8.0 OBJECTIVES

After going through this Unit you should be able to:

- explain an epidemic situation
- identify the causes for occurrence of epidemics; and
- list the steps involved in the control of epidemics

8.1 INTRODUCTION

You have already learnt in the earlier unit on epidemics (Unit 12, Block 3, CDM-01) about its meaning, causation and the control measures for preventing epidemics. In this unit, we shall describe two epidemic situations in the recent past, which have been in the national and international media headlines. You will also learn about the magnitude and causative factors of these epidemic situations. Towards the end of this unit, the lessons learnt from these particular situations will be highlighted.

8.2 MAJOR EPIDEMICS IN INDIA

India is endemic to many diseases such as Malaria, Kala-azar, Cholera, Tuberculosis. These erupt in epidemic form when conditions are favourable for their spread. Epidemics are disasters by themselves but these can emerge in the aftermath of other disasters as well.

In the recent past, two epidemics, viz., plague and dengue inflicted the Indian population very badly at Surat and Delhi, respectively. However, these occurred by themselves and were not the result of any other natural disaster.

8.2.1 The Surat (Gujarat) Plague Epidemic - 1994

Plague is a disease known to mankind from ancient times. India has undoubtedly a long history, which is replete with plague epidemics and havoc caused by them. This recent outbreak of plague generated a tremendous concern in and outside the country. No other disease so amenable to prevention and control has generated such serious concern in contemporary times. If its present epidemiological picture is appropriately examined, it does not deserve the attention it received. The reason for its larger than life size attention in the media in the country and outside, and the reason for the controversies which plagued this plague outbreak are possibly due to an inappropriate perception of the
changing epidemiology of plague in modern era, when we have powerful management and diagnostic tools to contain the disease.

This outbreak occurred in Surat on 19th September, 1994. Following the sudden increase in the number of admitted cases with acute onset of fever, chest pain, cough, hemoptysis and deaths between 19th and 20th September, 1994 in different city hospitals, a sense of deep concern arose. As no history of rat fall could be elicited and typical bubonic cases were not seen, primary pneumonic plague outbreak was considered a possibility. The clinical presentation and the course of the disease pointed towards the pneumonic plague.

Though stray cases were reported from other parts of the city, the major concentration of the reported cases came from the two adjacent localities of Ved Road and Katargam where the population were by and large Maharashtrians, the sanitation was very poor and the localities were highly congested slums. Furthermore, these areas are situated adjacent to river Tapti which was flooded between 7th and 9th September, 1994 due to heavy rains. About five lakh cusecs of water was released from the Ukai reservoir which led to the heavy water logging of the area. When the flood water started receding on 14th and 15th September, 1994, the people of the localities started cleaning the areas and perhaps many of them handled dead wild rodents and animals. The Ganapati festival was observed with pomp and grandeur on 18th September, 1994, when a large procession passed through the area and thereby getting infected probably.

While the first patients were hospitalized on September 19, the panic was so great that by September 29, about 2 lakh persons (one-third of the population) had fled the city.

During the period of the outbreak, 52 deaths were recorded from Surat city of which majority occurred before 25th September, 1994. A total of 1088 cases were suspected, about 146 were presumptive cases and 52 deaths due to plague took place during the period from 19th September, 1994 giving an overall case fatality rate of 4.8%.

A study was carried out in Surat city during 8-19 November, 1994. Several identifiable risk factors were studied like occupation of the people, their visits outside Surat during the incubation period, exposure to a case, participation in the Ganapati procession festival, participation in cleaning operation, any associated illness, consumption of antibiotic, which could be accountable for the sporadic spread of the epidemic. The surprising thing was that the National Capital Delhi was also hit by the plague soon thereafter, although located faraway at about 1000 km. from Surat.

Control Measures

Apart from identifying the patients and providing them proper medical treatment and care, a massive cleaning and sanitizing operation was conducted by the Municipal Corporation of Surat under the inspiring guidance of its Chief Executive whose efforts at cleaning up the city and thereby protecting it from epidemics were lauded nationally and internationally.

8.2.2 Dengue Epidemic in Delhi - 1996

Dengue epidemic struck the Capital from mid-August to end-November, 1996, with Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS): the worst ever in India’s history. The virus, viz., Type II Dengue was identified as the causative agent in a number of clinical samples. There were in all about 10,000 cases with nearly 400 deaths as reported from all parts of the city.
The following reasons were identified for the dramatic emergence in India of Dengue/DHF as a major public health problem:

1) Ineffective Mosquito Control Programmes

2) Major demographic and social changes, the most important being uncontrolled urbanization, excessive population growth and urban decay characterised by substandard housing and inadequate water and waste disposal systems; and

3) Inadequate medical and health services.

Dengue fever is caused by the bite of a mosquito known as Aedes Aegypti which profusely breeds in coolers, storage tanks, earthen pots and other receptacles with rainwater or stored clean water. There are a large number of other possible breeding places of Aedes Aegypti, viz., flower vases, neglected cups of jugs, household collection of water, neglected features of buildings, uncovered cisterns, wells, roof gutters, cracks in the masonry, traps of drains, flush tanks, ant traps, water receptacles of various kinds, rain filled empty cans or food tins, leaking water supply, water meters, sluice water chambers, water for birds, broken bottles, garden tanks, tree chambers, tree holes, fountains, troughs, a variety of dumps for engineering goods, trees, scraps and many more.

Control Measures

Following the report of six deaths due to dengue at the All India Institute of Medical Sciences in The Times of India on September 13th, 1996, the Municipal Corporation of Delhi (MCD) deputed two senior officers from the Antimalaria Department to collect the details. Containment measures were immediately taken in the localities from where these cases were reported. By September 14, 1996, the total number of cases admitted as DHF in Delhi was 11.

