

Surveillance of Viral Hepatitis in Hong Kong - 2003 Update Report

**Special Preventive Programme
Centre for Health Protection
Department of Health
December 2004**

THE SCIENTIFIC WORKING GROUP ON VIRAL HEPATITIS PREVENTION (SWG VHP)

About SWGVHP

The *Scientific Working Group on Viral Hepatitis Prevention* (SWG VHP) 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.

Special Preventive Programme (SPP), Centre for Health Protection (CHP) of the Department of Health provides secretariat support to the SWGVHP.

Membership List

Dr SS Lee, JP (Chairman)	Consultant, SPP, CHP, Department of Health
Professor NK Leung, BBS, JP	Hon Consultant Paediatrician, Princess Margaret Hospital
Professor CL Lai	Professor, Department of Medicine, The University of Hong Kong
Professor John Tam	Professor, Department of Microbiology, Chinese University of Hong Kong
Dr WL Lim, JP	Consultant Medical Microbiologist, CHP, Department of Health
Dr Betty Young	Consultant Paediatrician, Pamela Youde Nethersole Eastern Hospital
Dr CK Lin	Hospital Chief Executive, Hong Kong Red Cross Blood Transfusion Service
Dr HY Lo	Consultant Physician, Queen Elizabeth Hospital
Dr KT Tse	Consultant, Department of Obstetrics and Gynaecology, Queen Elizabeth Hospital
Dr Nancy Leung	Hepatologist, Department of Medicine, Chinese University of Hong Kong
Dr ST Lai	Consultant Physician, Infectious Disease Division, Princess Margaret Hospital
Dr Thomas Tsang	Consultant (Community Medicine), Surveillance and Epidemiology Branch, CHP, Department of Health
Dr SL Leung	Principal Medical Officer, Family Health Service, Department of Health
Dr YY Ho	Consultant (Community Medicine), Food & Environmental Hygiene Department
Mr. Thomas Tam	Senior Pharmacist, Department of Health

Secretariat

Dr KH Wong
Mr. MK Wong

Senior Medical Officer, SPP, CHP, Department of Health
Senior Executive Officer, SPP, CHP, Department of Health

Correspondence

The Secretariat
Scientific Working Group on Viral Hepatitis Prevention
c/o Special Preventive Programme Office,
5/F Yaumatei Jockey Club Clinic,
145 Battery Street, Yaumatei,
Kowloon,
HONG KONG.

Telephone: (852) 2780 8622
Facsimile: (852) 2780 9580

Website: www.hepatitis.gov.hk
E-mail: hepatitis@dh.gov.hk

Research Team

This report* was compiled by SPP, CHP of the Department of Health, on behalf of the SWGVHP. Ms Kathy LS Cheng collected, compiled and analysed the data, Dr. KH Wong and Dr. SS Lee wrote the report.

*pdf version of the report can also be downloaded from www.hepatitis.gov.hk.

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PREFACE

At its 7th meeting on 15 May 1995, the Scientific Working Group on Viral Hepatitis Prevention (SWGVP) deliberated on the issue of hepatitis surveillance in Hong Kong. The discussions in the meeting led to the suggestions of (a) maintaining a database on the seroprevalence of infective hepatitis in Hong Kong, (b) conducting regular epidemiological studies to supplement existing information on the different forms of infective hepatitis, and (c) alerting the Government, health care providers and researchers on the possible emergence of new epidemiological trends of viral hepatitis. Subsequently, in 1996, 1997, 2000, 2002 and 2003, local epidemiological data on viral hepatitis were collected and published in an “update report” series. The effort represented the first step towards a coordinated system in the description and dissemination of hepatitis surveillance information in Hong Kong.

This is the seventh report on viral hepatitis surveillance that brings updated information as of the end of 2003, for the information of health care professionals working on various aspects of viral hepatitis prevention. In this Report, a new format has been employed in the presentation of data. A commentary of the latest hepatitis epidemiology is followed by tabulated tables and figures categorized by types of hepatitis. Readers are reminded that this Report, similar to previous ones under the same series, is not a primary study but a collection of secondary data on the subject. The original papers and authors should be consulted in case of queries.

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. We also reckon that the list in the Acknowledgements may not be exhaustive. 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
December 2004

ACKNOWLEDGEMENTS

The SWGVHP wishes to thank the following agencies for their input, suggestions or comments in the course of preparing the 2003 Update Report:

CHC-Group Medical Practice
Chinese University of Hong Kong
Department of Medicine, Princess Margaret Hospital
Department of Microbiology, Princess Margaret Hospital
Family Health Service, Department of Health
Family Planning Association of Hong Kong
Government Virus Unit, Centre for Health Protection, Department of Health
Health Service of Baptist University of Hong Kong
Health Service of City University of Hong Kong
Health Service of Lingnam University
Hong Kong Red Cross Blood Transfusion Service
Pamela Youde Nethersole Eastern Hospital
Special Preventive Programme, Centre for Health Protection, Department of Health
Surveillance & Epidemiology Branch, Centre for Health Protection, Department of Health
University of Hong Kong

1. COMMENTARY

Surveillance Mechanisms of Viral Hepatitis in Hong Kong

1. Similar to many other places worldwide, viral hepatitis is a notifiable disease in Hong Kong. Locally, voluntary reporting was started in as early as 1966 and, since 1974, the disease has become notifiable. However, it was not until 1988 that the reported cases are classified by viral etiology, namely hepatitis A, hepatitis B, non-A non-B hepatitis and unclassified hepatitis. Since 1996, non-A non-B hepatitis is further categorized into hepatitis C, hepatitis E and hepatitis (not elsewhere classified). Under the current reporting system, hepatitis A and B are defined by the presence of IgM anti-HAV and IgM anti-HBc respectively, whereas hepatitis C and E are diagnosed by positive tests for anti-HCV and anti-HEV.

2. Expectedly, virtually all of the reported cases are acute viral hepatitis. While the figures captured under the local system could be a good reflection of the acute disease burden of viral hepatitis, the extent of chronic infections resulting from some hepatitis, notably hepatitis B and C, has to be determined by other mechanisms. Insight of the epidemiology of various forms of hepatitis in Hong Kong can be achieved by an analytical interpretation of regular statistics collected by health care or other institutions, and the information generated from designated studies. This report presents the findings from collation and analysis of viral hepatitis data obtained from the disease notification system, service statistics as well as seroprevalence studies. Much hopeful that the local viral hepatitis picture can be painted accurately and fully, this is certainly limited by the nature and availability of data. The presence of biases in data per se and their interpretation need to be acknowledged in reading this report.

