SURVEILLANCE OF VIRAL HEPATITIS IN HONG KONG
– 1999 Update Report

Department of Health
December 2000

THE SCIENTIFIC WORKING GROUP ON VIRAL HEPATITIS PREVENTION (SWGVHP)

About SWGVHP

The *Scientific Working Group on Viral Hepatitis Prevention* (SWGVHP) was formed by the Department of Health in 1992. It succeeded the work of the previous *Scientific Working Group* cum *Advisory Committee on Hepatitis B Vaccination*. Constituted by professionals in microbiology, public health and clinical fields, the SWGVHP has the following terms of reference:

- To keep under review local and international trends of viral hepatitis infection
- To advise the Government on the strategy on the prevention of viral hepatitis in Hong Kong.

The Department of Health's Special Preventive Programme provides the secretariat support to the SWGVHP. This update report is prepared by the SWGVHP, for the information of health care professionals working on various aspects of viral hepatitis prevention.

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PREFACE

The SWGVHP began deliberating the issue of hepatitis surveillance at its 5th meeting held on 15 May 1995. The discussions culminated in the suggestions of (a) maintaining a database on the seroprevalences of infective hepatitis, (b) conducting regular epidemiological studies to supplement existing information, and (c) alerting the Government, health care providers and researchers on the possible emergence of new epidemiological trends of viral hepatitis. In 1996 and again in 1997, local epidemiological information on viral hepatitis were collected and presented in a new "update report" series. The effort represented the first step towards a coordinated system in the description and dissemination of hepatitis surveillance information.

This is the third report on viral hepatitis surveillance that brings updated the situation as of the end of 1999. Readers are reminded that the report is not that of an original study but a collection of available information on the subject. In case of queries, the original papers and authors should be consulted.

In the course of the preparation of the Report, we have received enthusiastic support from health professionals of different agencies. The publication of the Report would not have been possible without their input. Much as we tried to be accurate and concise, we are fully aware of the possibility of errors. We welcome criticisms, suggestions and comments of any kind. These would be important in helping us improve the quality of the next Report.

Secretariat
Scientific Working Group on Viral Hepatitis Prevention
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EXECUTIVE SUMMARY

The epidemiology of viral hepatitis in Hong Kong is analyzed by examining data from three sources – the statutory notification system, seroprevalence studies and other related publications on the subject. A majority of the new information collected in the last three years (1997 to 1999) has focused on hepatitis B, with few touching on the other forms of hepatitis.

The statutory notification system has remained a useful mechanism for tracking the pattern of acute viral hepatitis. With the exception of the 1992 hepatitis A epidemic, the number of reports has stabilized in the recent years to a few hundred per year. In 1999, about 70% of the reported viral hepatitis have resulted from hepatitis A virus (HAV) infection. The predominance of HAV infection is confirmed by data from hospital inpatient statistics. There were recent data suggesting an important role of hepatitis E (HEV), the situation of which would need to be clarified in the coming years.

The seroprevalence of hepatitis B (HBV) markers has continued to fall. In young adults, for example, the prevalence of HBsAg is less than five percent (data from blood donors and university students) in 1999. In antenatal women, the fall is less obvious, especially among those not born in Hong Kong. Age is an important factor affecting HBsAg, with a higher proportion of the older population harbouring HBV chronically. The introduction of universal hepatitis B vaccination in 1988 would gradually affect the HBsAg rate in the younger age groups. As regards high risk behaviours, the HBsAg positive rate in drug users has generally fallen over years (11.1% in 1999), but is still substantially higher than the general public.

The prevalence of hepatitis A markers has also continued to fall in young people. Anti-HAV is positive in less than 10% of the adolescents and young adults between the age of 11 and 20. Comprehensive information on age-specific prevalences of HAV and HBV markers have not been available in the recent years.

The Hong Kong Red Cross Blood Transfusion Service provides a useful source of data on hepatitis C (HCV). In the last years, the prevalence of anti-HCV in new blood donors ranged between 0.05% and 0.1%. One study suggested that genotype 6a is more common in Hong Kong than western countries. Data on HEV and HGV are too limited for any meaningful interpretation to be made.

1. INTRODUCTION

Viral hepatitis is an important group of infectious diseases caused by viruses with predilection for the liver. In human, there are at least five hepatitis viruses which have been documented to give rise to liver inflammation and other clinical complications. These viruses are named alphabetically in order of their isolation or diagnosis in the scientific community – hepatitis A (HAV), hepatitis B (HBV), hepatitis C (HCV), hepatitis D (delta agent or HDV), and hepatitis E (HEV). More recently in 1995, the hepatitis G virus[1] (HGV) was identified. Its association with clinical diseases is still a subject of debate. More recently, another transfusion-transmitted virus[2] (TTV) was described, which has also been found to be linked to liver diseases.

In Hong Kong, the epidemiology of viral hepatitis could be derived from the data of the Department of Health's disease notification system. The knowledgebase in hepatitis is contributed also by clinicians specialising in infectious diseases, hepatology and virology. Since 1992, the *Scientific Working Group on Viral hepatitis Prevention* (SWGVHP) has been monitoring the hepatitis situation for supporting the development of prevention strategy. In 1996 and 1997, reports on the surveillance of viral hepatitis were prepared, discussed and published for the information of the wider medical community. It was decided subsequently that these surveillance reports be prepared on a regular basis.

