

## CHAPTER XVI

### MEDICAL AND PUBLIC HEALTH SERVICES

#### Early history

**P**RECISE information about medical institutions in the district in the early days is not available. However, *Ayurveda* and *Unani* systems were the accepted systems in the sphere of medical relief practised all over the country. *Ayurveda* was developed from the earliest times and the *Unani* system was introduced during the times of the Muslim rule. The *Ayurvedic* doctors or *Vaidyas* were very popular and were noted for their knowledge of the medicinal properties of herbs and plants. The afflicted persons went to them to receive medical attention and the cost of the medicines supplied was within the means of the common man. There was no need to depend on costly drugs since herbs and plants, which were freely made use of, were commonly available in the rural areas. Knowledge of several *Ayurvedic* medicines was common and many household remedies were fairly efficacious for common ailments. In many villages, there were at least one or two families well-versed in the *Ayurvedic* system of medicine.

During the days of the Muslim rule, the *Unani* system as practised by *Hakims* was also popular. But this did not replace the practice of *Ayurveda*, which was widely prevalent. The *Hakims*, however, did not penetrate into the rural areas, their practice being generally confined to the urban areas. They were patronised not only by the Muslims, but also by a section of the Hindus. The *Ayurvedic Vaidyas* continued to carry on their practice both in the urban and rural areas and the common people had great faith in them. The *Unani* system was especially encouraged by the Nizams, the rulers of the Hyderabad State. Even to-day, a considerable number of *Ayurvedic* practitioners and some *Hakims* are found all over the district.

With the greater contact with the East India Company and the British officers, the Western system of medicine came into vogue in the country. Nasir-ud-Daula, the sixth Nizam, ushered in the allopathic or the Western system of medicine in Hyderabad State.

The State Medical Department, whose functions were purely curative, came into existence in the year 1844. Except for vaccination against small-pox, there was no organisation for preventive medicine until 1912. Compulsory primary vaccination of children between the ages of six and twelve months was introduced in the State in 1922, during which year the Public Health Department was established. Earlier, in 1913, the Government appointed the Chief of the Medical Department as the Sanitary Commissioner also. Travelling dispensaries, one for each district, were established and they were manned by assistant surgeons who were called the District Sanitary Assistants. At the end of 1934, the Public Health Department was reorganised and a Deputy Director of Public Health was put in charge. The Medical and Public Health Departments were controlled by a Director assisted by two Deputy Directors, one for the medical wing and the other for the public health wing. The Unani units in the district, manned by Hakims, were placed under the State Unani Medical Department. The development of medical institutions in the Raichur district started in 1896 with the inauguration of the Civil Hospital at Raichur. Later on, civil dispensaries were started in several taluk headquarters, both for in-patients and out-patients. Ayurvedic and Unani dispensaries were also located in mofussil centres.

Organised public health service in this country is of comparatively recent origin. Till about 1870, the medical services in India were mainly concerned with the improvement of the health of the members of the military services. Though the heavy mortality caused by the out-breaks of epidemics, such as plague, awakened the Government to the need for more active State participation in improving the health of the people, the efforts were confined, till the reforms of 1919, to the promotion of sanitation by making it one of the important duties of the local bodies. Progress was, however, very slow and the first All-India Conference in 1911 noticed that very few towns and villages in India had any system of conservancy. The responsibility for local medical and public health administration was transferred to the Provincial and State Governments under the 1919 reforms. Though this widened the field of the Provincial and State Governments' activities in this direction, the quality of work still suffered from a lack of guidance and supervision over the local bodies to which organisations the work had been entrusted. The result was that only a fraction of the ground had been covered so far. The level of health services was unsatisfactory even in urban areas and the position was much worse in rural parts. Sanitary reform, village planning and housing schemes were practically unknown in the rural parts of the State, while such medical and maternity relief as had been provided, was totally inadequate to meet the needs of the masses.

**Health and  
sanitation**

The Royal Commission on Agriculture remarked in 1928 that in the rural areas of the country, sanitation in any accepted sense of the word was practically non-existent. The bank of a stream or the margin of a tank was commonly used as a public latrine, and this gave rise to hook-worm infestation and to the spread of all the diseases which are caused by a polluted water supply, for in many places the same water was used for drinking as also for bathing. The two outstanding problems connected with rural sanitation were: (1) prevention of soil pollution by indiscriminate defecation and (2) the provision of adequate and pure water supply for the villages. A detailed survey of hook-worm infection was completed in 1927 by the anti-ankylostomiasis campaign of the International Health Board under the Rockefeller Foundation of America and the immensity of the problem was clearly demonstrated. As a result, the Government started the rural sanitation campaign in 1928 for the prevention and control of hook-worm infection in the State. The rural sanitation staff consisted of one sanitation unit which worked in the several districts by rotation. The chief activities of the units were: (1) educational propaganda on prevention of hook-worm infestation and the dangers of soil pollution, (2) hook-worm treatment and (3) provision of latrines in the villages.

After the introduction of community development schemes in the country, and after the establishment of local bodies, *viz.*, Taluk Development Boards and Town Municipalities, health and sanitation became one of the important functions of local bodies, under which primary health centres have been sanctioned, which provide both curative and preventive services in the rural areas. The village panchayats are also taking up rural sanitation work in the areas by way of construction of drains, soak-pits, hand-flush latrines, etc., and also rural water supply schemes to provide wholesome water to the villagers.

**Medical relief  
in rural areas**

Till 1924, the amount spent on medical relief in rural areas was only a small fraction of the total expenditure on hospitals and dispensaries in the State. The great mass of the village population had no easy access to qualified doctors and had to be contented with the services of unqualified men. In the year 1924, the Government considered the problem of bringing qualified aid within the easy reach of the rural population and felt that immediate steps should be taken in this direction. The Government realised that the establishment and maintenance of a well-equipped public hospital or dispensary in almost every village or for each small area was not possible and an alternative scheme had to be devised whereby something substantial might be done at once, at least as an earnest of the Government's desire to bring medical relief within the easy reach of the rural population. Accordingly, the Government inaugurated a scheme for

opening subsidised rural dispensaries. Under the scheme, qualified practitioners of both Western and Indian systems of medicine were given small subsidies as an inducement to settle down in selected villages and to set up private practice. The liability of the Government on account of the scheme was restricted to the payment of subsidy for the medical practitioner and the midwife. The cost of medicines and other contingent charges were met by the local boards concerned. The grant of subsidy was subject to the condition that the medical practitioner should give free treatment to the needy. The practitioner was at liberty to accept such fees for medical attendance and treatment as he could get from well-to-do patients. Besides these dispensaries, some rural dispensaries were maintained entirely from the funds of local boards.