Changing Epidemiology of HAV and HEV

3. Hepatitis A virus (HAV) and hepatitis E virus (HEV) are both transmitted by faecal-oral route. Over the last decades, more data on hepatitis A relative to hepatitis E was available in Hong Kong. Hong Kong is of intermediate endemicity for HAV [1]. Since 1988 with the breakdown of reported hepatitis according to aetiologic agents, the largest epidemic of hepatitis A was in 1992, with over 3500 cases reported (Box 1). In the last decade, annual reported hepatitis A cases were in the range of 300 to 600. In 2003, the number of cases fell to just over 100 (Box 1). As hepatitis A is the biggest contributor to the reported viral hepatitis, the total reported number stroke a record low of 232 in 2003. During the SARS outbreak in the first half of 2003, the number of HIV and sexually transmitted diseases reports had also decreased. Nevertheless, unlike the detection of asymptomatic HIV-infected patients from screening, nearly all of the reported viral hepatitis were in symptomatic patients. One plausible contributing factor is the diminution of social activity, including dining out, during the SARS period, which led to a reduction of HAV exposure in the community.

4. From the available data, prevalence of hepatitis A infection has been falling. The latest epidemiology of hepatitis A in the local general population can be derived from a study conducted in 2001 [2]. In this household study (Community Research Project for Viral Hepatitis 2001, CRPVH), anti-HAV positivity was less frequent ($P < 0.001$) across all age groups among subjects >21 years [2], than subjects in the same age groups of another study conducted in late 1980s [3]. HAV prevalence has only increased insignificantly in every 10-year age groups of people aged 21-50 [2] when compared with their corresponding 10-year younger age groups [3], signifying an ageing cohort effect with no major infections in the last 10 years [2]. Similar conclusions can be drawn when comparing the late 1980s findings with those of a late 1970s study on local HAV seroprevalence [4]. Overall, these 3 studies suggested that age-specific prevalence of HAV has right-shifted in the last two decades. As of 2001, anti-HAV was present in about 20% of adults below 30 years old while it was over 80% in people aged ≥ 40 in the general Chinese population (Box 5). Besides an increasing prevalence with higher age, people born outside Hong Kong were more likely to test positive for anti-HAV whereas the reverse was true for people of non-labour work [2].

5. Serologic evidence of HEV infection was found in about 19% of adult subjects in the 2001 CRPVH study; people in the 40-49 age group had the highest positivity rate of 24% (Box 6). Unlike HAV infection, a pattern of right shift in HEV seroprevalence was not as prominent when temporal change was analysed. Both the

overall and age-specific HEV prevalence were lower in 2001 [1], when compared with the findings in a study done in late 1980s [5].

Pattern of Hepatitis B in Various Communities

6. Similar to what was observed for HAV, the number of hepatitis B virus (HBV) infections notified in 2003 dropped, to a record low of 98. In a recently published study, over 30% of acute HBV infections reported between 2000 and June 2002 were attributable to unprotected sex, the most important identifiable risk factor amongst all [6]. If sexual contact is becoming a common mode of HBV transmission locally, the observed decline in reported cases of 2003 echoed the fallen attendance at government sexually transmitted disease clinics in the same year.

7. Determining the seroprevalence of HBV also sheds light on how common the infection is in different communities, as well as its chronic disease burden. The various adult communities can be categorized into 3 groups according to the risk of contracting HBV: those (a) without apparent risk, (b) with undetermined risk, and (c) with apparent risk. Groups without apparent risk for which data in 2003 was available include blood donors, university students/staff, pre-marital screening attendees, antenatal women, police officers and new health care workers. Clients coming forward for post-exposure management are those with undetermined risk. Drug users and HIV/AIDS patients are at apparent risk of getting HBV, as a result of risk behaviours and shared transmission routes between human immunodeficiency virus (HIV) and HBV.

8. A majority of the available seroprevalence data in different populations were limited to overall positivity rate of HBV markers. Still, temporal trend can be discerned as most have yearly data for the past decade or so. For groups with some demographic characteristics available, such as age and gender, further analyses have been made per the aggregate data. All of these groups having more data belong to the first category with no apparent HBV risk. Several features on the current pattern of HBV could be observed from the serologic investigations, namely (a) chronic HBV infection is in a general declining trend, (b) HBV prevalence increases with increasing age, and (c) chronic HBV infection is commoner in male than female. A word of caution in the interpretation of data, though, is that HBV testings have been performed for a variety of reasons in different communities, with heterogeneous mix of population characteristics.

9. The temporal decline of hepatitis B markers in most community groups without apparent risk was especially obvious in new blood donors and police officers, whose HBsAg rate in 2003 continued to fall to 3.23% (Box 7) and 4.6% respectively (Box 14). The drop was less prominent in antenatal mothers (Box 12) and newly recruited health care workers (Box 17). After several years of decline, there was a slight rebound of HBsAg rates in university students/staff (Box 10) and pre-marital package service users (Box 11) in 2003 and 2002 respectively. Compared with aforementioned groups, a higher HBsAg prevalence with or without evidence of higher positivity rate of any HBV markers were consistently noted in drug users (Box 19) and HIV-infected patients (Box 20), underscoring their infection risk. Furthermore, due to the underlying immunosuppression, HIV/AIDS patients are more prone to becoming chronically infected with HBV after acute infection [7]. Up to 2003, HBsAg was present at some 10-14% in these two groups of clients for the last few years, which was substantially higher than the 3.5-9% in other clients (Box 21, 22).