The SWGVHP does not undertake direct surveillance activities. This Report is a presentation of surveillance data collected and collated from various sources largely in the public sector. In the process, the Group reviews the situation and brings the information updated as of the end of the year 1999. In compiling the Report, the Secretariat has tried to focus on new information collected between 1997 and 1999. For details of old data, readers shall refer to the SWGVHP's two previous update reports dated 1996 and 1997.

2. THE DATA SOURCES & METHODOLOGY

The production of the 1999 Update Report has, as in the previous years, relied on a continuing process of collecting data from three major sources of information: (a) disease notification system, (b) seroprevalence studies, and (c) published papers or presented abstracts on hepatitis epidemiology or related subjects.

Viral hepatitis is a notifiable disease under the *Quarantine and Prevention of Disease Ordinance* (Cap. 141). The notification system is managed by the Department of Health, which publishes quarterly update reports in its *Public Health and Epidemiology Bulletin*. The statistical data of notifiable diseases are also posted on the Department' s homepage on a monthly basis. Under this system, four categories of viral hepatitis are distinguished, based on the following criteria:

(a) hepatitis A – IgM anti-HAV positive
(b) hepatitis B – IgM anti-HBc positive
(c) non-A non-B hepatitis – negative for the above two markers
(d) unclassified hepatitis – data on hepatitis markers inconclusive

Seroprevalence studies of viral hepatitis are conducted by different agencies. A majority of the data comes from the Government Virus Unit and activities coordinated by Viral Hepatitis Preventive Service (a branch of the Special Preventive Programme). Some studies have been conducted for the purpose of obtaining epidemiological information, while others reflect information extracted from other clinical or research activities. The main sources of prevalence data in the 1999 Update Report are:

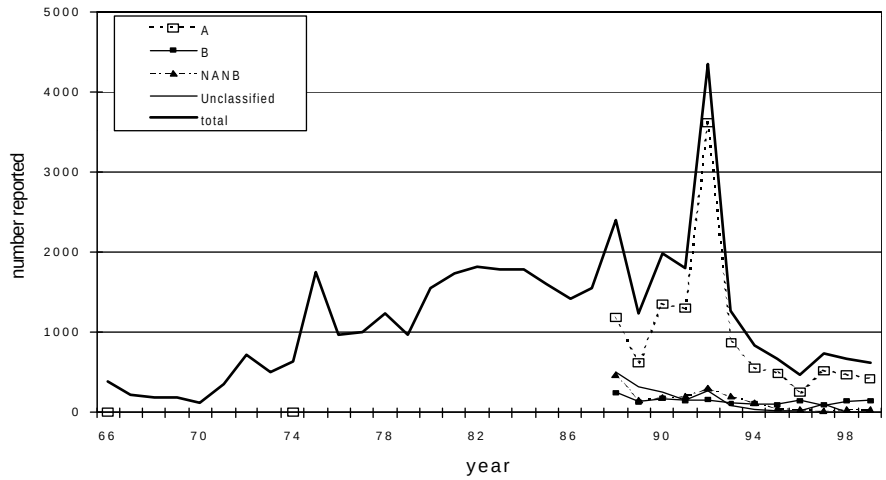
(a) Screening of donated blood at the Hong Kong Red Cross Blood Transfusion Service
(b) Hepatitis B screening programme for antenatal mothers at the Maternal and Child Health Service, Department of Health
(c) Premarital screening programme of the Family Planning Association of Hong Kong
(d) Hepatitis screening of drug users, Department of Health
(e) Seroprevalence data from Virus Unit, Department of Health
(f) Pre-vaccination hepatitis screening for police officers at Viral hepatitis Preventive Service

In Hong Kong, clinical service providers and academic institutes have keen interest in the clinical and public health aspects of viral hepatitis. A review of publications and presentations serves to enrich the information on hepatitis epidemiology. Some of the information may overlap those collected from the two other sources. Readers are reminded that they should refer to the original texts for details.

3. ACUTE VIRAL HEPATITIS

The disease notification system is a useful source of information on viral hepatitis presenting clinically. A graphic illustration of reported hepatitis (A, B, non-A non-B, and classified) in Hong Kong in shown in Box 1. The figures collected between 1966 and 1973 are those reported voluntarily. Between 1974 and 1987, there was no classification into individual viral types under the statutory notification system. Hepatitis A and B could be distinguished in the results beginning from 1988.

Box 1. Reported viral hepatitis from 1966 to 1999 (data source: DH)



With the exception of the hepatitis A epidemic in 1992, the number of reports per year has stabilized at a level of a few hundred per year, a majority of which being hepatitis A. In 1999, 618 cases of viral hepatitis have been reported, about 70% of which were hepatitis A. With improvement in sanitation and general health care, hepatitis A has shifted from presenting as an asymptomatic childhood infection to a clinical disease in young adults. The reports of acute hepatitis A is a reflection of the consumption of contaminated food against the background of a lack of immunity against the virus. On the other hand, hepatitis B is endemic in Hong Kong, with a high proportion of adults already carrying some markers signifying past infection or chronic carriage. With the introduction of hepatitis B vaccination, the infection in childhood is becoming very uncommon. These factors account for the rarity of acute

symptomatic hepatitis B, and the predominance of hepatitis A in the overall reported numbers. Box 2 shows the notified cases of viral hepatitis in the last thirty plus years.

