Surveillance of Viral Hepatitis in Hong Kong

2022 Report

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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-HDV	Antibody against hepatitis D virus
Anti-HEV	Antibody against hepatitis E virus
CHP	Centre for Health Protection
CI	Confidence interval
COVID-19	Coronavirus disease 2019
CRPVH	Community Research Project on Viral Hepatitis
DH	Department of Health
FHS	Family Health Service
FPAHK	Family Planning Association of Hong Kong
HBsAg	Hepatitis B surface antigen
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCC	Hepatocellular carcinoma
HCV	Hepatitis C virus
HCW	Health care worker
HDV	Hepatitis D virus
HEV	Hepatitis E virus
HIV	Human immunodeficiency virus
HKRCBTS	Hong Kong Red Cross Blood Transfusion Service
ICS	Immunisation coverage survey
IgG	Immunoglobulin G
IgM	Immunoglobulin M
ITC	Integrated Treatment Centre
MCHC	Maternal and Child Health Centre
MSM	Men who have sex with men
MTCT	Mother-to-child transmission
OR	Odds ratio
PHLSB	Public Health Laboratory Services Branch
PHS	Population Health Survey
PMH	Princess Margaret Hospital
POC	Point-of-care
PVST	Post vaccination serologic testing
PWH	Prince of Wales Hospital
PWID	People who inject drugs
QMH	Queen Mary Hospital
RNA	Ribonucleic acid
RT-PCR	Reverse transcription polymerase chain reaction
SHC	Social Hygiene Clinics
STI	Sexually transmitted infections
TPC	Therapeutic Prevention Clinic
WHO	World Health Organization
WPRO	Western Pacific Regional Office

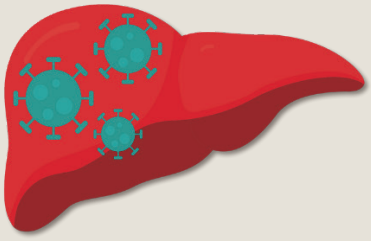
SURVEILLANCE 2022 AT A GLANCE

Number of reported cases of viral hepatitis

Hepatitis A
22

Hepatitis B
12

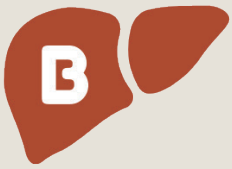
Hepatitis C
12

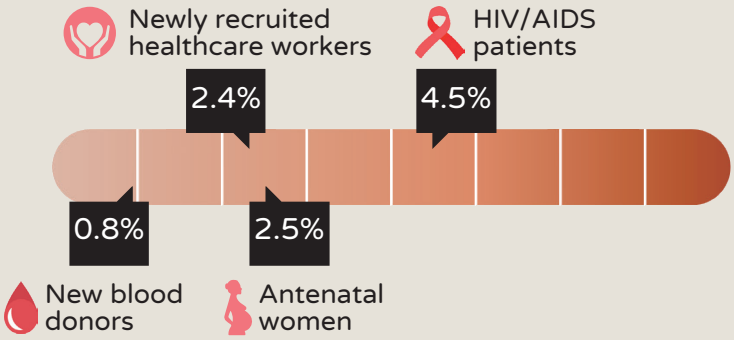


Hepatitis D
0

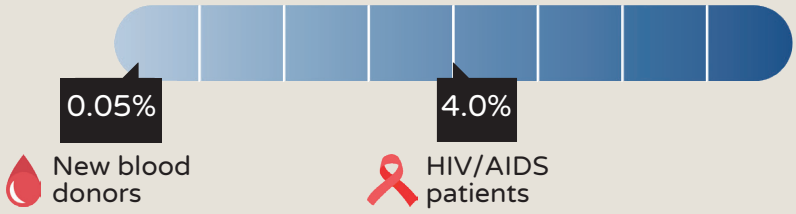
Hepatitis E
57

Prevalence of HBsAg





Prevalence of anti-HCV



Liver cancer statistics (2021)

Number of new cases
1771

Number of deaths
1447

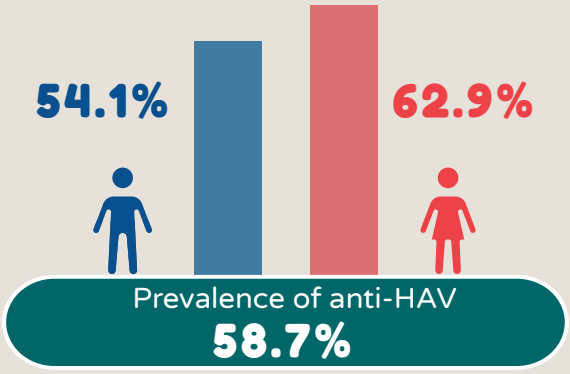
Coverage of hepatitis B vaccination

Birth dose coverage
99.4%

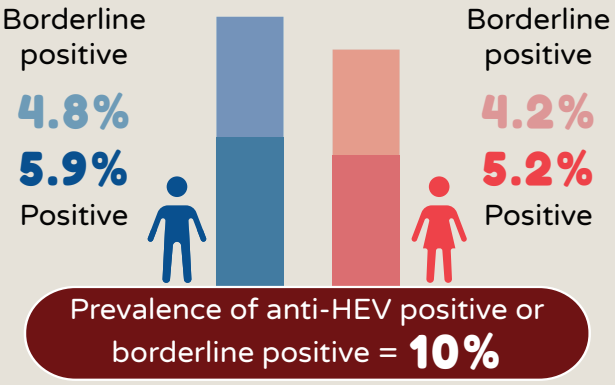
Third dose coverage in pre-school children born in 2015 - 2017
99.2%

VIRAL HEPATITIS SEROPREVALENCE IN POPULATION HEALTH SURVEY 2020-22

Hepatitis A



Hepatitis E



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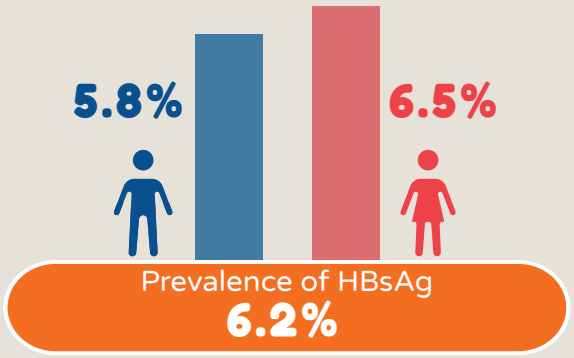

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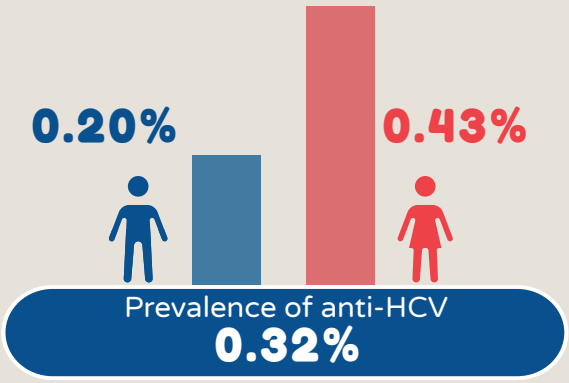
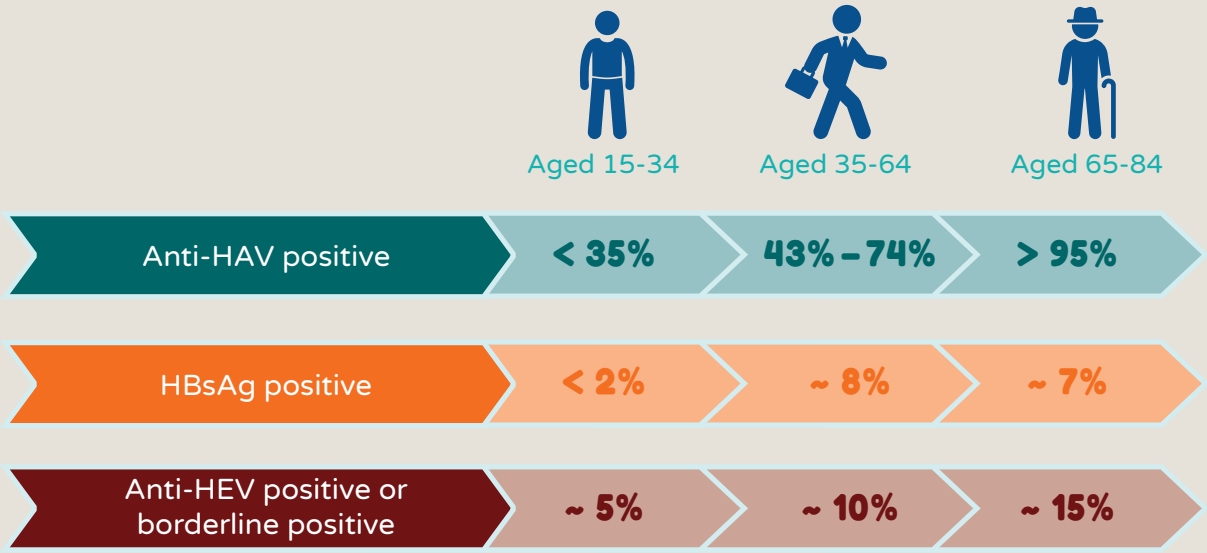




SURVEILLANCE MECHANISMS OF VIRAL HEPATITIS

1. Viral hepatitis is a statutory notifiable disease in Hong Kong. Voluntary reporting was started in 1966, and the disease has become notifiable since 1974. It was not until 1988 that the reported cases were classified by viral etiology, namely hepatitis A, hepatitis B, non-A non-B hepatitis and unclassified hepatitis. In 1996, non-A non-B hepatitis was further categorised into hepatitis C, hepatitis E and hepatitis (not elsewhere classified).

2. The extent of chronic viral hepatitis, notably hepatitis B and C, is determined by other mechanisms. This Report presents the latest findings from collation and analysis of viral hepatitis data obtained from the disease notification system, service statistics, seroprevalence studies and other research findings.

COMMENTARY

Hepatitis A

Acute Hepatitis A Virus Infection

3. Hong Kong was once of intermediate endemicity for hepatitis A virus (HAV) [1, 2]. After 1988 when viral hepatitis began to be reported according to etiologic agents, the largest epidemic of hepatitis A occurred in 1992, with over 3 500 cases reported to the Department of Health (DH) (Box 1). This represented a notification rate of 63 per 100 000 population (Box 8), and since then, a gradual declining trend in HAV incidence has been observed. This discernible decline in hepatitis A contributed to a parallel declining trend in overall reported viral hepatitis since 2002 (Box 4). The death rates from hepatitis A has been low, ranging between 0 and 0.15 per million population in the last two decades (Box 8).

4. From 2013 to 2022, there were a total of 637 hepatitis A reported cases and the annual number of cases peaked in 2015 at 138 and dropped to a record low of 15 in 2021 (Box 5). The male to female ratio was 1.5:1, with 70% aged below 45 years (Box 6, Box 7). Over the years, there has been an increase in the proportion of reported cases over 35 years old. Although the majority were still below 45 years of age, the proportion of reported cases that were aged 45 and above increased from less than 10% in early 2000s to 14% - 41% in the 2010s (Box 7). Recently, the proportion of reported cases aged 45 and above was exceptional high at 80% (12/15) in 2021 and 64% (14/22) in 2022 respectively, which shall be interpreted with caution given the small number of cases reported in these two years.

5. In 2015, a review on 587 reported cases of hepatitis A from 2005 to 2014 was published by the Surveillance and Epidemiology Branch of Centre for Health Protection (CHP), DH. The majority (70%) of cases required hospitalisation, and two fatal cases were recorded. Both fatalities had multiple comorbidities. The majority (76%) of the patients acquired the disease locally. Most (92%) were sporadic cases and 22 small clusters affecting two to four patients were identified. Of these, at least 60% were clusters affecting members of the same household [3].

6. An increase in the number of cases was noted in 2015 when a total of 138 cases were reported. The majority (75%) of the cases was reported from February to June. The male to female ratio was 1.2 to 1, with a median age of 33 years (range: 3 to 83 years). There was no fatality. Except two cases studying in the same school and two cases from the same family, no epidemiological link was found. No single identifiable source could explain the upsurge of cases [3].

7. In late 2016, an unusual upsurge of acute HAV infection affecting men who have sex with men (MSM) with human immunodeficiency virus (HIV) infection was noticed. With retrospective investigations and prospective reporting, a total of 53 cases of laboratory-confirmed HAV infection with clinical symptoms among individuals identified as MSM were recorded between September 2015 and November 2017. The age range of the cases was 20 to 55 years (median: 33 years). Forty-five (84.9%) required hospitalisation and there were no fatalities. Thirty-seven cases (69.8%) were known to be HIV-positive attending one of the three designated public HIV clinics. The majority (96.2%) did not report history of hepatitis A vaccination. Eighteen (33.9%) reported travel history within the incubation period. Around one quarter of the cases had concurrent diagnosis of other sexually transmitted infections (STI) including syphilis, gonorrhoea and chlamydia infection. Among the cases with specimen available for laboratory analysis, forty-three (81.1%) had identical nucleotide sequences within the genotyping window. Apart from one cluster affecting two patients, who were sex partners residing together, no other epidemiological linkage could be found. No common food nor water source or social gathering was identified among these cases. Epidemiological investigations suggested that the outbreak was contributed by transmission by way of sexual contact between men, a high proportion of whom were HIV-infected [4]. Hepatitis A outbreaks among MSM communities were reported during the same period in some other regions with low HAV endemicity, including Taiwan [5], Europe [6] and both North and South America [7-8].

Prevalence of anti-HAV

8. In the Population Health Survey (PHS) 2020-22 conducted by the DH, a territory-wide assessment of hepatitis A, B, C and E seroprevalence was made among the land-based non-institutional population aged 15 – 84 in Hong Kong, excluding foreign domestic helpers and visitors [9]. The PHS 2020-22 recruited 2072 health examination participants, and gauged an age- and sex-adjusted prevalence of anti-HAV at 58.7% in the study population (Box 22), which was similar to that (52.2%; 95% confidence interval [CI]: 51.3% - 53.2%) in another territory-wide seroprevalence study conducted between February 2015 and July 2016, involving 10 256 participants [10]. However, the anti-HAV prevalence in both studies was significantly lower than that (71.0%) in an earlier local seroprevalence study ($P < 0.001$), conducted back in 2001 via telephone household survey (Community Research Project for Viral Hepatitis 2001, CRPVH) (Box 21) [2].

9. Observations from epidemiological studies signify an aging cohort effect with an overall decline in the prevalence of HAV infection. Anti-HAV positivity was less common across all age groups among subjects aged 30 or above in the PHS 2020-22 [9] or in the seroprevalence study in 2015-16 [10] than the subjects in the same age groups in CRPVH conducted in 2001 [2]. Similar phenomenon that a lower anti-HAV prevalence among the subjects of the same age groups in a more recent study was observed, while comparing the findings of CRPVH 2001 with those in earlier studies conducted in late 1980s [11] or late 1970s [12]. Together, these five studies suggest that age-specific prevalence of anti-HAV has right-shifted locally since 1980s. As of 2022, the prevalence of anti-HAV remained at low level (around 30%) among adults aged below 30 years old. However, an anti-HAV prevalence exceeding 80% could only be observed in the elderly aged between 65 and 84 in 2020-22 (Box 22) or people aged 60 years old or above in 2016 [10], instead of those aged >=40 years in 2001 [2], in the general Chinese population.

10. Similar cohort effect has also been observed from the laboratory surveillance performed by Public Health Laboratory Services Branch (PHLSB) every five years since 2000. In the latest serosurvey conducted by PHLSB in 2020, an anti-HAV prevalence exceeding 80% was limited to those aged above 60, while the anti-HAV prevalence was higher than 80% in younger subjects aged above 40 in 2000 and 2005 or those aged above 50 in 2010 and 2015. The seroprevalence of anti-HAV was generally below 50% among those younger than 30 years old over the years (Box 23) [13]. In the last two serosurveys in 2015 and 2020, there was a significant increase in the seroprevalence of anti-HAV in the younger age group, most prominent among those aged 0 – 20. This finding may suggest an increase in the uptake of hepatitis A vaccination in the community, while the overall hepatitis A activity remained low in Hong Kong in the two decades before 2020. However, some limitations of the serosurvey, including relatively small sample size and potential bias from convenience sampling, should be noted while interpreting its results. Overall, with the declining prevalence of HAV infection, Hong Kong has changed from a region with intermediate to very low endemicity in the past three decades.

11. Besides an increasing prevalence with higher age, people born outside Hong Kong were generally more likely to test positive for anti-HAV, whereas a lower anti-HAV positivity rate was observed among people of non-labour work [2]. In the seroprevalence study 2015-16, anti-HAV positivity was more likely among the participants born in the mainland China, while those having lower monthly household income were more likely to be anti-HAV-positive [10].

12. From the telephone interview of the CRPVH 2001, some 11% of 4 564 subjects reported a history of HAV vaccination, about 80% of whom had completed the course. The uptake of vaccination in the general population remained low, as 5.7% and 5.9% of the participants in the PHS 2020-22 [9] and seroprevalence study 2015-16 [10] respectively had received hepatitis A vaccination. Both the low coverage of hepatitis A vaccination and the low circulating HAV in the community probably lead to a general decrease in anti-HAV prevalence over the years.

13. Cross-sectional surveys of anti-HAV at Kowloon Bay Integrated Treatment Centre (ITC), the HIV specialist clinic under DH, have been started since 2007. The subjects consisted of all new HIV/AIDS patients who first attended ITC between July 2007 and 2022 and convenience samples of all active HIV/AIDS patients who first attended ITC before July 2007 (Box 24). The prevalence of anti-HAV increased with age of HIV/AIDS patients, and the overall positivity rate among these patients tested between 2007 and 2022 appeared to be comparable with that of the data obtained from serosurvey in the general population in the past two decades. Confounding factors, such as different levels of past infection, immunodeficiency in HIV patients, history of hepatitis A vaccination and difference in years of testing, may have affected the results. Compared with patients acquiring HIV via other routes, those infected via homosexual or bisexual routes were most vulnerable to subsequent HAV infection, as reflected by the lowest level of anti-HAV prevalence in this group of patients (Box 25). Indeed, the increased susceptibility had manifested itself during the upsurge of hepatitis A infection among MSM occurring in 2015 to 2017 [4]. As a result, the Scientific Committee on AIDS and STI and Scientific Committee on Vaccine Preventable Diseases extended their recommendation for hepatitis A vaccine to MSM in June 2017 [14].

Hepatitis E

Acute Hepatitis E Virus Infection

14. The annual notification of hepatitis E infection increased from 11 in 1996 to a record high of 150 in 2012. In the past five years, the number of reported cases of hepatitis E ranged from 43 to 85 (Box 1). A higher number of infections were usually reported in the first four months of each calendar year, but such seasonal pattern was less prominent in recent years (2018 - 2021) (Box 16). Of 1 598 cases reported between 1998 and 2022, 1 032 (64.6%, Box 17) were male, giving male to female ratio of 1.8:1. The majority was adults, most of whom were aged between 35 and 74 (Box 18). Fatalities were more common with acute hepatitis E than with acute hepatitis A, and there have been death cases attributable to acute hepatitis E infection each year since 2014 (Box 19). In 2022, one death was reported, giving a death rate at 0.14 per million population.

15. In 2011, the CHP reviewed all hepatitis E cases recorded between 2001 and 2010 [15]. Of the 524 cases, 78.2% were hospitalised with a median stay of seven days. A total of 12 cases were fatal (9 males and 3 females), and age ranged from 53 to 82 (median age 67.5 years). The case fatality rate was 2.3%, which was comparable with reported figures from other countries (0.2% - 4.0%) [16]. None of the fatal cases was pregnant. Most cases (99.4%) were sporadic infection, except a small family cluster involving three persons, and 87.4% acquired the disease locally. Epidemiological investigation did not identify any outbreak linked to a particular food premises.

16. The epidemiology of acute hepatitis E cases recorded by CHP was also reviewed in recent years [17, 18]. The latest review covered a total of 461 cases from 2013 to 30 September 2018, with age ranging from 15 to 96 years (median: 56 years). More males were affected than females (62.5% vs. 37.5%). More than half of the cases were recorded from January to April. Most of the cases (81.8%) acquired the infection locally. Some 399 (86.6%) patients required hospitalisation with a median length of stay of seven days. Nine fatal cases were recorded, among whom eight had underlying illnesses, giving a case fatality rate of 2.0%. The age of the deceased patients ranged from 49 to 81 years (median: 74 years). A significant proportion of the patients recalled consuming pig liver (28.6%) and shellfish (28.9%) during the incubation period. Notably, one case recorded in August 2018 acquired the infection from organ transplant, involving a single deceased person whose organs had been donated to five recipients in February 2018. Subsequent laboratory investigations found that the other four recipients also had hepatitis E virus (HEV) infection [19].

