthcare,New Delhi
19. Dr. Kirti Iyengar,Coordinator, Reproductive Health Programme,ARTH, Udaipur, Rajasthan
20. Dr. Rajesh Bhalla,Director-PPP, Fortis Healthcare Ltd
21. Shri Daljit Singh,Chief Executive Officer, Fortis Healthcare Limited
22. Dr. Ramnik Ahuja,Consultant-Health, CII
23. Dr. Ved Prakash Mishra, Medical Council of India
24. Maj. General (Retd.) P.N. Awasthi, Consultant, Dental Council of India
25. Shri Aditya Bahadur, Executive Officer,CII,Gurgaon
26. Prof. S.K. Agarwal, Sr. Consultant- Internal Medicine,Apollo Hospitals, New Delhi
27. Dr. V.K. Arora, H.R. Consultant, Jaipur

Annexure- III

State/ UT wise number of Allopathic Doctors registered with the State Medical Councils (1995-2006)

S. no	State Medical Council	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Andhra Pradesh	23926	25155	27052	27844	28510	29214	30687	32510	34147	34808	34761	34761
2	Assam	12140	12518	12936	13293	13763	14253	14586	15060	15526	15849	16400	16400
3	Bhopal' / M.P	14286	14865	15794	16515	17271	18181	19021	27440	28247	29003	29649	29799
4	Bihar	28710	29569	30195	30720	31551	32226	33070	33720	34583	35111	35510	35793
5	Chattisgarh	Chattisgarh Medical Council started Registration work in Year 2002							1	101	285	470	567
6	Goa	569	797	1346	1569	1719	1916	2030	2128	2236	2360	2469	2550
7	Gujarat	26126	27308	28415	29492	30786	32177	33653	35174	36012	37194	38642	38915
8	Haryana	866	913	937	972	1018	1065	1146	1234	1285	1332	1381	1407
9	Hyderabad/A.P	13888	1388	13888	13888	13888	13888	13888	13888	13688	13888	13888	13888
10	Jammu & Kashmir	5280	5448	5674	5798	6151	6344	6875	7317	7900	8284	8557	8960
11	Jharkhand	Jharkhand Medical Council started Registration work in Year 2003								91	183	553	597
12	Kanataka	42351	45050	47706	50733	54012	57464	61163	64012	65789	67864	68988	71106
13	Travencore-Cochin	23622	24660	25644	26711	27908	29087	30173	31353	31353	33418	34561	34561
14	Maharashatra	59809	62979	66477	70095	73708	77278	80764	84536	88378	92327	96563	96563
15	Orissa	12336	12660	12981	13343	13661	14009	14315	14640	14707	14973	15219	15371
16	Punjab	2 8625	29170	30047	30670	31235	31859	32558	33206	33417	34104	34974	34974
17	Rajasthan	16503	17144	17779	18504	119189	19744	20438	21198	21885	22567	23459	23459
18	Tamilnadu	53378	55164	57299	59305	61383	63434	65771	68209	70357	72077	73173	75031
19	Uttar Pradesh	37880	38912	3 9319	39812	41714	42452	43492	45295	46309	46604	47873	47873
20	West Bengal	45123	45794	46591	47358	48377	49261	49941	50794	51961	53068	53613	53613
21	MCI Delhi	14258	15616	16861	18567	20149	21694	23055	24435	25737	26468	27348	28490
22	Delhi	Delhi Medical Council established in Year 2000					4	468	925	1514	2197	2750	3433
	Total	**459676**	**477610**	**496941**	**515189**	**535993**	**555550**	**577094**	**607075**	**625423**	**643964**	**660801**	**668131**

Notes:

- Data as on 31st December of the year concerned
- Last updated on 02-01-2007

1. Figures 7644, the registration done by the Mahakoshal Medical Council up to 06-06-1979 has been added in the annual figure of year 2002 in MP Medical Council, Bhopal vide letter dated 23-01-2003 received from the Registrar, MP Medical Council, Bhopal
2. After merging of the Hyderabad Medical Council