10. For some groups, evidence supported age as an important factor of HBsAg prevalence, with a higher proportion of the older population having markers of past infection or being chronically infected. From the 1996 to 2003 data in police officers, the presence of HBV markers progressively increased with each 10-year age group, from 28.6% in officers ≤ 20 years old to 60.3% in officers aged 51-60 years (Box 15). In addition, there was a rise of HBsAg rate with increasing age in police officers, from 5.3% in ≤ 20 years old to 9.4% in 51-60 years old subjects respectively (Box 15). Positive correlation of HBsAg positivity with age was also present in new blood donors of 2003, beyond the age of 30 (Box 8). Similar age pattern was, however, not observed in antenatal women, which showed more or less same HBsAg rate across reproductive ages (Box 13). Similarly, no definite age pattern can be derived from the household study of adult general population conducted in 2001 (Box 16).

11. Male had a higher HBV prevalence than female, as observed in several groups. Overall HBsAg positivity rate was 4.0% in male blood donors and 2.5% in female ones in 2003 (Box 8). Male police officers had a 4.9% HBsAg rate while that was 3.1% in female officers in 2003 (Box 14). From 1996 through 2003, the overall HBsAg rate was 6.9% and 4.1% in male and female police officers respectively (Box 14). Data from the same 8-year period also showed that the presence of HBV markers (anti-HBs or HBsAg) was higher at 39% in male than the 33.2% in female officers (Box 14). The overall HBsAg rate was also higher in male from the 2001 household study (Box 16).

12. Occurrence of new HBV infection is dependent on the interplay of multiple factors, including size of HBV pool, proportion of population being susceptible and chance of exposure to the virus. It is likely that the circulating pool of HBV has reduced over the years in Hong Kong, thereby lessening the risk of exposure which can lead to acute HBV infection. The reduced HBV pool in the community might have resulted from the ever-increasing vaccination coverage in adults (especially young ones), practice of universal precautions in health care settings, predonation blood screening and promotion of safer sex [6]. Nonetheless, the still high HBsAg prevalence, though declining, means a significant disease burden in the years to come. Continued tracking of the trends of new infections and prevalent cases could inform more of the changing HBV situation in our locality.

Current situation of hepatitis C

13. Although HCV shares similar transmission routes with hepatitis B, the two infections may not be of equal prevalence in a locality, as what epidemiological data point to in Hong Kong. While HBV is still prevalent in many populations in Hong Kong, HCV prevails only in isolated communities. Data from new blood donors in the last decade suggested that it is below 0.1% in young adults locally, with the figure in 2003 being 0.068% (95% confidence interval, 0.044%-0.100%) (Box 23). This is much lower than the prevalence of HAV, HBV and HEV. Findings of the household study of the entire spectrum of adult age groups conducted in 2001 further supported the relatively uncommon HCV infection in Hong Kong; the overall positive rate was 0.3% (95% confidence interval, 0.07%-0.94%) (Box 25).

14. Experience of clinicians and virologists has previously confirmed that HCV was common in injecting drug users, haemophilia and other patients requiring frequent blood/blood product transfusions [8]. Results of testing non-random samples from drug users under treatment suggested a decline in the rate of HCV infection from over 70% in 1991/1992 to below 50% in 2000/2001 (Box 26). HIV/AIDS patients, with a proportion being injecting drug users, is the only other group with data showing a comparatively high HCV prevalence (Box 27). The higher HCV prevalence, coupled with the hastened liver disease progression in HIV-infected patients [9], would no doubt result in a unique HCV/HIV coinfection that demands intervention. Limited genotypic studies in Hong Kong has identified that 1b, 6a and 1a were the commonest genotypes locally [10,11], a scenario different from that in western countries [12].

15. Since 2003, a surveillance project has been piloted to enhance understanding of the HCV situation in Hong Kong. Comprising laboratory and clinical reporting, the data was contributed by Hong Kong Red Cross Blood Transfusion Service and Department of Microbiology, Princess Margaret Hospital for the former, and Department of Medicine, Princess Margaret Hospital and Integrated Treatment Centre, CHP, DH for the latter. HCV prevalence in new and repeat blood donors in 2003 was 0.016% (Box 28). HCV antibody screening performed according to medical/clinical conditions or risk of infection at PMH showed an overall prevalence of 8.47%, with high rates occurring in patients who had frequent parenteral exposure (Box 28). The clinical cases reported in year 2003 were, however, too few for meaningful analysis.

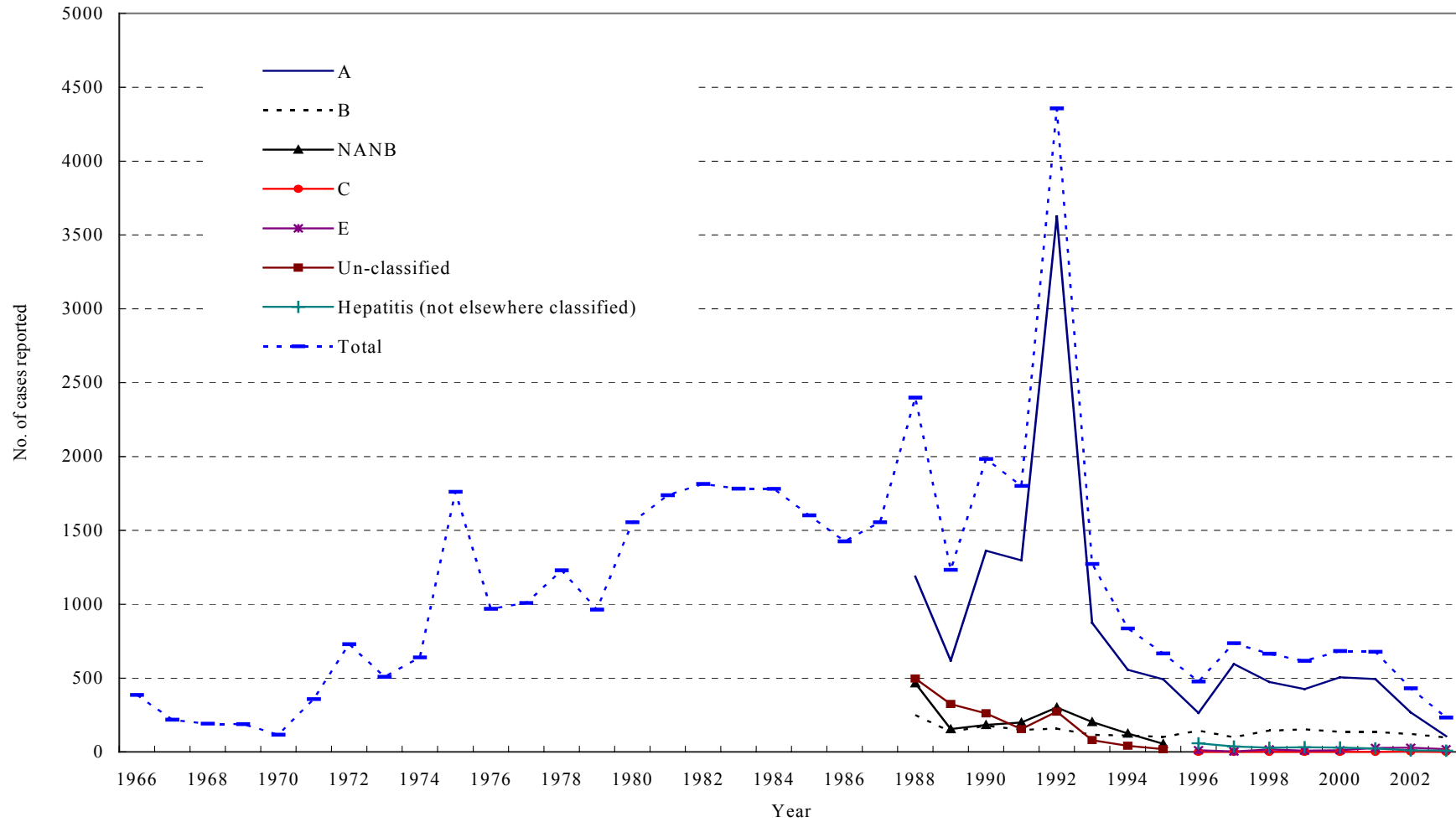
2. Tabulated results of acute viral hepatitis under the disease notification system

