CHAPTER XVI

MEDICAL AND PUBLIC HEALTH SERVICES

INTRODUCTION

While primitive man cracked skulls to let out the evil spirits, modern man has cracked the genetic code and is trying to steer his own destiny. The roots and traditions of medicine go back to thousands of years. Early man attributed disease and other calamities, for which an obvious explanation was not readily apparent, to anger of gods and the evil spirits of various kinds. As a logical sequel, the medicine he practiced consisted of sacrifices and rituals for appeasing gods, and use of charms and amulets for protection against the influence of evil spirits. The supernatural theory of disease, though has lost its grounds in the educated masses, is not yet extinct in our modern society.

There are four indigenous systems of medicine in India, namely the Ayurveda, the Siddha, the Unani-Tibb and the Traditional Folk Medicine. Out of these, Ayurveda was the only prevalent and accepted system of medicine in the north part of the country since the vedic period up to medieval period.

Ayurveda literally means the 'Science of Life'. The guiding codes for the ayurveda have been '*Charak Samhita'* and '*Sushrut Samhita'*; the two foundational documents of Indian Medicine. On the basis of teachings of Punarvasu Atreya, six of his disciples composed medical treatises around seventh century BCE. One of them, Agnivesh, wrote the *Agniveshtantra* or 'System of Agnivesh', which became known as the *Charaka Samhita* after its revision by Charaka. Charaka, the famous ancient Indian physician, was a court physician to the Buddhist King Kaniska (ca. 200 A.D.). Sushrut of Benares (between 800 B.C. and 400 A.D.), popularly known as the father of Indian Surgery, compiled *Sushrut Samhita* which deals at length the surgical aspect of the early Indian Medicine. These two *Samhitas* (codes) still continue to serve as the pillars for Ayurvedic System of Medicine.

At the close of 12th century, Arabic and Persian physicians brought *Unani* system of medicine to India. The Delhi Sultans, the Khiljis, the Tuglaqs and the Mughal emperors provided state patronage to its scholars[1]. Since city of Panipat fell on the route of land invasions to Delhi from the northwest, it was a natural choice of *Unani* medicine practitioners from those countries. This system of medicine gained much popularity in those days,

however, it remained confined more or less to the city areas.

In the middle of nineteenth century, the British brought with them the Allopathic System of Medicine. Like elsewhere in the country, the Allopathic system of medicine reached the area of Panipat along with their control in the region. Exotic but based on the progressive research in medical science, it gradually carried conviction of its usefulness and gained popularity with the passage of time. During the last decade of the 19th century, diseases like malaria, cholera etc. were in epidemics owing to the defective alignment of Western Jamuna river in the region and the consequent water-logging.

"Malaria fevers, dysentery, and enlargement of the spleen are the most prevalent diseases. Stone in the bladder is not uncommon. Opthalmia, syphilis, and itch are very common in the towns. Scurvy, leprosy, and elephantiasis are very rare; guinea worm and tape worm occasional. In the winter months there is much pleurisy; pneumonia and bronchitis are also prevalent at that season. Asthma is very common, particularly among tradesmen, as the weavers and silver-smiths suffer much. The malarial fevers are the worst in those parts of the district where rice cultivation is carried on, and where there are extensive marshes; thus, the dwellers near the chain of swamps caused by the Western Jamna Canal; and the inhabitants of the tracts every year flooded by the Sarusti, are the greatest sufferers…… Enlargement of the spleen is, when excessive, usually accompanied by sterility."[2]

Plague and smallpox were frequent in the region in the beginning of 20th century. Death rate was very high. "Plague has made regular visits every year ever since 1902. The attitude of the people towards anti-plague measures is still apathetic and it requires great tact and effort to persuade people to submit to rat destruction and inoculation. There have been a few instances of actual resistance to anti-plague measures. Cholera visits the district almost every year; the infection is invariably brought by the Hardwar pilgrims. There is not so much opposition to treatment of wells with permanganate but there is still a tendency to hide cholera cases. Malaria appears to be getting less virulent."[3]

The medical facilities to cope with this horrible state of public health were limited to a few Unani and Ayurvedic practitioners. By 1881, two dispensaries were situated at Panipat, namely *Sadar* Dispensary and City Dispensary.[4] Two dispensaries were established in Ahar, Samalkha and Binjhal in 1926, and one dispensary each was established in Naultha and Bapauli in 1927

and 1928 respectively[5].

After the independence of the country in 1947, a great emphasis was laid on the allopathic medical services and large numbers of medical institutions were opened in the State as well as in the region of Panipat district. In 1971, there was 1 civil hospital, 5 dispensaries, 3 primary health centres, 1 Maternity and Child Welfare Centre (Red Cross), and 7 Family Planning Clinics (Government)[6].

At present all systems of medicine namely; Ayurveda, Unani, Homeopathy, Allopathy, etc. are in practice in the district. Of all these, allopathic is more popular on account of Government patronage enjoyed by it during the past more than a century and a very advanced research in the field of diagnostics and surgery. As on 31st March 2011, Allopathic system of medicine, which is the main prevailing the district, is extending its medical facilities through a network of institutions comprising 1 District Hospital, 13 Primary Health Centres (PHCs), 3 Community Health Centres (CHCs), 1 Sub-Jail Dispensary and 90 Sub-Centres in the district.

MEDICAL AND HEALTH SERVICES

Medical and Public Health facilities in the district are headed by the Civil Surgeon. He is assisted by Deputy Civil Surgeons who look after various Medical and Health Programmes at the district level. Medical Superintendent at District Hospital and Senior Medical Officers at Community Health Centres provide the curative and preventive health services well assisted by Medical Officers and para-medical staff in PHCs, CHCs and Sub-Centres. The Department provides medical services to both outdoor patients (OPD) and indoor (admitted) patients (IPD). Other services like emergency service, referral service, health promotion and preventive service, dental health facility, and other national health schemes including family planning programme etc. are also available in all the health institutions in the district.