Clinical Epidemiology of HEV Infection

17. The epidemiology and clinical features of sporadic hepatitis E cases were compared with those of another enterically transmitted hepatitis, namely hepatitis A. Of 105 acute hepatitis A and 24 hepatitis E patients seen at Princess Margaret Hospital (PMH) in 2002, patients having hepatitis A were significantly younger (median age: 27 years) and had recent history of shellfish consumption while hepatitis E patients were older (median age: 53 year) and most had a recent travel history. Moreover, whereas hepatitis A was milder and recovery was uneventful, hepatitis E was more severe, associated with significant mortality and frequently complicated by protracted coagulopathy and cholestasis [20]. The higher disease severity for hepatitis E was also identified in a territory-wide cohort study, involving 1 068 cases of acute hepatitis A and 846 cases of acute hepatitis E from 2000 to 2016. As compared with hepatitis A patients, hepatitis E patients had more all-cause mortality (3.9% vs 0.6%; $P < 0.001$), liver-related mortality (2.0% vs 0.3%; $P < 0.001$) and hepatic events (2.8% vs 0.3%; $P < 0.001$) within 30 days from diagnosis [21].

18. A local study examined the epidemiology and genotype distribution of HEV infections from 57 laboratory-confirmed acute hepatitis E patients who were admitted to Prince of Wales Hospital (PWH) during 2002 and 2007. Almost all patients (56/57; 98%) were Chinese and most (48/57; 84%) had no history of travel during the prior 6 months. All cases were sporadic. No fulminant hepatitis was recorded and all patients recovered. Phylogenetic analyses of isolates from 46 patients showed that all except one belonged to genotype 4, and most were phylogenetically related to swine isolates reported from China. The remaining isolate was genotype 3 obtained from a woman who had no history of travel [22].

19. Apart from pregnancy, coinfection with hepatitis B virus (HBV) might be associated with more fulminant clinical outcome in patients infected with HEV. Among three cases of serious HEV infection with acute liver failure reported to DH in the first two months of 2012, one required liver transplantation and two passed away. One of the deceased patients was tested positive for chronic hepatitis B infection [23]. Moreover, a 10-year retrospective study on acute hepatitis E in local hospitals showed that patients with chronic hepatitis B acutely infected with HEV had a higher rate of liver failure, liver-related mortality and all-cause mortality, though the association was not statistically significant [24]. In another territory-wide cohort study from 2000 and 2016, coexisting chronic hepatitis B was found to be an independent risk factor for liver-related mortality in patients with acute hepatitis E (adjusted hazard ratio = 3.34; $P = 0.02$), as compared with acute hepatitis A patients [21].

HEV in High-risk Food Items

20. Given the evidence that suggests a zoonotic source of hepatitis E in overseas studies, the Centre for Food Safety conducted a risk assessment study titled "Hepatitis E Virus in Fresh Pig Livers" [25] to determine the HEV prevalence in fresh pig liver samples obtained in local markets. One hundred fresh pig liver samples were collected from pigs slaughtered between mid-January and May 2009. Sixteen (31%) out of 51 roaster pig (around four months old) liver samples were positive for HEV, while none of the 49 porker pig (around six months old) liver samples tested positive. Partial sequences of some HEV isolates from roaster pigs were identical to those from 7 among 48 local human cases. The findings suggest the possibility of roaster pigs as one of the sources of local human hepatitis E infections.

21. The genetic association between human HEV infection and HEV-contaminated high-risk food in Hong Kong was examined in a molecular epidemiological study by comparing local virus strains obtained from sera from 24 hepatitis E patients with those surveyed from five types of high-risk food items (lamb, oyster, pig blood curd, pig large intestine and pig liver) between 2014 and 2016 [26]. HEV RNA was detected in pig liver, pig intestine and oyster samples with prevalence of 1.5%, 0.4% and 0.2% respectively. Phylogenetic analysis showed that all sequenced human and swine HEV strains belonged to genotype 4 with close genetic relatedness. Again, the findings suggested that swine could be an important foodborne source of autochthonous human HEV infections in Hong Kong. The study also echoed the evidence of a major epidemiological shift in hepatitis E in Southern China driven by genotype switch from HEV-1 to HEV-4 over the past two decades [27].

Prevalence of HEV

22. The PHS 2020-22 gauged the latest anti-HEV prevalence in the general population in Hong Kong [9], where 5.5% (5.2% for females and 5.9% for males) of the participants aged between 15 and 84 were tested positive for anti-HEV (Box 27). Similar to anti-HAV, the prevalence of anti-HEV positive cases generally increased with age, from 1.9% for those aged 15 – 24 to 7.7% for those aged 45 – 84.

23. The proportion of PHS 2020-22 participants, who were anti-HEV positive or borderline positive, was lower at 10%, as compared with previous community-based studies showing local anti-HEV prevalence between 18.8 – 32.0% conducted in the 2000s and 2010s [2, 10, 28], as highlighted in the following paragraph.

24. In the CRPVH study conducted in 2001, the overall anti-HEV prevalence among adult subjects was 18.8% of adult subjects, with a peak in the 40 - 49 years age group at 24.1% (Box 26) [2]. A sero-epidemiological study conducted between February 2012 and May 2014 gave an overall anti-HEV seropositivity at 32.0%, among 1 539 participants sampled from different subpopulations including healthy adults, pregnant women, patients with chronic liver disease, elderly people and frequent food handlers. Independent risk factors associated with anti-HEV seropositivity was older age (>35 years), male sex, no hand-washing practice after handling shellfish and lower education level [28]. Prevalence of anti-HEV remained at a similar level at 33.3% (95% CI: 32.4% - 34.2%) in the territory-wide seroprevalence study in 2015-16 which also found that hepatitis A and E shared similar risk factors, such as being born in mainland China, increasing age and male sex, and protective factor of higher family income [10].

25. However, it is important to note that the anti-HEV detection method used in PHS 2020-22 differed from those used in the previous studies, and direct comparison of the results is not appropriate due to the different detection limits.

26. A local seroprevalence study on anti-HEV using 450 serum samples submitted for virological investigation unrelated to hepatitis in 2008 - 2009 in a local hospital found a higher rate of HEV IgG seropositivity at 28.7% [29]. The HEV IgG seropositivity rate increased from 8% among 1 - 10 years old to >56% among those aged over 80.

27. HEV prevalence was also determined in Hong Kong blood donors [30]. Of 10 000 unlinked donation samples collected in March to May 2015, anti-HEV seroprevalence was estimated as 15.8% among all donors. IgG anti-HEV positivity rate was higher in males, and increased with age from 3.1% for age group 16 - 20 to 43.1% for age group 51 - 60. Two samples were tested positive for HEV RNA and genotype 4, the dominant genotype in circulation in Hong Kong, was identified in one sample (genotyping was unsuccessful for another one). The HEV RNA positivity rate at 0.02% found in the study was within the reported range in developed countries (0.01% - 0.08%).

28. A matched cohort study was conducted to assess the effects of age, gender and addictive injection use on HEV serostatus and concentration [31]. HEV IgG seroprevalence was 46.2% among 91 people who inject drugs, who underwent HCV load testing between 1 January 2018 and 31 October 2019, as compared with 22.0% in 91 age- and sex-matched organ donors. Increasing age and addictive injection use were significantly associated with HEV IgG positivity. The study results also suggested that people who inject drugs were prone to repeated HEV exposure and reinfection, indicated by higher HEV IgG concentrations.

Epidemiology of Human Infection of Rat HEV

29. The usual HEV causing human infection belongs to *Orthohepevirus A* (HEV-A), while *Orthohepevirus* genus has three other species circulating in different hosts, namely *Orthohepevirus B* in chickens, *Orthohepevirus C* (HEV-C) in rats and ferrets and *Orthohepevirus D* in bats. Cases of human infection with HEV-C (also known as rat HEV) were first reported in Hong Kong in 2018, involving a 56-year-old man having immunosuppressant for anti-rejection prophylaxis after liver transplant in May 2017 [32] and a 70-year-old woman on immunosuppressant for treatment of underlying disease [33].

30. The latest situation of human infection of rat HEV was reviewed by CHP [34]. In 2022, two (3.5%), out of 57 reported HEV infection cases, were human infections of rat HEV. As of the end of 2022, a total of 17 cases of human infection of rat HEV, involving 13 male and four female, have been recorded by the CHP since 2018. All cases had underlying illnesses, and three patients passed away due to causes unrelated to human infection of rat HEV. According to the CHP's epidemiological investigations, the 17 patients resided in eight different districts in Hong Kong, mainly in Wong Tai Sin and Kowloon City, and the majority had no travel history during the incubation period. No patients recalled having direct contact with rodents or their excreta. Investigations by the CHP revealed that they were all sporadic cases with no epidemiological linkage, and no symptomatic home contacts were identified.

31. An epidemiological and clinical study found that HEV-C1 hepatitis was generally milder than HEV-A hepatitis. One HEV-C1 isolate obtained from a rat captured in Wong Tai Sin District, where half of the identified cases resided, was closely related to the major outbreak strain in Hong Kong [35]. Based on the available scientific information, the exact mode of transmission of rat HEV to humans is unknown at the moment [36].

Hepatitis B

Acute Hepatitis B Virus Infection

32. The number of reported acute HBV infections has been decreasing over decades, from 137 cases reported in 2000 to 12 cases reported in 2022 (Box 1).

Seroprevalence of HBV Infection

33. The PHS 2020-22 was the latest territory-wide study assessing the seroprevalence of HBV infection in the general population, which gauged an age- and sex-adjusted HBsAg prevalence at 6.2% among land-based non-institutional population aged 15 - 84 in Hong Kong, excluding foreign domestic helpers and visitors (Box 49) [9]. The PHS 2020-22 finding is largely consistent with another seroprevalence study conducted in 2018-20, which showed an adjusted HBsAg prevalence at 6.3% among the general population of all ages [37]. Both surveys suggested a further reduction of HBsAg prevalence in the general population, as compared with that found in CRPVH 2001 (8.8%) (Box 47) and a territory-wide seroprevalence study conducted in 2015-16 (7.2% after adjustment for age and sex) [10]. As observed from these previous seroprevalence studies, chronic HBV infection is in a general declining trend in community groups without apparent risk of contracting HBV.

34. The PHS 2020-22 also provided updated information on age and sex distribution of the HBsAg seroprevalence (Box 49). HBsAg prevalence was much higher in older adults, as compared with those aged below 35. While less than 1% of population aged below 35 were HBsAg-positive due to universal childhood immunisation launched in November 1988 in Hong Kong, the prevalence in older age groups ranged between 7.0% and 8.4%, lower than but comparable to the historical prevalence in 1970s at about 10% [38]. The range of HBsAg prevalence in older adults in PHS 2020-22 was in line with the findings in recent seroprevalence studies (7.3% - 10.9% among participants aged 36 or above in the study conducted in 2015 – 16 [10]; 8.4% among participants who were born in or before 1990 in the study conducted in 2018 – 20 [37]). In contrast, there was a significant reduction in the HBsAg prevalence among the younger adults aged below 35, who were mostly born after the implementation of a series of interventions initiated in 1980s for preventing mother-to-child transmission (MTCT) of HBV in the younger generation.

35. While chronic HBV infection appeared to be commoner in male than female in the general population in the past [10], the recent two seroprevalence studies did not find statistically significant difference in HBsAg prevalence between two sexes [9, 37]. The inconsistent patterns of chronic HBV infection by sex in the general population found in these seroprevalence studies might to be prone to different sampling strategies, as well as the availability of additional epidemiological information for controlling other confounding factors, such as place of birth, HBV carriage status of family members and history of hepatitis B vaccination.

36. In addition to the aforementioned territory-wide seroprevalence studies, seroprevalence of HBsAg in different communities are monitored continuously and the various adult communities can be categorised into three groups according to the risk of contracting HBV:

(a) without apparent risk: blood donors, pre-marital/ pre-pregnancy service users, antenatal women, police officers, new health care workers (HCW);

(b) with undetermined risk: clients seeking post-exposure management and tuberculosis patients; and

(c) with apparent risk: drug users, HIV/AIDS patients, MSM and female sex workers.

37. A word of caution in the interpretation of data though, is that testing for HBV markers has been performed for a variety of reasons in different communities, with heterogeneous mix of population characteristics.

Seroprevalence of Adult Communities without Apparent Risks

38. The temporal decline of chronic HBV infection has been most obvious in new blood donors and police officers. For new blood donors, the HBsAg prevalence follows a continual falling trend since early 1990s, from 6.7% in 1993 to 0.8% in year 2022 (Box 29). The trend is even more obvious among the 16 - 19 years age group where the prevalence was as low as 0.20% in male and 0.12% in female in 2022 (Box 30, Box 31). A similar trend was observed among police officers where the HBsAg prevalence fell from 7.9% in 1997 to 2.6% in 2022 (Box 38), with a prevalence of 1.8% among those aged 30 or less (Box 37). A falling trend was generally observed in other community groups without apparent HBV risk (Box 28, Box 36).

39. The HBsAg prevalence in newly recruited health care workers as determined at pre-HBV vaccination screening also showed a generally decreasing trend (Box 39). The prevalence decreased from 5.4% in 2003 to 2.2% in 2022 among newly recruited male health care workers, while that for newly recruited female health care workers decreased from 5.1% to 2.6% over the same period.

40. The HBsAg prevalence in antenatal mothers has been decreasing from over 10% in the early 1990s to 2.5% in 2022 (Box 32). As compared with other groups without apparent risk, the overall HBsAg prevalence in antenatal mothers is higher and confounded by the place of birth. A study of 2 480 pregnant women attending the Maternal and Child Health Centre (MCHC) of DH in 1996 found an HBsAg prevalence at 13.1% in those born in mainland China as compared to 8.4% in local mothers [39]. Data from Virus Unit, DH also showed a higher prevalence of 12.5% and 13.8% in the subset of non-resident expectant mothers versus the overall positivity rate of 8.5% and 8.6% in 2004 and 2005 respectively. The prevalence of HBsAg among antenatal mothers also varied significantly by age (Box 33, Box 34). The HBsAg prevalence among antenatal mothers younger than 25 years has been dropping to a low level (about 1%) in 2022, as compared with those aged 35 years or above (more than 4%). The age-specific prevalence is in line with the findings in a retrospective cohort study, involving 10 808 young pregnant women aged 25 years or below born in Hong Kong and managed at a local hospital between 1998 and 2011 [40]. The HBsAg prevalence in the study ranged between 2.3% and 8.4%, with a significantly lower prevalence among those being born in and after 1984 (Odds ratio [OR]: 0.68, 95% CI: 0.58 - 0.80), when hepatitis B vaccination was given to neonates born to HBsAg-positive mothers.

41. The HBsAg prevalence of users of pre-marital check-up in The Family Planning Association of Hong Kong (FPAHK) decreased from 8.7% in 1993 to 6.5% in 2010. The prevalence has further dropped to 3.4% in 2022 among pre-marital or pre-pregnancy package service users (Box 35).

Seroprevalence of Adult Communities with Undetermined Risk

42. Of 604 tuberculosis patients attending Tuberculosis & Chest Clinics, DH between March and May in 2022, 44 (7.3%, Box 40) were detected HBsAg positive, with the highest prevalence rate in the middle age group (40 - 59 years old: 9.8%, Box 41) followed by the more elderly group (>= 60 years old: 8.0%, Box 41). The HBsAg positivity rate was usually higher in male clients than in female clients, where HBsAg prevalence was 9.6% in males and 4.0% in females respectively in 2022 (Box 40). Both the age (Box 41) and gender pattern (Box 40) were consistently observed over the last decade.

43. Among clients attending for post-exposure management in Therapeutic Prevention Clinic (TPC) at ITC of CHP, DH in 2022, HBsAg rate was low at 1.9%. The HBsAg prevalence was higher in non-health care workers (2.6%) , as compared with health care workers (0%) in 2022 (Box 42).

Seroprevalence of Adult Communities with Apparent Risk

44. The HBsAg prevalence in HIV/AIDS patients under care of DH was in the range of 4.5% to 8.1% in the past decade (Box 44). The HBsAg prevalence was highest among those patients who were drug users (15.1%), while the lowest HBsAg prevalence was observed in heterosexual female patients (5.4%) (Box 45). Due to underlying immunosuppression and shared routes of transmission, HIV/AIDS patients are more likely to be chronically infected with HBV [41].

45. The HBsAg prevalence in female sex workers attending the clinic of Action for REACH OUT tested between 2007 and 2011 ranged from 5.0% to 10.4% (Box 43), similar to that measured in 1995 - 1998 at 6.8%.

46. Since April 2022, all MSM and sex workers attending Social Hygiene Clinics (SHC) of DH are offered with HBV and HCV screening as part of the comprehensive STI screening. Between August and December 2022, the HBsAg prevalence in female sex workers attending SHC of DH was 16.2% (6/37) and 64.7% (22/34) were tested positive for anti-HBs among HBsAg-negative female sex workers. The HBsAg prevalence in MSM attending SHC of DH was lower at 0.8% (4/489), while 39.5% (192/486) were tested positive for anti-HBs among HBsAg-negative MSM. It should be noted that age and other socio-demographic characteristics might have shed light on the difference in HBsAg and anti-HBs prevalence between these two risk groups, aside the high-risk behaviours being engaged by them. In general, MSM were much younger than sex workers were among SHC clients, and more likely to be covered by the hepatitis B immunisation programme.

47. The data regarding prevalence of HBsAg in drug users was difficult to interpret because of the small number of subjects since 2006 (Box 46). Before 2006, the annual prevalence of HBsAg in drug users was exceeding 10%, except for the year 1996 and 1997.

48. Overall, the difference in HBsAg prevalence between groups with or without apparent risk of contracting HBV has not been prominent in the past few years.

Seroprevalence of Children

49. Universal childhood hepatitis B vaccination programme has been in place in Hong Kong since 1988 to reduce the risk of MTCT of HBV. This has resulted in a substantial decline in the HBV infection and prevalence in the younger generation.

50. In 2009, an HBsAg seroprevalence study was conducted among 1 913 children aged 12 to 15 years who were born after the implementation of universal neonatal hepatitis B vaccination programme [42]. The seroprevalence of HBsAg was 0.78% (95% CI: 0.39 - 1.16%, Box 48). This result showed that Hong Kong had already achieved a time-bound goal set by the Western Pacific Regional Office (WPRO) of the WHO, which referred to reducing chronic HBV infection rate to less than 2% among children at least 5 years of age by the year of 2012. In July 2011, Hong Kong was verified by WPRO as having successfully achieved the goal of HBV control. Based on the same study, Hong Kong was also verified as of June 2013 as having met the goal of achieving a seroprevalence of less than 1%.

51. To further reduce the risk of MTCT of hepatitis B, pregnant women with a high HBV viral load have been provided with antiviral since August 2020 in all birthing hospitals under the HA. Starting from January 2022, the DH and HA collaborate to implement post-vaccination serologic testing (PVST) programme. Babies attending MCHC of DH, who are born to mothers infected with HBV, are offered with tests for HBsAg and anti-HBs after completion of the primary hepatitis B vaccination series. Of 1 212 babies who received PVST in 2022 after primary series of hepatitis B vaccination, 1 163 (96.0%) were tested positive for anti-HBs, indicating seroprotection after the vaccination. Some 45 (3.7%) babies were tested negative for both anti-HBs and HBsAg, requiring the second series of hepatitis B vaccination. Only four (0.3%) babies were tested positive for HBsAg, showing that the HBV transmission risk among high-risk babies has become very low in Hong Kong.

Hepatitis B Vaccination

52. The long-term protective efficacy of hepatitis B vaccination has been demonstrated in a previous local cohort study of 1 112 neonates born to HBsAg-positive mothers who received hepatitis B vaccine and hepatitis B immunoglobulin at different schedules [43, 44]. Upon completion of the vaccination schedules, 92.6% developed antibody against surface antigen (anti-HBs) seroconversion. The anti-HBs seroconversion rate dropped to 33.3% (203/610) at the 16th year of follow-up [43] and maintained at 37.4% (92/246) at the 30th year of follow-up [44]. Although 97 subjects developed anti-HBc seroconversion over the 30-year period, there was no new development of HBsAg positivity detected after the second year of follow-up. These findings demonstrated the long-term protective efficacy of neonatal hepatitis B immunisation among high-risk individuals up to at least 30 years.