<i>Box</i>	<i>Title</i>	<i>Source</i>	<i>Page</i>
Box 1	Number of cases of viral hepatitis reported to the Department of Health between 1966 and 2003	DH	13
Box 2	Reported viral hepatitis from 1966 to 2003	DH	14
Box 3	Breakdown of different types of reported viral hepatitis from 1996 to 2003	DH	15

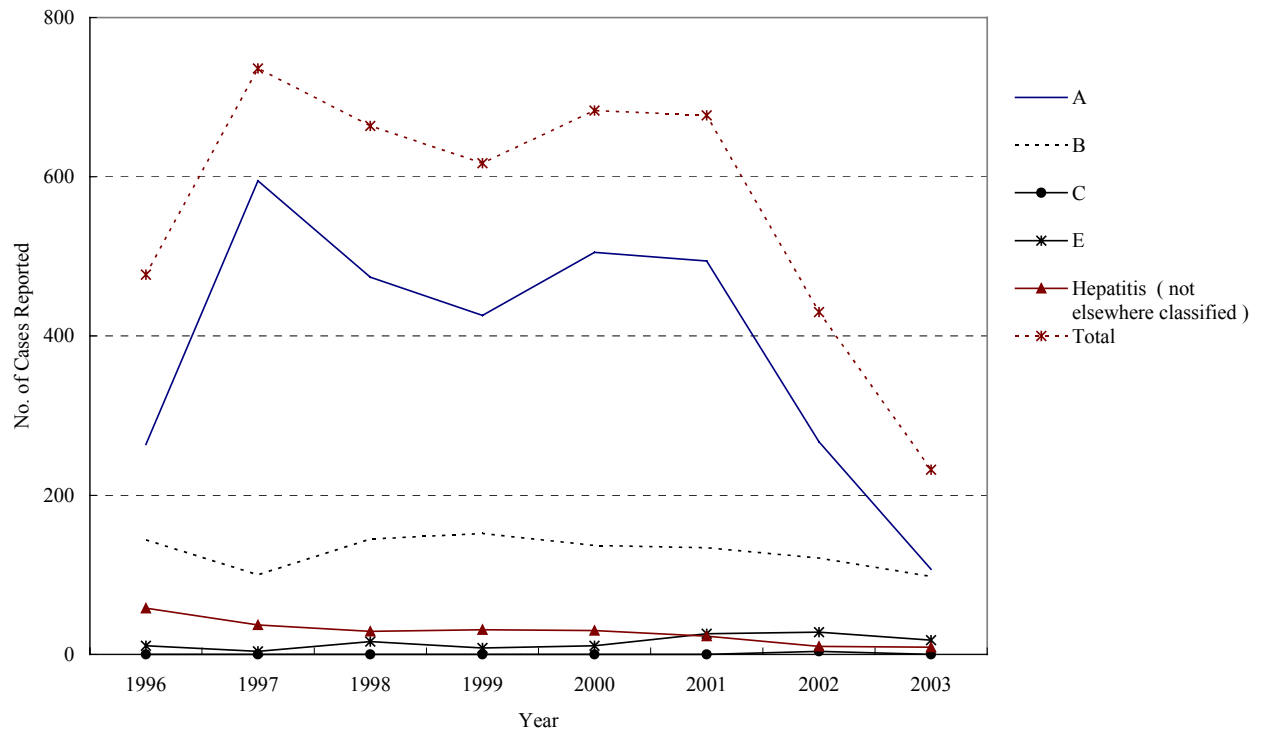
Box 1. Number of cases of viral hepatitis reported to the Department of Health between 1966 and 2003 (Data source: DH)

Year	A	B	NANB	C	E	Un-classified	Hepatitis (not elsewhere classified)	Total
1966	<i>voluntary reporting since 1966</i>							386
1967								218
1968								191
1969								188
1970								117
1971								357
1972								729
1973								509
1974	<i>notifiable since 1974</i>							639
1975								1761
1976								969
1977								1008
1978								1230
1979								964
1980								1554
1981								1738
1982								1814
1983								1783
1984								1780
1985								1601
1986								1425
1987								1554
1988	1187	250	465			496		2398
1989	618	136	154			324		1232
1990	1362	178	183			261		1984
1991	1297	150	200			154		1801
1992	3626	157	301			273		4357
1993	874	116	203			80		1273
1994	557	112	125			41		835
1995	491	102	55			18		666
1996	264	144	-	-	11	-	58	477
1997	595	100	-	-	4	-	37	736
1998	474	145	-	-	16	-	29	664
1999	426	152	-	-	8	-	31	617
2000	505	137	-	-	11	-	30	683
2001	494	134	-	-	26	-	23	677
2002	267	121	-	4	28	-	10	430
2003	107	98	-	-	19	-	8	232

Box 2. Reported viral hepatitis from 1966 to 2003 (Data source: DH)



Box 3. Breakdown of different types of reported viral hepatitis from 1996 to 2003 (Data source: DH)



3. Tabulated results of seroprevalence of hepatitis A and hepatitis E

Box	Title	Source	Page
Box 4	Prevalence of anti-HAV in a collection of studies/testings between 1978 and 2003	Multiple sources	17
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Box 6	Prevalence of anti-HEV in participants of Community Research Project for Viral Hepatitis (CRPVH) 2001	DH	18

Box 4. Prevalence of anti-HAV in a collection of studies/testings between 1978 and 2003 (Data sources: Multiple sources.)