CIVIL HOSPITAL, PANIPAT.— Originally a Municipal Hospital, it was provincialised in 1954 and since then it has been run by the government. Prior to the inauguration of the new building, near bus stand at Grand Trunk Road, on 23rd December 1969 the old hospital was located near the General Post Office. The old building was converted into Maternity and Child Welfare Centre and an Urban Family Planning Centre was also opened there. The General Hospital is now known as Bhim Sain Sachar General Hospital.

The Civil Hospital is a 100-bedded (58 males and 42 females) referral hospital with all the usual facilities of a general hospital viz. Medicine, Gynaecology, Midwifery, Pediatrics, ENT, Eye, Orthopaedics, Dentistry, Routine Surgery, Laparoscopic Surgery, Laboratories and Radiology etc. Civil Surgeon, Panipat is the sole controlling authority of all health related activities/programmes. He is assisted by Deputy Civil Surgeon (VBD), Deputy Civil Surgeon (FW), Deputy Civil Surgeon (Training Officer), Deputy Civil Surgeon (T.B.), Deputy Civil Surgeon (NRHM), Deputy Civil Surgeon (Health), Deputy Civil Surgeon (School Health), one Medical Superintendent, Senior Dental Surgeon, Dental Surgeon, 5 SMOs and 42 Medical Officers. The following figures show the number of benefitted outdoor and indoor patients from 2001 to 2011 :-

Year	Outdoor Patients	Indoor Patients
2001	148172	19756
2002	151379	17809
2003	166682	19613
2004	153269	18086
2005	123798	14505
2006	115399	16161
2007	119365	18939
2008	118015	19983
2009	172669	31537
2010	198851	25068
2011	238649	28688

E.S.I. HOSPITAL, PANIPAT.— ESI Hospital is situated near Bus Stand at Grand Trunk Road, Panipat. It was inaugurated in 1971. It is 75 bedded hospital (52 for males and 23 for females) under the general supervision of Medical Superintendent. It has 2 Senior Medical Officers, 14 Medical officers and other para-medical staff. The hospital has multi speciality facilities and it provides indoor, outdoor, emergency and diagnostic services to the insured workers of the area. Round the clock emergency services are provided in various departments which include Medicine, Surgery, Orthopedics, Gynecology, Chest, Pediatrics, Eye and ENT.

The year-wise detail of patients of various categories for the last four years is as follows:-

Year	Outdoor patients	Causality OPD	Indoor patients	Total OPD
2008	45670	1157	2756	49583
2009	42263	2743	2992	47998
2010	43019	2826	2155	48000
2011 (Up to March, 2011)	18376	1641	2430	22447

As such, the hospital caters to the need of nearly fifty thousand patients per year for their treatment.

ESI Dispensary-I, Panipat.— The E.S.I. Dispensary-I is situated near Bus Stand at Grand Trunk Road, Panipat. It was inaugurated in 1971. Two Medical Officers with other para-medical staff extend medical assistance to patients in this dispensary. In this dispensary 2,86,599 outdoor patients have got treatment during the last three years up to 2011. The dispensary is equipped with the facility of a laboratory.

ESI Dispensary-II, Panipat.— This dispensary is situated near Model Town, Industrial Area, Panipat. In 2007, a new OPD block was added to it. During 2008 to 2011, 63,428 outdoor patients have got treatment in this dispensary. Two Medical Officers with other para-medical staff have been deputed to extend the medical assistance in this dispensary. The year-wise detail of patients treated in this dispensary is as follows:-

Year	New OPD	Old OPD	Total
2008-09	7879	14606	22485
2009-10	7448	13876	21324
2010-11	7632	11987	19619

ESI Dispensary, Samalkha.— This dispensary is situated near Ramdasia dharamshala at Grand Trunk Road in Samalkha, Panipat. It serves the medical requirements of the employees of industrial establishment in and around Samalkha Town. Two Medical Officers with para-medical staff have been deputed to extend the medical assistance in this dispensary.

AYUSH

Realizing that the indigenous system of medicine had been favoured by the masses for a long time, the erstwhile government of Punjab established

the Directorate of Ayurveda in November, 1956, for its revival. Directorate of Ayurveda, Haryana hitherto functioned under the Health Department till it was separated and made an independent Directorate of Ayurveda in 1977. The State Government, in January, 2006, has changed the name of "Directorate of Ayurveda, Haryana" to "Directorate of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), Haryana". As on 31st March 2011, health-care through AYUSH in the district is being provided through a network of 16 dispensaries, 5 Prathmic Swasthya Kendras, 4 Primary Health Centres, 3 Community Health Centres and an AYUSH wing in District Hospital.

The details of medical institutions as on March 31, 2011 in the district are given in the table XLI of Appendix.

DISEASES COMMON TO THE DISTRICT

The common diseases which occur in the district are Malaria Dengue, Japanese Encephalitis, ordinary fevers, typhoid, gastro-enteric diseases, Influenza, Pneumonia, Tuberculosis, respiratory diseases other than tuberculosis, etc. Cholera, Plague and Smallpox are the three noticeable diseases under the Epidemic Diseases Act, 1897. Of these, Smallpox has been eradicated and plague is no longer epidemic. Cholera is epidemic but the incidence of disease depends largely for importation of infection and laxity in preventive measures to check it.

Malaria.— Malaria is communicable disease characterized by periodic high grade fever coupled with chills and headaches. Severe cases can progress to coma or death. The causative organism is *plasmodium*; a parasitic protozoa. Commonly, the disease is transmitted via a bite from an infected female Anopheles mosquito, which introduces the organisms from its saliva into a person's circulatory system. *Plasmodium falciparum* and *Plasmodium vivax* are two different species of the parasite that causes malaria in humans. *P.falciparum* causes the most acute, severe form of the disease, which can have a cerebral manifestation (cerebral malaria) and causes the most deaths worldwide. *P.vivax* is still a serious disease, but usually less severe. If diagnosed early, both forms can be easily treated and are completely curable.