Box 2. No. of cases of viral hepatitis reported to the Department of Health between 1996 and 1999 (data source: DH)

year	A	B	NANB	Un-classified	total
66	voluntary reporting since 1966				386
67					218
68					191
69					188
70					117
71					357
72					729
73					509
74	notifiable since 1974				639
75					1761
76					969
77					1008
78					1230
79					964
80					1554
81					1738
82					1814
83					1783
84					1780
85					1601
86					1425
87					1554
88	1187	250	465	496	2398
89	618	136	154	324	1232
90	1362	178	183	261	1984
91	1297	150	200	154	1801
92	3626	157	301	273	4357
93	874	116	203	80	1273
94	557	112	125	41	835
95	491	102	55	18	666
96	264	144	58	11	477
97	527	90	20	99	736
98	474	145	41	4	664
99	427	152	33	6	618

The pattern of reported hepatitis is confirmed by the trend depicted in hospital statistics. In a study of 434 acute hepatitis patients admitted to a public hospital, episodes due to hepatitis A, B, C, and non-ABC were 214(49.3%), 163(37.6%), 7(1.6%) and 50(11.5%) respectively[3]. In all instances, it should be noted that distinction between acute and acute-on-chronic hepatitis B infection may be difficult in the absence of previous testing for hepatitis markers.

The same study addressed the risk factors associated with acute hepatitis B infection. A history of high risk sexual exposure was recorded in 19 of the 67 patients (28.3%). In over half of the cases (58.2%), the risk factors cannot be identified.

Currently, the disease notification system does not allow the classification specifically into hepatitis C and E. The reporting of hepatitis C cases may not be an effective means of studying hepatitis C epidemiology in view of the infection' s chronicity and the difficulty of defining its onset. As for hepatitis E, the hospital admission study above had provided some new insights. Of a total of 505 admitted patients with acute hepatitis, 136 (26%) was non-ABC. Twenty-seven of these (24.3%) were cases of acute hepatitis E[4]. Overall, the pattern of acute hepatitis C and E cannot be defined using existing data from various sources.

4. CHANGING PREVALENCE OF HEPATITIS B MARKERS

The monitoring of hepatitis B is made possible through the testing of common markers resulting from the infection. The commonest markers are: HBsAg – present in chronic carriers and also during active acute infection; anti-HBs – indicative of immunity to the virus; anti-HBc – an indicator of natural infection. In the last years, a broad range of seroprevalence studies have been conducted. Many of these were conducted on young adults, others were data from investigations performed on populations with exposure risk.

Hepatitis B markers in young adults

Data on hepatitis B markers in young adults come mainly from the following sources: (a) blood donor screening at the Hong Kong Red Cross Blood Transfusion Service, (b) antenatal testing at the Department of Health's Maternal and Child Health Centres, and (c) Pre-marital package service of the Family Planning Association of Hong Kong. All are ongoing programmes which allow us to track the trend of hepatitis B prevalence. One hepatitis awareness project of the City University's Health Centre provides supplementary information on young adults.

Box 3. Prevalence of HBsAg in new blood donors (data source: HKRCBTS)

YEAR	HBsAg+ (%)
1990	7.97
1991	8.04
1992	7.38
1993	6.70
1994	5.88
1995	5.99
1996	5.57
1997	5.30
1998	4.89
1999	4.44

Majority of blood donors in Hong Kong is between the age of 16 and 30. Data from the Hong Kong Red Cross Blood Transfusion Service suggested a declining trend of HBsAg prevalence in young adults, from 7.97% in 1990 to 4.44% in 1999 in new donors. (Box 3) Some known carriers may not go for blood donation, which could also account for the low rate in the new donors. The prevalence in repeat donors was below 1%. The prevalence figures were similar to those obtained in the awareness project launched at the City University of Hong Kong from 1994 to 1996, which revealed an HBsAg prevalence of 3.9% for those between the age of 21 and 30.

The HBsAg prevalence in antenatal mothers has also been falling over the years. The observation carries significant implication as it could be used to predict the future trend of perinatal infection. Results from the Maternal and Child Health Service and Virus Unit demonstrated a steady decline from over 10% in the 1980s to 8.8% in 1999 (Box 4). Those between the age of 15 and 19 had a lower prevalence of 7.7%, compared to that of 9.3% above the age of 34 in 1999 (Box 5). The results of clients younger than 15 years of age should however be interpreted with care because of (a) the small number involved, and that (b) the dataset actually included abortion cases from sources other than the Maternal and Child Health Centres.