53. In another local study comparing three different HBV vaccine regimens without boosters given to 318 HBV negative children recruited at age 3 months to 11 years and followed up annually, no subjects tested positive for HBsAg up to 22 years of follow-up (55 subjects). Seventy-two subjects were noted to have at least one episode of anamnestic responses with significant increase in anti-HBs titres. Three subjects had benign breakthrough HBV infection with isolated anti-HBc seroconversion [45].

54. The coverage for the birth dose of hepatitis B vaccination among infants born locally was consistently above 99% in the past decade (Box 50).

55. DH has been conducting immunisation coverage surveys (ICS) every two or three years starting from 2001 to determine the coverage of all vaccines under the Hong Kong Childhood Immunisation Programme. The surveys included children aged 2 to 5 years and attending pre-primary institutions including kindergartens and childcare centres. Results from ICS conducted in 2001, 2003, 2006, 2009, 2012, 2015, 2018 and 2021 confirmed high coverage of hepatitis B vaccination [46, 47, 48, 49, 50, 51, 52, 53]. From the latest round of ICS conducted in 2021, the coverages of the first, second and third dose of hepatitis B vaccination were all exceeding 99% (Box 51).

56. Apart from universal neonatal hepatitis B vaccination programme, supplementary Primary 6 vaccination programme was introduced in 1998 to provide mop-up for primary school students who have not completed the primary series of immunisation. The coverage for three doses of hepatitis B vaccine had been consistently above 99% in the past decade but showed a slight decline since 2015/16 to about 98% for the third dose. Of note, this coincided with a change of survey methodology in 2015 and an underestimation of the actual coverage was possible (Box 52). With a high coverage of the neonatal hepatitis B vaccination programme, the number of Primary 6 students eligible for mop-up hepatitis B vaccination continued to decrease in the past decade. Due to on-off school suspension in school years 2019/20, 2020/21 and 2021/22 amid Coronavirus disease 2019 (COVID-19) pandemic, students may not be able to receive vaccine at school outreach immunisation activities as scheduled, giving a lower uptake rate for the required vaccine doses within the campaign period, as compared with the previous years. Nevertheless, they may receive vaccinations at Student Immunisation Team sub-offices outside the campaign period. Overall, the coverage rate of the first, second and third dose of hepatitis B vaccination maintained at a very high level, over 98%.

57. In the CRPVH 2001 study, about 16% of the telephone-interviewed subjects reported a history of hepatitis B vaccination, with a higher frequency in persons below 50 years of age. In the territory-wide survey in 2015-16, a quarter of participants reported having received hepatitis B vaccination, which significantly reduced the chance of being HBsAg-positive by 85% (OR: 0.15, 95% CI: 0.11 - 0.21) [10]. Similar magnitude of reduction was reported (86%) (OR: 0.14, 95% CI 0.08 – 0.25) in another household survey conducted in 2018-20, where hepatitis B vaccination history was self-reported by about 36% of the study participants [37].

Genotypes of HBV

58. Different HBV genotypes have been identified with distinct geographic distribution. Local studies indicated that genotype C was the commonest genotype and genotype B was the second. A study of 776 chronic hepatitis B patients seen at the University of Hong Kong Liver Clinic from 1999 to mid-2003 found that genotype C was the commonest (486, 62.6%), followed by genotype B (252, 32.5%), with a majority of genotype B belonging to subgroup Ba [54]. Another study of 426 chronic hepatitis B patients recruited consecutively from 1997 to mid-2000 at the Hepatitis Clinic of Prince of Wales Hospital (PWH) found a prevalence of 57% (242) and 42% (179) of genotypes C and B respectively [55].

59. A study of 49 HBV genotype C isolates from Chinese patients under the care of the PWH Hepatitis Clinic identified 2 distinct groups with different epidemiological distribution and virologic characteristics – 80% being genotype "Cs" (found mostly in Southeast Asia) and 20% "Ce" (predominated in Far East) [56]. In addition, subgenotype Cs appears to be more common in Hong Kong than other parts of China. In another analysis of a cohort of patients with HBeAg-negative chronic liver disease from three different parts of China (Beijing, Shanghai and Hong Kong), 69% of genotype C patients in Hong Kong belonged to subgenotype Cs whereas 97% of genotype C HBV in Shanghai and Beijing belonged to subgenotype Ce ($P < 0.0001$) [57].

Co-infection with Hepatitis D Virus

60. Hepatitis D virus (HDV) is a defective RNA virus that can infect only individuals who have HBV. In Hong Kong, HDV superinfection has been rare among non-drug abusers. In a study in early 1990s, only one patient was found to be anti-HDV-positive after testing sera collected from 664 patients with chronic hepatitis B and 31 patients with acute hepatitis B between January 1988 and December 1990 [58]. In the territory-wide seroprevalence study in 2015-16, no cases of HDV infection were detected among 10 256 participants, when 803 of the participants were HBsAg-positive and almost all had no history of illicit intravenous drug use [10].

61. After the first ever hepatitis D case reported to the CHP (Box 1) in November 2020, there was another reported hepatitis D case in August 2021. While the first case was a male injecting drug user aged 65 and above, the second case was a man in his forties, without history of needle sharing during the incubation period. Both cases were discharged after hospitalisation for three days and two weeks respectively. As reported in the aforementioned study in the 1990s, anti-HDV could be more commonly detected in people who inject drug (PWID), who had HBV-related chronic liver disease (13/14; 93%) [58]. In 2022, no hepatitis D case was reported.

Hepatitis C

Current Situation of Hepatitis C

62. From 2002 to 2022, a total of 248 cases of acute hepatitis C virus (HCV) infection were reported to DH under the statutory notification system (Box 1). In 2022, there were 12 reported cases of HCV infection. An increased number of reported cases was observed in the past decade, with a record high of 39 cases in 2016 (Box 12). A review conducted by the Centre for Health Protection [59] showed that among the 22 laboratory confirmed acute hepatitis C cases reported to DH from January 2008 to October 2011, there were 17 males and 5 females, most (86%) acquired the infection locally. The median age was 47.5 years. Majority (86%) was ethnic Chinese. Five (23%) of them reported history of injecting drug use while no particular risk factor was identified for the remaining cases.

63. Of the 39 cases in 2016, 31 were male (79%), with age ranged from 23 to 94 years (median: 42 years). Thirteen (33%) required hospitalisation and no fatalities were recorded. With regard to the potential risk exposures, one case reported having tattoo procedure, and two cases were identified as injecting drug users. Two cases reported having sex partners who were HCV carriers. Among the 31 male cases reported, 23 (74%) were known MSM. There was also one case, who had history of repeated hospital admissions and had received multiple transfusions of blood product during the incubation period. Epidemiological investigation and contact tracing did not identify other acute hepatitis C cases and the source of infection in this case could not be determined. For the rest of the cases, no epidemiological linkage was identified and all cases were regarded as sporadic. There have been overseas reports of rising incidence of sexual transmission of HCV among MSM [60]. Similar upsurge of acute HCV infection was noted in Asia Pacific, with distinctive molecular pattern observed in Hong Kong [61].

64. Although HCV shares similar transmission routes with hepatitis B, the epidemiology of two infections are different in Hong Kong. While HBV is prevalent in the general population in Hong Kong, HCV prevails only in specific populations.

Prevalence of HCV in Populations without Apparent Risk

65. Findings of the seroprevalence studies of the entire spectrum of adult age groups further supported the low prevalence of HCV infection among general population in Hong Kong; given the overall positivity rate for anti-HCV at 0.5% in 382 subjects in 1988 [62], 0.3% in 936 subjects in 2001 (95% CI: 0.07% - 0.94%) (Box 55), 0.5% in 10 256 subjects in 2016 (95% CI: 0.3% - 0.6%) [10] and 0.32% in 2 072 subjects aged 15 to 84 in PHS 2020-22 (95% CI: 0.14% - 0.71%) (Box 56).

66. Data from new blood donors who were mostly adolescents and young adults in the last decade suggested that HCV prevalence was generally less than 0.1% locally, with the figure in 2022 being 0.05% (95% CI: 0.02% - 0.09%) (Box 53). An unusual increase in anti-HCV prevalence was noted in 2020 and 2021, and should be interpreted with the changes in the composition of new blood donors (Box 54), when the proportion of those aged below 30 decreased from 67.2% in 2019 to 52.4% and 52.2% in 2020 and 2021 respectively.

67. The trend of anti-HCV among blood donors has also been monitored. Some 180 000 - 260 000 new and repeated blood donors of HKRCBTS were tested for anti-HCV each year, among which the prevalence was consistently low at less than 0.1% since 2003 (Box 57). The annual number of anti-HCV cases among blood donors ranged between 12 and 43 in the past decade.

68. In an analysis of HCV-positive blood donors during the period from 2003 to 2010, of those with identifiable risk factors, history of blood transfusion (43.7%) was the most common risk factor, followed by intravenous drug use (34.9%) and tattoo (28.6%). The source of infection was unknown in more than half of the respondents in the study [63]. In another study, 14 (30%) HCV-infected blood donors recruited in 2014 - 2016 could be traced to a history of contaminated blood transfusion (n = 9) or injection drug use (n = 5). In donors without identifiable source of infection (n = 32, 70%), high-risk sexual behaviour, body piercing, intramuscular injection and vaccine inoculation abroad and having lived abroad for more than 3 months were associated with HCV infection [64].

Prevalence of HCV in Populations with Undetermined or Apparent Risk

69. From 2003 to 2022, 11 of 3 443 (0.3%) clients who attended the TPC at ITC of CHP, DH for post-exposure management were tested positive for anti-HCV. Nine (81.8%) cases were non-HCW (Box 58).

70. Between August and December 2022, one (2.3%) female sex worker and 13 (2.6%) MSM, who attended SHC of DH, were tested positive for anti-HCV, giving an anti-HCV prevalence much higher than that for the general population (0.3% - 0.5%). Over the same period, one viremic HCV infection was found among MSM clients, while no female sex worker was tested positive HCV RNA.

71. A study published in the early 1990s has already shown that anti-HCV was more common in injecting drug users (117/175; 66.8%), haemophiliacs (14/25; 56.0%) and haemodialysis patients (3/65; 4.6%) requiring frequent blood/blood product transfusions but not persons at risk through sexual contact [62]. Other local studies also found a higher infection rate among haemodialysis patients in 1990s (9/51; 18%) [65] and a higher anti-HCV positivity rate among haemophiliacs in a survey in 2011 (100/222; 45%) [66].

72. Injecting drug use has been an important route of HCV acquisition. An HCV seroprevalence study in 2006 conducted in methadone clinics targeting PWID echoed the high prevalence rate of HCV in this community [67]. Of 567 PWID participants recruited in 2006, the prevalence of anti-HCV was 85% (95% CI: 82.5% - 88.3%). Two other studies in 2010s, involving PWID recruited at their gathering places, gave a similar figure of anti-HCV prevalence at 81.7% (95% CI: 78.6% - 84.7%) among 622 subjects in 2011 [68] and 76.4% (95% CI: 73.1% - 79.6%) among 664 subjects in 2014 [69] respectively. In a prospective study initiated in 2021, the overall anti-HCV prevalence was 63% (54/86; 95% CI: 52 – 73%) among methadone clinic attendees, 64% (55/86) of whom had self-reported history of injecting drug use. Of 54 anti-HCV-positive study participants, 78% tested positive for HCV RNA [70]. Injection duration, current or recent injection, ever sharing injecting equipment and concomitant use of other drugs, such as midazolam, were independent factors associated with HCV infection in these studies.

73. Similar levels of prevalence of anti-HCV and viremic HCV infection were also observed in other community-based projects involving people who had ever injected drugs. In New Life New Liver Project, which provided targeted HCV screening and education to ex-PWID in the community, 268 (73.4%), out of 365 subjects screened between November 2009 and June 2018, were anti-HCV positive. The number needed to screen to detect one patient with positive anti-HCV was 1.4 (95% CI: 1.3 - 4.6) [71]. In Conquering Hepatitis via Micro-Elimination (CHIME) program, subjects with history of illicit drug use, needle sharing or prior imprisonment were screened for anti-HCV by point-of-care (POC) test, followed with venipuncture for subjects with positive POC results to check for HCV RNA, during site visits to halfway house or drug rehabilitation centers. Out of 396 subjects screened between 2019 and 2021, 229 (57.8%) had positive POC, while 187 subjects were found to have HCV infection (47.2% RNA-positive). Compared to non-viraemic subjects, viraemic subjects were older, more likely to be divorced, unemployed, had lower education level, with longer duration of heavy cigarette smoking and illicit drug use [72].

74. HIV/AIDS patients, with a proportion being PWID, is another group with a comparatively high HCV prevalence (Box 59, Box 60). From 2000 to 2022, HCV/HIV coinfection among new patients attending ITC ranged from 1.5% to 24.8%. The decreasing trend of anti-HCV seroprevalence was largely attributed to the decreasing proportion of new patients acquiring HIV via injecting drug use. The prevalence rate appeared to be higher in male than female patients, likely related to the differential risk of parenteral and blood product exposure (Box 59). While HCV infection was present in 1.4 - 5.9% of HIV/AIDS patients infected due to sexual contact, HCV was nearly universal in patients infected through drug injection (Box 60). It should be noted that, among male patients who acquired HIV via heterosexual contact and tested anti-HCV positive, about three fifths (31 out of 55 subjects) had a past history of injecting drug use (Box 60).

75. There has been overseas data supporting sexual transmission of HCV among HIV-positive MSM [73]. The anti-HCV prevalence of subjects who contracted HIV via homosexual or bisexual contact in the ITC HIV/AIDS patient cohort has remained below 2% from screening since 2005. However, this figure has shown an increasing trend since 2012, with the cumulative number of individuals with HCV/HIV coinfection at the time of HIV diagnosis rising from 16 (1.3%) in 2013 to 77 (2.5%) in 2022 (Box 60).

76. From July to November 2013, ITC identified seven cases of recent HCV infection in Chinese HIV-positive MSM without history of injecting drug use [74]. Five of the seven cases were also diagnosed to have recent syphilis infection during the period. Phylogenetic analyses revealed that all cases belonged to the same genotype (genotype 3) although investigation showed no apparent linkage on their sexual exposure. An analysis on HIV-positive MSM attending ITC who had HCV seroconversion in the period 1999 - 2013 was subsequently performed [75]. Fourteen (1.1%) patients seroconverted, with an overall incidence rate of 0.22 per 100 patient-years. The incidence rate increased from 0.13 per 100 patient-years before 2002 to 0.19 per 100 patient years in 2002 - 2007 and 0.47 per 100 patient-years in 2008 - 2013. Compared with the non-seroconverters, the seroconverters were of higher education level and had prior history of STI. As reported in the latest retrospective study, a total of 420 records of HIV/HCV co-infections were identified in ITC between 1999 and February 2021, and the majority of the cases after 2013 were found in MSM [76]. The study also found that HIV/HCV co-infection cases in MSM were more likely to be younger, local residents, achieving HIV viral suppression and co-diagnosing with an STI at HCV diagnosis, and having a longer time lag between HIV and HCV diagnoses, as compared with those in non-MSM. The overall higher HCV prevalence, and the increasing incidence of HCV infection among HIV-positive MSM, coupled with the hastened liver disease progression in patients with HIV infection [77], would demand further attention.

77. A surveillance project for HCV in Hong Kong had been in place to monitor the trend of anti-HCV among selected in-patients, with the participation of the laboratories of Princess Margaret Hospital (PMH, joined since 2003) and Prince of Wales Hospital (PWH, joined since 2005). Among the selected hospital patients tested in the past eleven years, the overall anti-HCV prevalence was 1.7% (Box 61). Anti-HCV was most commonly found in drug users, of which 45.1% were found positive, followed by patients with history of blood transfusion at 7.7%. Overall, the male-to-female ratio of HCV positive subjects was about 2.5 to 1, with a mean age of 55.1 years old (Box 62).

Genotypes of HCV

78. Genotypic studies in Hong Kong has identified that 1b and 6a were the prevalent HCV genotypes locally, a scenario different from that in North America where 1a predominated [78, 79]. In an early study of 212 blood donors tested anti-HCV positive from 1991 to 1994, the commonest genotype found was 1b (58.8%), followed by 6a (27.0%) [80]. In another study of hospitalised patients with HCV testing for clinical indications, 1b was the commonest type found in patients with chronic liver diseases and chronic renal failure [81]. According to a local study of patients on renal replacement therapy, the predominant genotype was 1b, followed by 1a and 6a [82]. As reported in a recent territory-wide population-based study, the commonest HCV genotype was genotype 1 (48.8%), followed by genotype 6 (33.6%) and genotype 3 (10.8%) among 2 699 patients who were tested positive for anti-HCV between January 2005 and March 2017 in public hospitals in Hong Kong [83].

79. The commonest genotype in intravenous drug users was genotype 6. A retrospective analysis of 106 intravenous drug users and 949 non-drug users with samples collected between December 1998 and May 2004 also confirmed the significant high prevalence of genotype 6a in drug users (58.5%) followed by 1b (33.0%), in contrast to 63.6% for 1b and 23.6% for 6a in non-drug users [84]. Besides intravenous drug use, age and sex were independent factors associated with HCV genotypes in this study. Further phylogenetic analyses revealed that HCV 6a strains from Vietnam might be ancestral to Hong Kong counterparts, suggesting an association between the high predominance of HCV 6a infections and Vietnamese immigration during 1987 - 1997 in Hong Kong [85]. In a methadone clinic-based study published in 2011, out of 273 PWID with different periods of initiating injection, 52% had genotype 6a and 38% had 1b. Both genotypes 1b and 6a were prevalent among older injectors, while subtype 3a was more common in young injectors and those initiating injection more recently during 1995 - 2006 [86]. The predominance of HCV genotype 6 were also observed in recent community-based projects involving people who had

injected drugs, where 44.1% of HCV patients attending the assessment session of New Life New Liver Project were infected with HCV genotype 6a [71] and 59.2% of CHIME participants were infected with HCV genotype 6 [72]. Moreover, phylogenetic analysis revealed no specific clustering of any subtype or genotype, which did not suggest any outbreak of HCV among the study population. The extensive use of methadone, widely available since 1980s, may have protected Hong Kong from the emergence of HCV clusters among injection drug users [86].

80. For the HIV-positive MSM attending ITC who were diagnosed with acute HCV infection between 2009 to 2014, genotype 3a was the most prevalent (63.6%), followed by 1a (18.2%) and 6a (9.1%). The high prevalence of genotype 3a in MSM was in stark contrast to its rarity among HCV-infected PWID in Hong Kong. Phylogenetic analyses revealed a monophyletic HCV-3a cluster with members all diagnosed between 2013 and 2014, and a homologous pair with HCV-6a genotype. However, there was no temporal or genetic clustering of the corresponding HIV sequences [87]. Molecular analyses of HCV sequences from 58 HIV-positive patients from ITC between 2010 and 2016 also showed no international network of HCV among HIV-positive MSM in the three Asia-Pacific cities, namely Hong Kong, Taipei and Tokyo [88]. An overview of all 420 HIV/HCV co-infected patients between 1999 and February 2021 in ITC found that MSM were more likely to be associated with HCV genotype 3, compared to genotypes 1 and 6 in non-MSM [76].

81. The natural history of 138 HCV genotype 1 patients (median age: 50 years) was compared with that of 78 HCV genotype 6 patients (median age: 46.5 years) by reviewing medical records of anti-HCV-positive patients in Queen Mary Hospital between 1991 and 2007 [89]. Both genotypes share a similar natural history based on liver biochemistry, HCV viral load, and probability of cirrhotic complications and mortality after a median follow-up period of over 5 years.

Liver Cancer

Major Morbidity and Mortality from Viral Hepatitis

82. Chronic HBV and HCV infection are important risk factors for cirrhosis and liver cancer. Globally 830 000 people died of liver cancer in 2020 [90], and HBV and HCV infection generally accounted for approximately 80% of liver cancer cases [91]. Local studies showed that 75 - 80% of hepatocellular cancers in Hong Kong were related to chronic HBV infection, and 3 - 6% of the cases were related to chronic HCV infection. HBV and HCV co-infection accounted for another 0.4 - 3% [92].

83. Among 76 liver transplants performed in Queen Mary Hospital (QMH) due to cirrhosis from 1999 to 2000, 51 and 7 were related to hepatitis B and C respectively [93]. Another case series report showed that more than half (800; 58.6%) of the 1 366 patients undergoing liver transplantation between 1999 and 2019 in QMH had indications related to complications of chronic hepatitis B, including cirrhosis, HCC and severe flares; while the proportion of transplanted patients with chronic hepatitis B was declining from a peak of 76.7% in 2002 to 44.4% in 2019 [94].