The Medical and Public Health Departments of the State were amalgamated in 1965. An officer designated as Director of Health Services was appointed as the head of the re-organised department at the State-level. At the district-level, however, there are two wings under two independent district officers, viz., District Surgeon, who is in charge of the District Headquarters Hospital at Raichur, and the District Health and Family Planning Officer. Both these officers are directly responsible to the Director of Health Services in Mysore, Bangalore.

The District Health and Family Planning Officer, Raichur, is in charge of the public health and family planning wing of the department at the district-level. He is both a technical and administrative officer and deals with matters relating to public health, such as control of epidemics, malaria eradication, maternity and child welfare, vital statistics, sanitation, health education and laboratory work associated with public health. His functions as Family Planning Officer include propaganda on family planning, supply of contraceptives, conducting of camps for vasectomy and tubectomy operations, loop insertions, etc. He has been also in overall charge of all the medical institutions at the taluk-level in the district. Under the family planning programme, he is assisted by a Medical Officer of Health, a Lady Medical Officer, two District Extension Educators (one male and one female), two Health Assistants, a Nurse, a Statistical Assistant, a Projectionist and necessary ministerial and class IV officials. Insofar as the work of the District Laboratory is concerned, the District Health and Family Planning Officer is assisted by a Medical Officer of Health, four Senior Laboratory Technicians and four Laboratory Attenders. Under the Maternity and Child Health Programme, there is a District Nursing Supervisor to assist the District Health and Family Planning Officer. Besides these officers and members of the staff at the district-level, several other technical and other staff at the block-level and the medical

Reorganisation  
of department

officers and staff of the several medical institutions at the taluk-level, such as Primary Health Centres, Health Unit-type Dispensaries, Combined Dispensaries and Local Fund Dispensaries are also under the administrative control of the District Health and Family Planning Officer.

#### Vital statistics

In the early days, there was no special agency in respect of registration of births and deaths, other than the village officers. These village officers were required to send monthly returns to the Tahsil Office, from where they were transmitted to the District Office to be then forwarded to the office of the Sanitary Commissioner. With a view to securing better registration of details connected with births and deaths, rules were revised in 1915-16, according to which Inspecting Officers were required to scrutinise entries in the registers. Again in 1918, a new regulation was introduced to improve the system of collection, compilation and publication of vital statistics. According to this new regulation, the entries with reference to births and deaths had to be certified by a technical officer after a sample check-up in the area concerned. This proved helpful in correcting the deficiencies to a certain extent. At present, births, deaths and other related statistics are registered by the village patels in rural areas and sent to the Registrar-General of Births and Deaths through the Tahsildars concerned. In the urban areas, the municipal authorities collect these statistics and send them to the Registrar-General. The Health Inspectors collect the statistics in respect of health-unit areas and during their visits to villages, they take the opportunity of verifying the figures registered by the village officers.

The rise or fall in population of an area can be attributed, to some extent, to the condition of health of the people. There may be other causes like famines and distress conditions, migration of persons from one area to another, etc.

The following table gives the variations in the total population of the district for the first six decades of this century :—

<i>Census year</i>	<i>Total population</i>	<i>Increase or decrease</i>	<i>Net variation for sixty years</i>
1901	7,31,301	..	..
1911	7,82,240	+ 53,939	
1921	7,24,140	— 61,100	
1931	7,71,890	+ 47,750	
1941	8,57,533	+ 85,643	
1951	9,53,640	+ 96,107	
1961	11,00,895	+ 1,47,255	+ 3,69,594

It is seen from the foregoing figures that the net increase in population in the decade 1951-61 was 1,47,255, the highest during the 60-year period. This high increase is attributable mostly to a falling death rate and a higher birth rate. The fall in the population was only during the decade 1911-1921, which was owing to influenza which appeared in a virulent epidemic form in 1918 (See elsewhere in this chapter).

The following table indicates the number of births and deaths, as also the birth and death rates per thousand, for the period from 1958 to 1966 :—

Year	No. of births	Birth rate per 1,000	No. of deaths	Death rate per 1,000
1	2	3	4	5
1958	8,912	8.7	6,411	6.2
1959	11,815	11.4	7,673	7.4
1960	10,869	10.4	5,928	5.6
1961	13,015	12.4	7,116	6.7
1962	13,036	11.6	6,952	6.2
1963	10,155	8.9	5,397	4.7
1964	9,679	8.3	6,628	5.7
1965	7,547	6.3	3,159	3.6
1966	9,710	8.0	6,067	5.0

From the above figures, it can be seen that in recent years the death rate has been generally on the decline; so also the birth rate. The fall in the death rate is owing to the intensive preventive and curative measures undertaken by the public health authorities and also to a better standard of living. There has been a systematic drive to control epidemics and thousands of people have been vaccinated or inoculated. As in the rest of India, fever of different kinds is responsible for a large number of deaths in the district. The fall in the birth rate may be attributed, to a certain extent, to the intensive family planning drive that is being carried out in the district in the recent years and the growing consciousness among the people, especially among the educated classes, to limit their families. It may, however, be pointed out that the birth and death rates, as recorded in the district, fall much short of the known rates for India. This evidently shows that there are certain omissions in recording the vital events.