Malaria remained a dreadful disease for years together and epidemics occurred from year to year after excessive rainfall owing to inundations during Monsoons and the overflowing of rivers, streams and other water channels that leaves behind big patches of water collection here and there, which prove good

breeding places for anopheles mosquitoes thus exposing the entire population of the district to the ravages of malaria. The disease has been brought under control through centrally sponsored and aided National Malaria Eradication Programme (NMEP) initiated in 1958 on the advice of World Health Organization. The programme, aimed to eradicate malaria parasites, comprises of three phases: (i) Attack (ii) Consolidation and (iii) Maintenance. The main function of the NMEP was to detect malaria positive cases by collecting the blood smears of all fever cases, to eliminate the disease altogether by thorough and effective attack on mosquitoes and human reservoirs by application of insecticides and administration of anti-malaria drugs. Consistent and persistent efforts for detection of malaria positive cases followed by radical treatment and application of insecticidal sprays to control the mosquito breeding have yielded positive resulted regarding control of the disease.

The malaria unit in the district is manned by Laboratory Technicians, Multipurpose Supervisors and Class IV staff. An alarming number of malaria positive cases were detected in various Medical institutions during 2005 and 2006. The Community Health Centre-wise break up of cases reported positive during 2003 to 2011 is given below:-

Year	Name of CHC				Total Cases	Species of organism detected	
	Samalkha	Bapoli	Ahar	Panipat		*P.v.* *	*P.f.* *
2003	38	41	12	30	121	111	10
2004	725	853	150	153	1881	1859	22
2005	3965	1367	413	1562	7307	7278	29
2006	3880	1480	960	1837	8157	8137	20
2007	612	223	215	499	1549	1542	7
2008	221	348	94	467	1130	1060	70
2009	194	181	66	421	862	852	10
2010	72	167	20	140	399	371	28
2011	154	130	31	220	535	450	85

*** "*P.f.*" stands for *Plasmodium falciparum* and "*P.v.*" stands for *Plasmodium vivax.***

Dengue.—Dengue fever is a viral disease caused by infection with one of four different viruses known as DEN-1, DEN-2, DEN-3 and DEN-4. All four viruses are capable of causing the complications of dengue haemorrhagic fever and dengue shock syndrome. Infection with one type gives lifelong immunity

to that particular dengue virus. However, the infection does not provide immunity to the other three types, so it is possible to contract dengue fever again.

Dengue is not communicable directly from person to person. Like malaria, dengue is also a vector borne disease transmitted by infected *Aedes* mosquitoes. The typical signs and symptoms of uncomplicated dengue fever may include high temperature within one week of infection, severe headache, pain behind the eyes, joint and muscle aches, metallic taste in the mouth, appetite loss, abdominal pain, nausea and vomiting, diarrhoea, general feeling of unwell (malaise), skin rash that appears about four days after the onset of fever and depression. Dengue fever can sometimes develop into dengue haemorrhagic fever with additional symptoms including bleeding under the skin, which causes purple bruises, bleeding from the nose or gums, liver and heart problems, and extremely low blood pressure caused by blood loss (shock) leading to coma or death due to dengue haemorrhagic shock. Early diagnosis and management of symptoms is critical to reduce the risk of complications and avoid further spread of the virus.

The detail of dengue cases reported in the district in the district during 2003 to 2011 is as follows:-

Year	Dengue cases		Death due to dengue
	Suspected	Confirmed	
2003	42	16	2
2004	125	6	0
2005	6	0	0
2006	26	10	0
2007	30	11	3
2008	174	81	0
2009	6	1	0
2010	44	22	1
2011	23	5	0

There is no specific treatment and vaccine for this disease. The best way to protect against dengue fever is to avoid mosquito bites. Medical care aims to manage the symptoms and reduce the risk of complications while the person recovers. Most cases of uncomplicated dengue fever resolve within two weeks or so. Hospital admission is usually required if a person develops dengue haemorrhagic fever or dengue shock syndrome. Treatment for these

complications may include administration of intravenous fluids. Like dengue, Chikungunya; a viral disease caused by Alphavirus, also spreads through the bite of infected *Aedes* mosquitoes. The disease shares clinical signs with dengue, and can be misdiagnosed in areas where dengue is common. No case of Chikungunya has been detected in the district.

Japanese Encephalitis.—Japanese Encephalitis that causes acute inflamma--tion of the brain is yet another Arbo-viral (Arthropod borne) disease transmitted by *Culex* mosquitos. The causative virus commonly known as JEV belongs to genus *Flavivirus*. The patient suffers from febrile illness of variable severity associated with neurological symptoms ranging from headache to aseptic meningitis or encephalitis. For prevention of the disease, the indigenously developed vaccine–JENVAC is available. There is no specific treatment for Japanese Encephalitis. However, symptomatic treatment plays a very important role in the recovery of the patient and can greatly reduce the fatality rate. There is no transmission from person to person and therefore patients do not need to be isolated. Infection with JEV confers lifelong immunity. During 2001-11, Japanese Encephalitis has claimed 9, 2, 2 and 2 lives in 2003, 2004, 2005 and 2007 respectively followed by only one confirmed case in 2009 in the district.

Tuberculosis.— Tuberculosis (TB) is a disease caused by the bacterium Mycobacterium tuberculosis, has affected mankind for over 5000 years and the disease continues to be a major cause of morbidity and mortality. Although the bacilli has been discovered over a century back (1882, Robert Koch) and drugs have been available for more than 70 years, nearly one third of the world's population is infected with TB bacilli, i.e. have latent T.B. and of these 10 percent have a life time risk of development to active disease. Poor living conditions, debility and malnutrition predisposes population to disease.

