

# 43

## Screening and immunization

### A Screening

**Screening** is a way of identifying people at **increased** or **greater risk** for a condition, although they do not yet have any signs or symptoms. In some cases, **mass screening** – screening large numbers of people – is appropriate, for example in the past for tuberculosis. In other cases, only those with **high risk factors**, like a **family history** of conditions such as cancer and diabetes, are screened. However, there are a number of problems with screening. There are always **false negatives**, cases where a patient has a disease but screening does not identify it. There are also **false positives**, where someone is told they have a disease when in fact they do not. Furthermore, with some diseases, early identification is of no benefit to the patient as there is no treatment available.

### B Common screening tests

| Condition                                    | Test                         | Subjects                    | Frequency               |
|--|------------------------------|-----------------------------|-------------------------|
| Neural tube defects and Down's Syndrome risk | AFP                          | pregnant women              | between 16 and 17 weeks |
| Breast cancer                                | mammography                  | women, 50–70                | every 3 years           |
| Cervical cancer                              | smear test                   | women, 20–60                | every 3 years           |
| Cardiovascular disease                       | blood cholesterol            | >40 with high risk factors  | every year              |
| <b>Secondary prevention</b>                  |                              |                             |                         |
| Cholesterol >4                               | blood cholesterol            | patients with heart disease | every 6 months          |
| Diabetic retinopathy                         | ophthalmoscopy (see Unit 34) | patients with diabetes      | every year              |

### C Immunization for travellers



The following **vaccinations** are recommended for travellers to South Asia:

#### HEPATITIS A OR IMMUNE GLOBULIN (IG)

Transmission of hepatitis A virus can occur through direct **person-to-person contact**; through **exposure to contaminated water, ice, or shellfish harvested in contaminated water**; or from uncooked fruits, vegetables, or other foods.

#### HEPATITIS B

Especially if you might be **exposed to blood or body fluids** (for example, health-care workers), have sexual contact with the local population, or be exposed through medical treatment.

#### JAPANESE ENCEPHALITIS

If you plan to visit rural farming areas and under special circumstances, such as a known **outbreak** of Japanese encephalitis.

#### AS NEEDED

**Booster** doses for tetanus, diphtheria and measles, and a one-time dose of polio for adults.

#### MALARIA

Your risk of malaria may be high in these countries, including cities. Travellers should take an effective antimalarial drug.

#### RABIES

If you might have extensive, **unprotected** outdoor exposure in rural areas.

#### TYPHOID

Typhoid fever can be **contracted** through contaminated drinking water or food. Large outbreaks are most often related to **faecal contamination** of water supplies or foods sold by street vendors. Vaccination is particularly important because of the presence of *S. typhi* strains **resistant** to multiple antibiotics in this region.

43.1 Complete the sentences. Look at A, B and C opposite to help you.

- 1 ..... for heart disease include smoking, high cholesterol and a family history of heart disease.
- 2 In a small number of cases screening will not identify patients with the early signs of a disease. These are .....
- 3 Some people without signs of the disease will be wrongly identified as having the disease. These are .....
- 4 People ..... blood or body fluids should be immunized against Hepatitis B.
- 5 A ..... vaccination is given some time after the first vaccination to make sure the level of antibodies remains high.
- 6 Hepatitis B can be ..... through exposure to body fluids.
- 7 Penicillin now has no effect against some hospital-acquired infections as they are ..... penicillin.
- 8 An ..... of measles has affected a number of children who had not been immunized with the MMR vaccine.

43.2 Complete the sentences using information from B opposite. The first one has been done for you.

- 1 Women aged from 50 to 70 *should have mammography every three years to check for breast cancer.*
- 2 Patients with heart disease .....
- 3 Women between 20 and 60 .....
- 4 Patients over 40 with high risk factors .....
- 5 Patients with diabetes .....
- 6 Pregnant women .....

43.3 Which of the immunizations listed in C opposite would you recommend for the following visitors to South Asia?

- 1 A tourist who will stay for a few nights in five-star hotels in major cities
- 2 A backpacker who will travel by local transport from one city to another
- 3 A medical student doing an elective in a city hospital
- 4 A volunteer who will live for a year in a rural community
- 5 A traveller who has not had a tetanus vaccination for ten years



**Over to you**



What immunizations are advised for visitors to your country, or a country you would like to visit?