Infant mortality was considerably high in the district in the early decades of this century. The main causes for these deaths were prematurity, bronchitis, diarrhoea, dysentery, fevers, convulsion, sepsis and respiratory diseases. The following table gives

**Infant and  
maternal  
mortality**

the number of still-births, infant deaths and the infant mortality rate per thousand in the district for the period from 1958 to 1966 :—

<i>Year</i>	<i>No. of still births</i>	<i>No. of infant deaths</i>	<i>Infant mortality rate per 1,000</i>
1958 ..	534	426	47.8
1959 ..	47	707	59.8
1960 ..	34	507	46.6
1961 ..	75	597	45.7
1962 ..	64	651	49.9
1963 ..	65	464	45.7
1964 ..	80	348	35.9
1965 ..	21	349	46.2
1966 ..	57	534	55.0

Among the main causes of maternal deaths are anaemia, haemorrhage, eclampsia and difficult labour. As in the case of infant mortality, the rate of maternal mortality was high in the early decades and this has been reduced to a great extent by providing facilities for prenatal, natal and post-natal treatment in the several hospitals and health centres in the district. As per the figures furnished by the Director, Bureau of Economics and Statistics, Bangalore, the maternal mortality rate in the district was fluctuating between 5.8 and 3.2 per thousand during the period from 1958 to 1966 :—

<i>Year</i>	<i>No. of maternal deaths</i>	<i>Maternal mortality rate per 1,000</i>
1958 ..	46	4.8
1959 ..	62	5.5
1960 ..	64	5.8
1961 ..	43	3.2
1962 ..	53	4.0
1963 ..	43	4.2
1964 ..	46	4.8
1965 ..	31	4.1
1966 ..	36	3.7

#### Main diseases

The diseases common to the district can be roughly determined from a reference to the number of patients treated in the District Headquarters Hospital, Raichur. About a decade ago, *i.e.*, during the year 1958, 62,649 out-patients were treated in the

Hospital, for different diseases. The diseases such of which accounted for more than 1,000 patients, were as given below :—

Gonococcal infection	..	..	1,429
Dysentery	..	..	3,084
Malaria	..	..	3,020
Helminthic infection	..	..	2,481
Pyrexia	..	..	5,672
Vitamin deficiency	..	..	1,090
Anaemia	..	..	3,453
Asthama	..	..	1,030
Diseases of the eye	..	..	2,482
Disease of middle ear and mastoid	..	..	2,754
Upper respiratory tract infections	..	..	3,141
Influenza	..	..	1,650
Bente bronchitis	..	..	2,919
Chronic bronchitis	..	..	1,682
Teeth and gum diseases	..	..	2,332
Gastritis	..	..	1,475
Gastro-Enteritis and Colitis	..	..	1,367

The common diseases for which the majority of patients were treated in the various health centres and dispensaries in the district during the years since 1962 have been respiratory diseases and fevers and dysentery and diarrhoea. These are largely due to the insanitary environmental conditions and the unprotected water supply, especially in the rural areas. The other diseases from which the people generally suffer are typhoid, tuberculosis and vitamin deficiency. The following table indicates the number of deaths caused on account of several diseases during the period from 1962 to 1966 :—

<i>Disease</i>	1962	1963	1964	1965	1966
Respiratory diseases	528	493	590	340	484
Dysentery and Diarrhoea	264	210	225	131	203
Typhoid	423	254	231	156	233
Fevers	2,779	2,173	2,401	1,382	2,497
Tuberculosis	270	252	258	309	307

As could be seen from the above figures, the incidence of deaths on account of fevers is greater than that caused by any other type of disease.

When an epidemic breaks out in the district, the health authorities are alerted to work in close co-ordination and under the general direction of the District Health Officer. The health workers tour the area in order to know the extent and severity of the epidemic. All the wells in that area are thoroughly

**Common diseases**

**Epidemics**



disinfected with potassium permanganate and the villagers are advised to isolate the sick and to evacuate the houses. People living in the infected areas are discouraged from entertaining friends and relatives. Disinfection and fumigation are intensively carried out wherever possible. It is the duty of the health workers to enquire into and ascertain the causes, origin and spread of epidemic diseases within their jurisdictions and send periodical reports to the nearest medical officer as well as to the District Health Officer. Various conditions injurious to public health are systematically scrutinised and remedied so as to minimise the incidence. Special attention is paid to water supply sources and to the disposal of refuse. During *jatras* and *uruses*, special staff is requisitioned to take precautions and to control any outbreak of epidemics.

The district has been free from plague in recent years. But small-pox and cholera may be said to be still persisting with sporadic outbreaks in some or the other parts of the district. A brief account of each of the epidemics is given hereunder.

#### Small-pox

Small-pox affects particularly children. It is more prevalent in Raichur, Deodurg and Lingsugur taluks than in other taluks. Vaccination, being the only preventive, is done on a phased scale by the health services staff. The vaccinations are done by duly trained vaccinators—Basic Health Workers, Auxiliary Nurses and Midwives—who are all responsible to the District Health Officer. They are stationed in the headquarters of each taluk and are required to get in touch with the Tahsildar for any assistance in the discharge of their duties. The vaccination work is carried on after a close verification of all birth registers and police patels' registers. Systematic house-to-house inspection of the whole town or village is conducted for detection of unprotected cases. The minimum outturn of work for each vaccinator is about 200 successful vaccinations a month. He is required to carry out not less than 3,000 vaccinations in a year. In case of epidemics, the vaccinators have to rush to the infected areas in order to vaccinate all unprotected children and adults. All factories and schools are visited in an endeavour to vaccinate, in the premises themselves, all those who are not already protected. The school-master and the factory manager are held responsible for obtaining the consent of those who are to be vaccinated. Lymph in sufficient quantity is maintained and excessive storage of it is not permitted due to deterioration in potency, and the stock on hand is kept as far as possible in a cool place. Contra-indications to vaccination are mainly skin diseases, diarrhoea and fever. Re-vaccination, though not compulsory, is essential for protection against small-pox. In re-vaccination cases, the vaccinator will have to see that scarification is not done on the sites of old scars.

In the years 1957 and 1958, there were 291 and 482 attacks respectively in the district, resulting in 76 deaths in 1957 and 141 deaths in 1958. During 1957-58, a total of 1,11,587 vaccinations were done (primary 55,660 and re-vaccination 55,927). The percentage of success in primary vaccination was 64, while in re-vaccination, it was 28.

The following table indicates the number of small-pox attacks and deaths in the district during the years from 1965 to 1968 :—

<i>Year</i>				<i>Attacks</i>	<i>Deaths</i>
1965	..	..	..	123	37
1966	..	..	..	239	51
1967	..	..	..	35	12
1968	..	..	..	19	1

From the above figures, it is seen that the incidence of attacks and deaths was greater in 1966 than in other years and it was on a marked decrease in 1968 causing only one death. During the year 1965, a total of 1,35,021 vaccinations was done and in the following year, the work was further intensified and there was a total of 3,76,081 vaccinations. In the years 1967 and 1968, 2,91,985 and 2,71,645 vaccinations respectively were done.