Box 4. HBsAg prevalence in antenatal women (data source: MCH and Virus Unit, DH)

year	no. tested	no. (%) +ve HBsAg
1990	31749	3574 (11.3)
1991	30075	3278 (10.9)
1992	31394	3391 (10.8)
1993	34221	3456 (10.1)
1994	32470	3247 (10.0)
1995	30962	3016 (9.7)
1996	31508	3072 (9.7)
1997	25892	2417 (9.3)
1998	24678	2223 (9.0)
1999	23934	2114 (8.8)

Despite the young age of the antenatal population, the HBsAg rate was generally higher than that in the university (City University Study) and blood donors. One underlying reason maybe the place of birth of the individual. A study on 2480 pregnant women attending the Maternal and Child Health Centres in 1996 showed a discrepancy between local and non-local born antenatal mothers[5]. Those born in Hong Kong had a HBsAg prevalence of 8.4%, versus that of 13.1% in those born in the Mainland.

Box 5. The HBsAg prevalence and age breakdown of antenatal mothers (data source: MCH, DH)

	No. tested (% positive HBsAg) according to age group					
year	<15	15-19	20-24	25-29	30-34	>34
1990	447(6.9)	1044(10.3)	4671(13.4)	15228(10.7)	7639(12.6)	2780(12.9)
1991	86(5.8)	987(10.7)	4620(10.7)	13151(10.4)	8168(11.5)	3063(11.8)
1992	50(4.0)	928(9.6)	5065(11.4)	13093(10.6)	8788(10.6)	3470(11.7)
1993	30(10.0)	984(9.0)	5589(10.5)	12345(10.3)	9395(11.6)	3798(11.0)
1994	50(6.0)	951(7.8)	5723(9.8)	11590(9.7)	10158(10.6)	3998(10.4)
1995	474(4.3)	922(8.4)	4979(9.7)	10619(9.6)	10112(9.8)	4283(10.3)
1996	97(6.2)	842(7.8)	4765(10.3)	10137(9.5)	9759(9.5)	5908(10.6)
1997	9(0)	902(7.1)	4207(9.3)	8895(9.6)	7982(9.3)	3897(9.3)
1998	104(11.5)	911(5.8)	3887(9.2)	8507(9.3)	7418(8.8)	2851(9.3)
1999	124(11.3)	794(7.7)	3777(8.6)	8068(9.3)	7196(8.2)	3975(9.3)

The falling trend of HBsAg in young women was also evident in data from the Pre-marital Package service of the Family Planning Association. (Box 6) These figures were generally lower than those from the antenatal mothers, and were closer to the local HBsAg rates reported in the study discussed in the last paragraph. In 1999, for example, the HBsAg prevalence of young women attending the Family Planning

association was 6.7%, compared to that of 8.8.% in the Maternal and Child Health Centres.

The factor of age and hepatitis B markers

Age is one of the factors positively associated with the detection of hepatitis B markers. Generally speaking, the older one is, the higher the chance of previous exposure to hepatitis B. With the introduction of universal hepatitis B vaccination in infants, it is speculated that changes would occur in the pattern of hepatitis B markers in different age cohorts. Several datasets provided information on the correlation of age with the frequency of positive hepatitis B markers. Between 1996 and 1999, hepatitis B vaccination was introduced in the police force (Box 7). Results of pre-vaccination screening are available for analysis, stratified according to age. The other set of data (Box 8) is taken from the Community Health Service of United Christian Hospital[6] in 1998

Box 6. HBsAg prevalence derived from the *Premarital Package Service* (data source: FPA)

year	total no. of cases	HBsAg+ve	
		no.	%
1990	17,251	1,659	9.6
1991	19,142	1,831	9.6
1992	18,445	1,708	9.3
1993	19,193	1,661	8.7
1994	16,466	1,210	7.3
1995	16,798	1,320	7.9
1996	19,959	1,575	7.9
1997	17,109	1,301	7.6
1998	13,163	897	6.8
1999	12,686	851	6.7

Both sets of data demonstrated a positive correlation between age and HBsAg positivity. Admittedly these were biased self-selected samples, and it must be cautioned against drawing definitive conclusion from the figures. Generally speaking, men had a higher prevalence of HBsAg than women for all age groups, or were tested positive for any HBV markers in a higher proportion of the subjects. The HBsAg prevalence was between 7-8% in men and 4-6% in women. Unfortunately, age-specific prevalence in children and adolescents is not available. The impacts of hepatitis B vaccination have yet to be determined.

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Box 7. Prevalence of hepatitis B markers in police officers (data source: VHPS, DH)

Age	Male				Female			
	no. tested	no./% +ve for HBV markers		no./% +ve for HBsAg	no. tested	no./% +ve for HBV markers		no./% +ve for HBsAg	
20	318	92	28.9%	19 6.0%	88	22	25.0%	4	4.5%
21-30	3880	1208	31.1%	233 6.0%	1008	304	30.2%	42	4.2%
31-40	4500	1828	40.6%	327 7.3%	324	117	36.1%	13	4.0%
41-50	2031	1159	57.1%	204 10.0%	254	108	42.5%	16	6.3%
51-60	247	154	62.3%	30 12.1%	8	4	50.0%	0	- -
Total	10976	4441	40.5%	813 7.4%	1682	555	33.0%	75	4.5%

Box 8. Prevalence of hepatitis B markers in clients of Community Health Service (Data source: UCH)