84. According to the data from the Hong Kong Cancer Registry [95], liver cancer, including neoplasm of liver and intrahepatic bile ducts, was the fourth commonest cancer in men and twelfth commonest cancer in women in 2021. There were 1 771 newly registered cases of liver cancer, with 1 343 cases of males and 428 cases of females (male to female ratio was about 3.1 to 1) in 2021. There was a downward trend for the age-standardised incidence rate for both male and female in the past decade (Box 63, Box 64). The figures were 18.9 for male and 5.1 for female per 100 000 standard population in 2021.

85. In 2021, liver cancer was the third leading cause of cancer deaths in Hong Kong. There were 1 447 registered mortality from liver cancer. There was a downward trend for the age-standardised mortality rate for both sexes in the past decade (Box 65, Box 66). The figures were 14.0 for male and 4.2 for female per 100 000 standard population in 2021 [95].

SURVEILLANCE INFORMATION

Acute viral hepatitis

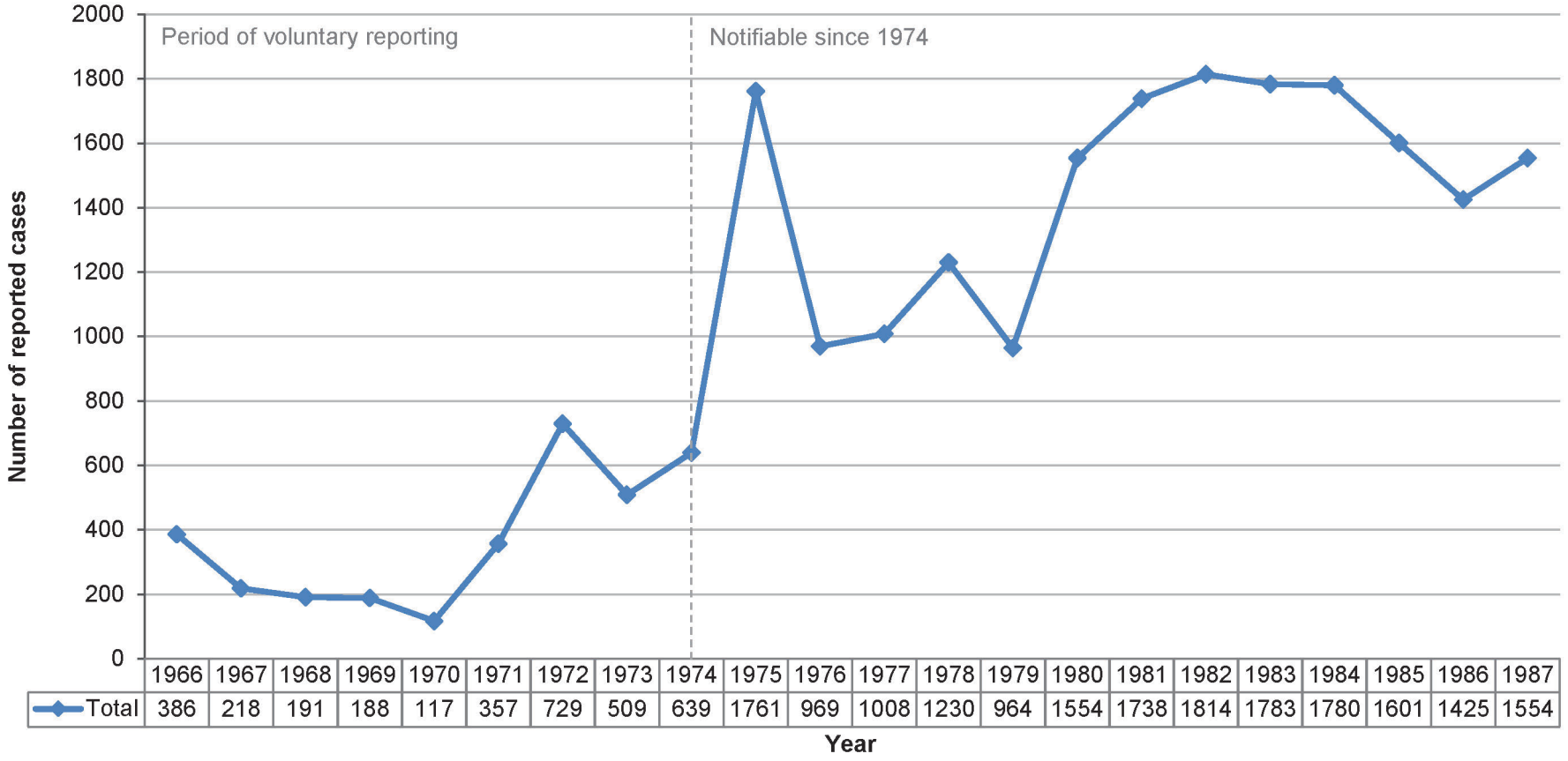
(Data source: Centre for Health Protection, Department of Health)

Box 1 Number of cases of viral hepatitis reported to the Department of Health between 1988 and 2022 (Data source: CHP, DH)

Year	A	B	NANB	C	D	E	Unclassified	Hepatitis (not elsewhere classified)	Total
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
2004	121	134	-	1	-	38	-	6	300
2005	64	105	-	1	-	34	-	0	204
2006	76	123	-	2	-	34	-	0	235
2007	69	74	-	1	-	65	-	0	209
2008	71	83	-	3	-	90	-	-	247
2009	64	80	-	3	-	73	-	-	220
2010	65	73	-	11	-	118	-	-	267
2011	46	70	-	5	-	119	-	-	240
2012	43	47	-	3	-	150	-	-	243
2013	44	40	-	10	-	90	-	-	184
2014	46	41	-	12	-	93	-	-	192
2015	138	29	-	14	-	84	-	-	265
2016	98	37	-	39	-	96	-	-	270
2017	117	33	-	18	-	64	-	-	232
2018	50	29	-	34	-	43	-	-	156
2019	79	28	-	17	-	85	-	-	209
2020	28	17	-	35	1	80	-	-	161
2021	15	17	-	23	1	77	-	-	133
2022	22	12	-	12	0	57	-	-	103

Box 2

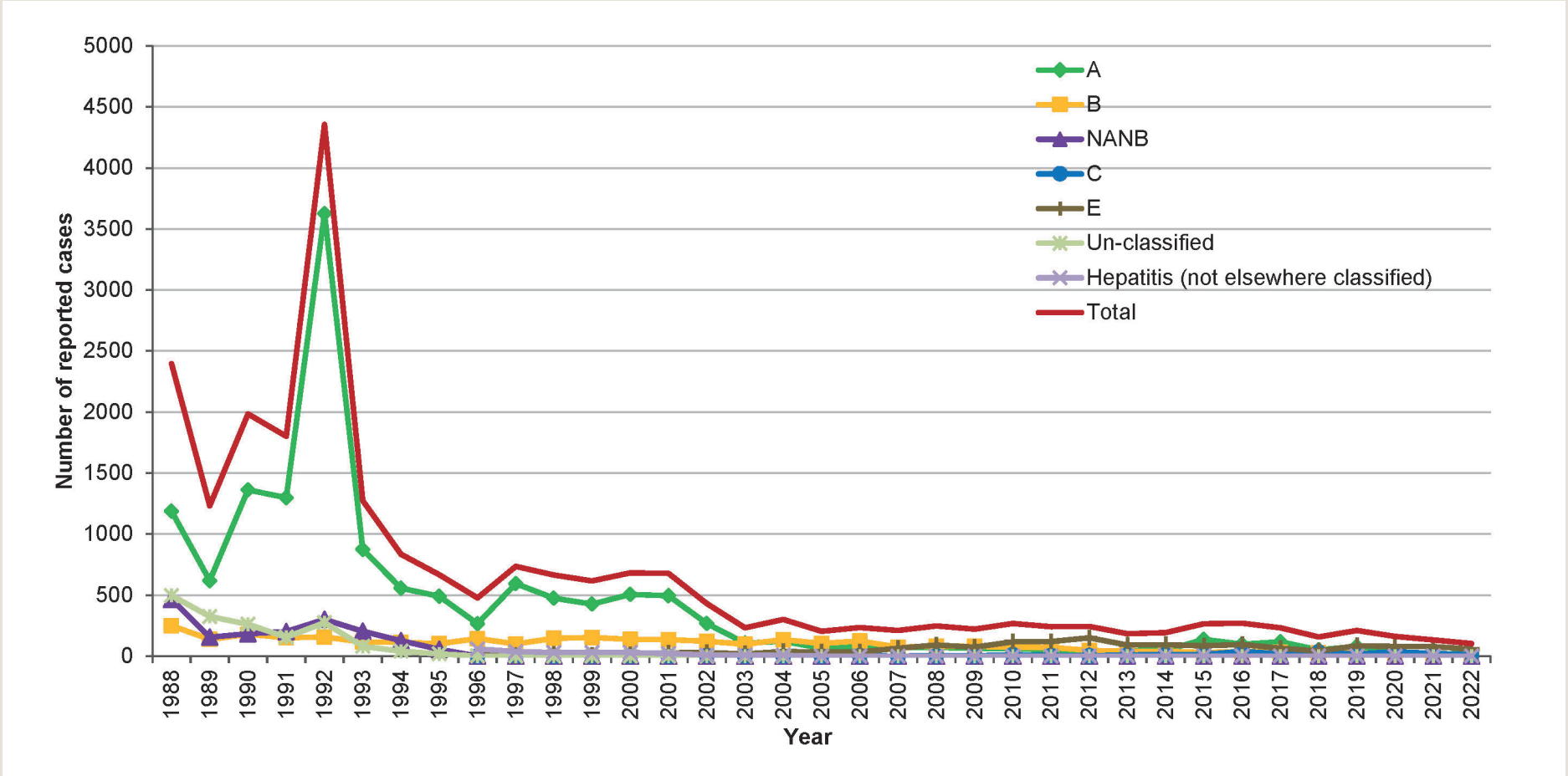
Reported cases of viral hepatitis from 1966 to 1987 by syndromic surveillance (Data source: CHP, DH)



	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total	386	218	191	188	117	357	729	509	639	1761	969	1008	1230	964	1554	1738	1814	1783	1780	1601	1425	1554

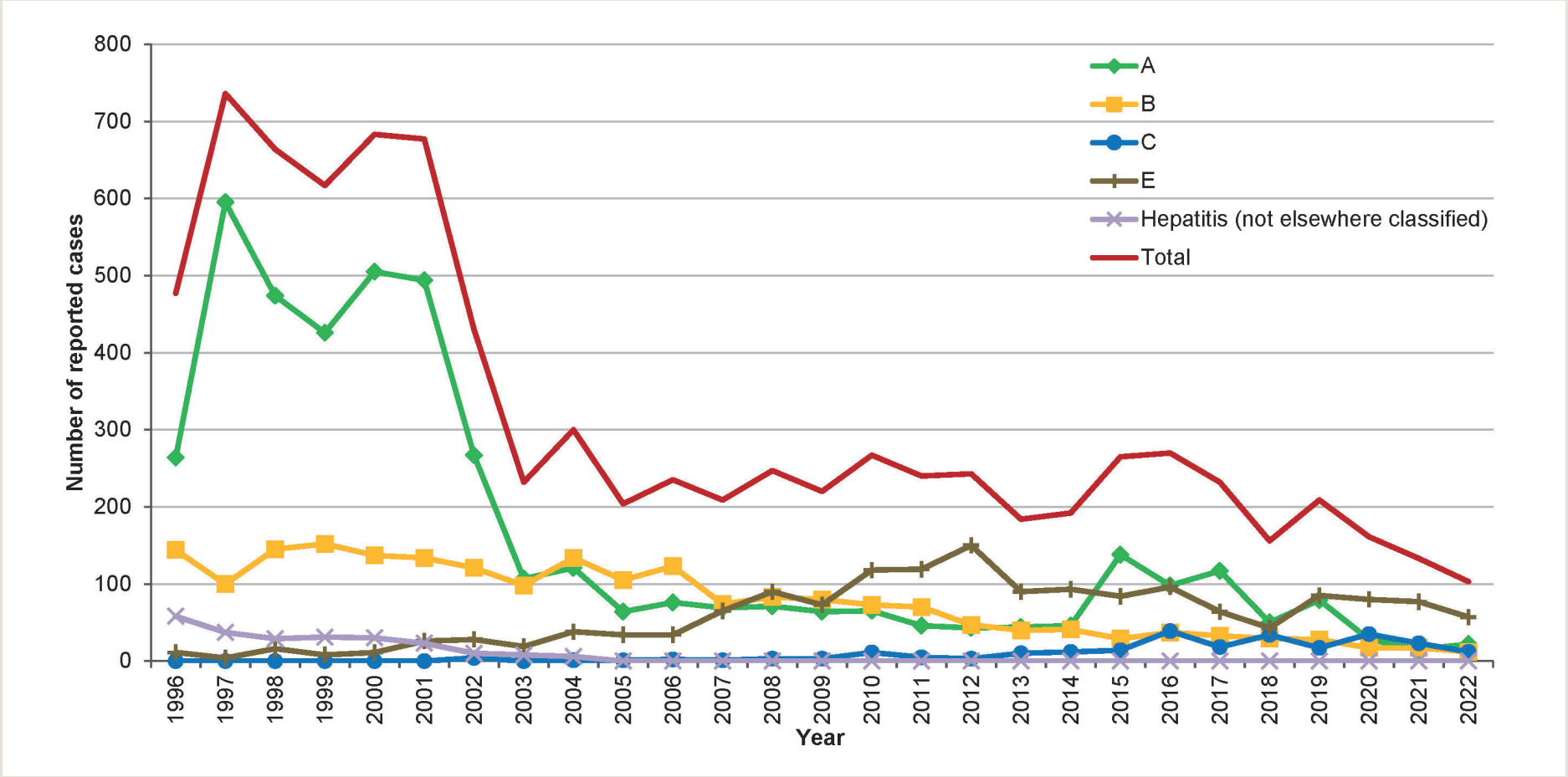
Box 3

Reported cases of viral hepatitis from 1988 to 2022 by viral etiology surveillance (Data source: CHP, DH)



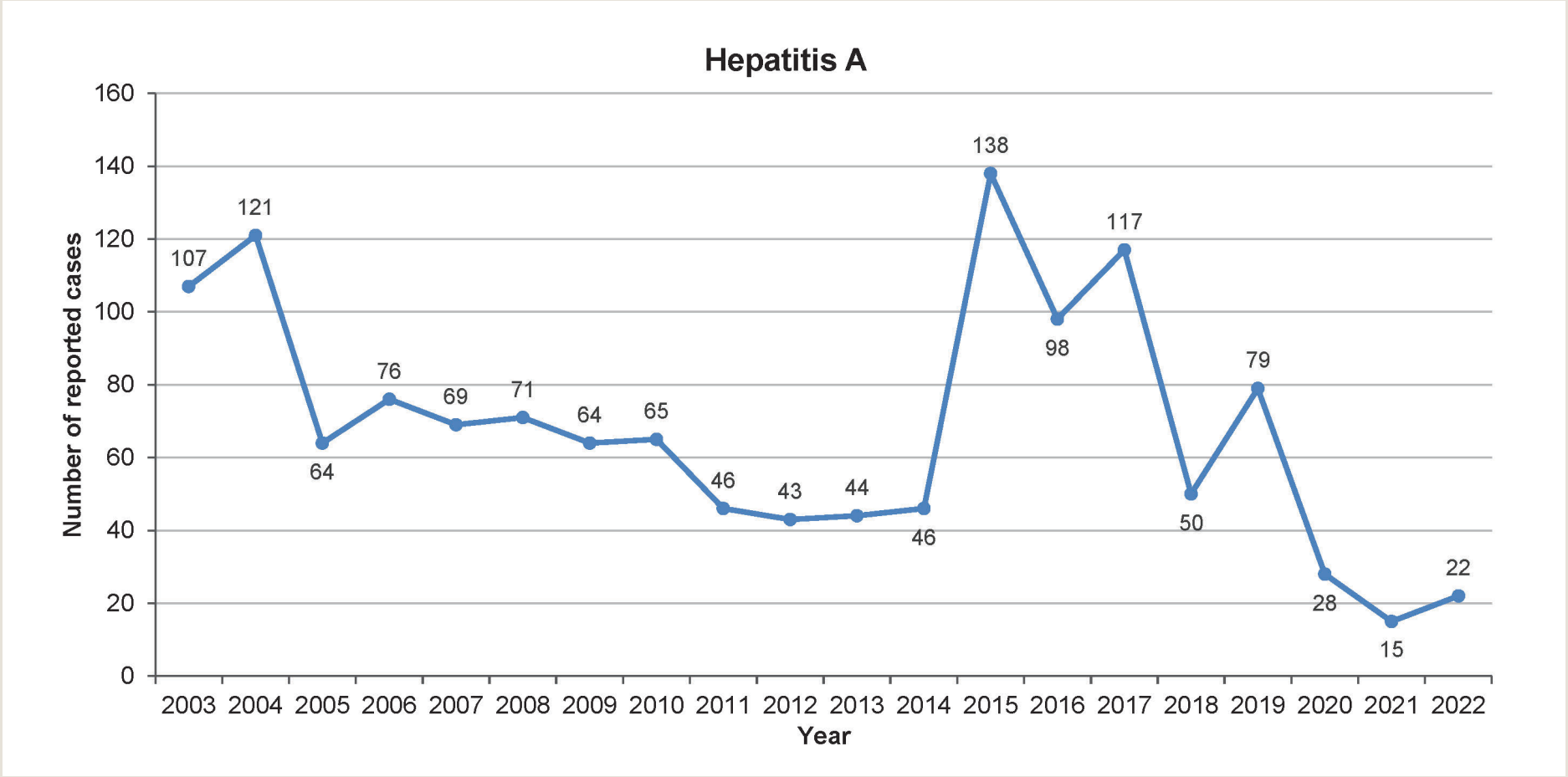
Box 4

Breakdown of viral hepatitis by etiology reported from 1996 to 2022 (Data source: CHP, DH)



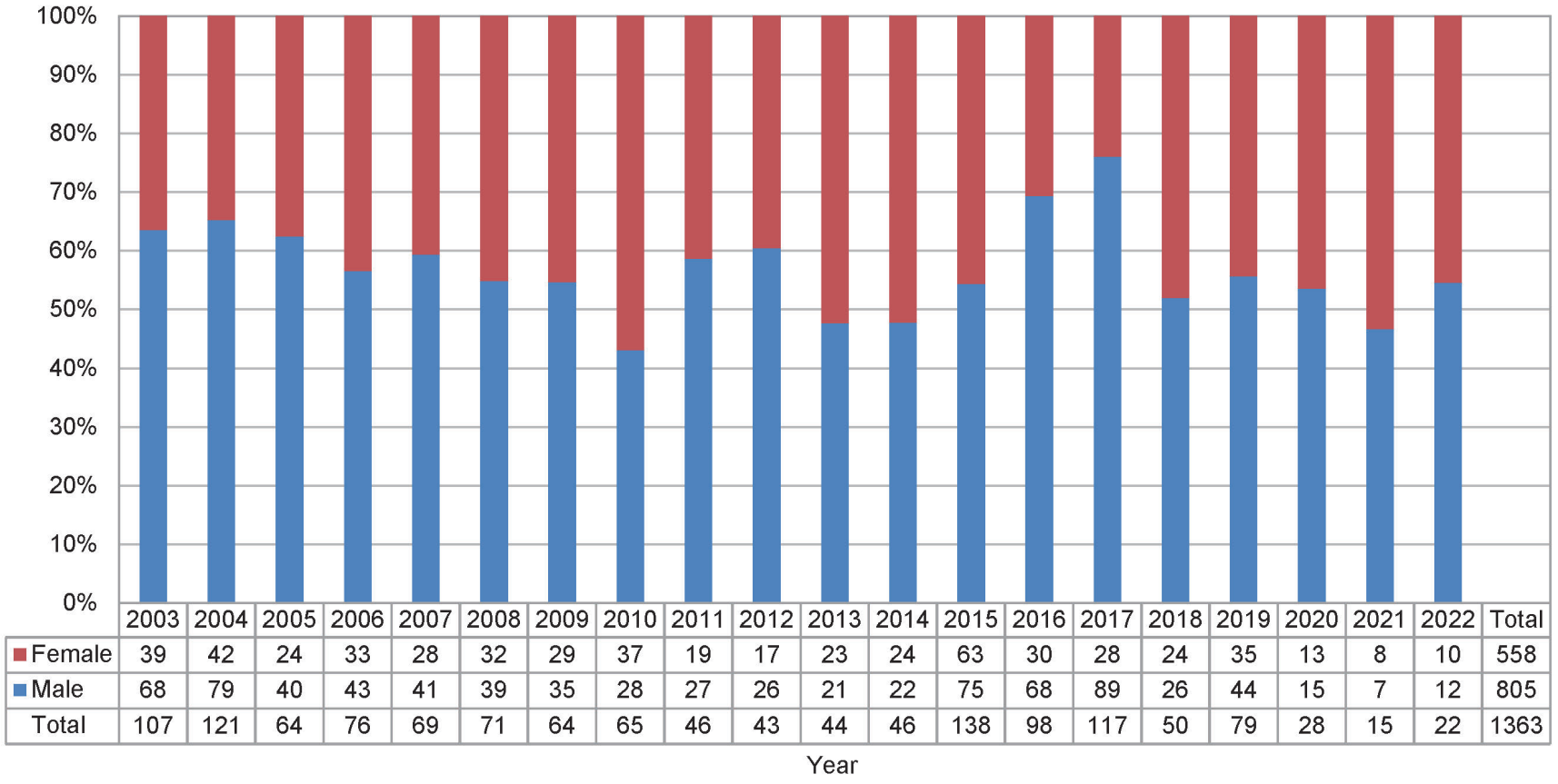
Box 5

Number of hepatitis A cases reported from 2003 to 2022 (Data source: CHP, DH)