Source: Central Bureau of Health Intelligence, DGHS, MOHFW, 2006

Annexure- IV

State/UT wise number of registered AYUSH Practitioners as on 1.1.2006

S. No.	State/ UT	Ayurveda	Unani	Siddha	Homeopathy	Naturopathy	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Andhra Pradesh*	15231	5022	0	9422	374	30049
2	Arunachal Pradesh	0	0	0	74	0	74
3	Assam*	250	0	0	624	0	874
4	Bihar	131121*	3772	0	27597*	0	162490
5	Chattisgarh	533	6	0	169	0	708
6	Delhi	2264*	1049*	0	3026	0	6339
7	Gujarat	20854	247	0	8065	0	29166
8	Haryana	18366	1663*	0	5531	0	25560
9	Himachal Pradesh	7111*	456*	0	1111	0	8678
10	Jammu & Kashmir	1807	1869	0	0	0	3676
11	Karnataka	14828*	938*	2*	8578	116*	24462
12	Kerala	14945*	63*	1366*	9091	0	25465
13	Madhya Pradesh	47602*	609*	0	9117	2	57330
14	Maharashtra*	52372	2884	0	38407	0	93663
15	Meghalaya*	0	0	0	230	0	230
16	Nagaland*	0	0	0	1997	0	1997
17	Orissa*	4448	17	0	3106	0	7571
18	Punjab	20379*	5611*	0	3742	0	29732
19	Rajasthan	23861	1619	0	4627	0	30107
20	Tamil Nadu	3542*	980*	16192*	17055	49*	37818
21	Uttar Pradesh	60585	14483	0	27569	0	102637
22	Uttarakhand	368	8	0	0	0	376
23	West Bengal	3167	4934*	0	37423*	0	45524
24	Chandigarh*	0	0	0	297	0	297
	TOTAL	443634	46230	17560	216858	541	724823

* Information has not been received for current year, hence latest available information is repeated.

Source: Central Bureau of Health Intelligence, DGHS, MOHFW, 2006

Annexure-V

Number of Dental Surgeons registered with Dental Council of India, 1994-2006

S.No.	Year	Dental Surgeons Registered
	1	2
1	1994	21720
2	1995	23953
3	1996	24656
4	1997	28705
5	1998	31728
6	1999	34761
7	2000	39105
8	2001	47204
9	2002	47165
10	2003	47318
11	2004	55344
12	2005	71421
13	2006	78103 (Up to September 2006)

Source: Dental Council of India, 2007

Annexure-VI

State-wise breakup of registered Dentists (as on 6.9.2006)

S.No.	Sate/Union Territory	Number of Dental Surgeons Registered
1.	Andaman & Nicobar	7
2.	Andhra Pradesh	4157
3.	Arunachal Pradesh	-
4.	Assam	793
5.	Bihar	1829
6.	Chandigarh	107
7.	Chattisgarh	-
8.	Dadar & Nagar Haveli	-
9.	Daman & Diu	-
10.	Delhi	6429
11.	Goa	561
12.	Gujarat	2085
13.	Haryana	1701
14.	Himachal Pradesh	469
15.	Jammu & Kashmir	536
16.	Jharkhand	-
17.	Karnataka	18640
18.	Kerala	5542
19.	Lakshadweep Island	-
20.	Madhya Pradesh	1601
21.	Maharashtra	14105
22.	Manipur	-
23.	Meghalaya	-
24.	Mizoram	-
25.	Nagaland	-
26.	Orissa	307
27.	Pondicherry	225
28.	Punjab	4010
29.	Rajasthan	-
30.	Sikkim	-
31.	Tamil Nadu	8493
32.	Tripura	-
33.	Uttar Pradesh	3933
34.	West Bengal	2573
	Total	**78103**

Source : Dental Council of India, 2007

Annexure- VII

Number of Postgraduate Degree/Diploma awarded in various disciplines of Medical Sciences by the Universities during Academic Session 2000-01

S.N	Subject:	Degree			Diploma		
		Male	Female	Total	Male	Female	Total
	1	2	3	4	5	6	7
1	Anesthesiology	193	92	285	157	101	285
2	Biochemistry	14	21	35	NA	NA	NA
3	Community medicine	35	23	58	9	2	11
4	Derm-Venereal & leprosy	41	25	66	21	19	40
5	Forensic medicine	12	5	17	5	NA	5
6	General medicine	456	64	520	NA	NA	NA
7	Obst. & gynae	84	270	354	37	246	283
8	Paediatrics	174	59	233	158	58	216
9	Pharmacology	22	26	48	NA	NA	NA
10	Pathology	100	95	195	25	32	57
11	Physiology	14	27	41	NA	NA	NA
12	Psychiatry	36	9	45	15	6	21
13	Radio- diagnosis	83	34	117	72	34	106
14	Radio therapy	12	6	18	NA	NA	NA
15	E. N. T.	88	24	112	51	24	75
16	General surgery	446	36	482	NA	NA	NA
17	Ophthalmology	115	79	194	55	53	108
18	Orthopedics	173	5	178	111	1	112
19	Tuberculosis & resp. Diseases	37	9	46	12	2	14
20	Anatomy	14	20	34	NA	NA	NA
21	Microbiology	37	50	87	NA	NA	NA
22	Virology	NA	NA	NA	1	1	2
23	Physical medicine & rehabilitation	3	1	4	NA	NA	NA
24	M. D. S.	2	1	3	NA	NA	NA
25	S. T. D.	1	NA	1	1	NA	1
26	Hospital administration	8	NA	8	NA	NA	NA
27	Tropical medicine & health	NA	NA	NA	3	NA	3
28	Dermatology	NA	NA	NA	2	2	4
	Total	**2200**	**981**	**3181**	**735**	**581**	**1316**