Age groups	1978	1987	1989	1993	1995	1996		1998	2000	2001	2001	2002	2003
0 – 10	12.9%	5.3%	6.8%	59.4% (M)	8.3%	-	6.1%	5.4%	9.3%	4.58%	-	5.3%	10.3%
11 – 20	44.8%	17.1%	11.2%		7.0%	-	11.8%	7.6%	17.5%	13.2%	26.8%	12.6%	13.2%
21 – 30	75.0%	53.8%	58.8%	53.3% (F)	11.3%	-	37.7%	40.8%	35.0%	41.3%	53.2%	46.7%	52.4%
31 – 40	82.9%	85.1%	83.5%		49.0%	-	58.6%	66.7%	60.0%	71.1%	88.3%	58.1%	100.0%
41 – 50	91.1%	94.7%	91.1%	94.5% (M)	70.5%	-	58.6%	66.7%	60.0%	71.1%	88.3%	58.1%	100.0%
>50			93.9%			91.0% (F)					-		
Data source	A	B	C	D	E	F	E	E	E	E	G	E	E

Data sources:

- A. Study on left-over sera of 362 subjects, by Tsang et al of the University of Hong Kong [4]
- B. Study on stored sera of 702 healthy subjects, by Chin et al of the University of Hong Kong.[3]
- C. Study on 1028 serum samples collected from individuals attending a health exhibition, by Lim et al of Department of Health. [13]
- D. Seroprevalence results reported in the press by Lai et al of the University of Hong Kong. [14]
- E. Pre-vaccination screening on students and staff of City University of Hong Kong: 553 (1995), 669 (1996), 608 (1998), 395 (2000), 592 (2001), 371 (2002), students and staff of Baptist University of Hong Kong 240 (2001), 259 (2002), 153 (2003) and students and staff of Lingnan University 125 (2003). [15]
- F. Seroprevalence study in school children by Lee et al of the Chinese University of Hong Kong. [16]
- G. Community Research Project on Viral Hepatitis 2001

Box 5. Prevalence of anti-HAV in participants of Community Research Project on Viral Hepatitis (CRPVH) 2001 (Data source: DH)

Age group	No. Tested	Anti-HAV +ve	
		No.	%
18-29	137	27	19.7
30-39	223	116	52.0
40-49	291	248	85.2
50-59	170	161	94.7
60 & over	115	113	98.3
All	936	665	71.0

Box 6. Prevalence of anti-HEV in participants of Community Research Project on Viral Hepatitis (CRPVH) 2001 (Data source: DH)

Age group	No. Tested	HEV +ve	
		No.	%
18-29	137	11	8.0
30-39	222	32	14.4
40-49	290	70	24.1
50-59	170	39	22.9
60 & over	115	24	20.9
All	934	176	18.8

4. Tabulated results of seroprevalence of hepatitis B

Box	Title	Source	Page
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**Box 7. Prevalence of HBsAg in new blood donors from 1990 to 2003
(Data source: HKRCBTS)**

Year	% HBsAg +ve
1990	7.97
1991	8.04
1992	7.38
1993	6.70
1994	5.87
1995	5.99
1996	5.62
1997	5.20
1998	4.89
1999	4.44
2000	4.15
2001	3.98
2002	3.64
2003	3.23

Box 8. HBsAg prevalence and its gender and age breakdown in first time blood donors in 2003 (Data source: HKRCBTS)

Age Group	Male			Female		
	No. tested	HBsAg No. positive	%	No. tested	HBsAg No. positive	%
16-19	11849	327	2.8	11888	234	2.0
20-29	3804	245	6.4	3496	146	4.2
30-39	1408	63	4.5	1888	47	2.5
40-49	770	59	7.7	1106	33	3.0
>49	241	21	8.7	282	15	5.3
Total	18072	715	4.0	18660	475	2.5

Box 9. New hepatitis B infection among repeat donors attending Hong Kong Red Cross Blood Transfusion Service, 2000 to 2003 (Data source: HKRCBTS)

Year	No. of repeat donors	No. of infection	Incidence of infection (/100000)
2000	148366	14	9.4
2001	150420	14	9.3
2002	151410	7	4.6
2003	143230	6	4.2

Box 10. HBsAg prevalence among university students/staff (Data source: City University Health Centre (till 2002), Baptist University Health Centre (since 2001) & Lingnam University Health Service (since 2003))

Year	Aged below 21			Aged 21 - 30		
	Total no. of cases	HBsAg+ve		Total no. of cases	HBsAg+ve	
		No.	%		No.	%
1994	305	7	2.3	830	29	3.5
1995	324	10	3.1	768	33	4.3
1996	348	4	1.1	762	30	3.9
1998	371	5	1.3	608	21	3.5
2000	230	7	3.0	391	12	3.1
2001	508	13	2.6	814	28	3.4
2002	266	10	3.8	483	13	2.7
2003	121	5	4.1	214	8	3.7

Box 11. HBsAg prevalence 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
2000	15,348	862	5.6
2001	16,611	844	5.1
2002	15,077	1,033	6.9
2003	13,489	957	7.1

Box 12. HBsAg prevalence in antenatal women from 1990 to 2003 (Data source: FHS, DH and Virus Unit, CHP, DH)

Year	No. tested	HBsAg +ve	
		No.	%
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
2000	19090	1701	8.9
2001	23373	2142	9.2
2002	22202	2005	9.0
2003	13513	1179	8.7