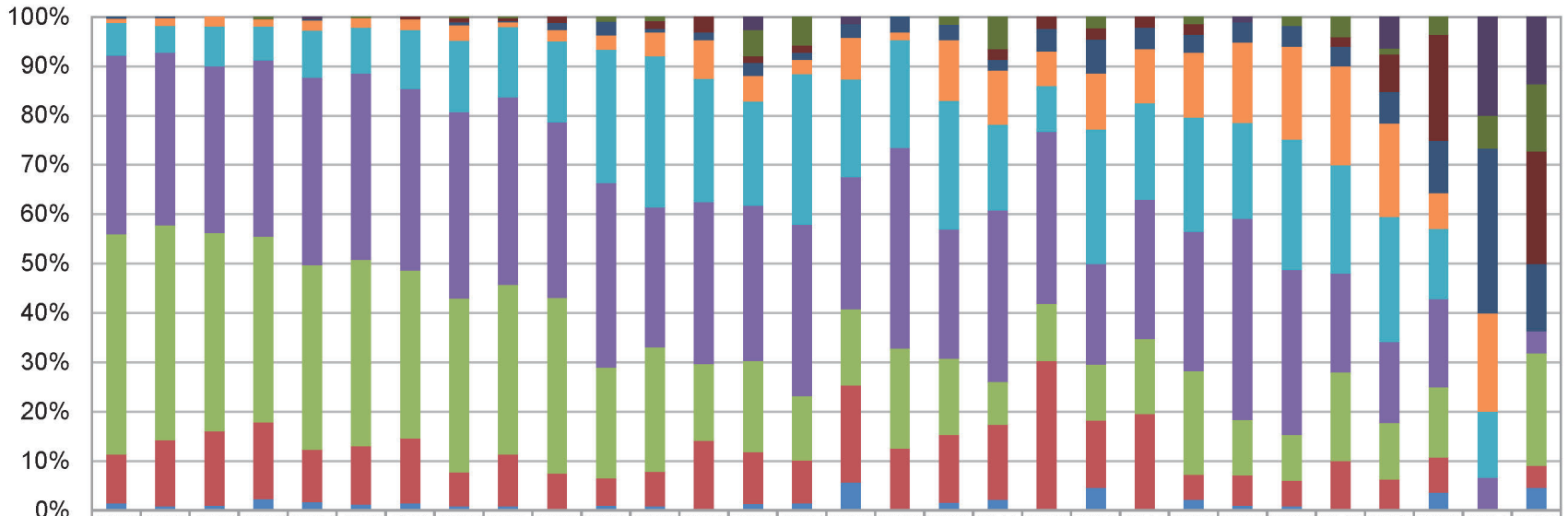
Box 6

Sex distribution of hepatitis A cases reported from 2003 to 2022 (Data source: CHP, DH)



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Female	39	42	24	33	28	32	29	37	19	17	23	24	63	30	28	24	35	13	8	10	558
Male	68	79	40	43	41	39	35	28	27	26	21	22	75	68	89	26	44	15	7	12	805
Total	107	121	64	76	69	71	64	65	46	43	44	46	138	98	117	50	79	28	15	22	1363

Box 7 Age distribution of hepatitis A cases reported from 1993 to 2022 (Data source: CHP, DH)

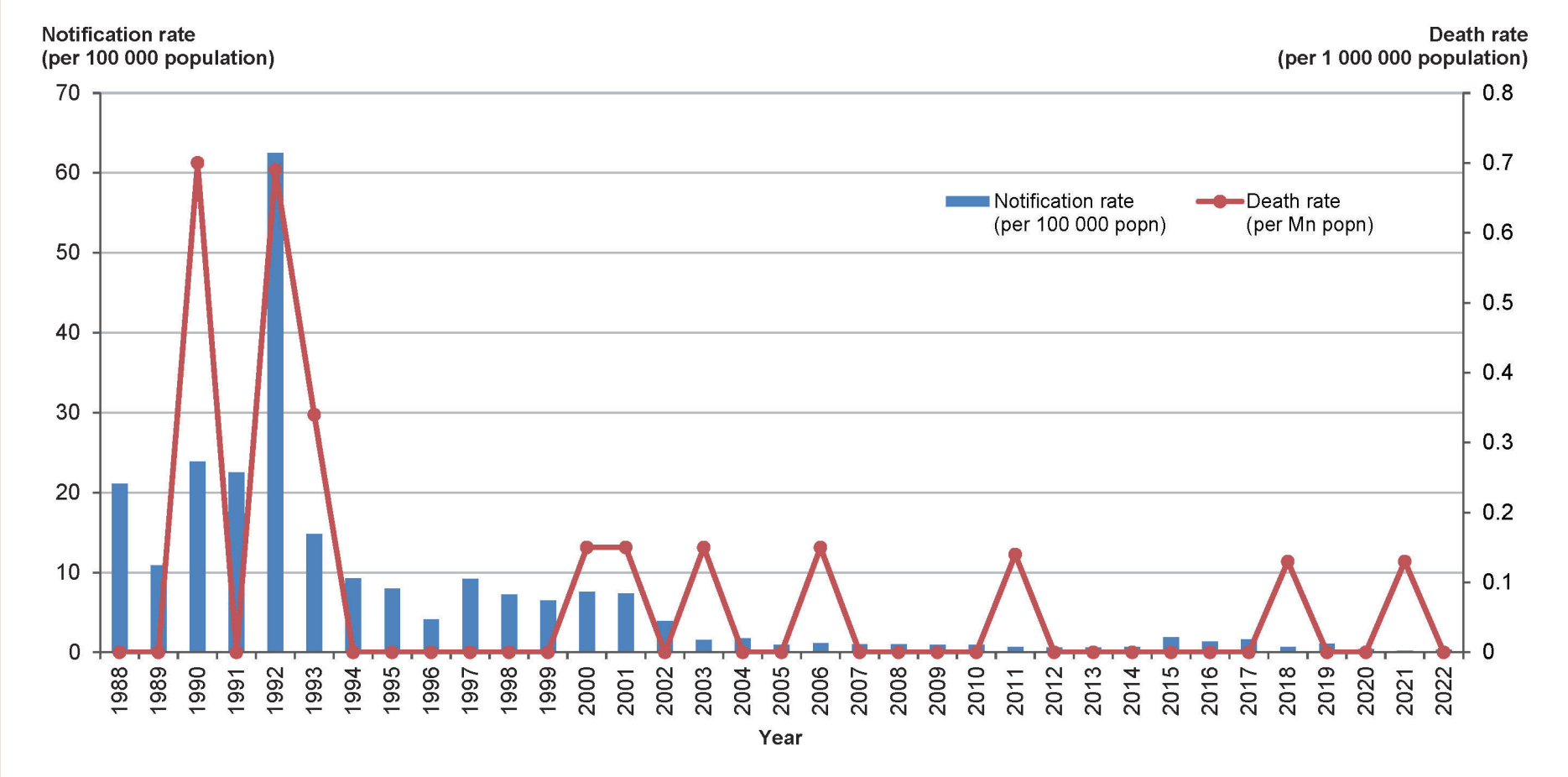


	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
> 84	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	6%	0%	20%	14%
75 - 84	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	5%	6%	0%	0%	2%	7%	0%	2%	0%	1%	0%	2%	4%	1%	4%	7%	14%
65 - 74	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	2%	3%	1%	1%	0%	0%	0%	2%	2%	2%	2%	2%	0%	0%	2%	8%	21%	0%	23%
55 - 64	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	3%	1%	2%	3%	1%	3%	3%	3%	2%	5%	7%	4%	4%	4%	4%	4%	6%	11%	33%	14%
45 - 54	1%	2%	2%	2%	2%	2%	2%	3%	1%	2%	3%	5%	8%	5%	3%	8%	2%	12%	11%	7%	11%	11%	13%	16%	19%	20%	19%	7%	20%	0%
35 - 44	7%	5%	8%	7%	10%	9%	12%	14%	14%	16%	27%	31%	25%	21%	30%	20%	22%	26%	17%	9%	27%	20%	23%	19%	26%	22%	25%	14%	13%	0%
25 - 34	36%	35%	34%	36%	38%	38%	37%	38%	38%	36%	37%	28%	33%	32%	35%	27%	41%	26%	35%	35%	20%	28%	28%	41%	33%	20%	16%	18%	7%	5%
15 - 24	45%	44%	40%	38%	37%	38%	34%	35%	34%	36%	22%	25%	16%	18%	13%	15%	20%	15%	9%	12%	11%	15%	21%	11%	9%	18%	11%	14%	0%	23%
5 - 14	10%	13%	15%	16%	11%	12%	13%	7%	11%	7%	6%	7%	14%	11%	9%	20%	13%	14%	15%	30%	14%	20%	5%	6%	5%	10%	6%	7%	0%	5%
< 5	1%	1%	1%	2%	2%	1%	1%	1%	1%	0%	1%	1%	0%	1%	1%	6%	0%	2%	2%	0%	5%	0%	2%	1%	1%	0%	0%	4%	0%	5%

Year

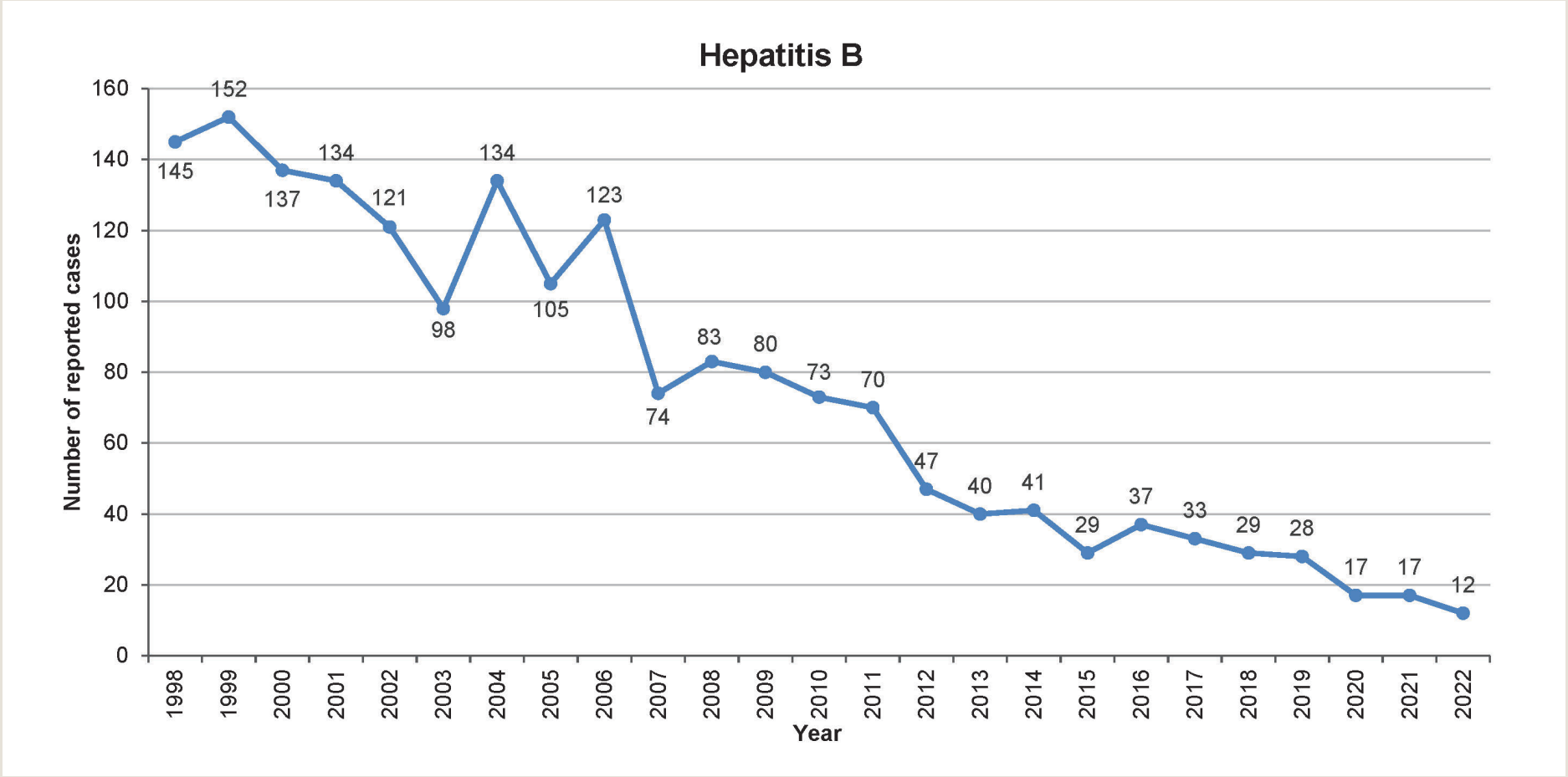
Box 8

Notification rates and death rates of hepatitis A from 1988 to 2022 (Data source: CHP, DH)



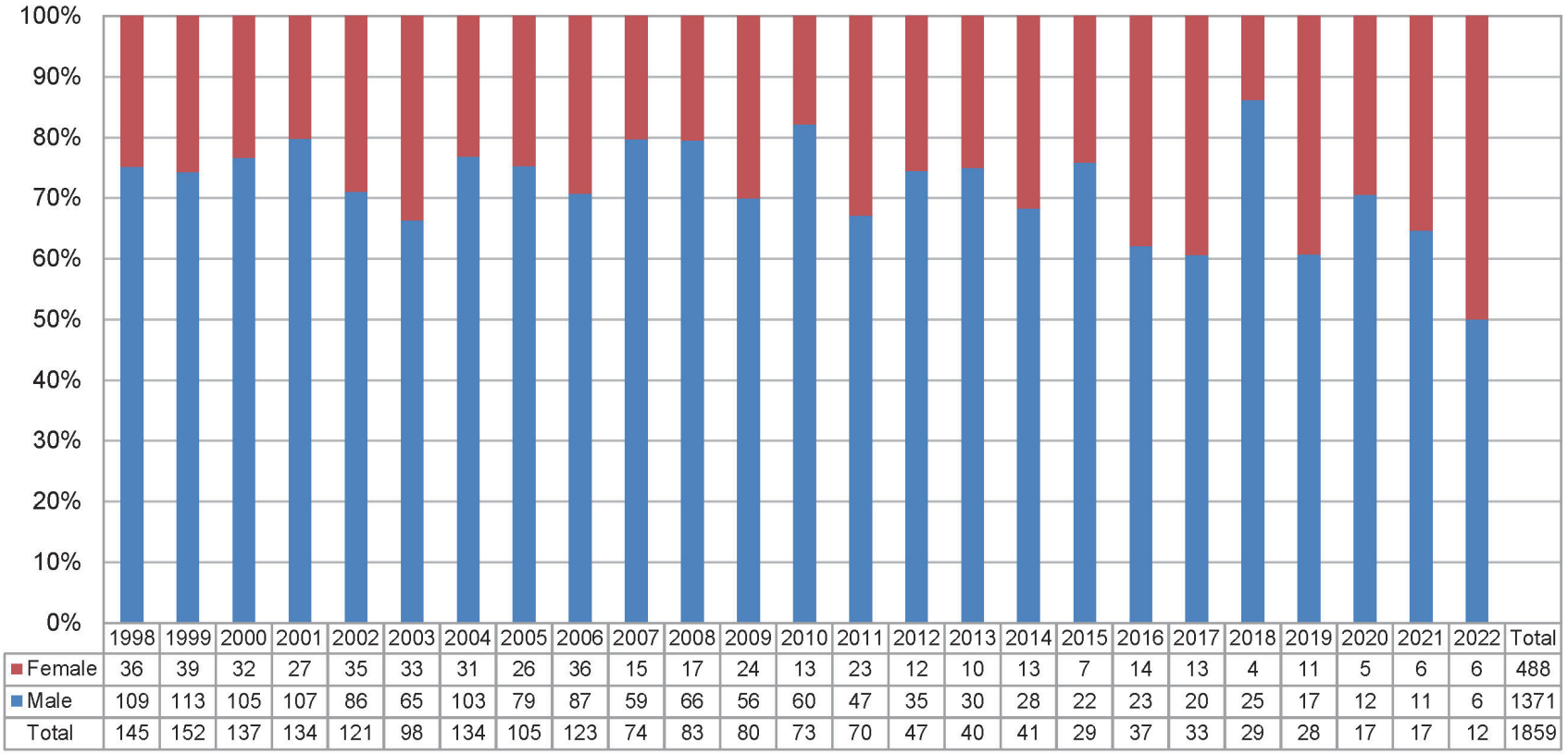
Box 9

Number of hepatitis B cases reported from 1998 to 2022 (Data source: CHP, DH)



Box 10

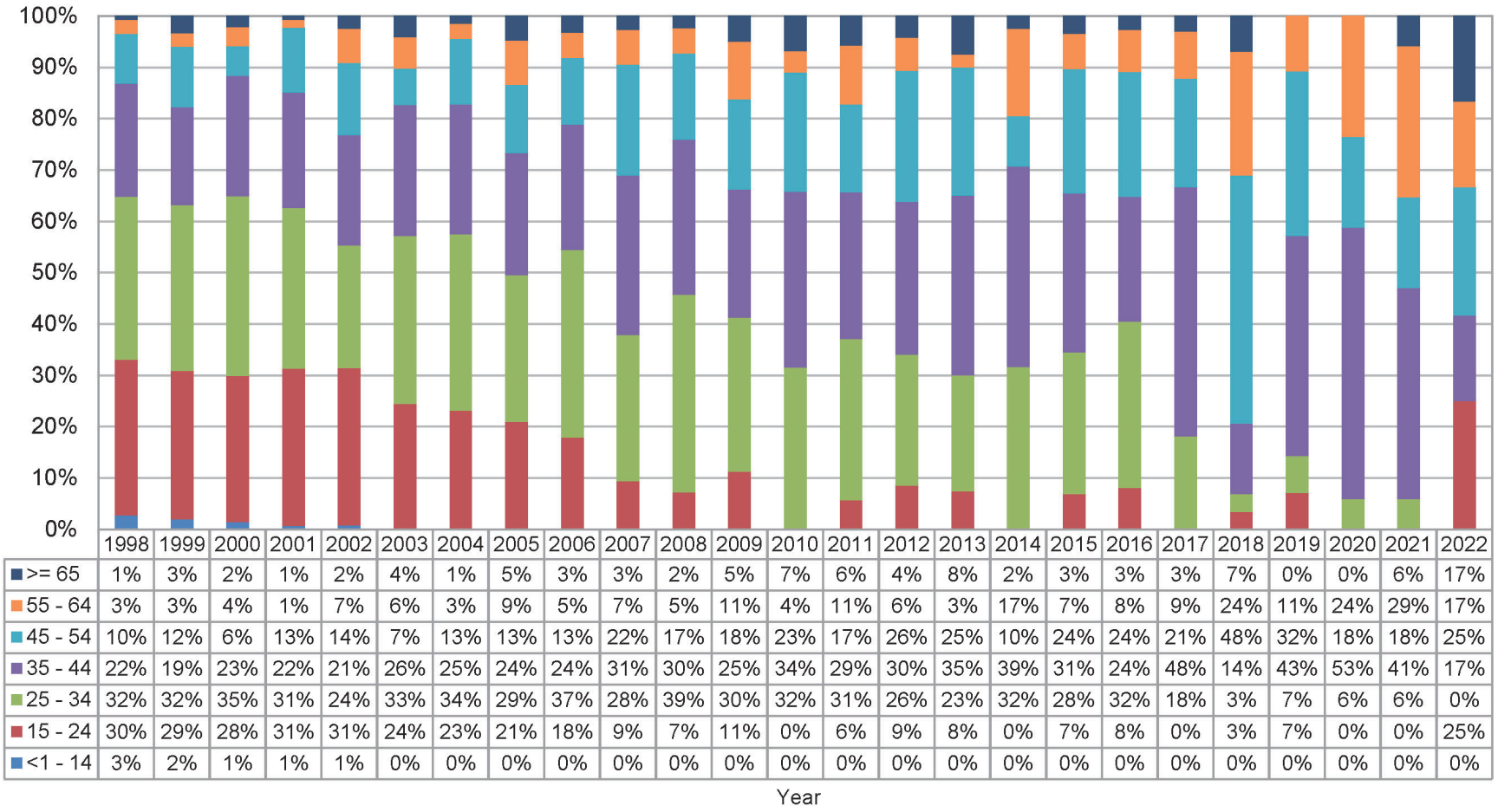
Sex distribution of hepatitis B cases reported from 1998 to 2022 (Data source: CHP, DH)