Source: Central Bureau of Health Intelligence, DGHS, MOHFW, 2006

Annexure-VIII

State/UT wise number of registered Nurses (2005) & Pharmacists (2006) in India

S.No.	States/UTs	Nurses as on 31st Dec, 2005	Pharmacists as on 31st Dec, 2006
	1	2	3
1	Andhra Pradesh	88457	37964
2	Arunachal Pradesh	NA	347
3	Assam	10540	2429
4	Bhopal	--	1381
5	Bihar	8883	4163
	Chattisgarh	462	NA
6	Goa	NA	466
7	Gujarat	85930	20948
8	Haryana	17186	874
9	Himachal Pradesh	7920	2818
	Jharkhand	322	NA
10	Karnataka	64308	73410
11	Kerala	77596	7531
	Madhya Pradesh	93106	1381
12	Maharashtra	86406	106220
13	Meghalaya	1524	269
14	Mizoram	1483	398
15	Nagaland	NA	1553
16	Orissa	46311	14312
17	Punjab	45801	35290
18	Rajasthan	37667	18214
19	Tamil Nadu	159843	101240
20	Tripura	794	257
21	Uttar Pradesh	17827	30276
	Uttarakhand	58	NA
22	West Bengal	45831	89630
23	Delhi	10707	22010
24	Lakshadweep	NA	3082
25	Pondicherry	NA	1716
	Total	**9,08,962**	**5,78,179**

Source: Central Bureau of Health Intelligence, DGHS, MOHFW, 2006

Annexure - IX

Vacancy Position of Health Manpower in Rural Areas at a Glance
(As on March, 2006)

S.No.	States/UTs	ANM	MPWIMI	HA IFI/ LHV	HA IMI	MOIPHCI	Specialists	Pharmacists
1.	Andhra Pradesh	337	1013	50	348	295	182	67
2.	Arunachal Pradesh	0	0	0	0	4	0	0
3.	Assam	0	NA	NA	NA	NA	NA	NA
4.	Bihar	1595	1100	359	326	472	192	698
5.	Chattisgarh	668	966	70	611	388	651	282
6.	GOA	17	25	7	7	3	7	1
7.	Gujarat	766	2319	365	649	163	238	566
8.	Haryana	*	388	130	160	137	75	78
9.	Himachal Pradesh	420	219	2	52	*	NA	130
10.	Jammu & Kashmir	376	4	58	0	25	134	0
11.	Jharkhand	1151	1127	183	154	1574	*	379
12.	Karnataka	212	1277	39	465	196	152	55
13.	Kerala	15	200	90	6	194	309	26
14.	Madhya Pradesh	682	417	118	24	439	204	1203
15.	Maharashtra	2655	4356	82	0	609	1180	391
16.	Manipur	*	29	*	10	*	27	*
17.	Meghalaya	59		10	15	21	1	32
18.	Mizoram	19	63	0	0	22	0	34
19.	Nagaland	0	*	0	0	0	0	0
20.	Orissa	353	1519	0	8	0	NA	56
21.	Punjab	667	1483	27	81	284	166	56
22.	Rajasthan	0	1440	0	224	209	278	20
23.	Sikkim	7	0	2	22	0	12	28
24.	Tamil Nadu	817	3287	260	81	552	NA	62
25.	Tripura	10	181	7	1	9	0	*
26.	Uttaranchal	79	155	4	135	90	92	3
27.	Uttar Pradesh	1756	3348	407	1651	NA	697	NA
28.	West Bengal	456	4482	499	946	111	68	273
29.	A&N Islands	0	26	0	0	0	12	0
30.	Chandigarh	0	0	0	0	0	0	0
31.	D & N Haveli0	0	0	2	3	0	0	0
32.	Daman & Diu	0	0	0	0	0	0	0
33.	Delhi	9	20	7	NIL	8	0	2
34.	Lakshadweep	0	13	0	0	0	0	0
35.	Pondicherry	0	0	3	5	0	*	0
	All India	**13126**	**29437**	**2781**	**5984**	**5801**	**4681**	**4445**

NA : Not Availble
* : Surplus
Source: Bulletin of Rural Health Statistics, Special Revised Edition, MOHFW (GOI), 2006

Annexure -X

Total Specialists at CHCs (As on March, 2006)