Tuberculosis exists in India as a significant public health problem with an addition of about 1.8 million new cases every year, of which about half are infectious cases of sputum smear positive pulmonary TB. Tuberculosis kills more adults in the productive age group than any other infectious disease thus leading to socio-economic problems in the community. To overcome this enormous burden of Tuberculosis, the Directly Observed Treatment, Short Course (DOTS) strategy was introduced in 1997 under Revised National Tuberculosis Programme (RNTP) and has been expanded in a phased manner to cover the entire population by 2006. In the district, there

are two 'Tuberculosis Units' at Panipat and Samalkha each covering a population of around 6 lakh. Each unit has five designated Microscope Centres for sputum smear examination. The achievements of Panipat district since the start of RNTP are as shown below:-

Year	Total Cases	ATCDR (Annualized Total Case Detection Rate) per lakh	NSP Cases	NSPCDR (New Smear Positive Case Detection Rate) per lakh	Sputum Smear Conversions	Result of Treatment.
2004	1564	161	589	60	587-507-86%	589-486-82.5%
2005	1887	185	600	59	600-504-84%	600-489-81.5%
2006	1967	187	597	57	597-519-87%	597-502-84%
2007	1912	178	581	52	561-494-88%	581-475-85%
2008	1998	187	585	56	595-534-90%	561-476-84.85%
2009	2128	192	585	55	585-531-90.77%	551-470-85.3%
2010	1963	171	572	50	572-519-90.73%	591-506-85.62%
2011	2147	199	582	51	582-525-90.21%	559-478-87.02%

AIDS (Acquired Immune Deficiency Syndrome).—Acquired immune deficiency syndrome (AIDS) is a disease caused by a retrovirus called Human Immunodeficiency Virus (HIV). Both the virus and the disease are often referred to together as HIV/AIDS. The illness weakens the immune system, making people more vulnerable to infections and diseases. The development of numerous opportunistic infections in an AIDS patient can ultimately lead to death. HIV is found in the body fluids of an infected person (semen and vaginal fluids, blood and breast milk). The virus is passed from one person to another through blood transfusion, contaminated hypodermic needles and sexual contact. In addition, infected pregnant women can pass HIV to their babies during pregnancy, during childbirth, and through breast feeding. There is no risk of acquiring HIV if exposed to faeces, nasal secretions, saliva, sputum, sweat, tears, urine or vomit unless these are contaminated with blood.

There is currently no cure for HIV/AIDS. Antiretroviral Therapy (ART) involving nearly 30 approved antiretroviral drugs (ARVs) may slow the course of the disease. Some infected people with the help of ART can live a long and relatively healthy life. HIV/AIDS can be combated only by taking preventive measures and educating the people through mass awareness programmes. HIV/AIDS Control activities were initiated in Haryana with the establishment of AIDS Cell in 1992. Haryana AIDS Control Society was registered in 1998.

The AIDS Control Programme is being implemented in the district through Haryana AIDS Control Society established as per guidelines of National AIDS Control Organization (NACO). The Society is carrying out the IEC (Information, Education and Communication) activities in district through newspapers, radio, televisions, cable TV network, hoardings, street plays, posters, pamphlets, booklets, workshops, meetings and functions etc. Red Ribbon Clubs have been formed at the level of College and School AIDS Education Programme has been initiated in the district to create awareness and sensitize the students on various issues of HIV/AIDS. Red Ribbon Train came in district in 2010 and 2012 for awareness of HIV/AIDS.

In 1993, HIV testing of all blood units was made mandatory. District has one licensed blood bank at Red Cross (Government) Hospital and three private blood banks, namely Bharat Blood Bank, Panipat Blood Bank, Prem Blood Bank, where blood units are collected and mandatory screening for HIV (besides Hepatitis-B, Hepatitis-C, VDRL and Syphilis) is done.

Sexually Transmitted Disease (S.T.D.) Clinic has been established in district hospital for giving free treatment, condoms and counselling to S.T.D. patients. For providing free counselling and testing services to voluntary and referred patients, Integrated Counselling and Testing Centres are functional at PHC Madlauda, PHC Seenk, CHC Samalkha, CHC Ahar, CHC Patti Kalyana and District Hospital. HIV/AIDs report of the district from 2007-08 to 2010-11 is as under:-

Year	2007-08	2008-09	2009-10	2010-11
Total no. of slides	2369	2713	6530	7630
ANC tested	853	1138	1985	2009
Female tested	627	581	1294	2559
Male tested	889	994	3251	3062
HIV Reactive	37	35	56	127
ANC Reactive	2	1	1	3
Female Reactive	14	11	21	27
Male Reactive	21	23	34	97
Reactive %	1.56	1.29	0.86	1.66

Vital Statistics.—The registration of Births and Deaths Act, 1969 was passed by the Government of India to regulate the registration and compilation of vital statistics in the country so as to ensure uniformity and comparability leaving enough scope to the states to develop efficient system of registration

suited to the regional conditions and needs. The Act was enforced in Haryana State in 1972. The Government has notified Haryana Registration of Births and Deaths Rules, 2002 which specifically provide for the forms in which births, deaths and still births are to be reported and recorded, custody and maintenance of registers, procedures of delayed registration and late registration of the name of the child, issue of certificates, medical certification of causes of death, procedure for corrections and cancellations, compounding of offences and flow of content of statistical reports etc.

The Director, Health and Family Welfare, Haryana is the ex-officio Chief Registrar, Birth and Deaths in the State. Deputy Director (M&E) Health Department and Assistant Director, Local Self Government have been vested with the powers of Additional Chief Registrar (Births and Deaths). At the District level, Civil Surgeon is the District Registrar (Birth and Deaths). Medical Officer In-charge at Primary Health Centre, Medical officer of Health in Municipal Corporation, Secretary in Municipalities, and Executive officer in Cantonment Board have been given the powers of Registrar (Birth and Deaths).