The MCD and the New Delhi Municipal Committee (NDMC) took the following measures:

1) House to house survey for detection of vector breeding sources
2) Intensification of anti-larval operation
3) Focal spray with pyrethrum extract
4) Intensification of health education Activities

Public notice by way of newspapers to educate the people regarding dengue and to control the domestic breeding of mosquitoes was done. Likewise equipment like spray pumps, fogging machines were put in operation in large numbers. Control room for monitoring the situation and distribution of pyrethrum solution to the NGOs was also taken-up.

In the year 2001, dengue again seemed to appear in Delhi and a few cases were reported in October. Timely campaign against breeding of mosquitoes by public education and public health measures ensured that the disease did not attain epidemic status.

Check Your Progress 1

Note: i) Use the space given below for your answers.
ii) Check your answers with those given at the end of the Unit.
1) Explain the reasons for the outbreak of plague in Surat in 1994.

2) Give reasons for the emergence of Dengue/DHF in India.

8.3 LESSONS LEARNT

8.3.1 Plague

1) The diseases of the past can make their resurgence if favourable environment conditions are present. Efforts to prevent the resurgence of such deadly diseases have to be made by way of good sanitary conditions, hygiene and cleanliness.

2) The decaying material including dead animals in the unsanitary conditions that usually prevails after the occurrence of destructive natural disaster situations such as earthquakes result in the spread of diseases/epidemics as was seen in the case of the Latur earthquake of 1993.

3) People living in poor sanitary conditions, congested slums and overcrowded localities are more prone to communicable diseases like plague.

4) Migratory population and people participating in crowded functions during festivals and processions create conditions conducive for the spread of such diseases.

5) Surveillance and monitoring programme for the diseases like plague are lacking at present. For want of required data/information on various causative factors, these epidemics cannot be forecast, thus further deterring timely preventive measures.

6) Public needs to be educated about the signs and symptoms of likely diseases so as to enable the early detection and preventive measures of such diseases.

7) Local health authorities have to keep a constant vigil on the epidemic prone areas.

8.3.2 Dengue Fever

1) The outbreaks of dengue including dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS) can be anticipated through a system of surveillance and monitoring of Vector densities.
2) A check on the spread of epidemics by means of adequate control and monitoring measures before and after the occurrence of epidemics has to be ensured.

3) Breeding conditions and the vector around Delhi and in other parts of the country pose a constant threat of dengue in India. Desert coolers, water storage tanks and utensils, leaking water supplies, wells and fountains, rainwater collections and water bodies, tyre dumps, junk cans, rain-soaked and uncleared garbage dumps, etc. provide excellent places for Aedes breeding.

4) DHF has become endemic and would surface periodically because of the very high vector breeding. The only practical approach to avoid future epidemics lies in preventive vector control with main reliance on source reduction and sanitation.

5) Extensive training programme to update their knowledge and skills in this area is essential for health workers.

6) We must accept and face the reality that dengue can surface again and to prevent future outbreaks, especially in the absence of any specific antiviral treatment or vaccine, sustained preventive community measures is the only key to success. Public education in this regard is very essential.

Check Your Progress 2

Note: i) Use the space given below for your answers.
    ii) Check your answers with those given at the end of the Unit.

1) What are the lessons learnt after the outbreak of plague in India?

2) Has dengue become endemic in some parts of the country? If yes, what should be done?

8.4 LET US SUM UP

In this unit you have learnt about the two major epidemic situations of the last decade.

The Plague epidemic occurred in Surat in the year 1994 whereas dengue fever epidemic gripped the country’s capital in 1996. You have learnt that in both these epidemics not only large number of people were affected but a significant number of persons also lost their lives. The likely causative factors have been explained and the important lessons learnt have been highlighted.
8.5 KEY WORDS

Bubonic : A disease situation involving swelling of glands in the body
Anti-larval operation : Action to kill mosquitoes at the larva stage itself.
Endemicity : A condition or illness that is common among the people throughout the year.
Haemorrhagic : Disease in which blood flows out
Epidemiology : The study of the occurrence of a disease in human population.
Vector : Insect that spreads disease, e.g., mosquito
Pneumonic : Pertaining to pneumonia which is a disease in which lungs get infected and develop swelling.

8.6 REFERENCES AND FURTHER READINGS

Park. K., Text Book of Preventive and Social Medicine, M/s. Banarsidas Bhanet, Jabalpur.
Macmohan B. and T.F. Pugh, Epidemiology : Principles and Methods, Little Brown Boston.
Anderson M., An Introduction to Epidemiology, Macmillan, London.

8.7 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1
1) Your answer should include the following points
   - The surroundings were generally very unclean and unhygienic.
   - The flood that preceded the plague outbreak brought dead bodies of wild rodents and animals.
   - While cleaning up the area, people came in contact with these dead rodents and animals.
2) Your answer should include the following points
   - Dengue spreads through the Aedes Aegypti type of mosquito which breeds in clean but stagnant water, the like of which is available in and around houses.
   - Effective mosquito control programme is a major reason for the emergence of dengue.
   - Inadequate medical and public health services have also contributed to the emergence of dengue.
Check Your Progress 2

1) Your answer should include the following points
   • Good sanitary conditions are essential to avoid plague.
   • Crowded places should be avoided.
   • Regular surveillance and monitoring are necessary.
   • Such epidemics can start after major natural disasters also.
   • Public education is essential.

2) Your answer should include the following points
   • Yes, dengue is endemic in Delhi and other parts of India.
   • Strict monitoring and control of breeding of mosquitoes has to be ensured.
   • Public education is necessary.