S.No.	States/UT	Required[1] (R)	Sanctioned (S)	In Position (P)	Vacant (S-P)	Shortfall (R-P)
1	Andhra Pradesh	668	406	224	182	444
2	Arunachal Pradesh	124	4	0	4	124
3	Assam	400	NA	NA	NA	NA
3	Bihar	280	280	88	192	192
5	Chattisgarh	472	700	49	651	423
6	GOA	20	14	7	7	13
7	Gujarat	1092	322	84	238	1008
8	Haryana	328	112	37	75	291
9	Himachal Pradesh	264	NA	NA	NA	NA
10	Jammu & Kashmir	320	276	142	134	178
11	Jharkhand	776	63	146	*	630
12	Karnataka	1016	843	691	152	325
13	Kerala	428	424	115	309	313
14	Madhya Pradesh	916	253	49	204	867
15	Maharashtra	1628	1628	448	1180	1180
16	Manipur	64	30	3	27	61
17	Meghalaya	100	2	1	1	99
18	Mizoram	36	0	0	0	36
19	Nagaland	84	0	0	0	84
20	Orissa	924	496	NA	NA	NA
21	Punjab	504	343	177	166	327
22	Rajasthan	1300	870	592	278	708
23	Sikkim	16	16	4	12	12
24	Tamil Nadu	660	NA	NA	NA	NA
25	Tripura	40	2	2	0	38
26	Uttarnchal	196	163	71	92	125
27	Uttar Pradesh	1544	1110	413	697	1131
28	West Bengal	1384	692	624	68	760
29	A&N Islands	16	12	0	12	16
30	Chandigarh	4	4	4	0	0
31	D & N Haveli	4	2	2	0	2
32	Daman & Diu	4	0	0	0	4
33	Delhi	0	0	0	0	0
34	Lakshadweep	12	0	0	0	12
35	Pondicherry	16	4	6	*	10
	All India	**15640**	**9071**	**3979**	**4681**	**9413**

Note: Total Specialists (Surgeons, OB&GY, Physicians & Pediatricians)
1 ; One per each Community Health Centre
* : Surplus
Source: Bulletin of Rural Health Statistics, Special Revised Edition, MOHFW (GOI), 2006

Annexure XI

Number of Medical Colleges & Students admitted to the 1st Year M.B.B.S. in India 1991-2007

SNo.	Year	No. of Medical Colleges	Admission		
			Male	Female	Total
	1	2	3	4	5
1	1991-92	146	7468	4731	12199
2	1992-93	146	6927	4314	11241
3	1993-94[1]	146	5989	3541	10400
4	1994-95	152	7685	4564	12249
5	1995-96	165	4416	2623	7039
6	1996-97	165	2212	1269	3568
7	1997-98[2]	165	2348	1274	3949
8	1998-99[2]	147	NR	NR	11733
9	1999-00[3]	147	NR	NR	10104
10	2001-01	189	NR	NR	18168
11	2004-05	229	NR	NR	24690
12	2005-06	242	NR	NR	26449
13	2006-07	262	14449	10609	28928

Notes:

1. Total may not tally with male & female columns as some medical colleges have given the information for total only.
2. Data not received from 59 colleges in 1997-98 and 1998-99
3. Data not received from 89 colleges in 1999-2000

* Data for the years2001-02,2002-03 & 2003-04 not provided by the source agency
* NR : Not received

Source: Central Bureau of Health Intelligence, DGHS, MOHFW, 2006

Annexure -X

Total Specialists at CHCs (As on March, 2006)

S.No.	States/UT	Required[1] (R)	Sanctioned (S)	In Position (P)	Vacant (S-P)	Shortfall (R-P)
1	Andhra Pradesh	668	406	224	182	444
2	Arunachal Pradesh	124	4	0	4	124
3	Assam	400	NA	NA	NA	NA
3	Bihar	280	280	88	192	192
5	Chattisgarh	472	700	49	651	423
6	GOA	20	14	7	7	13
7	Gujarat	1092	322	84	238	1008
8	Haryana	328	112	37	75	291
9	Himachal Pradesh	264	NA	NA	NA	NA
10	Jammu & Kashmir	320	276	142	134	178
11	Jharkhand	776	63	146	*	630
12	Karnataka	1016	843	691	152	325
13	Kerala	428	424	115	309	313
14	Madhya Pradesh	916	253	49	204	867
15	Maharashtra	1628	1628	448	1180	1180
16	Manipur	64	30	3	27	61
17	Meghalaya	100	2	1	1	99
18	Mizoram	36	0	0	0	36
19	Nagaland	84	0	0	0	84
20	Orissa	924	496	NA	NA	NA
21	Punjab	504	343	177	166	327
22	Rajasthan	1300	870	592	278	708
23	Sikkim	16	16	4	12	12
24	Tamil Nadu	660	NA	NA	NA	NA
25	Tripura	40	2	2	0	38
26	Uttarnchal	196	163	71	92	125
27	Uttar Pradesh	1544	1110	413	697	1131
28	West Bengal	1384	692	624	68	760
29	A&N Islands	16	12	0	12	16
30	Chandigarh	4	4	4	0	0
31	D & N Haveli	4	2	2	0	2
32	Daman & Diu	4	0	0	0	4
33	Delhi	0	0	0	0	0
34	Lakshadweep	12	0	0	0	12
35	Pondicherry	16	4	6	*	10
	All India	**15640**	**9071**	**3979**	**4681**	**9413**