The record of births, deaths, marriages and sickness occurring in a community is carried out at the level of primary health centres/sub-centres of the district and the Municipal Authority keeps the relevant record. The vital statistics of birth and death regarding the district for the period from 2006 to 2011 are given below:—

Year	Population	Total		Rate per thousand	
		Birth	Death	Birth	Death
2006	10,57,130	21,616	4,563	20.45	4.31
2007	10,74,107	23,703	5,119	22.06	4.76
2008	10,90,716	25,370	5,734	23.25	5.25
2009	10,87,341	25,686	5,623	23.62	5.17
2010	11,86,042	27,025	5,745	22.78	4.84
2011	12,04,929	27,552	6,115	22.86	5.07

General Standard of Health.—India gained independence in August 1947 and thereafter initially, in the absence of any policy in this regard, the policy intent, the framework and the strategies for improvement in General Standard of Health were provided mainly by the following important organizations: the Constitution of India (1950), the National Development Council, the Planning Commission, the Ministry of Health and Family Welfare and the legislature.

Keeping in view the constitutional obligations, the Government of India planned several approaches for the health care delivery. The fundamentals for organization of health services in India were laid by the recommendations and guidance provided by the 'Health Survey and Development Committee' (Bhore Committee) in 1946. Subsequently, the health services organization and infrastructure have undergone extensive changes and expansion in stages following review by a number of expert committees, namely the Mudaliar Committee (1961), the Mukherjee Committee (1966), the Kartar Singh Committee (1974), and the Srivastava Committee (1975). Progressive changes have been introduced into the programme through five-year plans. India became a signatory to the *Alma Ata Declaration* of 1978, and committed itself to attain the goal of 'Health for All'. The National Health Policy was officially adopted in 1983.

An overall improvement of general health is witnessed in the district owing to the policies of the government aimed at steady improvement in the living standard, control of communicable diseases, preventing and correcting nutritional deficiencies, improvement in accessibility and availability of water supply and sanitation services, integration of the family planning programme with Mother and Child Health (MCH) and nutrition programmes, adoption of National Rural Health Policy, 2002 and implementation of National Rural Health Mission, 2005.

Availability of a well established health care system, coupled with preventive and prophylactic medicine and improved sanitation has helped improvement in the general standard of health of inhabitants of the district. The people of the district take sufficient protein in the form of milk, *lassi (butter-milk)* and fat in the form of *ghee*. By and large, people are vegetarian and usually consume *chapattis* with vegetables or rice with pulses. In urban areas, a small section of population take body building proteins like meat, eggs, fish and other protective foods (green leafy vegetables, salad, fresh fruit etc.). The general standard of health of inhabitants of district is good with robust physique.

PREVENTIVE MEASURES TO PROMOTE PUBLIC HEALTH

The concept of good health lays greater emphasis on the prevention of deadly diseases. This necessitates various kinds of preventive and promotional measures for improvement in public health. The importance of

good health habits formed in childhood cannot be ignored; therefore, the younger generation at schools and colleges, in the district, is imparted health education which is perhaps the most important activity for any preventive measure. Likewise, in order to tackle the problem of over-population and for maternity welfare, the family planning requires greater attention of people. It is necessary to ensure supply of clean and safe drinking water, check the evil of adulteration of food articles, promote desired knowledge about the practice of nutritive food articles, and to take other steps for prevention of degradation of environmental hygiene and improvement therein.

School Health Services.—The health of the school children is a collective responsibility of parents, teachers, community and the health administration. School Health Service is therefore an important function of the Primary Health Centres, under which every child is examined thoroughly and a careful clinical study including physical examination of the child with test for vision, hearing and speech is conducted and a record in this regard is maintained. Besides, the children are clinical examined for detection of nutritional deficiencies and for any intestinal parasites. The data pertaining to the district reflects that an estimated 40 percent students are having anemia and other nutritional deficiencies. 7 percent students in the 5 to 14 years age group are suffering from refractive errors.

Indira Bal Swasthya Yojana.—Indira Bal Swasthya Yojana has been launched in 2010. Under this scheme, all children admitted in *Anganwadis* and government schools across the district have been covered and examined medically. The treatment, if so required, is given on the spot. Those children who needed special treatment are referred at nearest Public Health Centre or General Hospital. The government is providing monetary assistance to school going children who are suffering from any disease and where surgery is required.

Family Welfare Programme.—Family Welfare Programme includes in its purview not only limitation of births but also proper spacing methods, medical termination of pregnancy, advice on sterility, education for parenthood, sex education and screening for pathological conditions related to reproductive system. Family Welfare Programme in the district has made considerable progress through spread of family welfare education amongst masses. The following figures show the achievements of family welfare programme in the

district during 2005-06 to 2010-11:-

Year	Number of beneficiaries			
	Contraceptive	Oral Pill	I.U.D.	Sterilization
2005-06	14130	3967	6284	3712
2006-07	18285	4356	7554	3748
2007-08	17953	3616	5899	2411
2008-09	17263	4590	6679	3414
2009-10	14390	3275	7484	3620
2010-11	10753	2062	6838	2819

NATIONAL RURAL HEALTH MISSION

The Government of India has launched the National Rural Health Mission (NRHM) in April, 2005. The NRHM seeks to provide accessible, affordable and quality health care to the rural population, especially the vulnerable section. It also seeks to reduce, in the country, the 'Maternal Mortality Ratio (MMR)' from 407 to 100 per 1,000,00 live births, 'Infant Mortality Rate (IMR)' from 60 to 30 per 1000 live births and the 'Total Fertility Rate (TFR)' from 3.0 to 2.1 within 7 years period of the mission. During 2007-2009, the figures of MMR, IMR and TFR, in the country have shown gradual reduction to 212, 50 and 2.6 respectively. The Total Fertility Rate of the Haryana is 2.3, the Infant Mortality Rate is 48 and Maternal Mortality Ratio is 153 (SRS 2007 - 2009) which are lower than the national average. Brief description of schemes launched under NRHM is as follows:-

Accredited Social Health Activist (ASHA).— This scheme has been launched for women of the villages with minimum population of 1000 persons. A matriculate woman from the village who is sensitive to the health needs of people is eligible for becoming ASHA; a health activist who creates awareness on health and its social determinants and mobilizes the community towards local health planning and increased utilization of the existing health services.