The district is now free from the ravages of plague. In living memory, it made its first appearance in the district in 1898-99 after its initial outbreak in Bombay and occurred periodically, sometimes in an epidemic form and sometimes in an endemic form. In the year 1940-41, it took a heavy toll of 1,531 persons. In recent years, there has been no incidence of this dreaded disease. **Plague**

The people of Raichur district still remember with horror the influenza epidemic of 1918-19. It first appeared in June-July 1918 and soon assumed the form of a whirlwind, sickening a large number of people of the district. The first wave which lasted till September was mild, while the second wave which started in October was the worst both in rural and urban areas. Antibiotics were not in existence then and traditional remedies like the inhalation of irritants did not prove successful. Since the people succumbed to this disease quickly, the population of the district fell by 61,100 as revealed by the census of 1921. In those days, this epidemic was called the Spanish flue. In June 1957, a wave of influenza, called the Singapore flue, affected the entire district. In the Raichur Civil Hospital itself, 1,650 cases were treated during that year. Antibiotics proved quite useful. Municipalities and **Influenza**

health units strove hard to isolate the patients to check the spread of the disease from person to person. The wave slowly disappeared by October 1957. Such a severe flue has not been experienced in the recent past.

#### Cholera

Cholera recurs periodically, particularly after heavy rains and also in the winter months. This disease has become endemic and sometimes assumes the form of an epidemic, when intensive control measures are put into operation by the public health authorities. Many of the villages are poor in general sanitation, the surroundings being used for indiscriminate defecation resulting in the fly nuisance. There is no protected water supply in most of the villages and water scarcity is acutely felt in summer months when people drink impure water from ponds and pools. However, under development schemes, a number of villages are being provided with drinking water wells.

There was no incidence of cholera during 1959 and 1960, but it made its appearance in the district from 1961. It took a heavy toll during the years 1962 and 1964. Whenever there is an outbreak of cholera, the authorities rush groups of necessary health staff to the places for mass anti-cholera inoculations. Mass inoculations alone cannot check the spread of the disease. It is very necessary that every inhabited place obtains protected water supply facilities. Cholera breaks out often about the month of October and persists for about four months in an epidemic form and then the fury begins to decline giving an endemic character to the disease.

The epidemic was severe in 1950 and 1958 with 2,965 and 1,596 attacks and 1,306 and 576 deaths respectively. In 1958, about 2,21,250 inoculations were done. The following table gives the number of cholera attacks and deaths and the number of persons inoculated during the years from 1964 to 1968 :—

<i>Year</i>	<i>Attacks</i>	<i>Deaths</i>	<i>Mass inoculations done</i>
1964 .. ..	1,284	358	4,67,654
1965 .. ..	78	29	16,736
1966 .. ..	27	9	1,71,239
1967 .. ..	105	32	10,739
1968 .. ..	(There was no information of outbreak)		

#### Leprosy

Leprosy is another disease prevalent in the district, mostly in the taluks of Koppal and Raichur. In 1957, there were 1,489 cases, out of which 546 were in Koppal taluk and 277 in Raichur

taluk. With a view to conducting a survey and providing treatment facilities, a National Leprosy Subsidiary Centre was started at Koppal in 1959-60. It is proposed to upgrade this centre into a National Leprosy Control Centre so as to provide necessary facilities for in-patients.

In 1966, the leprosy work was integrated with health unit-type dispensaries by starting 10 Survey, Education and Treatment Centres at Matmari, Mudgal, Jalhalli, Kanakgiri, Potanhal, Tawargera, Jawalgera and Kuknur. Starting of such centres at other places in the district is under consideration.

The leprosy cases registered during the years from 1966 to 1968 were—1,167 in 1966, 1,014 in 1967 and 1,162 in 1968. The existing facilities are only to survey and give out-patient treatment in hospitals and dispensaries. The staff of the National Leprosy Subsidiary Centre, Koppal, consists of one Medical Officer, one Medical Social Worker, four Para-Medical Assistants and one Pharmacist, assisted by clerks and others. Each of the Survey, Education and Treatment Centres has a paramedical worker.

As in the case of old Mysore, in the Raichur district also **Malaria** the malaria control work was in progress at Munirabad even before the plan periods. An Anti-Malaria Scheme was inaugurated at Munirabad on 10th February 1947 and malaria survey and control schemes were undertaken in the first 20 square miles from the Tungabhadra dam site. In 1948, the control measures and survey work were extended to Gangavati—to a distance of 30 miles. In April 1954, the Anti-Malaria Scheme of the project came under the National Malaria Control Programme, the headquarters being located at Munirabad. After the formation of the new Mysore State, however, a full-fledged unit was started (in 1958) at Raichur and the whole of the district was divided into four sub-units, *viz.*, (1) Munirabad sub-unit comprising Koppal and Gangavati taluks, (2) Kushtagi sub-unit with Kushtagi and Yelburga taluks, (3) Sindhanur sub-unit with Sindhanur and Lingsugur taluks and (4) Yermaras sub-unit with Manvi, Raichur and Deodurg taluks.

The Malaria Control Programme was switched over to Malaria Eradication Programme during 1962, followed by the Consolidation and Maintenance phases. Special attention is being paid to the project areas, refugee and rehabilitation centres (refugees from Burma and Ceylon) and the like. Usually, two rounds of insecticidal sprayings (DDT 50 per cent) are given in all the vulnerable areas of the unit. The vector species—*A. culicifacias* is still susceptible to DDT in this area. In some parts of the unit areas, there is a certain amount of refusals for insecticidal spraying. In 1957, there were 6,335 malaria cases

which came for treatment in the various hospitals of the district, of which 3,092 cases were treated in Raichur town alone.

The following table shows the number of positive cases detected by the surveillance workers, the number of blood smears collected and the preventive measures undertaken during the years from 1964 to 1968 :—

<i>Year</i>	<i>Number of positive cases detected</i>	<i>No. of blood smears collected</i>	<i>No. of houses sprayed with DDT</i>
1964	216	1,24,744	1,24,828
1965	227	1,25,163	1,28,761
1966	75	1,19,794	1,24,633
1967	137	1,84,895	16,670
1968	56	2,30,277	48,665

The staff pattern of the National Malaria Eradication Unit, Raichur, is as given below :—

1. Medical Officer of Health	..	1
2. Assistant Unit Officer	..	1
3. Senior Malaria Inspectors	..	4
4. Junior Malaria Inspectors	..	4
5. Malaria Surveillance Inspectors	..	32
6. Malaria Surveillance Workers	..	133
7. Superior Field Workers	..	10
8. Senior Microscopist	..	1
9. Junior Microscopists	..	6

These are assisted by one mechanic, five drivers and necessary ministerial and class IV officials.