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Female	36	39	32	27	35	33	31	26	36	15	17	24	13	23	12	10	13	7	14	13	4	11	5	6	6	488
Male	109	113	105	107	86	65	103	79	87	59	66	56	60	47	35	30	28	22	23	20	25	17	12	11	6	1371
Total	145	152	137	134	121	98	134	105	123	74	83	80	73	70	47	40	41	29	37	33	29	28	17	17	12	1859

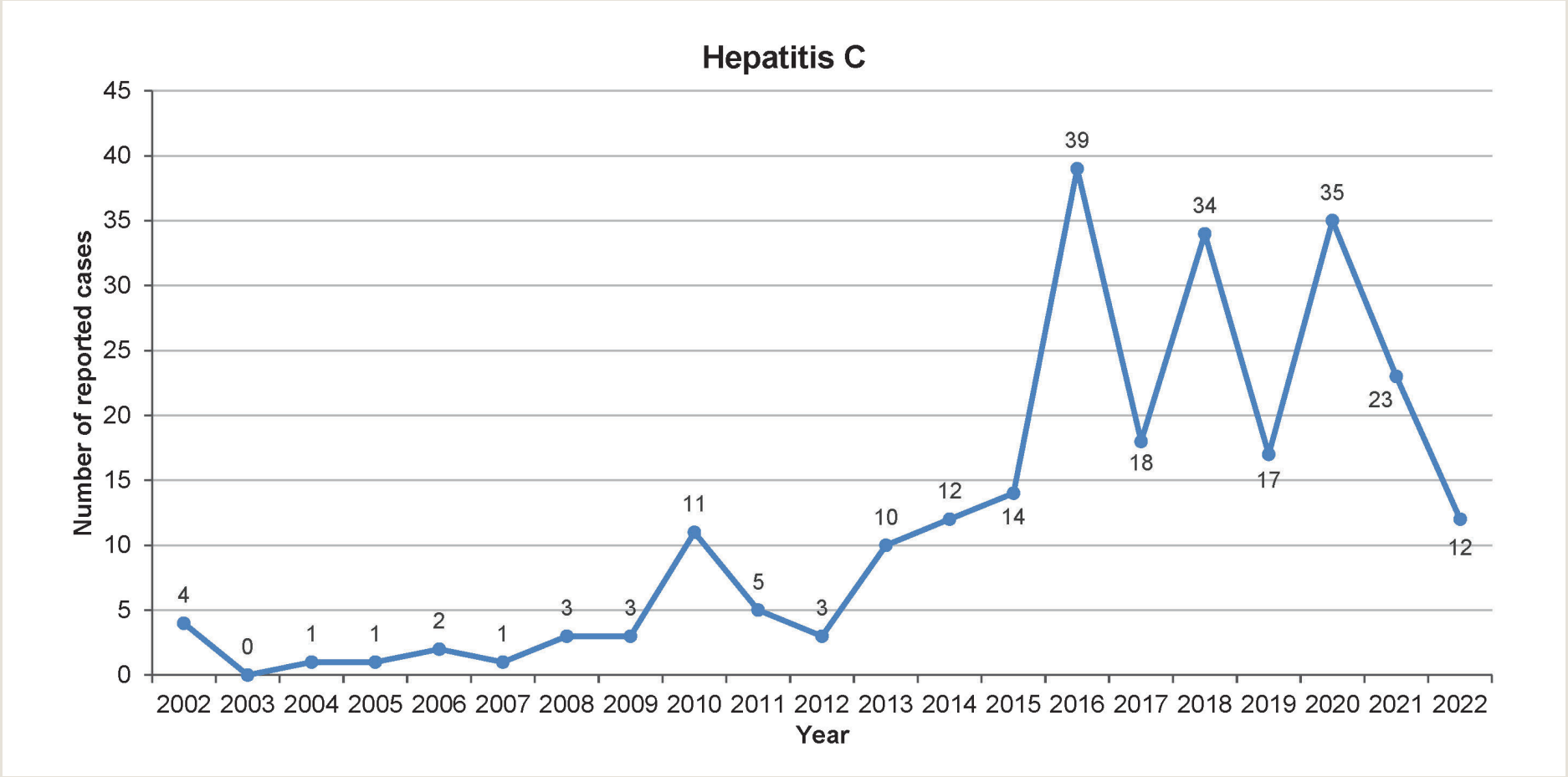
Box 11

Age distribution of hepatitis B cases reported from 1998 to 2022 (Data source: CHP, DH)

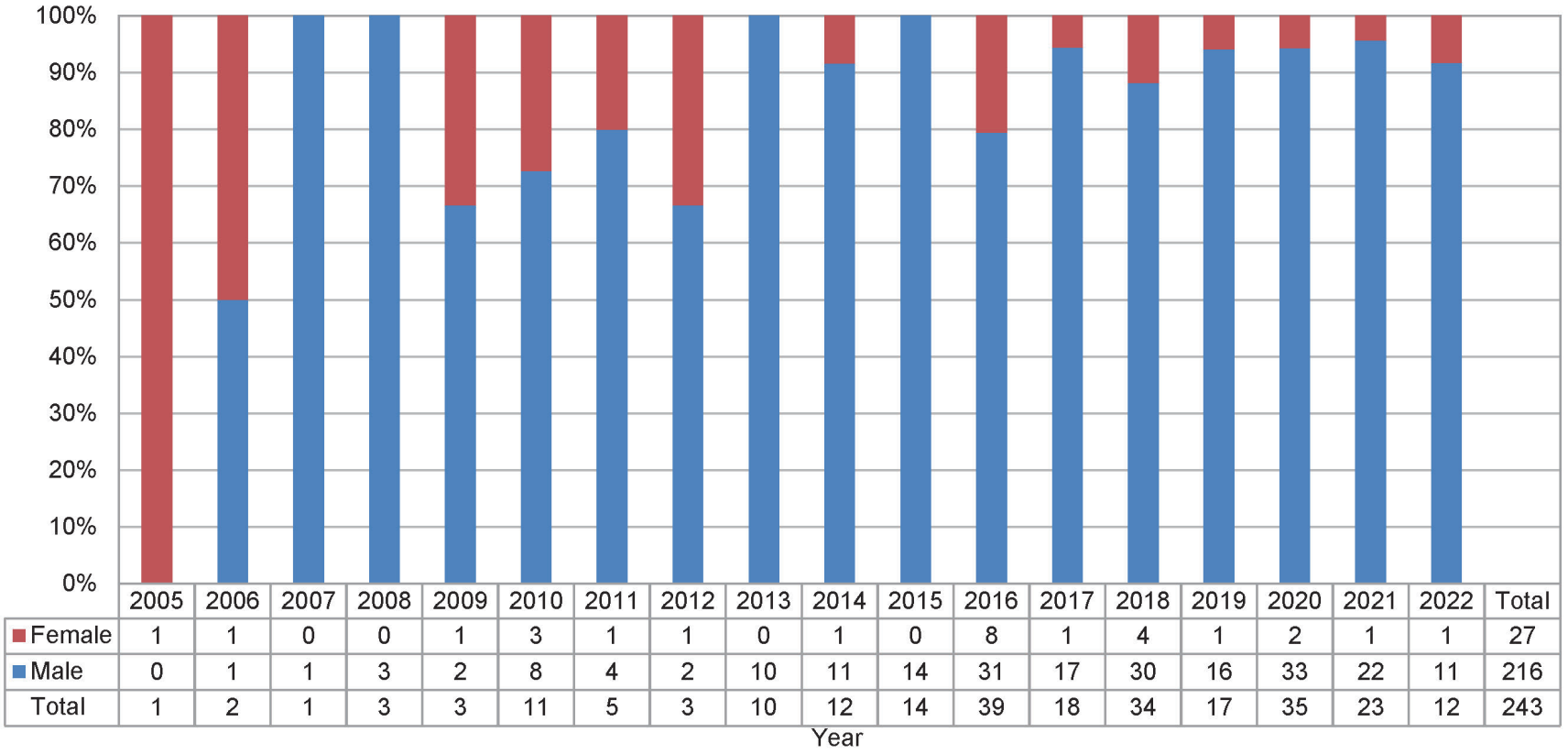


	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
>= 65	1%	3%	2%	1%	2%	4%	1%	5%	3%	3%	2%	5%	7%	6%	4%	8%	2%	3%	3%	3%	7%	0%	0%	6%	17%
55 - 64	3%	3%	4%	1%	7%	6%	3%	9%	5%	7%	5%	11%	4%	11%	6%	3%	17%	7%	8%	9%	24%	11%	24%	29%	17%
45 - 54	10%	12%	6%	13%	14%	7%	13%	13%	13%	22%	17%	18%	23%	17%	26%	25%	10%	24%	24%	21%	48%	32%	18%	18%	25%
35 - 44	22%	19%	23%	22%	21%	26%	25%	24%	24%	31%	30%	25%	34%	29%	30%	35%	39%	31%	24%	48%	14%	43%	53%	41%	17%
25 - 34	32%	32%	35%	31%	24%	33%	34%	29%	37%	28%	39%	30%	32%	31%	26%	23%	32%	28%	32%	18%	3%	7%	6%	6%	0%
15 - 24	30%	29%	28%	31%	31%	24%	23%	21%	18%	9%	7%	11%	0%	6%	9%	8%	0%	7%	8%	0%	3%	7%	0%	0%	25%
<1 - 14	3%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Box 12 **Number of hepatitis C cases reported from 2002 to 2022 (Data source: CHP, DH)**



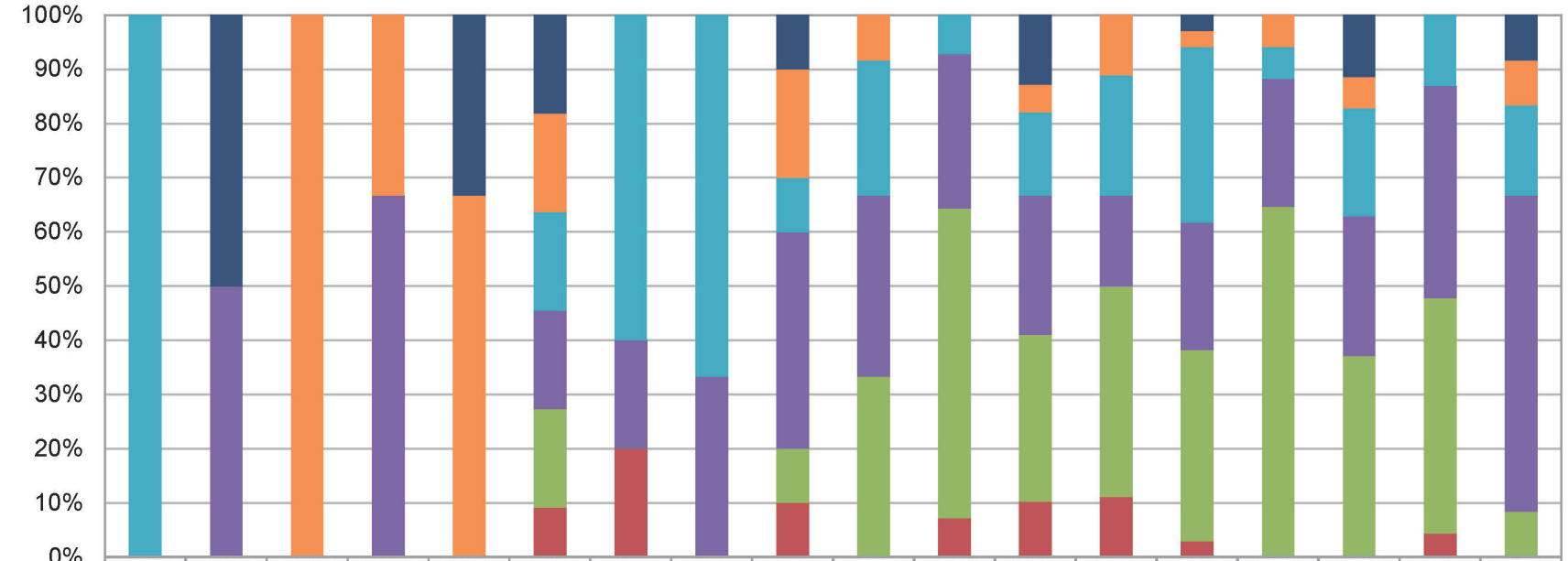
Box 13 Sex distribution of hepatitis C cases reported from 2005 to 2022 (Data source: CHP, DH)



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Female	1	1	0	0	1	3	1	1	0	1	0	8	1	4	1	2	1	1	27
Male	0	1	1	3	2	8	4	2	10	11	14	31	17	30	16	33	22	11	216
Total	1	2	1	3	3	11	5	3	10	12	14	39	18	34	17	35	23	12	243

Box 14

Age distribution of hepatitis C cases reported from 2005 to 2022 (Data source: CHP, DH)

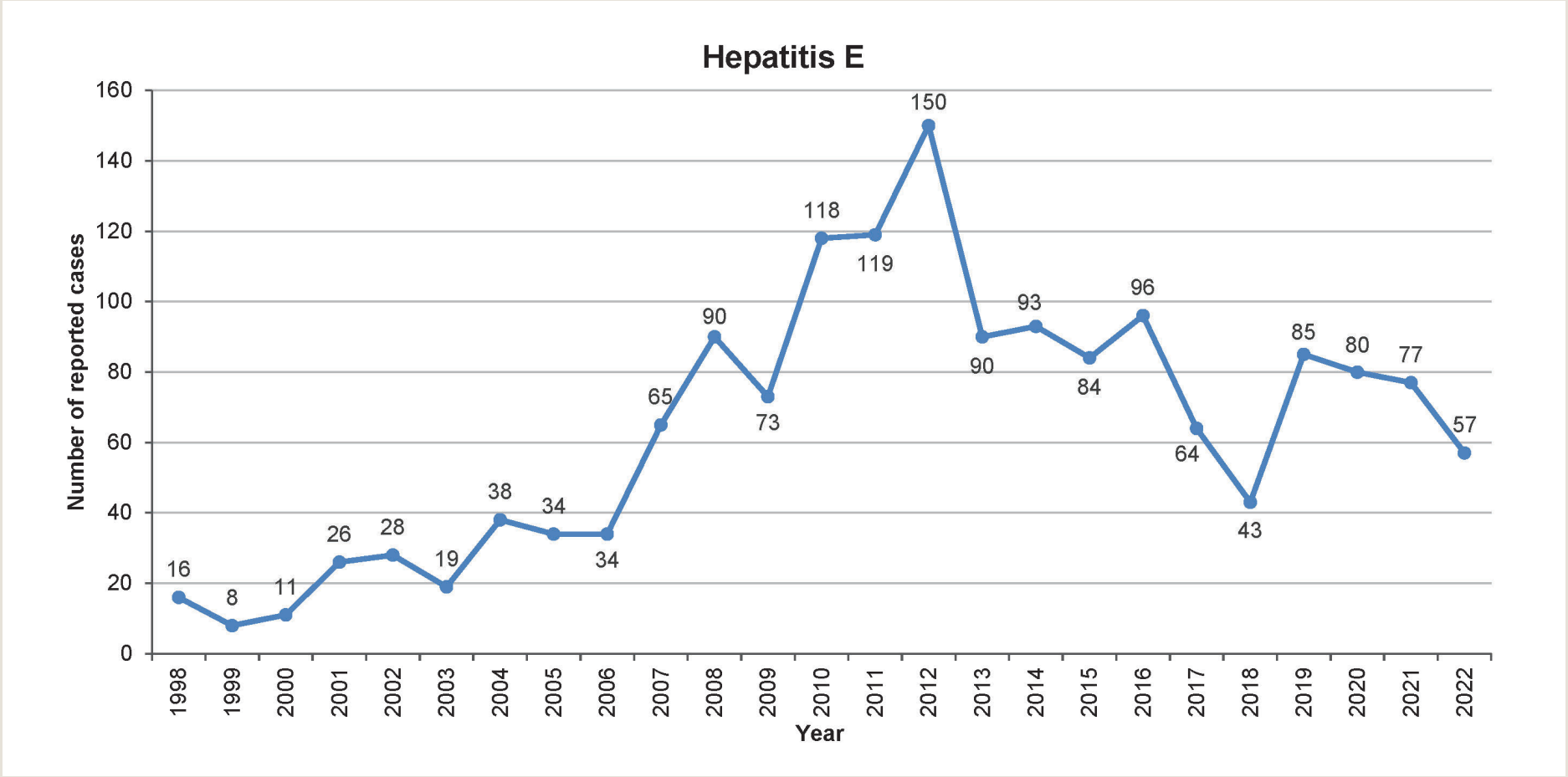


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
>= 65	0%	50%	0%	0%	33%	18%	0%	0%	10%	0%	0%	13%	0%	3%	0%	11%	0%	8%
55 - 64	0%	0%	100%	33%	67%	18%	0%	0%	20%	8%	0%	5%	11%	3%	6%	6%	0%	8%
45 - 54	100%	0%	0%	0%	0%	18%	60%	67%	10%	25%	7%	15%	22%	32%	6%	20%	13%	17%
35 - 44	0%	50%	0%	67%	0%	18%	20%	33%	40%	33%	29%	26%	17%	24%	24%	26%	39%	58%
25 - 34	0%	0%	0%	0%	0%	18%	0%	0%	10%	33%	57%	31%	39%	35%	65%	37%	43%	8%
15 - 24	0%	0%	0%	0%	0%	9%	20%	0%	10%	0%	7%	10%	11%	3%	0%	0%	4%	0%
<1 - 14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Year

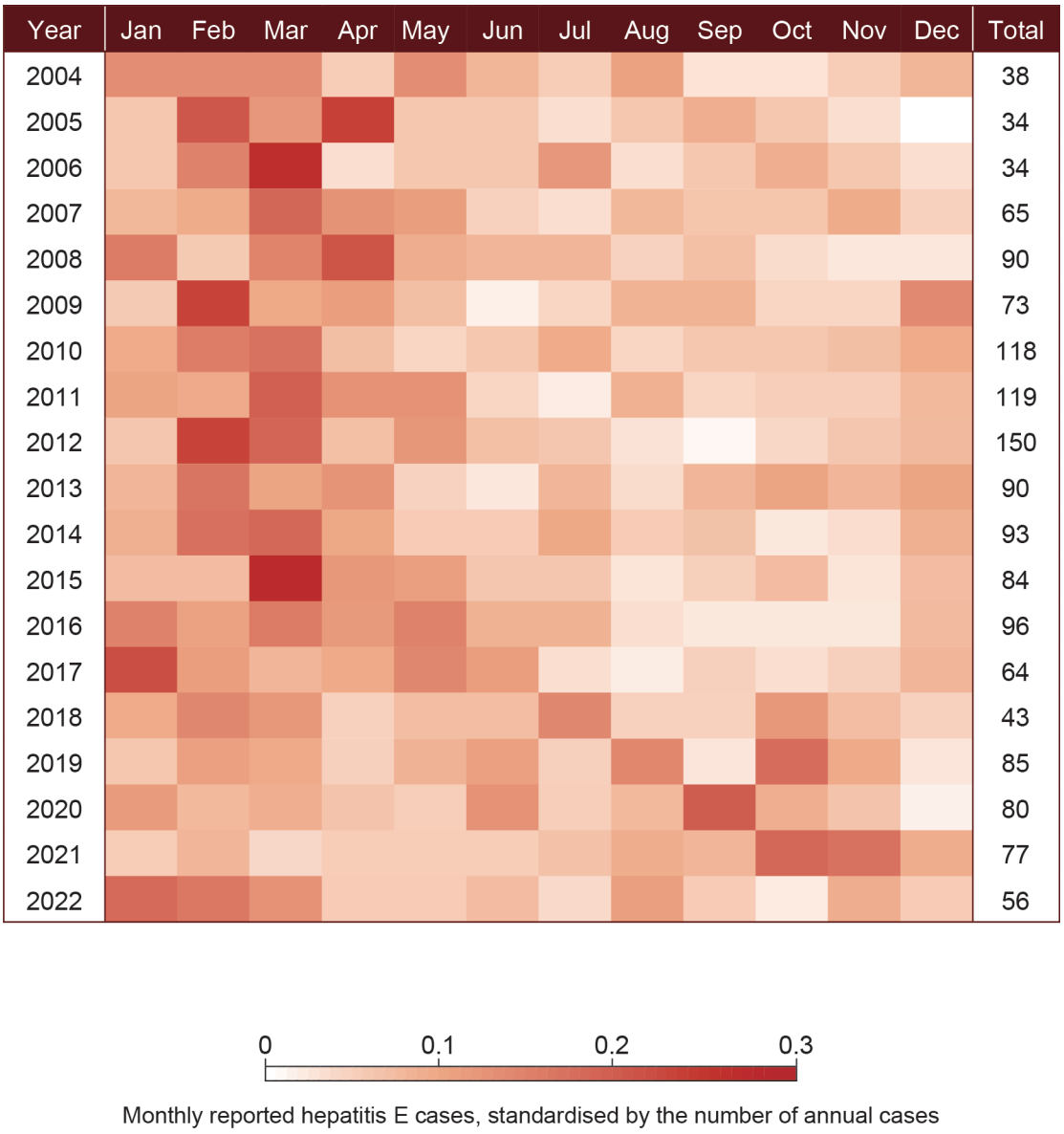
Box 15

Number of hepatitis E cases reported from 1998 to 2022 (Data source: CHP, DH)