ASHA provides information to the community on determinants of health such as nutrition, basic sanitation and hygienic practices, healthy living and working conditions, information on health and family welfare services etc. She mobilizes the community and facilitate them in accessing health related services such as immunization, Ante Natal Check-up (ANC), Post Natal Check-up supplementary nutrition, sanitation and other services available at the Sub-centre, Primary Health Centre, *Anganwadi* etc. She acts as a depot

older for essential provisions like Oral Rehydration Therapy (ORS), Iron Folic Acid Tablet (IFA), Chloroquine, Oral Pills & Condoms, Disposable Delivery Kits (DDK) etc. She counsels women on birth preparedness, importance of safe delivery, breast-feeding and complementary feeding, immunization, contraception and prevention of common infections including Reproductive Tract Infection/Sexually Transmitted Infections (RTIs/STIs) and care of the young child. An ASHA receives outcome-based remuneration on the services she renders. During 2011, the number of ASHAs working in Panipat is 550.

Janani Suraksha Yojna (Government of India Scheme).— This scheme has been launched with the objective of decreasing the neo-natal and maternal deaths happening in the country by promoting institutional deliveries and ensuring early registration of pregnant woman of Scheduled Castes and Below Poverty Line (BPL) families, for timely detection of any complications and facilitating appropriate referral. Under this scheme ₹700, ₹600 and ₹500 are paid for institutional delivery at rural institute, urban institute and at home, respectively. During 2010-11, an amount of ₹7.16 lakh has been spent under this scheme.

Janani Suraksha Yojna (State Scheme).— This scheme is especially for Scheduled Caste/Scheduled Tribes. Financial assistance amounting to ₹500; at the time of Antenatal Registration and ₹1000; at the time of institutional delivery, is given under this scheme. During 2010-11, an amount of ₹9.98 lakh has been spent under this scheme in the district.

Jacha Bacha Scheme.— The scheme has been launched in August, 2008 with the objective of promoting institutional deliveries at Community Health Centres; Primary Health Centres; Sub Centres by encouraging the ANMs / Staff Nurses. Under this scheme a cash incentive of ₹400 in case of birth of male child and ₹600 per delivery in case of birth of female child, is admissible to them when they exceed their respective targets of conducting institutional deliveries.[7]

Delivery Huts.— The scheme has been launched to provide safe delivery and newborn care services in clean, hygienic and women friendly environment locally; to contribute to reduction of MMR and IMR, detecting high obstetric complications and ensuring timely referral, to encourage and ensure birth registration and administration of '0' dose of polio and BCG to the new-born. Under this scheme, 'Delivery Huts' have been established within the villages at easily accessible prominent place for providing services required for normal

deliveries and referral arrangements where the Auxiliary Nurse and Midwife is available round the clock. This innovative scheme has got an overwhelming response and 27 delivery huts are functioning in the district. During the year 2007, the number of deliveries conducted in the delivery huts was 451 which rose to 2245 in 2011.

United Fund.—To increase functional, administrative and financial resources and to provide increased autonomy to the field units, as part of Health Sector Reforms under Reproductive and Child Health-II (RCH-II) scheme of NRHM united fund scheme has been introduced for local health action. This scheme aims at enabling innovative / institution specific / need based activity at the Sub-Centre, Primary Health Centre (PHC) and Community Health Centre (CHC) level. A sum of ₹10,000 has been allotted to each sub-centre per year in the name of account jointly operated by lady Sarpanch; Panch and Auxiliary Nurse and Midwife(ANM) of the concerned village to improve the health services at Sub-Centre Level by ANM herself. Similarly, for the improvement in Health Services at PHC and CHC level an amount of ₹25000 and ₹50000, respectively, is given to them as united fund per annum.

Urban Reproductive and Child Health (RCH) Centre.— In order to cater the health needs of urban slum population, 7 Urban Health Centres in the slums of the district at Raj Nagar, Batra Colony, Rajiv Colony, Katokan Basti, Sector-29, Hari Singh Colony and Babail Road have been opened with the free of cost facility of OPD, Immunization, ANC, Lab services, etc.

Referral Transport Scheme.— In 2009, free services to the victims of roadside accidents, patients belonging to below poverty line families and to the pregnant women to get them delivered at the Government Institution were initiated. The service under this scheme is available in each health institution and can be availed free of cost by dialling 102 (Toll Free Number) from any phone. All other persons can avail this service @ ₹7 per kilometer. The progress of Referral Transport Scheme in the district during the last two years is as under:-

Year	No. of calls	Pregnant women	Road side accidents	Other emerg--encies	Referral from one hospital to another	Patient back home after delivery	VIP and sports duty
2010	9975	4798	810	1664	1155	1420	68
2011	11520	4601	515	246	1604	4499	55

Routine Immunization.— Vaccines provide active immunity to the body by stimulating the immune system which produces antibodies against disease-producing organisms. Routine Immunization is one of the most cost effective public health interventions. Immunization programs are aimed at reducing mortality among children and enable them to live a healthy life. Immunization Program was first introduced in India in 1978 and was universalised in 1985 and named as Universal Immunization Program (UIP). This program covers 6 vaccine preventable diseases, namely Polio, Tetanus, Diphtheria, Pertussis (whooping cough), childhood Tuberculosis, and Typhoid. Later, the measles vaccine was added after the elimination of the typhoid vaccine. In 1992, the UIP was integrated with Child Survival and Safe Motherhood Program (CSSM), and in 1997, it was added to Reproductive and Child Health Program (RCH). Polio eradication program was launched in 1995-96 under which National Immunization Days (NIDs). Immunization done in the district during 2008-09 to 2011-12 is as follows:-

Year	DPT (Infants)	Polio (Infants)	BCG	Measles	DPT (Boster)	TT Below 5	TT 6-10	TT 11-16	100 IFA
2008-09	69377	68644	25452	25480	18356	39168	19585	15600	22597
2009-10	79946	85695	28795	25007	22738	45818	20198	16161	22542
2010-11	76867	86168	28264	25561	22241	44905	22456	17698	35659
2011-12	65272	74537	27051	23501	18173	37939	19294	17171	26618

Nutrition.— The Applied Nutrition Programme is being carried out in all the blocks of the district with the assistance of Government of India and UNICEF. It aims at educating people for taking a balanced diet from amongst the available food items. The demonstrations are arranged on proper cooking and emphasis is laid on food hygiene, consumption of general vegetables and cheaper proteins. The Primary Health Centres, particularly at maternity and child welfare centre level, deal with oral nutrition by organizing milk feeding programme, providing Vitamin A and B Capsules, Iron, multivitamin and vitamin B-complex tablets received by them from the UNICEF.