**Medical and Health Institutions**

As per the statistics furnished by the Bureau of Health Education, Directorate of Health Services, Bangalore, there were, in 1960, three hospitals, 17 dispensaries, eight health centres of Government of India type, three family planning clinics (one urban and two rural) and one district laboratory in Raichur district. Of the three hospitals, two were general hospitals and one was for women, all the three being Government hospitals; 13 dispensaries were located in the rural areas. The population served per institution, on an average, was 60,692.8, while the average area served per institution in square miles was 224. There were ten anti-rabic centres attached to the Headquarters Hospital, Raichur, and to Government dispensaries at Gurgunta, Gangavati, Deodurg, Koppal, Kushtagi, Lingsugur, Manvi, Yelburga and Sindhanur. There were 24 doctors employed, of whom 23 were male doctors and only one was a lady doctor.

Under the reorganisation of the Medical and Public Health Departments in 1965, all the medical institutions at the taluk-level were transferred to the control of the District Health and Family Planning Officer. In March 1969, there were fifteen primary health centres of Government of India pattern, eight combined dispensaries, two Government dispensaries, three reduced-scale local-fund dispensaries and sixteen health unit-type dispensaries in the Raichur district under the charge of the District Health and Family Planning Officer. There was one District Hospital under the charge of the District Surgeon at Raichur.

The District Hospital, Raichur, was founded in 1896 and was located in the crowded part of the Raichur city outside the walls of the inner fort, having a bed-strength of 60 and the office of the Civil Surgeon was located outside the hospital compound. Now, the District Hospital is working in a new building constructed at a cost of about Rs. 11½ lakhs and opened in 1962 near the Ganj, with a bed-strength of 148. Again, in July 1969, a first floor, built at a cost of Rs. 1,05,000 was added on to the building. There is also a plan to construct six more wards at a cost of rupees four lakhs to make provision for 120 beds more.

**District  
Hospital,  
Raichur**

There is no separate women's and children's hospital, but there is a maternity wing attached to the District Hospital, where maternity cases are admitted. The hospital has also a well-equipped surgical unit. The other units that are functioning in the District Hospital are: (1) X-Ray Unit (200 M.A.), (2) Blood Bank, (3) Ear, nose and Throat Department, (4) T.B. Clinic and (5) Urban Family Planning Unit. All the units of the District Hospital are having well-qualified staff.

According to the figures furnished by the District Hospital for the calendar year 1957, a total number of 2,774 in-patients were admitted for treatment, of whom 987 were men, 1,587 women and 200 children. The number of beds in the hospital during that year was 34 for men and 50 for women and children. The daily average attendance of the in-patients was 79.3. In the out-patient wing, a total number of 62,649 persons were treated, of whom 19,434 were men, 18,686 women and 24,529 children. The total expenditure incurred on the hospital for the year 1957 was Rs. 80,049.

During the calendar year 1968, a total number of 3,449 in-patients were admitted for treatment, of whom 1,254 were men, 1,752 women and 443 children. The total number of beds in the hospital was 220. The daily average in-patient attendance was 119.00. In the out-patient wing, a total number of 99,827 persons were treated, of whom 46,666 were men, 34,048 women and

19,113 children, the daily average attendance being 273.50. The total expenditure on the hospital for 1968 was Rs. 2,05,231.

The following figures show the major, minor and maternity operations done in the District Hospital during the years 1957 and 1968 :—

<i>Year</i>	<i>Major operations</i>	<i>Minor operations</i>	<i>Maternity operations</i>
1957 .. ..	295	1,384	106
1968 .. ..	533	574	674

**T. B. Clinic,  
Raichur**

There is also a T.B. Clinic in Raichur town manned by a Medical Officer. This Medical Officer is assisted by an Assistant Medical Officer along with one T.B. Health Visitor, one Laboratory Technician and one X-Ray Technician. The clinic, which was started in March 1956, was formerly functioning in a municipal building in the centre of the town. Now it is functioning in the new building of the District Hospital, where there is sufficient accommodation. Ever since its establishment, it has been under the control of the District Surgeon, Raichur. Necessary anti-T.B. drugs are being supplied by the UNICEF. Proposals for upgrading this T.B. Clinic into that of a District T.B. Centre are under consideration of the Government.

Ever since its inception, the T.B. Clinic has been attending to sputum examinations, blood tests, urine tests, etc. In the year 1958, 17,543 old cases were treated and 3,907 fresh cases were attended to. In that year, 3,485 sputum examinations were done as against 347 and 1,353 in the years 1956 and 1957 respectively. These examinations showed that tuberculosis of the lung was rampant in the district. In 1968, 38,479 cases of various types were attended to and a sum of Rs. 26,554-75 was expended on the institution.

**District Health  
Laboratory**

A laboratory to provide facilities at the district-level to the medical institutions and medical practitioners was established at Raichur in 1958-59. Various pathological tests are being conducted in the laboratory and the number of such tests done during the years 1959, 1963, 1967 and 1968 is shown in a statement given at the end of the chapter. Investigations on the causes and prevention of the guinea-worm disease is also proceeding in the laboratory.

**Primary Health  
Centres**

There are 15 Primary Health Centres of Government of India pattern established in the rural parts of the district during

the successive Five-Year Plan periods, with a view to extending medical aid to more and more people. Each centre covers a population of sixty thousand and the bed-strength, on an average, is six. These Health Centres which provide instant remedial measures to needy patients are gaining popularity in the rural areas.

The staff sanctioned to each of the Primary Health Centres consists of one Medical Officer of Health, a Health Visitor, a Junior Health Inspector, a Pharmacist and two class IV workers. Besides, to look after the family planning aspect of the work, there is also an Extension Educator, a Computer and a Health Assistant for every 20 to 30 thousand population and an Auxiliary Nurse-Midwife for every ten thousand population, under the Medical Officer of Health. Similarly, to look after the malaria maintenance work, there are a Senior Health Inspector, a Junior Health Inspector and a Basic Health Worker for every ten thousand population.