Box 13. HBsAg prevalence and age breakdown of antenatal mothers (Data source: FHS, DH)

Year	No. tested (% positive HBsAg) according to age group				
	15-19	20-24	25-29	30-34	>34
1990	1044 (10.3)	4671 (13.4)	15228 (10.7)	7639 (12.6)	2780 (12.9)
1991	987 (10.7)	4620 (10.7)	13151(10.4)	8168 (11.5)	3063 (11.8)
1992	928 (9.6)	5065 (11.4)	13093 (10.6)	8788 (10.6)	3470 (11.7)
1993	984 (9.0)	5589 (10.5)	12345 (10.3)	9395 (11.6)	3798 (11.0)
1994	951 (7.8)	5723 (9.8)	11590 (9.7)	10158 (10.6)	3998 (10.4)
1995	922 (8.4)	4979 (9.7)	10619 (9.6)	10112 (9.8)	4283 (10.3)
1996	842 (7.8)	4765 (10.3)	10137(9.5)	9759 (9.5)	5908 (10.6)
1997	902 (7.1)	4207 (9.3)	8895 (9.6)	7982 (9.3)	3897 (9.3)
1998	911 (5.8)	3887 (9.2)	8507(9.3)	7418 (8.8)	3851 (9.3)
1999	794 (7.7)	3777 (8.6)	8068 (9.3)	7196 (8.2)	3975 (9.3)
2000	618 (6.8)	2974 (10.1)	6466 (9.5)	5818 (8.0)	3192 (8.7)
2001	659 (7.3)	3516 (9.5)	8330 (10.1)	6936 (8.3)	3915 (9.0)
2002	484 (5.0)	2829 (9.7)	9120 (9.7)	6351 (8.5)	3414 (8.1)
2003	354 (4.8)	1727 (9.7)	4726 (9.6)	4357 (8.0)	2339 (8.2)

Box 14. Prevalence of hepatitis B markers in police officers, by sex from 1996 to 2003 (Data source: DH)

Year	Male					Female					All				
	No. tested	+ve for HBV markers		+ve for HBsAg markers		No. tested	+ve for HBV markers		+ve for HBsAg markers		No. tested	+ve for HBV markers		+ve for HBsAg markers	
		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%
1996	2080	878	42.2	138	6.6	413	128	31.0	15	3.6	2493	1006	40.4	153	6.1
1997	4227	1836	43.4	346	8.2	472	178	37.7	26	5.5	4699	2014	42.9	372	7.9
1998	2316	855	36.9	177	7.6	284	90	31.7	16	5.6	2600	945	36.3	193	7.4
1999	1399	517	37.0	93	6.6	322	108	33.5	17	5.3	1721	625	36.3	110	6.4
2000	1300	478	36.8	83	6.4	244	68	27.9	3	1.2	1544	546	35.4	86	5.6
2001	1058	399	37.7	69	6.5	221	84	38.0	6	2.7	1279	483	37.8	75	5.9
2002	1374	493	35.9	77	5.6	270	91	33.7	10	3.7	1644	584	35.5	87	5.3
2003	1415	458	32.4	69	4.9	259	79	30.5	8	3.1	1674	537	32.1	77	4.6
1996-2003	15169	5914	39	1052	6.9	2485	826	33.2	101	4.1	17654	6740	38.2	1153	6.5

Box 15. Prevalence of hepatitis B markers in police officers, by age from 1996 to 2003 (Data source: DH)

Year	Age group														
	≤20			21-30			31-40			41-50			51-60		
	No. tested	% +ve for HBV markers	% +ve for HBsAg markers	No. tested	% +ve for HBV markers	% +ve for HBsAg markers	No. tested	% +ve for HBV markers	% +ve for HBsAg markers	No. tested	% +ve for HBV markers	% +ve for HBsAg markers	No. tested	% +ve for HBV markers	% +ve for HBsAg markers
1996	9	33.3	0.0	741	29.3	4.7	1155	39.7	6.8	544	55.5	5.9	44	59.1	18.2
1997	9	55.6	11.1	1500	31.5	6.1	2081	42.2	7.3	999	58.2	11.4	110	69.1	13.6
1998	225	24.9	5.8	1131	30.2	5.6	828	39.1	8.3	356	52.8	12.4	60	58.3	6.7
1999	149	30.9	5.4	920	32.6	5.8	428	38.6	6.8	202	51.0	8.9	22	50.0	9.1
2000	29	31.0	6.9	789	30.3	6.2	460	35.7	4.3	242	50.4	5.8	24	50.0	4.2
2001	31	35.5	6.5	639	34.3	5.6	339	36.3	5.6	225	46.2	6.2	45	57.8	8.9
2002	63	39.7	6.3	779	30.2	4.7	443	33.2	3.6	307	46.6	9.1	52	65.4	3.8
2003	72	18.1	1.4	702	27.8	4.8	505	31.1	4.6	357	43.1	5.0	38	47.4	2.6
1996-2003	587	28.6	5.3	7201	30.8	5.5	6239	38.7	6.5	3232	52.5	8.7	395	60.3	9.4

Box 16. Prevalence of HBsAg from the Community Research Project on Viral Hepatitis (CRPVH) 2001 Study (Data source: DH)

Age Group	Male			Female			Total		
	No. tested	HBsAg +ve		No. tested	HBsAg +ve		No. tested	HBsAg +ve	
		No.	%		No.	%		No.	%
18-30	72	6	8.3	87	6	6.9	159	12	7.5
31-40	93	5	5.4	144	20	13.9	237	25	10.5
41-50	100	20	20.0	183	10	5.5	283	30	10.6
51 & Over	111	8	7.2	146	7	4.8	257	15	5.8
Total	376	39	10.4	560	43	7.7	936	82	8.8

Box 17. Prevalence of hepatitis B markers in newly recruited health care workers from 2001 to 2003 (Data source: DH)

Year	Male			Female		
	No. tested	+ve for HBsAg No.	%	No. tested	+ve for HBsAg No.	%
2001	440	27	6.1	613	36	5.9
2002	499	23	4.6	730	38	5.2
2003	373	20	5.4	531	27	5.1