Arogya Kosh for the Patients below Poverty Line.— The scheme is sponsored both by Central and State Government in equal share of ₹ One Crore each. Assistance is provided to the poor persons living below poverty line for getting super-specialized treatment for life threatening diseases like chronic lung disease, heart diseases, kidney diseases, cancer etc. The

State/District illness assistance funds have been established under the Societies Registration Act. Only those patients who take treatment from AIIMS, New Delhi, PGIMER, Chandigarh and PGIMS, Rohtak are covered under this scheme.

Prevention of Adulteration in Food Stuff.— Food is one of the basic necessities for sustenance of life. Pure, fresh and healthy diet is most essential for the health of the people, adulteration of which is required to be checked. Adulteration in food stuff is checked under the Prevention of Food Adulteration Act, 1954. The Prevention of Food Adulteration Programme in the State runs under the supervision of Director General Health Services, Haryana. At the district level, Civil Surgeon has been notified as the local authority and is responsible for the implementation of Prevention of Food Adulteration Programme. Besides, a Food Inspector has been appointed in the district under the provisions of the said Act. All medical officers have also been vested with the powers of Food Inspector. Samples of food stuffs are collected in routine and through specially organized raids.

WATER SUPPLY AND SEWERAGE SYSTEM

There are two government agencies which provide water and waste-water services in Panipat: (i) Public Works Department Water Supply and Sanitation Division (PWD-WSSD); a state government department primarily responsible for providing water supply and sewerage services within the municipal boundaries and (ii) the Haryana Urban Development Authority (HUDA); an autonomous government body functioning as the land developer and the second largest service provider in Panipat responsible for providing services only to sectors (areas) developed by it. Their responsibilities include providing piped water supply and sewerage facilities in the district.

In the district, ground water is sweet, and tube-wells, percolation-wells and hand-pumps are common sources of water-supply. Extensive ground water usage for domestic as well as commercial and industrial use has been observed as a common phenomenon in the town. Tube-wells have traditionally been the main source of water in the district. In March 2011, there were 640 tube-wells, 32,244 bore-wells and 324 ponds/tanks in the district. Besides these, important sources for drinking water-supply include river Yamuna and Delhi Carrier Link Channel Canal (Western Yamuna Canal) that passes through the Panipat town. Some rural areas of the district also get potable water through canals.

The present water supply status of Panipat town is 135 litres per capita per day. Approximately, 95 percent of the town population is being served with piped water supply through 195 tube wells. The demand of the district is nearly 81 MLD (Million Litres per day). The supply of water is intermittent and the tap water is available to 45.7 percent of the households in the district compared to 48.1 percent for the state as a whole. However, it is much better placed in the availability of drinking-water within the premises. 43.4 percent of the rural households and 80.8 percent of the urban households in the district have access to drinking water within the premises, as compared to 30.7 percent and 76.0 percent, respectively, for the State.

Panipat town has deep sewerage system of disposal and sanitation. Approximately, 92 percent of the town is covered with sewerage facilities. Presently, there are two Sewage Treatment Plants having the capacity of 35 MLD and 10 MLD and both the treatment plants are based on UASB technology. An estimated volume of 90 MLD of sewage with BOD load of 2700 kilogram is disposed from Panipat. PWD-WSSD has D. G. Sets, Jetting Machines, Rope and bucket machines for sewer cleaning. Bamboo Stick technique is also widely used in the town which provide immediate relief to the households and is quite efficient in cleaning of smaller laterals.

The effluent and sewage of area finds disposal at Panipat Drain, Nohra Drain and Gharaunda Drain. Panipat district is in the jurisdiction of Yamuna Action Plan and all the villages have been covered in the 'Nirmal Gram' scheme.

Samalkha.— The present water supply status of Samalkha town is 115 litres per capita per day. Approximately, 85 percent of the population is being served with piped water supply through 12 tube wells. The distribution system is spread over 82 percent of the area of the town. Samalkha town has deep sewerage system of disposal and sanitation. Approximately, 83 percent area of the town is covered with sewerage facilities.

Israna.— The present water supply status of Israna is 70 litres per capita per day. Water supply is canal based with one water-works and two tube-wells in working. There is no sewerage system in Israna.

Bapoli.— The present water supply status of Bapoli is 70 litres per capita per day. Water supply is based on tube wells. Four tube-wells are working in Bapoli. This sub-tehsil headquarter is devoid of any sewerage system.

Madlauda.— The water supply status of Madlauda is 70 litres per capita per day in March, 2011. Water supply is based on canal as well as on tube wells. One canal based water works and six tube-wells are working in this village. There is no sewerage system.

Water Supply (Rural).— In November 1, 1966, at the time of formation of Haryana, only few villages of the erstwhile district had piped water supply. A number of schemes, under the National Water Supply and Sanitation Programme, to provide piped water supply to the rural areas, have been executed since then. All the villages in the district have been provided with piped water supply. Augmentation works are in progress for raising water supply status to 55 litres per capita per day (LPCD). Percolation wells, hand-pumps and tube-wells are still used as common sources of drinking water in village. Water from ponds is generally used for cattle purposes.