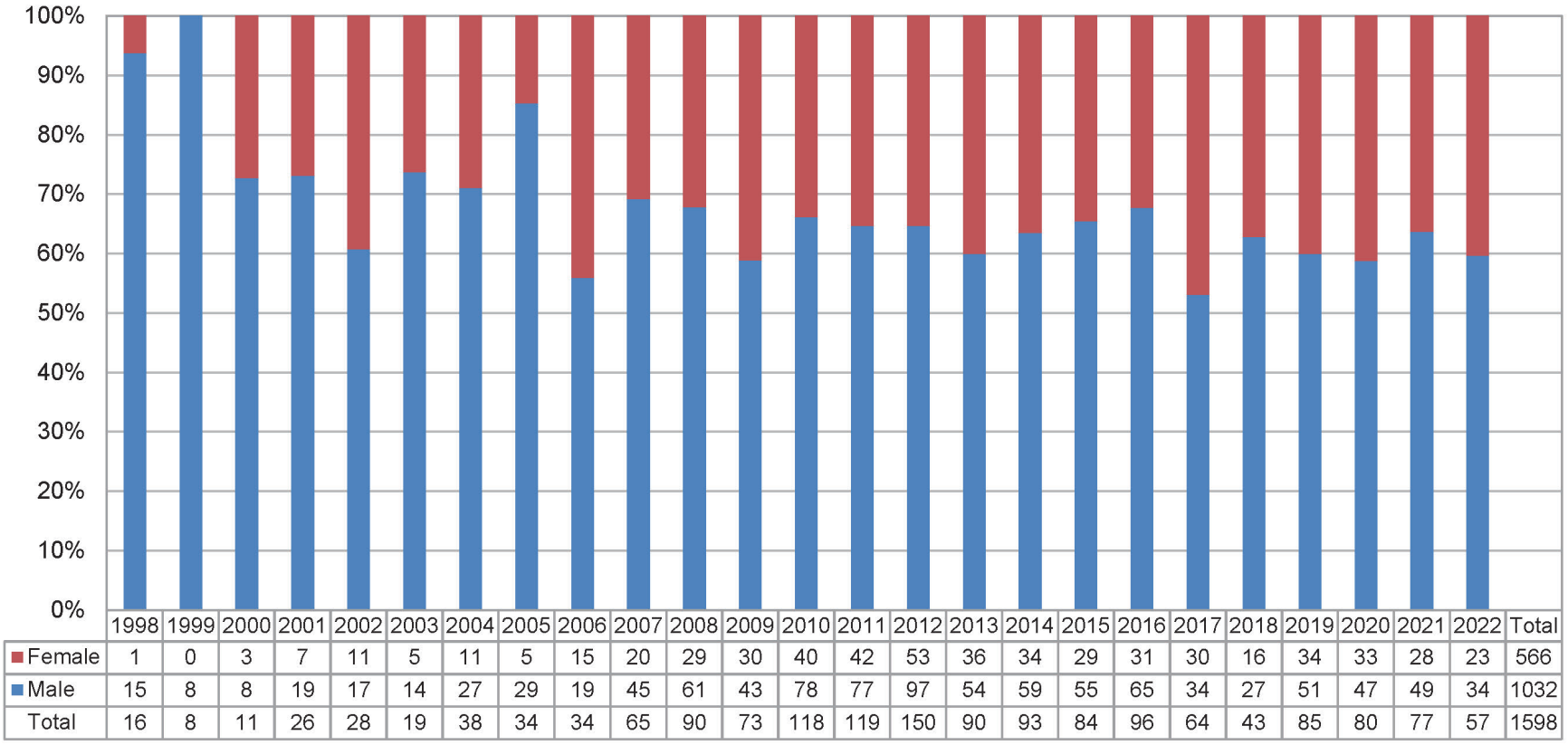
Box 16

Seasonal distribution of reported cases of hepatitis E by month from 2004 to 2022 (Data source: CHP, DH)



Box 17

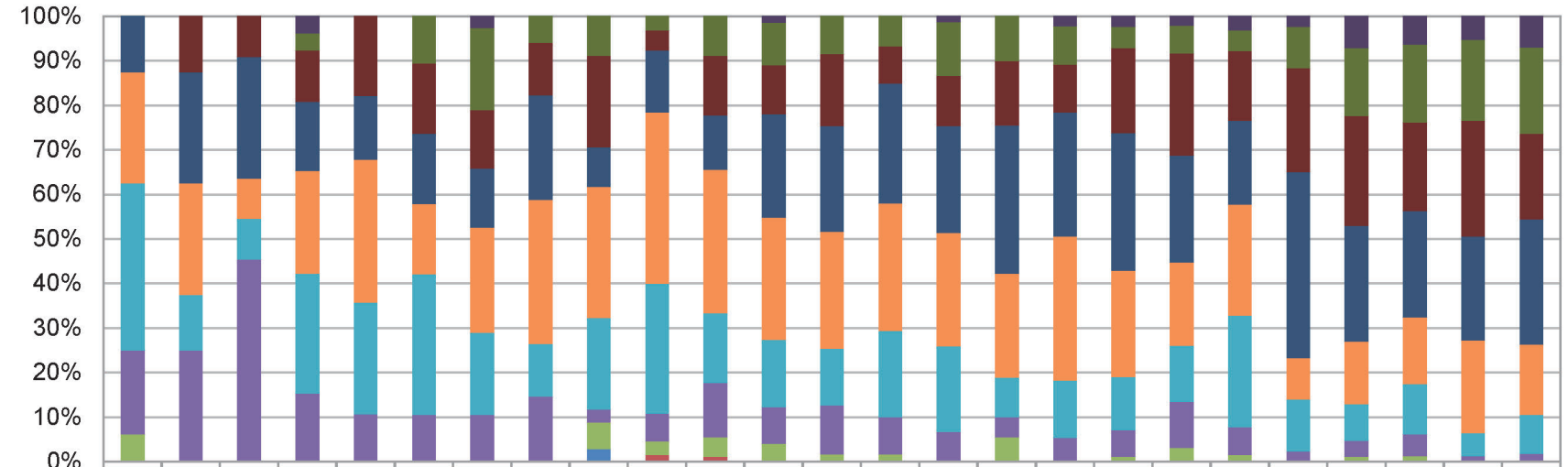
Sex distribution of hepatitis E cases reported from 1998 to 2022 (Data source: CHP, DH)



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Female	1	0	3	7	11	5	11	5	15	20	29	30	40	42	53	36	34	29	31	30	16	34	33	28	23	566
Male	15	8	8	19	17	14	27	29	19	45	61	43	78	77	97	54	59	55	65	34	27	51	47	49	34	1032
Total	16	8	11	26	28	19	38	34	34	65	90	73	118	119	150	90	93	84	96	64	43	85	80	77	57	1598

Box 18

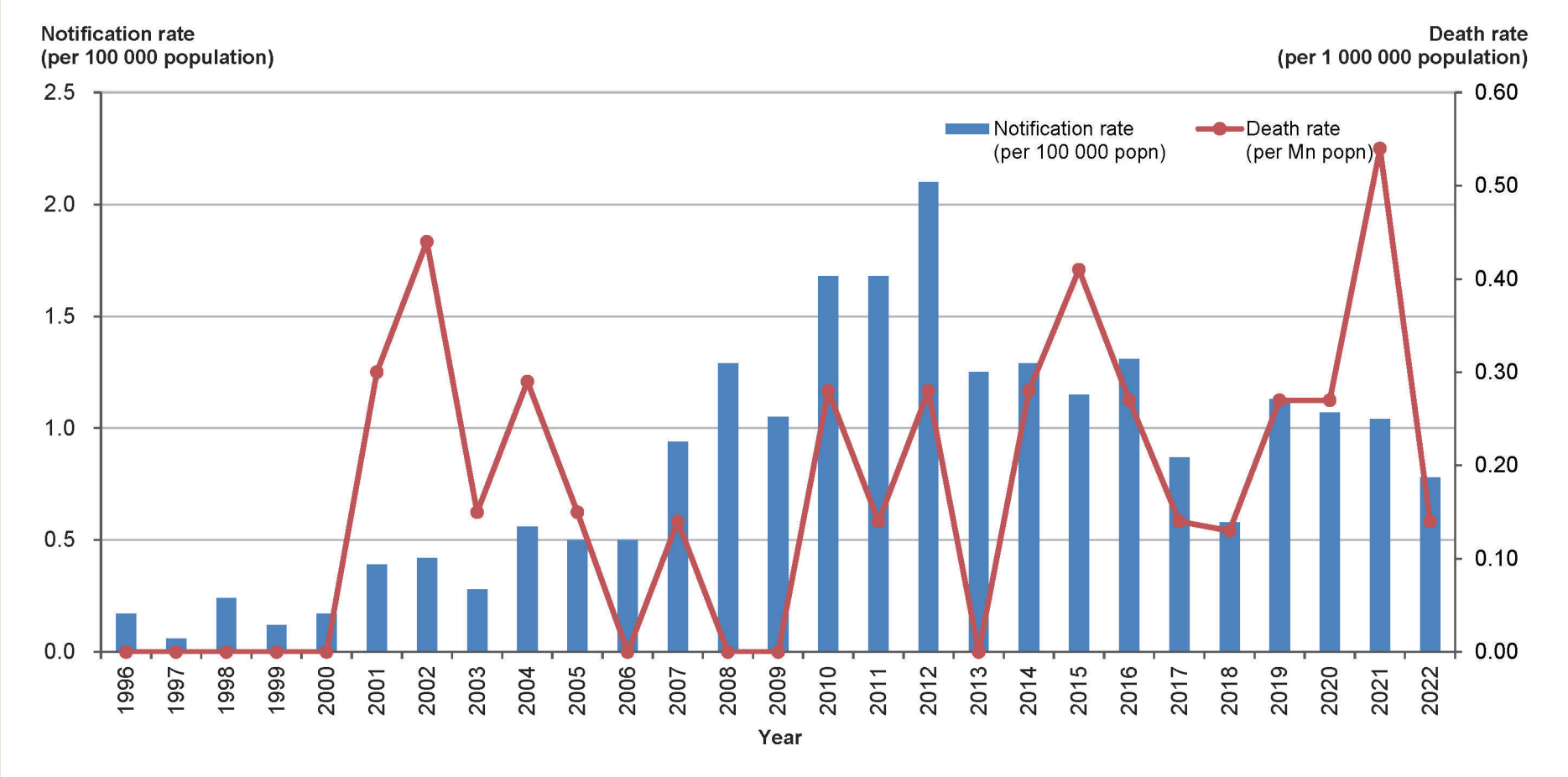
Age distribution of hepatitis E cases reported from 1998 to 2022 (Data source: CHP, DH)



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
> 84	0%	0%	0%	4%	0%	0%	3%	0%	0%	0%	0%	1%	0%	0%	1%	0%	2%	2%	2%	3%	2%	7%	6%	5%	7%
75 - 84	0%	0%	0%	4%	0%	11%	18%	6%	9%	3%	9%	10%	8%	7%	12%	10%	9%	5%	6%	5%	9%	15%	18%	18%	19%
65 - 74	0%	13%	9%	12%	18%	16%	13%	12%	21%	5%	13%	11%	16%	8%	11%	14%	11%	19%	23%	16%	23%	25%	20%	26%	19%
55 - 64	13%	25%	27%	15%	14%	16%	13%	24%	9%	14%	12%	23%	24%	27%	24%	33%	28%	31%	24%	19%	42%	26%	24%	23%	28%
45 - 54	25%	25%	9%	23%	32%	16%	24%	32%	29%	38%	32%	27%	26%	29%	25%	23%	32%	24%	19%	25%	9%	14%	15%	21%	16%
35 - 44	38%	13%	9%	27%	25%	32%	18%	12%	21%	29%	16%	15%	13%	19%	19%	9%	13%	12%	13%	25%	12%	8%	11%	5%	9%
25 - 34	19%	25%	45%	15%	11%	11%	11%	15%	3%	6%	12%	8%	11%	8%	7%	4%	5%	6%	10%	6%	2%	4%	5%	1%	2%
15 - 24	6%	0%	0%	0%	0%	0%	0%	0%	6%	3%	4%	4%	2%	2%	0%	6%	0%	1%	3%	2%	0%	1%	1%	0%	0%
5 - 14	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
< 5	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Box 19

Notification rates and death rates of hepatitis E from 1996 to 2022 (Data source: CHP, DH)



Seroprevalence of hepatitis A

Box 20 Prevalence of anti-HAV in studies/testing between 1978 and 2009 (Data sources: multiple sources)

Age groups	1978	1987	1989	1993^	1995	1996		1998	2000	2001	2001	2002	2003	2004	2005	2006	2007	2008	2009
0 – 20	12.9% (0 – 10) 44.8% (11 – 20)	5.3% (0 – 10) 17.1% (11 – 20)	6.8% (0 – 10) 11.2% (11 – 20)	59.4% (M) 53.3% (F)	8.3%	- (0 – 10) 7.0% (11 – 20)	6.1%	5.4%	9.3%	4.58%	- (0 – 10) 12.5% (11 – 20)	5.3%	10.3%	14.7%	15.4%	20.0%	14.3%	16.7%	25.0%
21 – 30	75.0%	53.8%	58.8%	59.4% (M) 53.3% (F)	11.3%	-	11.8%	7.6%	17.5%	13.2%	26.8%	12.6%	13.2%	21.0%	28.2%	25.8%	19.4%	26.3%	30.3%
31 – 40	82.9%	85.1%	83.5%	59.4% (M) 53.3% (F)	49.0%	-	37.7%	40.8%	35.0%	41.3%	53.2%	46.7%	52.4%	43.8%	35.7%	50.0%	37.5%	47.4%	36.4%
>40	91.1%	94.7%	91.1% (41 – 50) 93.9% (>50)	94.5% (M) 91.0% (F)	70.5%	-	58.6%	66.7%	60.0%	71.1%	88.3% (41 – 50) 97.7% (>50)	58.1%	100.0%	50.0%	72.7%	80.0%	62.5%	71.4%	26.7%
Data source	A	B	C	D	E	F	E	E	E	E	G	E	E	E	E	E	E	E	E

^Figure is the average of age 0 – 40

Data sources:

A. *Study on left-over sera of 362 subjects, by Tsang et al of the University of Hong Kong [12]*

B. *Study on stored sera of 702 healthy subjects, by Chin et al of the University of Hong Kong [11]*

C. *Study on 1028 serum samples collected from individuals attending a health exhibition, by Lim et al of Department of Health. [96]*

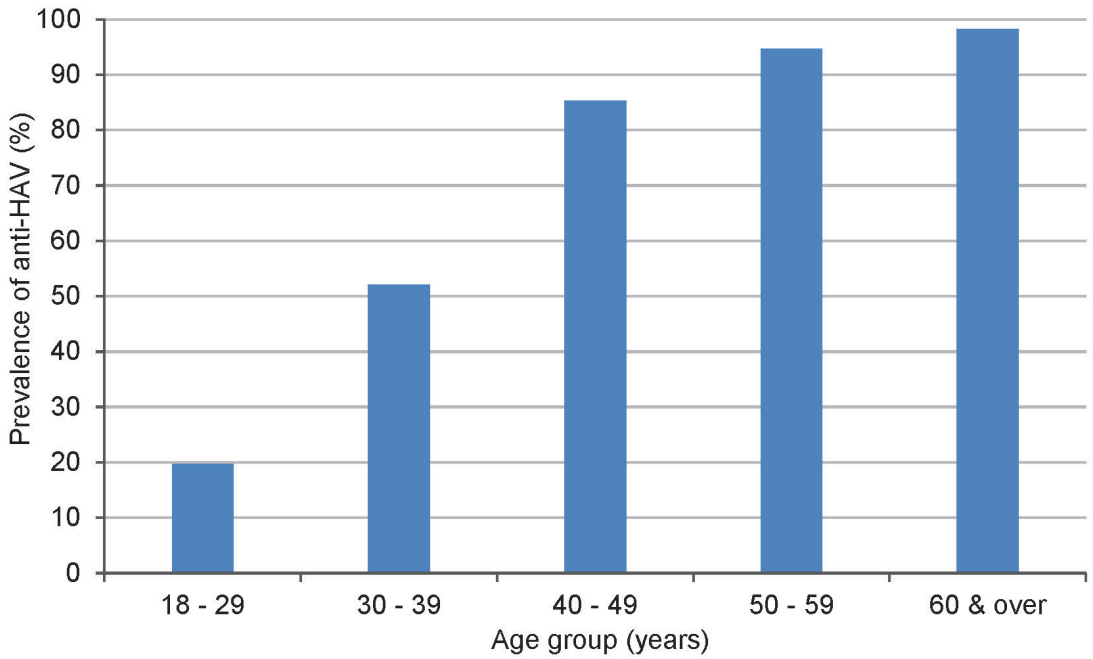
D. *Seroprevalence results reported in the press by Lai et al of the University of Hong Kong. [97]*

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), 55 (2004), 77 (2005), 53 (2006), 54 (2007), 70 (2008), 63 (2009) and students and staff of Lingnan University 125 (2003), 84 (2004). [Data from CHC-Group Medical Practice]*

F. *Seroprevalence study in school children by Lee et al of the Chinese University of Hong Kong. [98]*

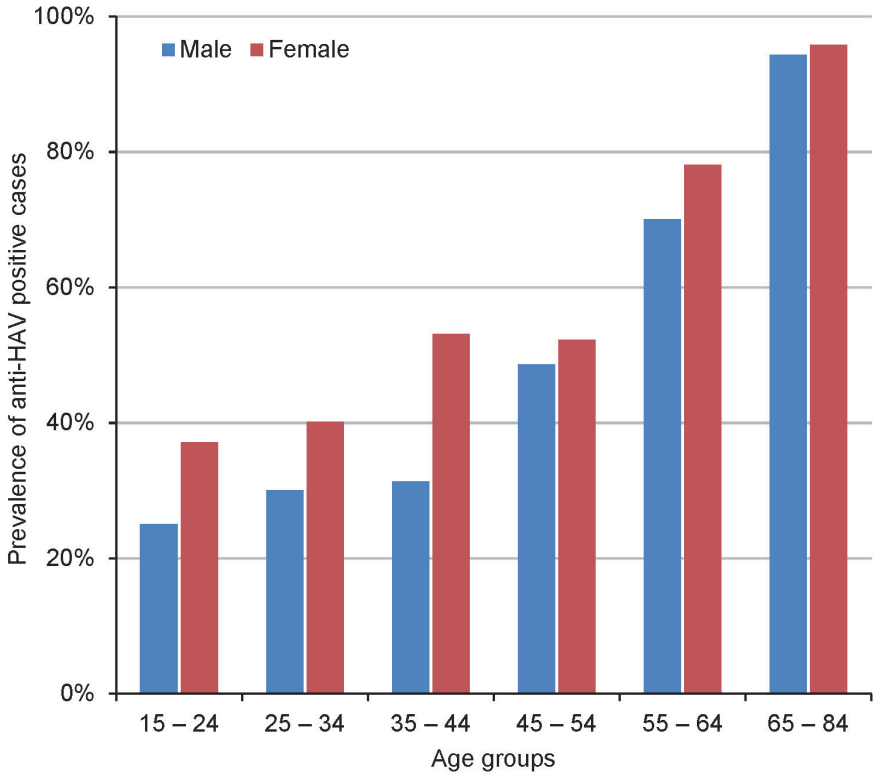
G. *Community Research Project on Viral Hepatitis 2001. [2]*

