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<td>Author(s)</td>
<td>Lee, Hinpeng</td>
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<tr>
<td>Citation</td>
<td>Acta medica Nagasakiensia. 1986, 30(4), p.300-303</td>
</tr>
<tr>
<td>Issue Date</td>
<td>1986-03-20</td>
</tr>
<tr>
<td>URL</td>
<td><a href="http://hdl.handle.net/10069/15693">http://hdl.handle.net/10069/15693</a></td>
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Surveillance of Viral Hepatitis and Liver Cancer in Singapore

Hin Peng LEE

Department of Social Medicine and Public Health, National University of Singapore

INTRODUCTION

In communicable disease control, one is familiar with "individual surveillance" which refers to the close follow-up of contacts of infectious diseases in order to detect onset of disease. As of the 1950s, this concept has broadened to include "community surveillance" which can be defined as the regular and systematic collection, collation, analysis, interpretation and dissemination of morbidity and mortality information on specifically selected diseases.

The objectives of a surveillance programme would be:
(a) To detect changes in disease patterns so that early control action can be initiated;
(b) To evaluate disease control measures;
(c) To provide data for health service planning.

SURVEILLANCE WORK IN SINGAPORE

Fortunately in Singapore, surveillance work is made easier for the following reasons:
(1) There is a well defined area and population, which is properly enumerated every ten years. About 2.47 million people (1982 estimates) live in an area of about 570 square kilometres.
(2) There is a comprehensive medical and health care system which is accessible to everyone, and the information obtained in government facilities is of reasonably good quality. Data from the private sector are generally not available, except for specific diseases like the notifiable infectious diseases and cancer.
(3) There is an efficient infrastructure of communication channels to ensure effective collection and dissemination of information.
(4) The country is small and compact, and from the epidemiological point of view, reasonably homogeneous geographically.
(5) The death registration system covers the whole population, and nearly all certificates are signed by medical practitioners.

**INFECTION DISEASES SURVEILLANCE**

The Infectious Diseases Act of 1976 provides for the statutory notification of 20 diseases. Food poisoning and measles are also made administratively notifiable. Three other diseases are monitored on a weekly basis through attendances at government out-patient dispensaries— influenza, diarrhoeal diseases and viral conjunctivitis— to detect early signs of an epidemic. Notifications are received from medical practitioners of both sectors, and from clinical laboratories.

The Quarantine and Epidemiology Department of the Ministry of the Environment is responsible for the epidemiological investigation and control of communicable diseases in Singapore. The department was transferred from Ministry of Health to Ministry of the Environment when it was established in September 1972. The setting up the Ministry of the Environment was an expression of the strong commitment of the government to the improvement and preservation of environmental health in the country. Clinical laboratories and treatment facilities remained under Ministry of Health.

A Joint Co-ordinating Committee on Epidemic Diseases was instituted in October 1973. There are now representatives from Ministry of Health, Ministry of the Environment, National University of Singapore (Department of Microbiology), Ministry of Defence (Medical Services, HQ), and Ministry of National Development (Primary Production Division). The terms of reference are as follows:

(a) to co-ordinate the work of Ministry of Health and Ministry of the Environment on diseases of public health importance;
(b) to initiate surveys and research on diseases of public health importance;
(c) to present information on diseases of public health importance to both the government and the public.

It publishes the "Epidemiological News Bulletin". Besides providing epidemiological data on the notifiable diseases, the Bulletin also serves as the medium of communication between the government and medical practitioners.

**HEPATITIS SURVEILLANCE**

Viral hepatitis was made administratively notifiable in 1976 and became statutory in 1977. Only clinically diagnosed cases are notified, and there has been no community survey to estimate the size of the problem among asymptomatic individuals. Usually, the only serological information available is the presence of HBsAg. Thus, all "non-B" cases (about 55%) will include "A" (30%) and "non-A non-B" (25%).

In 1983, there were a total of 626 notifications, giving rise to a crude rate of 25.0
per 100,000. There were 8 deaths, making the fatality rate 1.3%. Of the 569 tested for HBsAg, 244 (42.9%) were positive. The male:female ratio was 3.8:1.

In the period 1977–81 reviewed by Goh,1 there were a total of 2512 notifications (about 500 per year). Hepatitis B was confirmed in 677 cases (27.0%).

Some of the salient epidemiological data on Hepatitis B are as follows:

- Notification rate: 5.6 per 100,000
- Case fatality: 2.1%
- Peak incidence: 25–34 years
- Male/Female: 4.7/1
- Ethnic distribution: Indians highest

No definite seasonal pattern.

Overall prevalence of chronic HBsAg carriage is about 5%.

For Hepatitis A, some of the data are as follows:

- Notification rate: 15.2 per 100,000
- Case fatality: 1.3%
- Peak incidence: 15–34 years
- Male/Female: 2.9/1
- Ethnic distribution: Indians highest

About 9% of cases are imported.

**CANCER SURVEILLANCE**

There have been vast changes in the mourning patterns over the last 3 decades. Infective and parasitic diseases have declined markedly while circulatory diseases and cancers have increased.

In 1982, there were a total of 12,896 deaths of which malignant neoplasms accounted for 2,662 (20.6%). Among the cancer deaths, 339 (12.7%) were due to cancer of liver and intrahepatic duct (ICD-155).

Based on figures for 1973–77, the ethnic variation in mean annual liver cancer mortality rate (standardised to world population) were as follows:

**Mean Annual Liver Cancer Mortality: standardised rate per 100,000, by sex and ethnic group**

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<thead>
<tr>
<th>Ethnic Group</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>Chinese</td>
<td>29.8</td>
<td>7.5</td>
</tr>
<tr>
<td>Malay</td>
<td>14.4</td>
<td>4.2</td>
</tr>
<tr>
<td>Indian</td>
<td>12.9</td>
<td>3.2</td>
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The Singapore Cancer Registry is a voluntary data bank which collects basic clinical and epidemiological data on all cancer cases diagnosed in Singapore since 1st January.
1968. It depends primarily on notifications from medical practitioners of both sectors. The registry staff ensure that notification are as complete as possible by routinely checking pathology records, government hospital discharge forms and death certificates.

Based on data from 1968—1977, the number and rate of cases notified were:

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<th></th>
<th>Male</th>
<th>Female</th>
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<tr>
<td>Number of cases</td>
<td>1,888 (12.1%)</td>
<td>496 (4.4%)</td>
</tr>
<tr>
<td>Crude rate (per 100,000)</td>
<td>17.6</td>
<td>4.8</td>
</tr>
<tr>
<td>Standardised rate</td>
<td>28.7</td>
<td>7.4</td>
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By comparison, our liver cancer rates are high, like Shanghai, as opposed to Osaka, Bombay and Western cities. However, the annual trend does show a slight decline of about 1—2%. As our Hepatitis B immunisation programme gets under way, it is important for us to continue monitoring the liver cancer rates. Unfortunately, the results may not be apparent until 10—20 years from now.

REFERENCES

1) GOH K. T. Epidemiological surveillance of communicable diseases in Singapore. Southeast Asian Medical Information Center, Tokyo, 1983.