Environmental Hygiene.— Environmental hygiene is equally important after domestic and personal hygiene. There has been all round development for the improvement of villages with regard to link roads, pavement of streets, *pucca* drainage and provision of clean water supply through tube-wells, hand-pumps and wells. Cattle excreta are disposed in dung pits for keeping the surroundings clean. Salvaged water is either drained out in open fields or in ponds. The Medical Officers, the Sanitary Inspectors and other health workers guide the people regarding maintaining environmental hygiene. The Chief Medical Officer has the overall charge of sanitation work in the district. He is assisted by Deputy Chief Medical Officer (Health). The Senior Sanitary Inspector at tehsil level and Sanitary Inspector at PHC level look after the sanitation work within their respective jurisdiction. In urban areas, municipalities through their sanitary and conservancy staff look after the cleanliness of the surroundings in the district towns and the work of removal and disposal of solid refuse and the liquid waste. Guidance is provided to people for use of manure pits and latrines. Cattle and human excreta are deposited in pits where it is converted into compost and sold to farmers.

POLLUTION

The Central Pollution Control Board has carried out Comprehensive Environmental Pollution Index Assessment (CEPI) in association with Indian Institute of Technology, Delhi. Based on this study, Panipat City and its industrial clusters have been declared as Critically Polluted areas having CEPI

of more than 70. The CEPI scores of the district are listed:-

Air	55.75
Water	56.50
Land	59.00
Overall CEPI Score	71.91

There are 5 designated industrial areas in Panipat Town. One Common Effluent Treatment Plant (CETP) of capacity 21 MLD has been installed only in the industrial area of Sector 29 Part-II, Panipat whereas no CETP has been installed in other 4 industrial areas. Industrial area of Samalkha generates 80 KLD effluent most of which is domestic waste and it is discharged into the sewer of Public Health Engineering Department.

The main source of pollution in the district is heavy traffic on national highway passing through it and uncontrolled exhaust smoke released by vehicles plying on its roads and industries. A study conducted in 2010 to know the air pollution and its impact of on human health revealed a significant increase of 44 percent in commercial zone and 13.5 percent in residential zone, eye diseases in the study population[8]. For acute respiratory illnesses (correlate strongly with air pollution levels) the high number of study population suffering in commercial zone (cough 45.20 percent, sneezing 26.75 percent, Nose block 2.20 percent, Wheezing 19.55 percent, Dry cough 13.75 percent, Bronchitis 7.67 percent and Asthma 3.97 percent) as compared to residential zone (cough 13.5 percent, sneezing 14.0 percent, Nose block 13 percent, Wheezing 12 percent, Dry cough 6.80 percent, Bronchitis 4.3 percent and Asthma 0.88 percent) has been reported in the study. Results of the study based on the concentration of air pollutants, revealed that higher levels of particulate matter especially RSPM (Respirable Suspended Particulate Matter), is more dangerous for human Health and responsible for several cardiovascular and respiratory problems like cough cold, runny nose, bronchitis, wheezing, pneumonia and asthma along with eye, skin and heart diseases and that persons in commercial zones of Panipat are at a greater danger as compared to residential zones.

Haryana State Pollution Control Board (HSPCB) has been entrusted with the responsibility, and vested with the authority, for controlling and preventing all types of pollutions in the State under the various Acts and rules, namely Water (Prevention and Control of Pollution) Act, 1974; Water (Prevention and Control of Pollution) Cess Act, 1977; Air (Prevention and

Control of Pollution) Act, 1981; Environment (Protection) Act, 1986; Manufacture, Storage and Import of Hazardous Chemical Rules, 1989; Municipal Solid Waste (Management and Handling) Rules, 1998; Bio Medical Waste (Management and Handling) Rules, 1998 and its amending Rules of 2003; Re-cycled Plastic Manufacture and Usage Rules, 1999; Noise Pollution Rules, 2000; Hazardous Waste (Mangement, Handling and Transboundary Movement) Rules, 2008; E-waste (Management and Handling) Rules, 2011; etc. These Acts and Rules envisage an integrated approach for tackling such problems. Appropriate steps for control and prevention of pollution are necessary because the presence of various pollutants beyond certain limits cause a detrimental effect on the health of people as also on animal's life, vegetation and property.

The Pollution Control Board has opened a new laboratory in the district. Individual Effluent Treatment Plants (ETPs) and Air Pollution Control Devices have been installed at industrial units in Panipat to ensure compliance of standards. Stringent action is taken against errant and defiant units. The State Government has formulated a policy for shifting the potentially polluted textile/dyeing units from non-conforming areas to the approved Industrial Estate in Sector 29, Part-II, Panipat. Most of the operating industrial units in the district have installed their own ETPs and closure action has been taken by the Board against units which have not installed the required ETPs from time to time. A complete ban has been imposed in the district on manufacture, sale and use of plastic carry bags since January, 2011.

For creating awareness against pollution, posters are displayed at prominent places in villages and offices of Panchayats and Panchayat Samitis. Radio jingles are relayed on All India Radio, Rohtak, Kurukshetra and Hisar (FM) in local language to convey the message more effectively. A short documentary film is also being prepared by National Film Development Corporation (NFDC), Delhi on the subject. Encouragement is also given to cultivators in the shape of awards who discourage the burning of wheat stubble/paddy straw in the fields and use machines such as happy-seeder, rotavator, bailer etc. to check pollution.[9]

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Notes and References

[1] http://www.dsir.gov.in/reports/ittp_tedo/ism/ISM_USM_Intro.pdf

[2] Karnal District Gazetteer, 1892, p.13.

[3] *ibid*, 1918, pp.207-208.
[4] Karnal District Gazetteer, Statistical Tables, Volume VI-B, 1912, Table 53, p.cxxxiv.
[5] *ibid*, Statistical Tables, Part- B, 1935, Table 53, pp.cxcii-cxcix.
[6] Karnal District Gazetteer, 1976, Table XLIV, pp. 611-13
[7] The scheme has been abolished by Government of Haryana w.e.f. March, 2012
[8] International Journal of Advanced Research, Vol.1, Issue 8, 2013, pp.450-457
[9] Haryana Review, Volume 25, June, 2011, p.17