Note: Total Specialists (Surgeons, OB&GY, Physicians & Pediatricians)
1 ; One per each Community Health Centre
* : Surplus
Source: Bulletin of Rural Health Statistics, Special Revised Edition, MOHFW (GOI), 2006

Number of Medical Colleges & Students admitted to the 1st Year M.B.B.S. in India 1991-2007

SNo.	Year	No. of Medical Colleges	Admission		
			Male	Female	Total
	1	2	3	4	5
1	1991-92	146	7468	4731	12199
2	1992-93	146	6927	4314	11241
3	1993-94[1]	146	5989	3541	10400
4	1994-95	152	7685	4564	12249
5	1995-96	165	4416	2623	7039
6	1996-97	165	2212	1269	3568
7	1997-98[2]	165	2348	1274	3949
8	1998-99[2]	147	NR	NR	11733
9	1999-00[3]	147	NR	NR	10104
10	2001-01	189	NR	NR	18168
11	2004-05	229	NR	NR	24690
12	2005-06	242	NR	NR	26449
13	2006-07	262	14449	10609	28928

Notes:

1. Total may not tally with male & female columns as some medical colleges have given the information for total only.
2. Data not received from 59 colleges in 1997-98 and 1998-99
3. Data not received from 89 colleges in 1999-2000

* Data for the years2001-02,2002-03 & 2003-04 not provided by the source agency
* NR : Not received

Source: Central Bureau of Health Intelligence, DGHS, MOHFW, 2006

Annexure- XII

State-wise number of required & existing Medical Colleges (As on 30.9.2006)

Sl.No	States/UTs	Population March 2006 (in '000')	Medical Colleges Required @ 1 per 50 lakh Population	Existing No.of Medical Colleges (Govt./Pvt.)	Difference between Existing and Required number
1	Andhra Pradesh	80712	16	32	16
2	Arunachal Pradesh	11669	0	0	0
3	Assam	28605	6	3	-3
4	Bihar	90752	18	8	-10
5	Chattisgarh	22594	5	3	-2
6	Delhi	16021	3	5	2
7	Gujarat	54979	10	13	3
8	Goa	1492	0	1	1
9	Haryana	23314	5	3	-2
10	Himachal Pradesh	6455	1	2	1
11	Jharkhand	29299	6	3	-3
12	Jammu & Kashmir	10941	2	4	2
13	Karnataka	56258	11	36	25
14	Kerala	33265	7	18	11
15	Madhya Pradesh	66390	13	8	-5
16	Maharashtra	104804	21	39	18
17	Manipur	2308	1	1	0
18	Meghalaya	2470	1	0	-1
19	Nagaland	2119	0	0	0
20	Mizoram	946	0	0	0
21	Orissa	38887	8	4	-4
22	Punjab	26059	5	7	2
23	Rajasthan	62276	12	8	-4
24	Sikkim	567	0	1	1
25	Tamilnadu	65135	13	25	12
26	Tripura	3407	1	2	1
27	Uttaranchal	9219	2	3	1
28	Uttar Pradesh	183282	37	16	-21
29	West Bengal	85216	17	9	-8
30	A & N Islands	419	0	0	0
31	Chandigarh	1103	0	1	1
32	Daman & Diu	216	0	0	0
33	Dadar & Nagar Haveli	266	0	0	0
34	Lakshdweep	72	0	0	0
35	Pondicherry	1098	0	7	7
	Total	**1122615**	**221**	**262**	**41**

Source:-Census of India, 2001 & Medical Council of India, 2006

Annexure- XIII

State/UTs wise number of undergraduate AYUSH Institutes & their admission capacity in India as on1-4-2006*

S. No	States/UTs	Ayurveda		Unani		Siddha		Naturopathy		Homoeopathy		Total	
		Colleges	Adm. Capacity	Colleges	Adm. Capacity	Colleges	Adm. Capacity	Colleges	Adm. Capacity	Colleges	Adm. Capacity	Colleges	Adm. Capacity
	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Andhra Pradesh	4	150	2	100	...	...	1	30	4	180	11	460
2	Arunachal Pradesh	0	0	...	...	....	...			1	50	1	50
3	Assam	1	50	...	...	....	...			3	90	4	140
4	Bihar	11	330	4	140	....	...			16	930	31	1400
5	Chattisgarh	3	170	1	40	...	...	1	40	3	200	8	450
6	Chandigarh	1	50	...	...	...	...			1	80	2	130
7	Delhi	1	40	2	90	...	...			2	100	5	230
8	Goa	1	40	...	...	...	...			1	50	2	90
9	Gujarat	10	435	..	...	...	...	1	50	15	1585	26	2070
10	Haryana	6	250	...	...	...	...			1	50	7	300
11	Himachal Pradesh	1	50	...	...	...	...			1	100	2	150
12	Jammu & Kashmir	1	60	2	40	...	...					3	100
13	Jharkhand	1	40	...	...	...	...			2	100	3	140
14	Karnataka	51	2355	4	170	...	...	3	110	12	855	70	3490
15	Kerala	14	680	...	...	1	50			5	250	20	980
16	Madhya Pradesh	14	625	4	180	...	...			19	1715	37	2520
17	Maharashtra	56	2965	5	250	...	...			46	3850	107	7065
18	Orissa	6	190	...	...	...	...			6	195	12	385
19	Punjab	11	510	...	...	..	...			5	490	16	1000
20	Rajasthan	6	300	2	90	...	...	4	155	7	535	19	1080
21	Tamil Nadu	6	210	1	40	5	270			10	750	22	1270
22	Uttar Pradesh	15	450	10	415	...	...			#8	100	33	965
23	Uttarakhand	3	160	...	...	...	...			1	50	4	210
24	West Bengal	2	110	1	40	...				13	730	16	880
	Total	225	10220	38	1595	6	320	10	385	182	13035	461	25555