The following table shows the bed-strength in the hospital and combined dispensaries of the district as in 1957 and 1968 :—

Name of Hospital or Dispensary	Bed-strength	
	1957	1968
1. District Hospital, Raichur .. ..	84	220
2. Civil Dispensary, Lingsugur .. ..	4	10
3. Civil Dispensary, Sindhanur .. ..	2	4
4. Civil Dispensary, Deodurg .. ..	4	20
5. Civil Dispensary, Yelburga .. ..	4	4
6. Civil Dispensary, Kushtagi .. ..	4	12
7. Civil Dispensary, Koppal .. ..	8	20
8. Civil Dispensary, Manvi .. ..	4	4
9. Civil Dispensary, Gangavati .. ..	4	16
Total .. ..	118	310

There are some Ayurvedic and Unani dispensaries in the district, located mostly in the rural areas, catering to the needs of the rural population. As in March 1969, there were 29 such institutions in the district, of which five were Government Ayurvedic Dispensaries, 12 Ayurvedic Dispensaries under the local bodies and six Government Unani Dispensaries. It is proposed to open one more Ayurvedic Dispensary at Pamankallur in Manvi taluk. The technical control of these institutions is vested with the District Health and Family Planning Officer, since April 1968. A list showing the locations of these Ayurvedic and Unani dispensaries, the total number of persons treated in each during 1968-69

**Ayurvedic and  
Unani  
Dispensaries**



and the total expenditure incurred on each of them during that year is given at the end of this chapter.

**Hutti Gold  
Mines Hospital**

The Hutti Gold Mines Hospital caters to the needs of the workers of the mines as well as others. Medical, surgical and obstetrical emergencies are given top priority for treatment. A small clinical laboratory and an X-ray unit are attached to the hospital. The staff of the hospital consists of three Medical Officers (including a Lady Medical Officer) assisted by two Supervisors, seven Staff Nurses, three Nursing Aids, two dressers, four ward boys, two pharmacists and one laboratory assistant. The number of patients treated during 1968-69 was 1,45,164, of whom 17,581 were in-patients and the rest out-patients. The total expenditure incurred on the maintenance of the hospital during that year was about Rs. 1,64,890. (See also Chapter V under Welfare Amenities).

**Railway  
Health Unit,  
Raichur**

A Health Unit was established in the Railway Colony, Raichur, on 19th September 1963 with the object of providing medical facilities to the railway employees residing at Raichur. It is under the supervision of the medical branch of the Southern Railway Divisional Office, Guntakal. There are seven medical workers in the Health Unit, while the conservancy staff consists of 41 workers. There is no provision for the treatment of in-patients. The number of out-patients treated during the year 1968-69 was 10,826 and the expenditure incurred on the institution was Rs. 1,40,000. There is also a Catholic Dispensary at Jawalgera, started in 1947, and this charitable institution has been serving the medical needs of the people of that area.

**Family  
Planning  
Programme**

The Family Planning Programme has assumed considerable importance in recent years because of the alarming increase in the growth of population and the consequent need for checking it. A State Family Planning Board has been functioning in the State since the year 1957. There is a District Family Planning Committee at Raichur, consisting of both official and non-official members, for implementing the family planning programme in the district. The family planning activities comprise mainly family planning services, training of workers and educating the public about the needs and methods of family planning.

As a first step in this direction, an Urban Family Planning Centre attached to the Civil Hospital, Raichur, was sanctioned during 1957-58 and is being continued. Later, 15 rural family planning centres were started and attached to the Primary Health Centres of the district. In 1969, there were, in all, 16 family planning centres, providing family planning facilities to the people in their respective areas.

Facilities have been provided in all bigger medical institutions in the district for conducting vasectomy and tubectomy operations. In order to popularise these surgical methods of family planning, the services of private medical practitioners are also utilised on payment of a subsidy of Rs. 25 per operation. Vasectomy camps are organised in the taluk headquarters in the primary health centres and also in important village centres. Medical advice on the methods of family planning is given to married persons, who require such advice, and also to those women who, in the opinion of the medical officer, cannot undergo the strain of pregnancy and parturition without danger to their health. Besides, the primary health centres in the district also conduct couple surveys and selected couples are advised through individual contacts to adopt temporary or permanent family planning methods. A new device of family planning for women, popularly known as the loop (intra-uterine contraceptive device) was introduced in the district in 1965.

#### Vasectomy and Tubectomy

Contraceptives such as jellies, diaphragms and *nirodhs*, etc., were supplied to all the family planning centres, hospitals and dispensaries in the district for distribution among the people. Intensive propaganda through lectures, film shows, exhibitions, publicity literature, etc., is done throughout the district to educate the public in respect of family planning. In addition, family planning fortnights are organised every year throughout the district, when as many people as possible are covered under the programme. Orientation training camps are also conducted at certain selected centres for providing training to village leaders.

Family planning activities were accelerated during the latter part of the Third Five-Year Plan and the subsequent annual plans. Compared to the female population of the district, the response from women has not been as much encouraging as in the other districts of the State. As against the set target of 10,140 loop insertions in 1965-66, only 520 women availed of this facility, while in 1966-67, 2,488 women were covered under this programme. There was a decrease in the number in 1967-68 in that only 1,284 loop insertions were done during that year. During the subsequent year, as against a target of 5,200, only 435 loop insertions were done, thus showing a further decrease in the number availing this facility. Similarly, against a set target of 1,014 for sterilisation operations, only 157 underwent sterilisation in 1965-66. In the following three years, *viz.*, 1966-67, 1967-68 and 1968-69, as against a set target of 3,430, 3,760 and 7,800 respectively, 1,978, 2,784 and 5,467 persons underwent sterilisation operations.

The following table indicates the number of vasectomy and tubectomy operations performed since 1961 :—

Year	Sterilisation operations for		Total
	Males (Vasectomy)	Females (Tubectomy)	
1961	2	4	6
1962	10	3	13
1963	31	1	32
1964	173	12	185
1965	95	4	99
1966	615	13	628
1967	2,630	9	2,639
1968	5,678	21	5,699

It is seen from this table that an awareness of the need for family planning has grown in recent years, more among men than among women, in the district.

#### Maternity and Child Health Services

Domiciliary midwifery work is attended to by the auxiliary nurse-midwives and midwives attached to the primary health centres, health unit-type and local fund dispensaries. Institutional midwifery work is attended to in the various hospitals. The UNICEF has provided a vehicle to each of the primary health centres at Sindhanur, Koppal, Kanakgiri and Jalhalli for attending to the maternity and child health services. In 1968-69, there was only one Maternity and Child Health Centre, attached to the District Hospital, Raichur, apart from a Maternity Centre at Gunjahalli run under the auspices of the Kasturba Gandhi National Memorial Trust.