Male				
age	**HBsAg+ (%)**	**HBsAb+ (%)**	**HbsAb- (%)**	**total**
18-24	1 (1.8)	47 (85.5)	7 (12.7)	55 (100.0)
25-34	20 (6.7)	203 (68.1)	75 (25.2)	298 (100.0)
35-44	42 (8.5)	267 (53.9)	186 (37.6)	495 (100.0)
45-54	31 (9.3)	158 (47.6)	143 (43.1)	332 (100.0)
55-64	27 (8.9)	128 (42.1)	149 (49.0)	304 (100.0)
>=65	22 (8.1)	107 (39.3)	143 (52.6)	272 (100.0)
Sub-total	143 (8.1)	910 (51.8)	703 (40.0)	1756 (100.0)
Female				
18-24	4 (2.9)	105 (75.0)	31 (22.1)	140 (100.0)
25-34	26 (3.5)	483 (65.8)	225 (30.6)	734 (100.0)
35-44	52 (4.4)	691 (57.9)	450 (37.7)	1193 (100.0)
45-54	74 (9.1)	407 (49.8)	336 (41.1)	817 (100.0)
55-64	39 (7.1)	242 (43.8)	271 (49.1)	552 (100.0)
>=65	19 (5.2)	164 (45.2)	180 (49.6)	363 (100.0)
Sub-total	214 (5.6)	2092 (55.1)	1493 (39.3)	3799 (100.0)
Total	**357 (6.4)**	**3002 (54.0)**	**2196 (39.5)**	**5555 (100.0)**

Hepatitis B serology in occupationally exposed professionals

Health care workers are at risk of HBV infection because of their potential occupational exposure to blood and body fluids. In 1983, a study reported a higher rate of hepatitis B markers in those who had been in service for over 10 years (58.7%) versus those at entry (30.8%)[7]. The HBsAg carriage rates were 10.8% and 7.5% respectively. The HBsAg prevalence was lower in subsequent studies. HBsAg and anti-HBs were positive in 4.7% and 38.2% of 5825 health care workers screened in 1992 and 1993[8]. The figures were 7% and 36.3% in data collected in a vaccination campaign of the Department of Health in 1995. In all instances, the HBsAg prevalence has varied positively with age.

Box 9. Prevalence of hepatitis B markers in life guards (data source: VHPS, DH)

Age	no. tested	no.(%)+ve for hep B markers	No. (%) HBsAg+ve
<20	12	7 (58.3)	1 (8.3)
20-30	231	100 (43.3)	28 (12.1)
31-40	264	173 (65.5)	60 (22.7)
41-50	193	137 (71.0)	33 (17.1)
51-60	42	26 (61.9)	8 (19.0)
TOTAL	742	443 (9.7)	130 (17.5)

Relatively little new information was available in the last three years. Between 1997 and 1999 a vaccination programme was organised for lifeguards of the Regional and Urban Service Departments. The prevalence of hepatitis B markers was

obtained during pre-vaccination screening. (Box 9) The HBsAg rate was 17.5%. This could be a self-selected biased sample, and no obvious factors could be found to account for the high percentage.

Hepatitis B markers and risk behaviours

Needle-sharing in injecting drug users and the practice of unprotected sex are known factors associated with HBV transmission. Two programmes offered new data on hepatitis B infection in drug users and commercial sex workers.

One programme involved the monitoring of the pattern of hepatitis B markers in drugs users registering with drug rehabilitation services. A majority of these clients were methadone clinic attendees. Hepatitis B markers were detected in a high proportion of drug users. HBsAg has fallen from over 13% in 1990 to between 10% and 11% in the last years. In the past, almost every drug user was positive for at least one of the three markers (HBsAg, anti-HBs and anti-HBc). This has also dropped to around 60%. Box 10 shows the prevalence in the last ten years. The fluctuation from 1995 to 1999 is probably a result of the small number of clients, and the varied source of samples collected for administrative reasons.

Box 10. Prevalence of hepatitis B markers in drug users (data source: Virus Unit, DH)

Year	no. tested	% +ve			
		HBsAg	anti-HBs	anti-HBc*	any marker
1990	1067	13.4	59.0	15.7	90.8
1991	1517	14.4	54.4	20.5	89.3
1992	827	14.0	49.3	21.5	84.9
1993	749	14.3	43.1	12.3	69.7
1994	616	12.7	37.5	13.0	63.1
1995	190	10.5	36.8	11.6	58.9
1996	363	8.8	42.4	12.9	62.3
1997	293	6.5	35.8	15.7	52.9
1998	292	9.9	42.8	8.9	59.2
1999	730	11.1	65.3	14.5	65.5

* *specimens positive for HBsAg were not tested for anti-HBc*

Co-infection with HDV has been reported in injecting drug users. In a study of 198 patients with liver diseases screened for anti-HDV in 1985 to 1987, only 1 patient was tested positive[9]. In another report[10] published in 1995, the prevalence of HDV has fallen from 63.1% of 146 HBsAg carriers in 1985-1986 to 8.8% of 153 HBsAg carriers in 1992-1993. There was a greater decline in infection rate in those with five or less years of history of illicit drug use ($p<0.0001$) compared with those on drugs for over 5 years ($p<0.01$). The decrease in HDV prevalence is probably related to a general fall in HBV carriage, an observation reported in other overseas studies[11]. No additional information on the pattern of HDV infection was published subsequently. Overall, epidemiological information on HDV in other population groups is sparse.