Note:

* Provisional

Admission in respect of seven colleges stopped since 2000-2001

- Admission capacity in respect of 3 colleges of Bihar, 2 colleges each of Karnataka & Maharashtra and one college each of Haryana, Orissa and Tamilnadu and 5 colleges of U.P.under Ayurveda, one college each of Bihar and J & K under Unani not provided.

Source: Central Bureau of Health Intelligence, DGHS, MOHFW, 2006

Annexure XIV

Number of Dental Colleges & Admissions to BDS & MDS Courses in India 1994-95 to 2006-07

S.No.	Year	BDS		MDS	
		No. of Dental Colleges	No. of Admission	No. of Dental Colleges	No. of Admission
	1	2	3	4	5
1	1994-95	77	1987	32	225
2	1995-96	94	2562	32	263
3	1996-97	100	2859	35	301
4	1997-98	100	3301	37	427
5	1998-99	110	6100	41	729
6	1999-00	121	7100	44	801
7	2000-01	135	8340	49	859
8	2001-02	149	9550	52	922
9	2002-03	164	10970	56	992
10	2003-04	185	12960	58	1106
11	2004-05	189	13300	61	1173
12	2005-06	205	14700	67	1291
13	2006-07	240	18180	87	1764
14	2007-08	-	-	100	1958

BDS = Bachelor of Dental Surgery
MDS = Master of Dental Surgery

Source : Dental Council of India, 2007

Annexure-XV

State-wise Number of Dental Colleges in India, 2007

State	Private	Government	Total	Dentists Population ratio*
Andhra Pradesh	18	2	20	1:18698
Assam	0	1	1	1: 34959
Bihar	6	1	7	1: 80309
Chandigarh	0	1	1	**
Chhattisgarh	4	1	5	**
Delhi	0	1	1	1:2120
Goa	0	1	1	1: 3223
Gujarat	7	2	9	1:32580
Haryana	10	1	11	1: 10541
Himachal Pradesh	4	1	5	1: 12958
Jammu & Kashmir	1	1	2	1: 18787
Karnataka	42	1	43	1: 2760
Kerala	14	3	17	1: 4682
Madhya Pradesh	10	1	11	1: 48463
Maharashtra	24	4	28	1:7968
Orissa	3	1	4	1: 90189
Pondicherry	1	1	2	1: 2996
Punjab	9	2	11	1:4082
Rajasthan	10	1	11	**
Tamil Nadu	16	1	17	1:6470
Uttar Pradesh	26	2	28	1:33211
Uttaranchal	2	0	2	**
West Bengal	1	2	3	1: 52126
Total	**208**	**32**	**240**	

*Ratio is reducing with the passing out of fresh BDS batches from the existing dental colleges.

**Dental Councils in these States do not exist.

Source: Dental Council of India, 2007

Annexure - XVI

Number of Institutions providing Diploma & Degree in Pharmacy (August, 2006)

Sl.No.	Name of the States	Diploma		Degree	
		Institutions	Admission	Institutions	Admission
1	Andhra Pradesh	42	2340	25	1440
2	Assam	3	200	1	40
3	Bihar	2	120	1	30
4	Chandigarh	2	100	1	50
5	Chattisgarh	3	187	2	120
6	Delhi	8	480	3	180
7	Goa	1	60	1	60
8	Gujarat	9	640	12	700
9	Haryana	14	875	6	360
	Himachal Pradesh	2	60	-	-
10	Jharkhand	2	120	1	60
11	Karnataka	93	5820	47	2700
12	Kerala	21	1310	5	300
13	Madhya Pradesh	11	670	11	660
14	Maharashtra	103	6250	52	2870
15	Manipur	1	30	-	-
16	Mizoram	1	33	-	-
17	Orissa	28	1600	11	640
18	Pondicherry	-	-	1	60
19	Punjab	18	1030	10	470
20	Rajasthan	17	1020	8	440
21	Sikkim	1	60	1	60
22	Tamil Nadu	43	2960	37	2180
23	Tripura	1	60	1	30
24	Uttar Pradesh	13	680	18	1010
25	Uttaranchal	11	500	4	210
26	West Bengal	10	490	2	120
27	Jammu & Kashmir	1	40	-	-
	Total	**461**	**27735**	**261**	**14790**