#### Applied Nutrition Programme

An Applied Nutrition Programme has been in operation in the Raichur district since the year 1963-64. The programme was first started in the Gangavati Community Development Block and later it was extended to Kushtagi, Lingsugur and Yelburga Blocks during the years 1967-68, 1968-69 and 1969-70 respectively. Diet and clinical nutrition investigations were conducted in the selected villages of the Applied Nutrition Programme Blocks of the district. In general, the dietary pattern of many families revealed that the use of single cereal and single pulse was very common and the intake of other protective foods like green leafy vegetables, milk and milk products, fruits, etc., was negligible. It was found that there was 52 per cent of Vitamin A deficiency, 24.5 per cent of Vitamin B deficiency, and 11.4 per cent of Vitamin C deficiency among the vulnerable population, viz., the pregnant women, nursing mothers and children upto the age of 14.

To improve the existing dietary pattern, several measures have been taken by the health authorities in the selected blocks. Some of the health services personnel have been specially trained under the Applied Nutrition Programme. People are being advised

by them to use mixed cereals like wheat and jowar or ragi and jowar in the diet instead of a single cereal along with green leafy vegetables which are not only nutritious but also available locally at cheaper rates. They are also being advised to use the leafy tops of vegetables like carrot, radish, knol-khol, etc. As a first step in this regard, proper methods of cooking and storage practices are being suggested.

Health education forms one of the important activities of the Health Services Department. The basic health workers, who primarily attend to this aspect of work in the district, are required to utilise every opportunity, especially during village gatherings, to contact the rural populace and talk to them about various health subjects, sometimes giving practical demonstrations, with reference to personal cleanliness, environmental sanitation, chlorination of water, vaccination, D.D.T. spraying, etc. The Department also arranges for the observance of the World Health Day, Leprosy Day, Anti-Fly Week, Family Planning Fortnight and the like in the district so as to impart health education to the people. On such occasions also, the health services authorities make arrangements to give talks, organise exhibitions and screen films on various health subjects in the villages and towns.

The aim of the School Health Programme is to provide comprehensive health care to the school children comprising medical examination, treatment, correctional remedies and follow-up action, school sanitation, proper water supply and provision of playgrounds, health education in schools, etc. During the year 1965-66, only one Primary Health Centre at Jalhalli was attending to school health service in the district. The service was extended to two more Primary Health Centres at Mudgal and Potanhal during the year 1968-69. The number of schools selected and the number of children covered by each of the three Primary Health Centres during 1968-69 were as follows :—

<i>Name of Centre</i>	<i>Number of schools selected</i>	<i>Number of children covered</i>
Jalhalli .. ..	20	1,082
Mudgal .. ..	17	2,013
Potanhal .. ..	15	823
Total .. ..	52	3,918

According to the Census Report of 1961, there were 249 persons working as Physicians, Surgeons and Dentists in the Raichur district. Of the 249 persons, 242 were men and only seven were women ; of them, 171 men and four women were working in towns.

Then there were 539 persons working as nurses, pharmacists and health technicians, of whom 432 were men and 107 were women. Of these persons, 172 men and 46 women were working in the urban areas, while 260 men and 61 women were serving in the rural areas.

During the year 1967, there were 107 Ayurvedic, seven Unani and twelve Integrated registered medical practitioners in the district, while during the subsequent year, *i.e.*, 1968, the numbers of these practitioners were : Ayurvedic 158, Unani 13 and Integrated 12. There were also 30 registered Homeopathic practitioners in the district in 1969.

**Chemists and  
Druggists**

According to the figures furnished by the Drugs Controller for the State of Mysore, there were, in 1968-69, 45 chemists and druggists and 34 registered pharmacists in Raichur district. In that year, seven licences were cancelled, three were suspended and a fine of Rs. 1,410 was imposed.

**Indian Medical  
Association,  
Raichur**

A District Medical Association was started at Raichur in January 1940. It had a president, an honorary secretary and nine other members, of whom five were working in Government institutions and six were private practitioners. It was rendering free medical service during epidemics, conferences, etc. After a couple of years, the body was affiliated to the Indian Medical Association and its name was changed to Indian Medical Association, Raichur. The Association convened the 3rd Hyderabad State Medical Conference at Raichur in 1951, which was attended to by more than 300 delegates. Again, in October 1967, it held the 34th Mysore State Medical Conference at Raichur. On this occasion, the Association brought out a souvenir containing useful articles by eminent persons in the field of medicine. In 1967, this branch consisted of 21 members. The number of members increased to 56 in 1969 (including 35 men and 4 lady doctors working in Government institutions and 17 private medical practitioners). The Association has its own well-furnished building and owns a modest library. It has a 15 mm. projector to carry on health propaganda.

TABLE 1

Statement showing the location of Health Centres and Dispensaries in Raichur district (taluk-wise) and the number of patients treated and expenditure incurred during 1968-69.

Sl. No.	Name of dispensary with location	No. of in-patients treated	No. of out-patients treated	Total expenditure incurred
1	2	3	4	5
<b>Raichur taluk</b>				
				Rs.
1.	Primary Health Centre, Matmari ..	..	4,555	41,709
2.	Primary Health Centre, Mallapur ..	..	14,164	11,187
3.	Health Unit-type Dispensary, Kalmala.	..	8,733	13,279
4.	Health Unit-type Dispensary, Chandarbanda.	..	9,319	14,300
5.	Health Unit-type Dispensary, Gunjahalli.	..	6,117	12,381
<b>Manvi taluk</b>				
1.	Primary Health Centre, Potanhal ..	71	7,455	21,010
2.	Primary Health Centre, Kavital ..	..	13,076	24,666
3.	Combined Dispensary, Manvi ..	77	18,777	21,705
4.	Health Unit-type Dispensary, Kurdi	..	11,900	..
5.	Health Unit-type Dispensary, Sirvar	..	13,408	..
6.	Health Unit-type Dispensary, Biagwat.	..	3,224	7,907
<b>Sindhnanur taluk</b>				
1.	Primary Health Centre, Jawalgera	35	12,939	47,917
2.	Combined Dispensary, Sindhnanur ..	1,376	16,538	20,916
3.	Reduced-Scale Local Fund Dispensary, Turvihah.	..	5,214	10,116
4.	Health Unit-type Dispensary, Balganur.	..	8,588	10,597
<b>Koppal taluk</b>				
1.	Primary Health Centre, Hiresindogi	18	5,562	42,966
2.	Primary Health Centre, Kavalur ..	..	96,771	32,781
3.	Combined Dispensary, Koppal ..	142	27,472	38,349
4.	Combined Dispensary, T.B.P. (Project), Munirabad.	142	26,871	42,396
5.	Health Unit-type Dispensary, Kinhal.	..	13,695	14,035
6.	Health Unit-type Dispensary, Hittanhal.	..	9,470	11,245
7.	Health Unit-type Dispensary, Irkalgad.	..	Not available	..
9.	National Leprosy Centre, Koppal ..	..	755	39,304

TABLE 2

List of Ayurvedic and Unani Dispensaries in Raichur district with their location and number of patients treated and expenditure incurred in 1968-69.