At the Social Hygiene Service that provided free treatment for sexually transmitted diseases (STD), a study was conducted to examine the prevalence of hepatitis B markers in commercial sex workers. An analysis on 100 commercial sex workers was published[12]. The complete study had involved a total of 1020 consecutive female commercial sex workers recruited at one Social Hygiene Clinic on the Kowloon side between March 1995 and April 1998 – 69 (6.8%) positive for HBsAg, 551 (54.0%) positive for anti-HBs and 400 (39.2%) negative for either. On the other hand, HBsAg testing has been offered to clients attending the HIV clinic of the Department of Health. As a majority of the HIV/AIDS patients in Hong Kong has contracted the virus through sexual contact, it is not surprising to find a high HBsAg prevalence of 15.4%. (Box 11)

Box 11. HBsAg prevalence in HIV/AIDS patients. (data source: AIDS Unit, DH)

gender	no. +ve HBsAg (%)	total
male	22 (15.7)	140
female	2 (14.3)	16
total	24 (15.4)	156

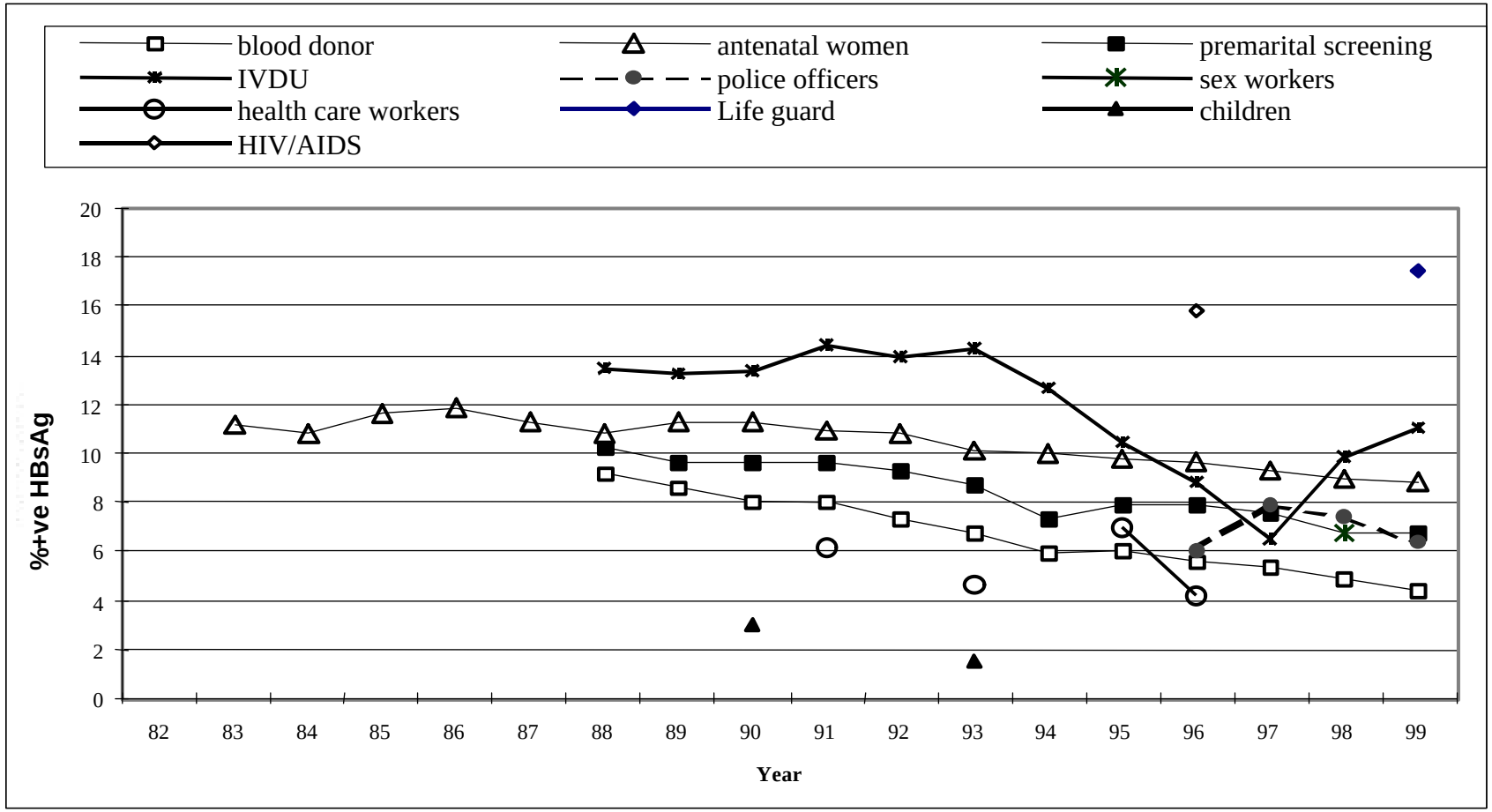
Composite data on HBsAg prevalence

Box 12 and 13 show the HBsAg data collected from various sources between 1990 and 1999. Readers may refer to the report published in 1996 and 1997 for details of some of the data included in the composite table and graph. A general trend of decline is evident. Comparison across datasets should be cautioned in view of the different methodology employed in the studies.