Source: Pharmacy Council of India, 2007

Annexure-XVII

Number of registered Nurses required & their gap in 2007 and 2012

Sl.No.	State/UTs	Projected population 2007(000)	Actual number of nurses required in 2007	Actual number of nurses available in 2007	Gap	Projected population 2012(000)	Actual number of nurses required in 2012	Actual number of nurses available in 2012	Gap
1	Andhra Pradesh	81554	163108	100617	62491	85491	170982	135112	35870
2	Assam	29053	58106	12318	45788	30945	61890	16541	45349
3	Bihar	92208	184416	10602	173814	99020	198040	14236	183804
4	Chattisgarh	22934	45868	214	45654	24585	49170	287	48883
5	Delhi	16484	32968	3096	29872	18983	37966	4157	33809
6	Gujarat	55808	111616	102395	9221	59800	119600	137500	-17900
8	Haryana	23743	47486	18882	28604	25854	51708	25355	26353
9	Himachal Pradesh	6526	13052	9452	3600	6856	13712	12693	1019
	Jharkhand	29745	59490	12	59478	31904	63808	16	63792
10	Karnataka	56909	113818	65357	48461	60026	120052	87764	32288
11	Kerala	33535	67070	85440	-18370	34802	69604	114731	-45127
12	Madhya Pradesh	67569	135138	110195	24943	73344	146688	147973	-1285
13	Maharashtra	106386	212772	97845	114927	114184	228368	131389	96979
14	Mizoram	958	1916	1553	363	1016	2032	2085	-53
15	Orissa	39276	78552	55007	23545	41105	82210	73866	8344
16	Punjab	26391	52782	51880	902	27981	55962	69667	-13705
17	Rajasthan	63408	126816	42347	84469	68892	137784	56865	80919
18	Tamilnadu	65629	131258	190389	-59131	67862	135724	255661	-119937
19	Tripura	3449	6898	765	6133	3658	7316	1027	6289
20	Uttar Pradesh	186755	373510	20861	352649	204250	408500	28012	380488
21	West Bengal	86125	172250	53291	118959	90320	180640	71561	109079
	Total	**1094445**	**2188890**	**1032518**	**1156372**	**1170878**	**2341756**	**1386498**	**955258**

Annexure – XVIII

NATIONAL CLASSIFICATION OF OCCUPATIONS- 2004

Group	222	Health Professionals (Except Nursing)
Family	2221	Physicians and Surgeons, Allopathic
	2221.10	Physician, General
	2221.15	Surgeon, General
	2221.20	Anatomist, Medical
	2221.25	Anesthetist
	2221.30	Psychiatrist
	2221.35	Neurologist
	2221.40	Dermatologist
	2221.42	Allergy Specialist
	2221.45	Ear, Nose and Throat Specialist
	2221.50	Cardiologist
	2221.55	Radiologist
	2221.60	Tuberculosis Specialist
	2221.65	Ophthalmologist
	2221.68	Urologist
	2221.70	Venereologist
	2221.75	Obstetrician
	2221.78	Gynaecologist
	2221.80	Paediatrician
	2221.85	Orthopaedist
	2221.90	Surgeons and Medical Specialists, Allopathic ,Other
Family	2222	Physicians and Surgeons, Ayurvedic
	2222.10	Physician,Ayurvedic
	2222.90	Physicians and Surgeons, Ayurvedic, Other
Family	2223	Physicians and Surgeons, Homoeopathic
	2223.10	Physician, Homoeopathic
	2224.90	Physician, Bio-Chemic
Family	2224	Physicians and Surgeons, Unani
	2224.10	Physician
	2224.90	Physicians and Surgeons, Unani, Other
Family	2225	Dental Specialists
	2225.10	Dentist
	2225.20	Oral and Maxillofacial Surgeon
	2225.30	Orthodontist
	2225.40	Periodontist
	2225.50	Prosthodontist
	2225.60	Paediatric Dentist
	2225.90	Dental Specialists, Other
Family	2229	Health Professional (Except Nursing), n.e.c.
	2229.10	Health Officer
	2229.15	Administrator, Hospital
	2229.20	Naturopath
	2229.30	Physician, Osteopathic
	2229.40	Physician, Siddha