Box 18. Prevalence of hepatitis B markers in persons attending Therapeutic Prevention Clinic of ITC for post-exposure management, from July 1999 to 2002 (Data source: ITC, CHP, DH)

	Health care workers					Non- Health care workers					Total				
	No. tested	+ve for HBsAg		+ve for anti-HBs		No. tested	+ve for HBsAg		+ve for anti-HBs		No. tested	+ve for HBsAg		+ve for anti-HBs	
		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%
Jul-Dec 1999	23	2	8.7	11	47.8	87	13	14.9	41	47.1	110	15	13.6	52	47.3
2000	77	5	6.5	56	72.7	218	20	9.2	92	42.2	295	25	8.5	148	50.2
2001	100	2	2.0	75	75.0	312	20	6.4	142	45.5	412	22	5.3	217	52.7
2002	98	9	9.2	62	63.3	239	21	8.8	130	54.4	337	30	8.9	192	57.0
Total	298	18	6.0	204	68.5	856	74	8.6	405	47.3	1154	92	8.0	609	52.8

Box 19. Prevalence of hepatitis B markers in drug users from 1990 to 2003 (Data source: Virus Unit, CHP, 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	832	13.9	49.0	21.4	84.4
1993	744	14.4	43.4	16.4	69.2
1994	607	12.9	38.1	13.5	64.1
1995	190	10.5	36.8	12.1	58.9
1996	358	8.7	43.0	12.6	62.8
1997	290	6.6	36.2	15.9	53.4
1998	290	10.0	43.4	7.9	59.3
1999	725	11.2	44.8	13.8	67.2
2000	892	11.4	42.5	15.8	67.8
2001	654	11.6	41.3	17.3	70.2
2002	553	12.7	43.0	16.6	72.3
2003	198	10.1	42.4	12.6	65.2

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

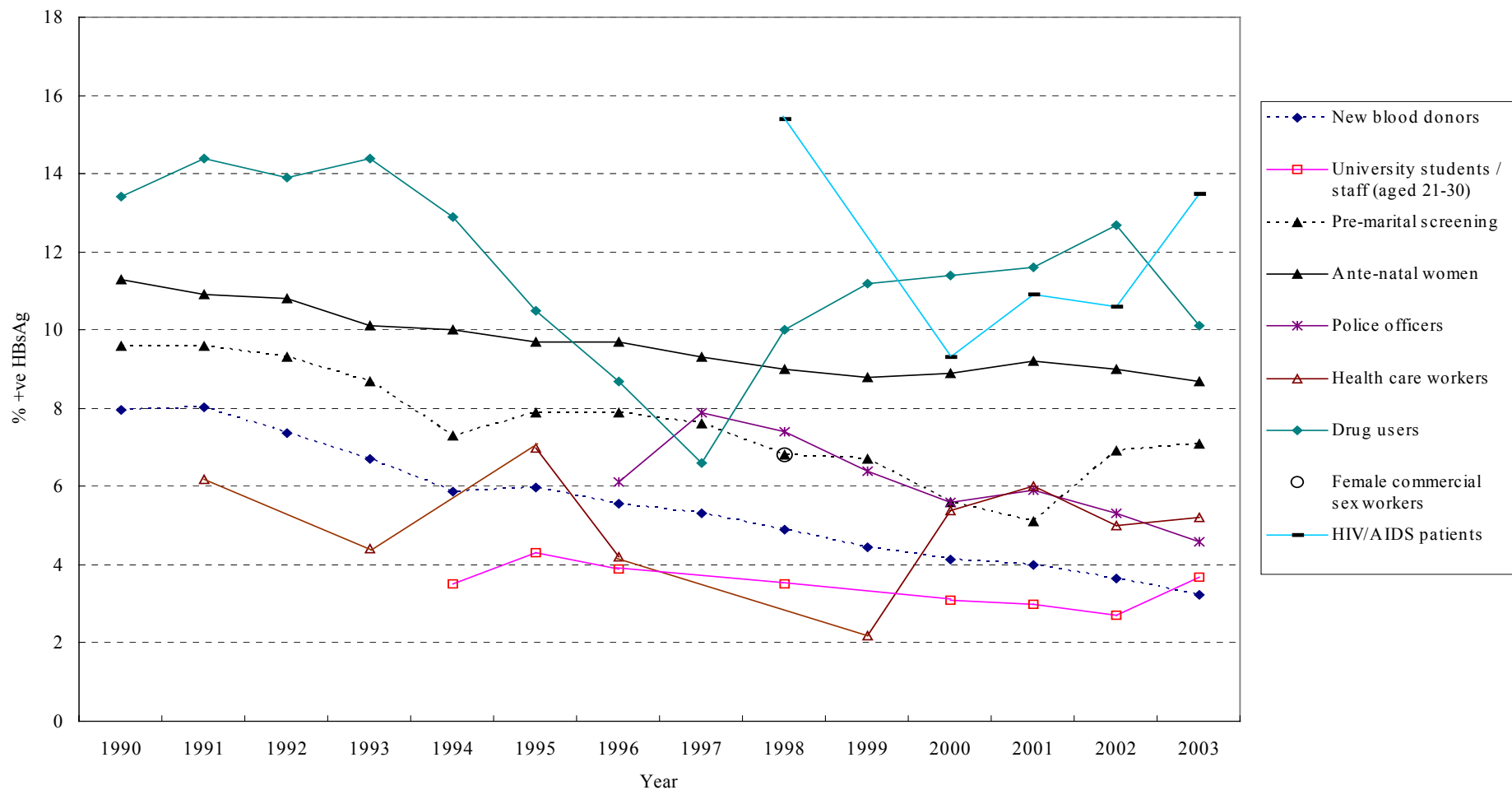
Box 20. HBsAg prevalence in HIV/AIDS patients in 1998 and 2000-2003. (Data source: ITC, CHP, DH)

Year	Male		Female		Total	
	No. tested	No. HBsAg + (%)	No. tested	No. HBsAg + (%)	No. tested	No. HBsAg + (%)
1998	140	22 (15.7)	16	2 (12.5)	156	24 (15.4)
2000	87	9 (10.3)	21	1 (4.8)	108	10 (9.3)
2001	75	10 (13.3)	26	1 (3.8)	101	11 (10.9)
2002	119	14 (11.8)	22	1 (4.5)	141	15 (10.6)
2003	91	12 (13.2)	13	2 (15.4)	104	14 (13.5)