Box 12. HBsAg prevalence in different population groups in the last decade (1990 to 1999)

year	% HBsAg+								
	New blood donors	Ante-natal women	Pre-marital screening	police officers	Life guards	Health care workers	IVDU	commercial sex workers	HIV/ AIDS
1990	7.97	11.3	9.6				13.4		
1991	8.04	10.9	9.6			6.2	14.4		
1992	7.38	10.8	9.3				14.0		
1993	6.70	10.1	8.7			4.7	14.3		
1994	5.88	10.0	7.3				12.7		
1995	5.99	9.7	7.9			7	10.5		
1996	5.57	9.7	7.9	6.1		4.2	8.8		
1997	5.30	9.3	7.6	7.9			6.5		
1998	4.89	9.0	6.8	7.4			9.9	6.8	15.4
1999	4.44	8.8	6.7	6.4	17.5		11.1		

Box 13. Trends of HBsAg in selected population groups



5. TRACKING HEPATITIS A AND HEPATITIS E

Both HAV and HEV are transmitted through orofaecal route. The determination of anti-HAV (total or IgG) in the population provides a picture of previous exposure to the virus. IgM anti-HAV is a specific marker of recent infection, and is used for the investigation of acute infection.

In the past, a number of studies had been conducted to examine the hepatitis A serology in the general population. Whereas about half (44.8%) of the adolescents and young adults developed anti-HAV when they reached the age of 11-20 in 1978[13], this proportion dropped to 17.1% in 1987, 11.1% in 1993[14], and 7% in 1996[15]. Box 14 shows the results (% anti-HAV positive) of a collection of studies on this shift of the prevalence curve over the last two decades.

Box 14. Prevalence of anti-HAV in a collection of studies between 1978 and 1998

Age groups	1978	1987	1989[16]	1993	1996	1998[17]
0 – 10	12.9%	5.3%	6.8%			5.4%
11 – 20	44.8%	17.1%	11.2%	59.4% (M)	7.0%	
21 – 30	75.0%	53.8%	58.8%	53.3% (F)		7.6%
31 – 40	82.9%	85.1%	83.5%			40.8%
41 – 50	91.1%	94.7%	91.1%	94.5% (M)		33.3%
>50			93.9%	91.0%(F)		
Data source	A	A	B	C	D	E

Data sources:

A. Study on stored sera of 702 healthy subjects, by Chin et al of University of Hong Kong, reference no.13.

B. Study on 1028 serum samples collected from individuals attending a health exhibition, by Lim et al of Department of Health, reference no.19.

C. Seroprevalence results reported in the press by Lai et al of University of Hong Kong, reference no. 14.

D. Seroprevalence study in school children by Lee A of the Chinese University of Hong Kong, reference no. 15.

E. Pre-vaccination screening on students and staff on City University of Hong Kong, reference no. 20.

HAV is an important cause of acute viral hepatitis. The consumption of contaminated shellfish is likely one of the underlying factor for the occasional upsurge of cases reported in Hong Kong. A recent study cited the experience of Tam JS, who reported the detection of HAV by RT-PCR in 6% of clams, 14% of mussels and 30% of oysters in winter. The corresponding figures for summer for clams and mussels were 0% and 26% respectively[18].

In Hong Kong, sero-epidemiological information on HEV is limited. A retrospective study published in 1992 reported that 16.1% of the healthy subjects were positive for anti-HEV[19]. The age-specific prevalence increased from below 10% in people less than 20 years of age, to about 30% in those above the age of 40. Another study published in 1995 reported a prevalence of 18.2% in 77 healthy subjects in southern China[20].

6. HEPATITIS C INFECTION

Hepatitis C is transmitted through parenteral route. One early study in 1988 reported a prevalence of 0.5% in the general population and 66.8% in injecting drug users[21].

With the implementation of anti-HCV screening at the Hong Kong Red Cross Blood Transfusion Service, a regular source of epidemiological information has become available. Box 15 shows the anti-HCV prevalence in new donors, which ranged from 0.05% to 0.1% in the last five years.

Among 212 blood donors who tested positive for anti-HCV in 1991 to 1994, serotyping was performed[22], revealing that the commonest genotype was 1b (58.8%), followed by type 6a (27.0%). A significantly greater number of donors infected with type 6a reported a history of drug abuse, compared with those infected with type 1b. In western countries, type 1 is most commonly reported. The distribution of genotypes in a study in the United States is as follows: 1a, 56.7%; 1b, 17.0%; 2a, 11.4%; 3a, 7.4%; 4, 0.9%; 6, 3.2%[23].

Box 15. Anti-HCV prevalence in new blood donors (data source: HKRCBTS)

	1991	1992	1993	1994	1995	1996	1997	1998	1999
No. of new donors	48769	43674	36146	38077	39778	40875	40419	43756	40960
Anti-HCV+	17	28	36	24	28	24	35	29	40
% Anti-HCV+	0.035	0.064	0.099	0.063	0.070	0.059	0.087	0.066	0.097

7. COMMENTARY

The publication of the update report series has enabled the SWGVHP to examine the strengths and weaknesses of the existing surveillance mechanism as it relates to viral hepatitis in Hong Kong. The efforts have also brought a dedicated group of professionals together to debate on the hepatitis situation, to develop consensus, and to recommend on prevention strategies.