# 44 Epidemiology

## A Rates

The study of the spread and control of diseases in the community (**epidemiology**) requires analysis of **frequency** – the number of times something occurs in a particular period. We talk about frequency using word combinations with **rate**:

|   |      |   |
|---|------|---|
| birth<br>death (mortality)<br>case fatality<br>survival | rate | = the number of births in a <b>population</b> (group of people)               |
|   |      | = the number of deaths in a population  |
|   |      | = the number of deaths from a particular disease                              |
|   |      | = the number of patients still alive after treatment for a particular disease |

The birth rate in Singapore is 10.2 per 1,000 population.

The infant mortality rate in Singapore is 3.0 per 1,000 live births.

Other words used to talk about frequency:

|            |                         |                               |
|------------|-------------------------|-------------------------------|
| Malaria is | <b>common</b>           | in many developing countries. |
|            | <b>uncommon</b><br>rare | in developed countries.       |

## B Incidence and prevalence

The **prevalence** of a disease is the number of people in a population who have the disease at a particular time. The **incidence** of the disease is the number of new cases of the disease during a particular time.

|                             |             |                               |
|-----------------------------|-------------|-------------------------------|
| The incidence of malaria is | <b>high</b> | in many developing countries. |
|                             | <b>low</b>  | in developed countries.       |

The incidence of HIV infection is **highest** in sub-Saharan Africa.

The incidence of HIV infection is **lowest** in the Caribbean.

**Note:** You don't say 'The incidence of malaria is common.'

The incidences of a disease in different groups are often compared.

Rheumatoid arthritis is **more common** in females **than** in males.

Rheumatoid arthritis is **less common** in males **than** in females.

Men and women are **equally affected by** restless leg syndrome.

## C Association and causation

Studying the incidence of disease in particular groups of people can **lead to** the discovery of **causation** – what makes it occur. For example, the high incidence of lung cancer among cigarette smokers suggests that smoking is a **causative factor** in the development of lung cancer. However, care must be taken not to assume every **association between** a disease and a measured variable is **causative**. To say there is an association between two things simply means that they occur *together in a certain situation*. For example, several studies have indicated high rates of lung cancer in cooks. Although this could be a consequence of their work (perhaps caused by carcinogens in fumes from frying), it may be simply because professional cooks smoke more than the average. In other words, smoking might **confound** the association with cooking.

4.1 Complete the sentences. Look at A and B opposite to help you.

- 1 The proportion of episodes of illness that end fatally is the ..... rate.
- 2 The proportion of people who die in a particular period is the ..... rate.
- 3 The proportion of babies born in a particular period is the ..... rate.
- 4 The proportion of patients who are still alive five years after treatment is the five-year ..... rate.
- 5 Ten per cent of the population have perennial rhinitis at any time. This is the .....
- 6 Every year, 0.5–1.0% develop the condition. This is the .....

4.2 Complete the text, using the correct grammatical form of each word. Look at the table and at A, B and C opposite to help you.

**Incidence of lung cancer**

(Surveillance and Risk Assessment Division, CCDD, Health Canada)

| Country | Incidence (per 100,000) |       |
|---------|-------------------------|-------|
|         | Men                     | Women |
| China   | 67.5                    | 26.6  |
| Canada  | 59.1                    | 30.8  |
| USA     | 55.7                    | 33.5  |
| UK      | 51.2                    | 22.0  |
| Japan   | 44.6                    | 13.3  |
| Sweden  | 22.0                    | 12.9  |
| India   | 12.1                    | 3.8   |

In all countries, lung cancer was (1) ..... in men than in women. The (2) ..... incidence among men was in China where 67.5 men per 100,000 were diagnosed with lung cancer in the period. In women, however, lung cancer was less (3) ..... in China than in the USA and Canada. The (4) ..... incidence in both men and women was in India. Sweden also had a fairly (5) ..... incidence in both sexes. Lung cancer is probably (6) ..... in India for cultural and economic reasons, whereas in Sweden it is the result of an effective health education campaign.

4.3 Find prepositions in A, B and C opposite that can be used to make word combinations with the words in the box. Then use the correct forms of the words to complete the sentences.

|          |             |           |      |      |
|----------|-------------|-----------|------|------|
| affected | association | incidence | lead | rare |
|----------|-------------|-----------|------|------|

- 1 Recent surveys showed that the ..... HIV cases had come down in the southern states of India.
- 2 Epidemiologic data suggest an ..... obesity and depression, but further studies are needed.
- 3 Appropriate preventive measures should ..... a reduction in the mortality rate.
- 4 Thalassaemia is ..... people of Northern European origin.
- 5 Male and female soldiers are equally ..... post-traumatic stress disorder.

**Over to you**



Which diseases have the highest incidence in your country? What is the commonest cause of death in men and in women?