Sl. No.	Name of Dispensary with location	No. of patients treated	Expenditure incurred
1	2	3	4
<b>Raichur taluk</b>			
Rs.			
1.	T.D.B. Ayurvedic Dispensary, Yergera ..	5,808	4,198
2.	Government Unani Dispensary, Raichur ..	20,357	23,830
<b>Manvi taluk</b>			
1.	Government Ayurvedic Dispensary, Bagalwad ..	5,035	4,518
2.	T.D.B. Ayurvedic Dispensary, Kallur ..	7,883	7,433
3.	Government Unani Dispensary, Rajolibanda ..	10,879	8,380
<b>Sindhaur taluk</b>			
1.	T.D.B. Ayurvedic Dispensary, Walkamdinni ..	N.A.	N.A.
<b>Gangavati taluk</b>			
1.	T.D.B. Ayurvedic Dispensary, Venkatagiri ..	6,632	3,839
2.	do Nandihalli ..	6,660	3,879
3.	do Agoli ..	4,739	3,582
4.	do Hulihaidar ..	5,724	4,132
5.	do Gowripur ..	2,056	4,122
6.	do Hanwal ..	3,021	2,712
7.	Government Unani Dispensary, Anegundi ..	N.A.	N.A.
8.	Government Unani Dispensary, Naoli ..	5,976	11,632
<b>Koppal taluk</b>			
1.	Government Ayurvedic Dispensary, Ginigera ..	3,396	4,675
2.	Government Ayurvedic Dispensary, Kinhal ..	3,265	3,914
<b>Yelburga taluk</b>			
1.	T.D.B. Ayurvedic Dispensary, Hirewankal-Kunta ..	3,809	3,378
2.	T.D.B. Ayurvedic Dispensary, Tadkal ..	12,402	5,257
<b>Lingsugur taluk</b>			
1.	Government Ayurvedic Dispensary, Maski ..	4,687	5,019
2.	Government Unani Dispensary, Medikinal ..	3,753	9,001
<b>Deodurg taluk</b>			
1.	Government Ayurvedic Dispensary, Gabbur ..	3,208	3,858
2.	T.D.B. Ayurvedic Dispensary, Koppal ..	3,650	4,293
3.	Government Unani Dispensary, Ramdurg ..	5,400	6,588

T.D.B. = Taluk Development Board ; N.A. — Not available

1	2	3	4	5
<b>Gangavati taluk</b>				
1.	Primary Health Centre, Kanakgiri	59	9,853	69,321
2.	Combined Dispensary, Gangavati ..	3,287	31,433	55,635
3.	Health Unit-type Dispensary, Anegundi.	..	11,419	12,353
4.	Health Unit-type Dispensary, Siddapur.	..	12,018	5,037
5.	Health Unit-type Dispensary, Karatgi.	..	12,483	13,735
6.	Health Unit-type Dispensary, Naoli.	..	3,196	12,341
<b>Yelburga taluk</b>				
1.	Primary Health Centre, Mangalur ..	..	7,960	16,930
2.	Primary Health Centre, Kuknur ..	31	9,138	47,696
3.	Government Dispensary, Yelburga	29	6,659	3,455
<b>Kushtagi taluk</b>				
1.	Primary Health Centre, Tawargera..	..	9,037	4,433
2.	Primary Health Centre, Chalagera	..	7,589	31,281
3.	Combined Dispensary, Kushtagi ..	630	10,620	22,346
4.	Reduced-Scale Local Fund Dispen- sary, Hanamanahal.	..	4,671	7,650
5.	Reduced-Scale Local Fund Dispensary, Hanamsagar	..	6,677	8,240
<b>Lingsugur taluk</b>				
1.	Primary Health Centre, Mudgal ..	..	13,871	38,338
2.	Primary Health Centre, Anahosur ..	..	12,760	24,635
3.	Combined Dispensary, Lingsugur ..	91	15,714	26,073
4.	Government Dispensary, Gurgunta	10	8,529	13,632
5.	Health Unit-type Dispensary, Gejjalagatta.	..	3,165	14,322
<b>Deodurg taluk</b>				
1.	Primary Health Centre, Jalhalli ..	15	6,334	41,300
2.	Medical and Primary Health Unit, Deodurg.	126	26,363	56,845
3.	Health Unit-type Dispensary, Arkera.	..	16,190	8,841



TABLE 3

Statement showing the number of pathological tests done at the District Laboratory at Raichur during the years 1959, 1963, 1967 and 1968

Year	R.B.C.	Blood for total count	Blood for Defl. count	Blood for HB %	Blood for ESR.	Blood for CT. & BT.	Blood for Wiadl	Blood for Sugar GTT.	Blood for Urea	Blood for VDRL.
1	2	3	4	5	6	7	9	8	10	11
1959	..	..	185	185	285	162	..	..	..	134
1963	..	402	1,511	1,494	596	567	..	..	..	420
1967	..	..	1,640	1,640	1,510	1,584	..	11	10	758
1968	..	52	2,277	2,310	2,507	1,906	1,366	57	41	1,391

  

Year	Blood for Calcium	CSF Analysis	Semen Exam.	Sputum for T.B.	Skin Chipping	F.T.M.	Urine analysis	Motion analysis	Smear for Diphtheria	Blood for M.P.
1	12	13	14	15	16	17	18	19	20	21
1959	..	..	..	64	9	..	1,575	206	..	56
1963	..	..	..	61	22	..	3,196	322	..	507
1967	..	..	30	85	551	30	85	2,316	323	363
1968	..	1	24	18	426	22	94	2,383	427	4