Limitation of surveillance mechanisms

The current surveillance mechanisms are limited in their capacity of effectively defining the hepatitis situation in Hong Kong. Statutory reporting is a regular monitoring mechanism for describing acute viral hepatitis. The system is useful in tracking symptomatic infections like hepatitis A in adults. Its usefulness in monitoring the other hepatitis infections is doubtful. Though there have been suggestions to specifically include hepatitis C in the reporting system, the advantages may be minimal in view of the chronicity of the disease and the difficulty in identifying acute infection. Hepatitis E may be a better candidate if serological diagnosis can be improved. All in all, the application of reporting is likely to be limited in the epidemiological surveillance of viral hepatitis.

Serosurveillance plays a complementary and crucial role in the surveillance of viral hepatitis. In the last five year the SWGVHP has been able to collect a good range of data to help describe hepatitis epidemiology in Hong Kong. There are, however, problems in the use of the existing datasets. Many of these are not properly designed epidemiological studies. Some are figures extracted from service activities or health promotion projects (for example, pre-vaccination screening in police officers, testing of drug users, antenatal testing of pregnant women). There are also research projects which provide useful one-off epidemiological data, but longitudinal trends could not be worked out. Despite these shortcomings, a systematic approach to collate and analyse available data is itself a useful exercise for better understanding hepatitis epidemiology.

Patterns of viral hepatitis

Similar to observations in the last two reports, an obvious pattern seen in the 1999 update report is the decline of hepatitis B markers in almost all community groups studied. Whereas it' s still customary to say that we have an HBsAg carriage rate of

10%, evidences have emerged to support that it could be much lower. A population-based study is needed to reposition Hong Kong in term of its HBsAg carriage. The resulting figure would hinge on a balance of such factors as human mobility, age, vaccination, infection control, and practice of high risk sexual and drug using behaviours. Perinatal infection has been the commonest cause of HBV transmission in the past. With the universal vaccination programme in place since 1988, carriage in childhood would continue to decline. One potential impact, which we may need to be on the alert, is the possibility of an increasing importance of sexual transmission.

Hepatitis C shares common transmission routes with hepatitis B. Worldwide, HCV prevalence varies from place to place. The data from new blood donors suggest that it' s between 0.05% to 0.1% in Hong Kong. Experiences of clinicians and virologists confirm that HV is common in injecting drug users and haemophilia patients. Data on other parenterally transmitted viruses like TTV and HGV are sparse. A meaningful conclusion cannot be drawn at this stage.

The orofaecally transmitted viral hepatitis, HAV and HEV, are likely to continue to be important causes of symptomatic infectious diseases. The declining level of HAV antibodies reflects the diminishing immunity of the population against the virus. Currently less than 10% of adolescents and young adults between the age of 11 and 20 do not have protective immunity against HAV. There are no recent data on age-specific anti-HAV prevalence. Such knowledge would be useful to help decide on the vaccination strategy for Hong Kong. The importance of HEV is less clear. It is one possible cause for acute hepatitis, while between 10% to 20% of the population may carry antibody against the virus, an indication of previous infection.

Meeting future surveillance needs

The SWGVHP has, over the last years, discussed means of enhancing the capacity of Hong Kong' s surveillance mechanism on viral hepatitis. The main suggestions are:

(a) The reporting system shall be reviewed to consider the inclusion of specific forms of viral hepatitis

(b) Seroprevalence studies would need to be conducted regularly to track the changes over time.

(c) Registry system could be established to monitor the clinical and epidemiological patterns of chronic infection like hepatitis C.

(d) A central coordinating mechanism could serve to identify surveillance needs, promote research, and assist in the dissemination of surveillance information.

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CHC-Group Medical Practice

Health Service of City University of Hong Kong

Department of Community and Family Medicine, Chinese University of Hong Kong

ABBREVIATIONS

AIDS	Acquired immune deficiency syndrome
Anti-HAV	Antibody against hepatitis A virus
Anti-HBc	Antibody against hepatitis B core antigen
Anti-HBs	Antibody against hepatitis B virus
Anti-HCV	Antibody against hepatitis C virus
Anti-HDV	Antibody against hepatitis D virus
Anti-HEV	Antibody against hepatitis E virus
DH	Department of Health
FPA	Family Planning Association
HBsAg	Hepatitis B surface antigen
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HDV	Hepatitis D virus
HEV	Hepatitis E virus
HGV	Hepatitis G virus
HIV	Human immunodeficiency virus
HKRCBTS	Hong Kong Red Cross Blood Transfusion Service
IgG	Immunoglobulin G
IgM	Immunoglobulin M
IVDU	Intravenous drug users
MCH	Maternal and child health centre
RT-PCR	Reverse transcriptase – polymerase chain reaction
STD	Sexually transmitted disease
TTV	Transfusion transmitted virus
UCH	United Christian Hospital
VHPS	Viral Hepatitis Preventive Service

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