	2229.90	Physicians and Surgeons, Other
Group	223	Nursing Professionals
Family	2230	Nursing Professionals
	2230.10	Nurse, specialist
	2230.90	Professional Nurses, Other
Group	322	Modern Health Associate Professionals (Except Nursing)
Family	3221	Medical Assistants
	3221.10	Laboratory Assistant, Clinical
	3221.20	Vaccinator
	3221.30	Inoculator
	3221.40	Dresser
	3221.90	Medical Assistants, Other
Family	3222	Sanitarians
	3222.10	Sanitary Inspector
	3222.20	Sanitary Darogha
	3222.90	Sanitarians, Other
Family	3223	Dieticians and Nutritionists
	3223.10	Nutritionist, General
	3223.20	Dietician, General
	3223.30	Animal Nutritionist
	3223.90	Dieticians and Nutritionists, Other
Family	3224	Optometrists and Opticians
	3224.10	Optician, General
	3224.20	Optician, Contact Lens
	3224.90	Optometrists and Opticians, Other
Family	3225	Dental Assistants
	3225.10	Dental Assistants
	3225.90	Dental Assistants, Other
Family	3226	Physiotherapists and Related Associate Professionals
	3226.10	Physiotherapist
	3226.20	Occupational Therapist
	3226.30	Chiropodist
	3226.40	Masseur
	3226.90	Physiotherapists and Related Associate Professionals, Other
Family	3228	Pharmaceutical Assistants
	3228.10	Pharmacist
	3228.20	Laboratory Assistant, Pharmaceutical
	3228.90	Pharmaceutical Assistants, Other
Family	3229	Modern Health Associate Professionals (Except Nursing) n.e.c.
	3229.10	Speech Therapist and Audiologist
	3229.20	Speech Pathologist
	3229.30	Voice Pathologist
	3229.40	Orthotist and Prosthetist
	3229.50	Orientation & Mobility Instructor
	3229.90	Medical and Health Technicians, Other
Group	323	Nursing and Midwifery Associate Professionals
Family	3231	Nursing Associate Professionals

	3231.10	Nurse, General
	3231.20	Nurse, Industrial
	3231.30	Nursing Attendant
	3231.90	Nurses, Other
Family	3232	Midwifery Associate Professionals
	3232.10	Midwife
	3232.20	Midwifery Attendant
	3232.30	Lady Health Visitor
	3232.90	Midwifery Associate Professionals, Other
Group	324	Traditional Medicine Practitioners and Faith Healers
Family	3241	Traditional Medicine Practitioners
	3241.90	Traditional Medicine Practitioners, Other
Family	3242	Faith Healers

Note: n.e.c. denotes "not elsewhere classified'.

Annexure- XIX

Financial Requirements

A. Human Resource Development

Activity		Funds required (Rs. in Cores)			
	No. of institutions /units/persons	Unit cost (Rs. In lakhs	Non-recurring	Recurring	Total
Opening New Nursing Colleges	225	650	1350.00	112.50	1463
Upgrading Nursing Schools into Nursing Colleges	769	340	2307.00	307.60	2615
Strengthening existing Nursing Colleges	266	140	266.00	106.40	372
Opening new Medical Colleges	60	8,000	3360.00	1440.00	4800
Up gradation & Strengthening existing govt. Medical Colleges	125	400	400.00	100.00	500
Establishing Schools of Public Health	6	3,100	113.00	73.00	186
Sub- total			**7796.00**	**2139.50**	**9936**

B. Training

Financial Requirements for Training Village Level Functionaries

Activity	No. of institutions / units / persons	Funds required (Rs. in cores)			
		Unit cost (Rs. In lakhs)	Non-recurring	Recurring	Total
Training of Village Health Committees, (15/VHC) Gram Panchayats (10/GP) Clerical staff (2/GP) = 27-30 per Village . @ Rs. 300 per Person and Administrative overheads.	250,000	300 Rs. per person	0.00	225.00	225.00
Training unqualified RMPs on a pilot basis for six months over a period of one year, which could be followed up by reorientation trainings over the next two years; the costs calculation here do not contain cost of reorientation training	100,000	0.34	0.00	58.00	58.00
Training, development & supervision of Village, level worker	250.000		390.00	250.00	640.00
Sub total			**390.00**	**533.00**	**923.00**

Financial Requirements for In-service Health Personnel

Training of MOs for 9 months for multi-skilling in different specialities (Gyne/obs, Paeds, Public Health, Anesthesia)	32,000	1.45	463.00	0.00	463.00
Posting 2nd & 3rd yr PGs in Sub-district and District Hospital for 6 months	4,600	0.11	0.00	13.98	13.98
Creating more posts of PG students	440	2.64	0.00	11.54	11.54
Fellowships for Doctors, Nurses, Social Scientists and Public Health Specialists	1,350	0.74	0.00	10.00	10.00
Non- Practicing allowance to Teaching Faculty	11,100	0.36	0.00	40.00	40.00
Rural allowance for health personnel	63,600	0.24	0.00	153.00	153.00
Training of Pharmacists	559,000	74.96	0.00	4.00	4.00
Sub Total			**463.00**	**232.52**	**695.52**
Grand Total (A + B)			**8649.00**	**2905.52**	**11554.52**

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