Box 21. HBsAg prevalence in different population groups from 1990 to 2003 (Data source: multiple sources)

Year	% HBsAg+								
	New blood donors	University students/staff (aged 21-30)	Pre-marital screening	Ante-natal women	Police officers	Health care workers	Drug users	Female commercial sex workers	HIV/AIDS patients
1990	7.97	-	9.6	11.3	-	-	13.4	-	-
1991	8.04	-	9.6	10.9	-	6.2	14.4	-	-
1992	7.38	-	9.3	10.8	-	-	13.9	-	-
1993	6.70	-	8.7	10.1	-	4.4	14.4	-	-
1994	5.87	3.5	7.3	10.0	-	-	12.9	-	-
1995	5.99	4.3	7.9	9.7	-	7	10.5	6.8	-
1996	5.62	3.9	7.9	9.7	6.1	4.2	8.7		-
1997	5.20	-	7.6	9.3	7.9	-	6.6		-
1998	4.89	3.5	6.8	9.0	7.4	-	10.0		15.4
1999	4.44	-	6.7	8.8	6.4	2.2	11.2	-	-
2000	4.15	3.1	5.6	8.9	5.6	5.4	11.4	-	9.3
2001	3.98	3.4	5.1	9.2	5.9	6.0	11.6	-	10.9
2002	3.64	2.7	6.9	9.0	5.3	5.0	12.7	-	10.6
2003	3.23	3.7	7.1	8.7	4.6	5.2	10.1	-	13.5

Box 22. Trends of HBsAg in selected population groups from 1990 to 2003 (Data source: multiple sources)



5. Tabulated results of seroprevalence of hepatitis C

Box	Title	Source	Page
Box 23	Anti-HCV prevalence in new blood donors, 1991 to 2003	HKRCBTS	31
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Box 28	Prevalence of hepatitis C from screening of blood donors and clinical testing of patients in a cluster hospital	HKRCBTS & PMH Microbiology Laboratory	32

Box 23. Anti-HCV prevalence in new blood donors, 1991 to 2003 (Data source: HKRCBTS)

Year	No. of new donors	Anti-HCV+	
		No.	%
1991	48769	17	0.035
1992	43674	28	0.064
1993	36146	36	0.100
1994	38077	24	0.063
1995	39778	28	0.070
1996	40875	24	0.059
1997	40419	35	0.087
1998	43756	29	0.066
1999	40960	40	0.098
2000	41166	24	0.058
2001	43415	30	0.069
2002	42292	34	0.080
2003	36732	25	0.068

Box 24. Anti-HCV prevalence and its gender and age breakdown in new blood donors in 2003 (Data source: HKRCBTS)

Age Group	Male			Female		
	No. tested	Anti-HCV No. Positive	%	No. tested	Anti-HCV No. Positive	%
16-19	11849	2	0.02%	11888	2	0.02%
20-29	3804	8	0.21%	3496	3	0.09%
30-39	1408	5	0.36%	1888	0	0.00%
40-49	770	4	0.52%	1106	0	0.00%
>49	241	0	0.00%	282	1	0.35%
Total	18072	19	0.11%	18660	6	0.03%

Box 25. Prevalence of anti-HCV in participants of Community Research Project on Viral Hepatitis (CRPVH) 2001 (Data source: DH)

Age group	No. Tested	Anti-HCV +ve	
		No.	%
18-29	137	0	0
30-39	223	1	0.4
40-49	291	0	0.0
50-59	170	2	1.2
60 & over	115	0	0.0
All	936	3	0.3

Box 26. Anti-HCV prevalence in drug users on rehabilitation (Data source: Virus Unit, CHP, DH)

Year	No. tested	Anti-HCV+	
		No.	%
1991/1992	134	99	73.9
2000/2001	210	97	46.2

Box 27. Anti-HCV prevalence in new HIV/AIDS patients from 2001 to 2003 (Data source: ITC, CHP, DH)

Year	Male		Female		Total	
	No. tested	Anti-HCV + (%)	No. tested	Anti-HCV + (%)	No. tested	Anti-HCV + (%)
2001	75	7 (9.3%)	26	1 (3.8%)	101	8 (7.9%)
2002	118	10 (8.5%)	22	1 (4.5%)	140	11 (7.9%)
2003	91	14 (15.4%)	13	0 (0.0%)	104	14 (13.5%)

Box 28. Prevalence of hepatitis C from screening of blood donors and clinical testing of patients in a cluster hospital (Data source: HKRCBTS, PMH Microbiology Laboratory)

Category		No. tested	HCV +ve	
			No.	%
1. PRE-DONATION SCREENING		178188	28	0.016
2. SCREENING	Pre-transplant	7	0	0.00
	Drug users	167	87	52.10
	Needlestick injuries	90	1	1.11
	Pre-haemodialysis/ peritoneal dialysis	508	5	0.98
	Post-renal transplant	36	2	5.56
	Haematology	36	1	2.78
	Pre-methotrexate	55	0	0.00
	History of blood transfusion (mostly Cooley's anemia)	35	2	5.71
	Pre-vaccination	1	0	0.00
	TOTAL (2)	935	98	10.48
3. CLINICAL INDICATION		501	30	5.99
4. OTHERS OR UNKNOWN		193	10	5.18
TOTAL (2+3+4)		1629	138	8.47

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 surface antigen
Anti-HCV	Antibody against hepatitis C virus
Anti-HEV	Antibody against hepatitis E virus
BUHC	Baptist University Health Centre
CHP	Centre for Health Protection
CRPVH	Community Research Project on Viral Hepatitis
CUHC	City University Health Centre
DH	Department of Health
FHS	Family Health Service
FPA	Family Planning Association
HBsAg	Hepatitis B surface antigen
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HEV	Hepatitis E virus
HIV	Human immunodeficiency virus
HKRCBTS	Hong Kong Red Cross Blood Transfusion Service
IgM	Immunoglobulin M
IDU	Injecting drug users
ITC	Integrated Treatment Centre
LUHC	Lingnam University Health Centre
PMH	Princess Margaret Hospital
SARS	Severe acute respiratory syndrome
STD	Sexually transmitted disease

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