Box 21 Prevalence of anti-HAV in participants of Community Research Project for Viral Hepatitis in 2001 (Data source: DH)



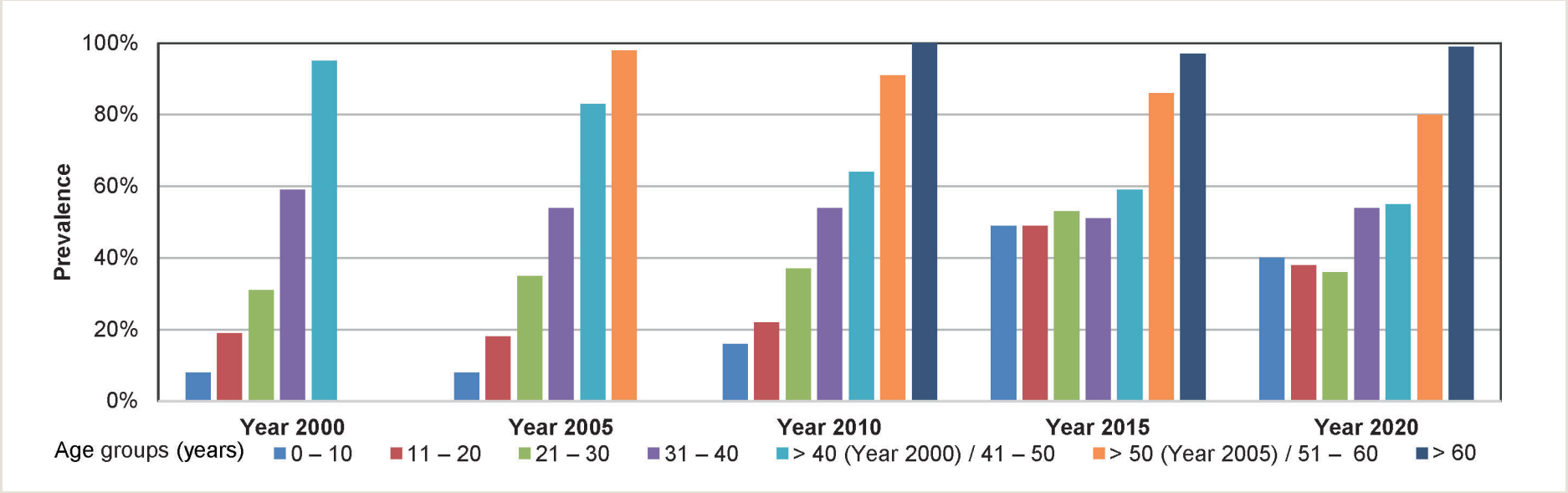
Age group	No. Tested	Anti-HAV +ve (%)
18-29	137	27 (19.7%)
30-39	223	116 (52.0%)
40-49	291	248 (85.2%)
50-59	170	161 (94.7%)
60 & over	115	113 (98.3%)
All	**936**	**665 (71.0%)**

Box 22 **Prevalence of anti-HAV positive cases, by sex and age group, among participants of Population Health Survey 2020-22 (Data source: DH)**



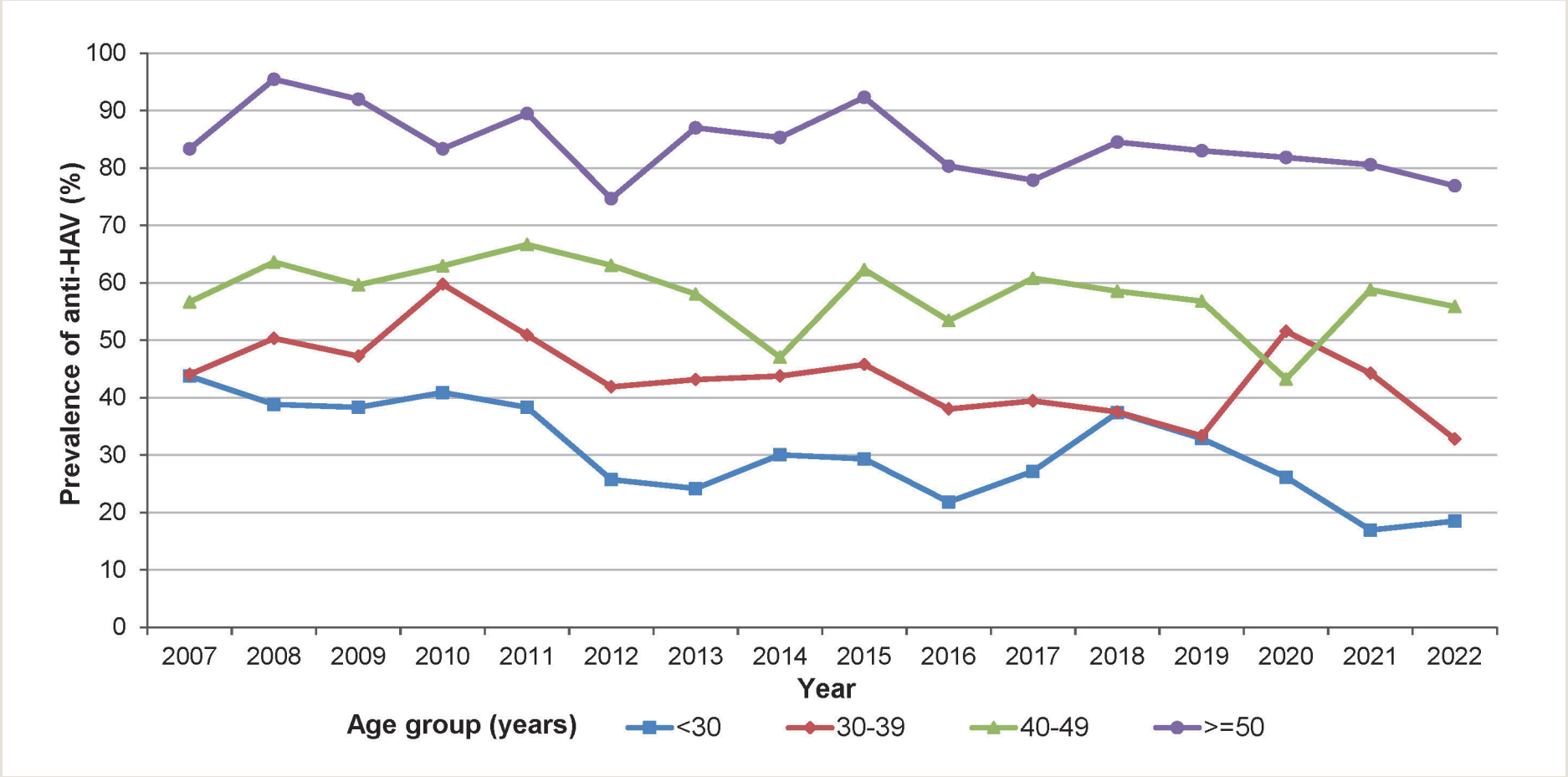
Age group	Anti-HAV +ve (%)		
	Male	Female	**Total**
15 – 24	25.0%	37.1%	**30.9%**
25 – 34	30.0%	40.1%	**35.2%**
35 – 44	31.3%	53.1%	**43.1%**
45 – 54	48.6%	52.2%	**50.6%**
55 – 64	70.0%	78.1%	**74.2%**
65 – 84	94.3%	95.8%	**95.1%**
Total	**54.1%**	**62.9%**	**58.7%**

Box 23 **Prevalence of anti-HAV in individuals with blood collected for serological diagnosis of conditions unrelated to hepatitis (Data source: PHLSB, CHP, DH)**



Year	Age groups (years)													
	0 – 10		11 – 20		21 – 30		31 – 40		> 40 (Year 2000) / 41 – 50		> 50 (Year 2005) / 51 – 60		> 60	
	No. tested	%	No. tested	%	No. tested	%	No. tested	%	No. tested	%	No. tested	%	No. tested	%
2000	420	8	190	19	200	31	190	59	100	95	-	-	-	-
2005	200	8	181	18	187	35	200	54	100	83	100	98	-	-
2010	96	16	100	22	100	37	95	54	100	64	100	91	100	100
2015	160	49	162	49	122	53	127	51	99	59	70	86	58	97
2020	89	40	99	38	97	36	99	54	101	55	100	80	100	99

Box 24 **Prevalence of anti-HAV at baseline screening of HIV/AIDS patients attending ITC from Jul 2007 to 2022 (Data source: ITC, CHP, DH)**

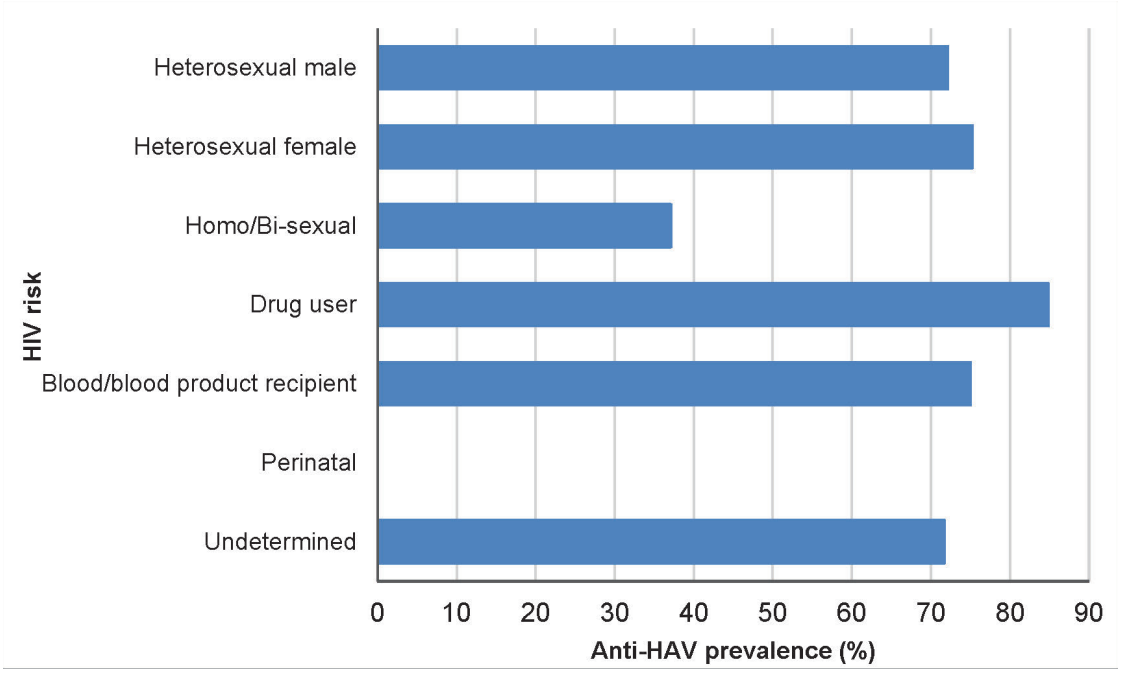


Box 24 **Prevalence of anti-HAV at baseline screening of HIV/AIDS patients attending ITC from Jul 2007 to 2022 (Data source: ITC, CHP, DH) (continued)**

Year	Age group									
	< 20		20 – 29		30 – 39		40 – 49		>= 50	
	No. tested	Anti-HAV +ve (%)	No. tested	Anti-HAV +ve (%)	No. tested	Anti-HAV +ve (%)	No. tested	Anti-HAV +ve (%)	No. tested	Anti-HAV +ve (%)
2007 Jul-Dec	0	0 (0.0%)	64	28 (43.8%)	202	89 (44.1%)	30	17 (56.7%)	12	10 (83.3%)
2008	2	1 (50.0%)	101	39 (38.6%)	282	142 (50.4%)	77	49 (63.6%)	44	42 (95.5%)
2009	2	0 (0.0%)	58	23 (39.7%)	91	43 (47.3%)	52	31 (59.6%)	25	23 (92.0%)
2010	3	0 (0.0%)	41	18 (43.9%)	82	49 (59.8%)	54	34 (63.0%)	42	35 (83.3%)
2011	2	0 (0.0%)	45	18 (40.0%)	57	29 (50.9%)	66	44 (66.7%)	38	34 (89.5%)
2012	6	0 (0.0%)	64	18 (28.1%)	105	44 (41.9%)	111	70 (63.1%)	75	56 (74.7%)
2013	5	2 (40.0%)	90	21 (23.3%)	102	44 (43.1%)	112	65 (58.0%)	123	107 (87.0%)
2014	8	1 (12.5%)	135	42 (31.1%)	96	42 (43.8%)	68	32 (47.1%)	68	58 (85.3%)
2015	13	6 (46.2%)	113	31 (27.4%)	118	54 (45.8%)	69	43 (62.3%)	65	60 (92.3%)
2016	4	0 (0.0%)	106	24 (22.6%)	121	46 (38.0%)	58	31 (53.4%)	56	45 (80.4%)
2017	10	4 (40.0%)	115	30 (26.1%)	109	43 (39.4%)	74	45 (60.8%)	86	67 (77.9%)
2018	2	1 (50.0%)	97	36 (37.1%)	64	24 (37.5%)	41	24 (58.5%)	97	82 (84.5%)
2019	3	1 (33.3%)	67	22 (32.8%)	69	23 (33.3%)	44	25 (56.8%)	53	44 (83.0%)
2020	1	0 (0.0%)	64	17 (26.6%)	64	33 (51.6%)	37	16 (43.2%)	33	27 (81.8%)
2021	1	1 (100.0%)	58	9 (15.5%)	61	27 (44.3%)	34	20 (58.8%)	36	29 (80.6%)
2022	6	1 (16.7%)	48	9 (18.8%)	64	21 (32.8%)	34	19 (55.9%)	26	20 (76.9%)

Box 25

Prevalence of anti-HAV per HIV risk at baseline screening of HIV/AIDS patients attending ITC from Jul 2007 to 2022 (Data source: ITC, CHP, DH)

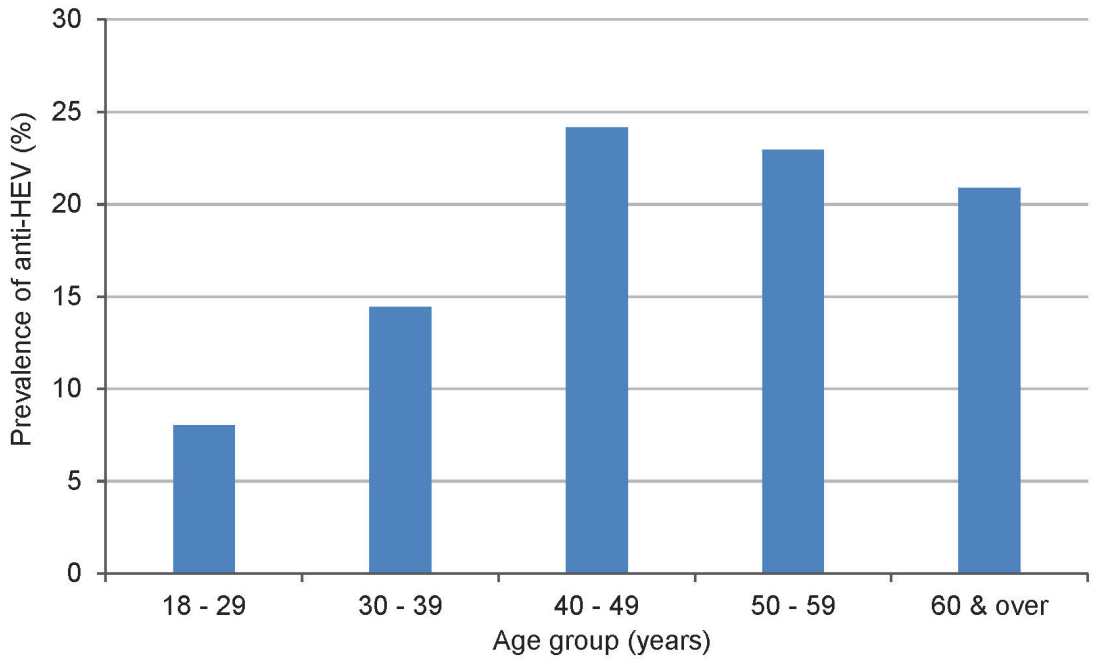


HIV risk	No. tested	Anti-HAV +ve (%)
Heterosexual male	873	630 (72.2%)
Heterosexual female	583	439 (75.3%)
Homo/Bi-sexual	3112	1155 (37.1%)
Drug user	205	174 (84.9%)
Blood/blood product recipient	28	21 (75.0%)
Perinatal	10	0 (0.0%)
Undetermined	53	38 (71.7%)
Total	**4864**	**2457 (50.5%)**

Seroprevalence of hepatitis E

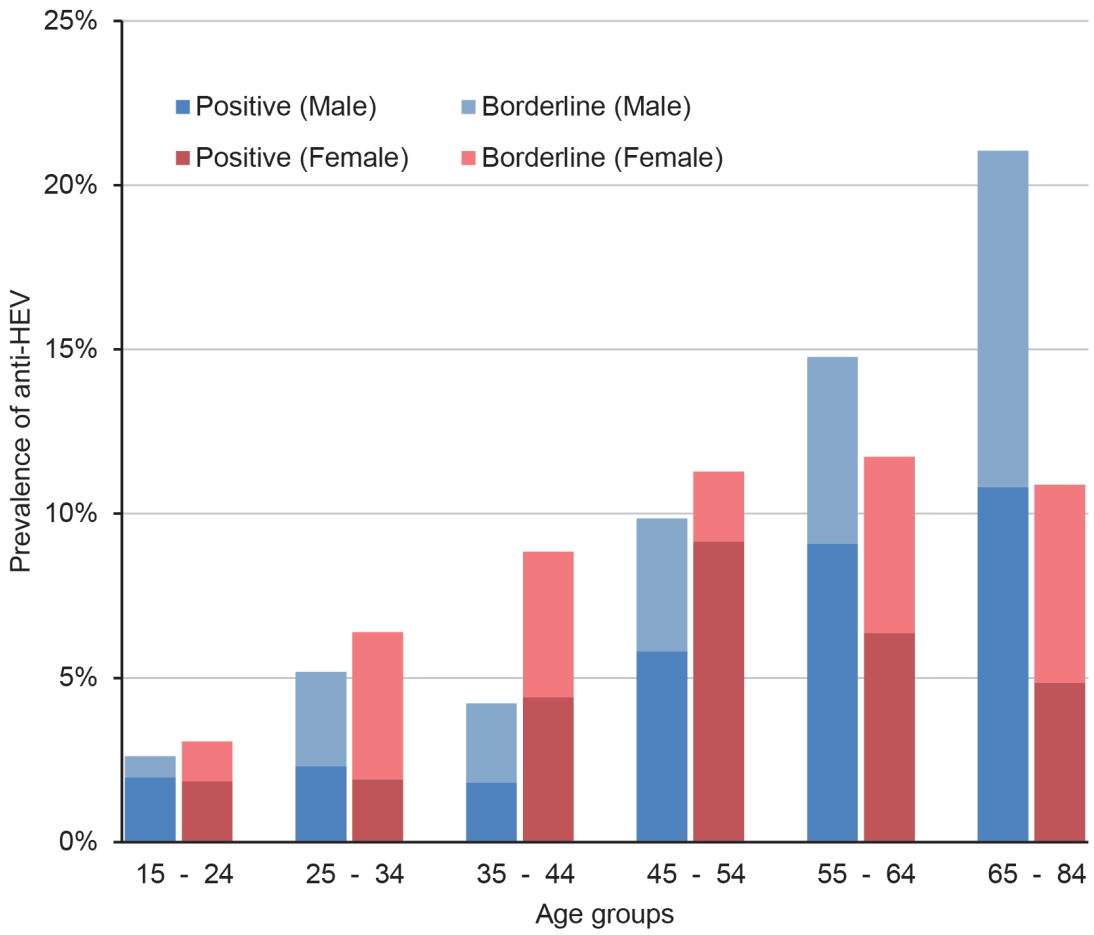
Box 26

Prevalence of anti-HEV in participants of Community Research Project for Viral Hepatitis in 2001 (Data source: DH)



Age group	No. Tested	Anti-HEV +ve (%)
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%)**

Box 27 **Prevalence of anti-HEV positive or borderline positive cases, by sex and age group, among participants of Population Health Survey 2020-22 (Data source: DH)**



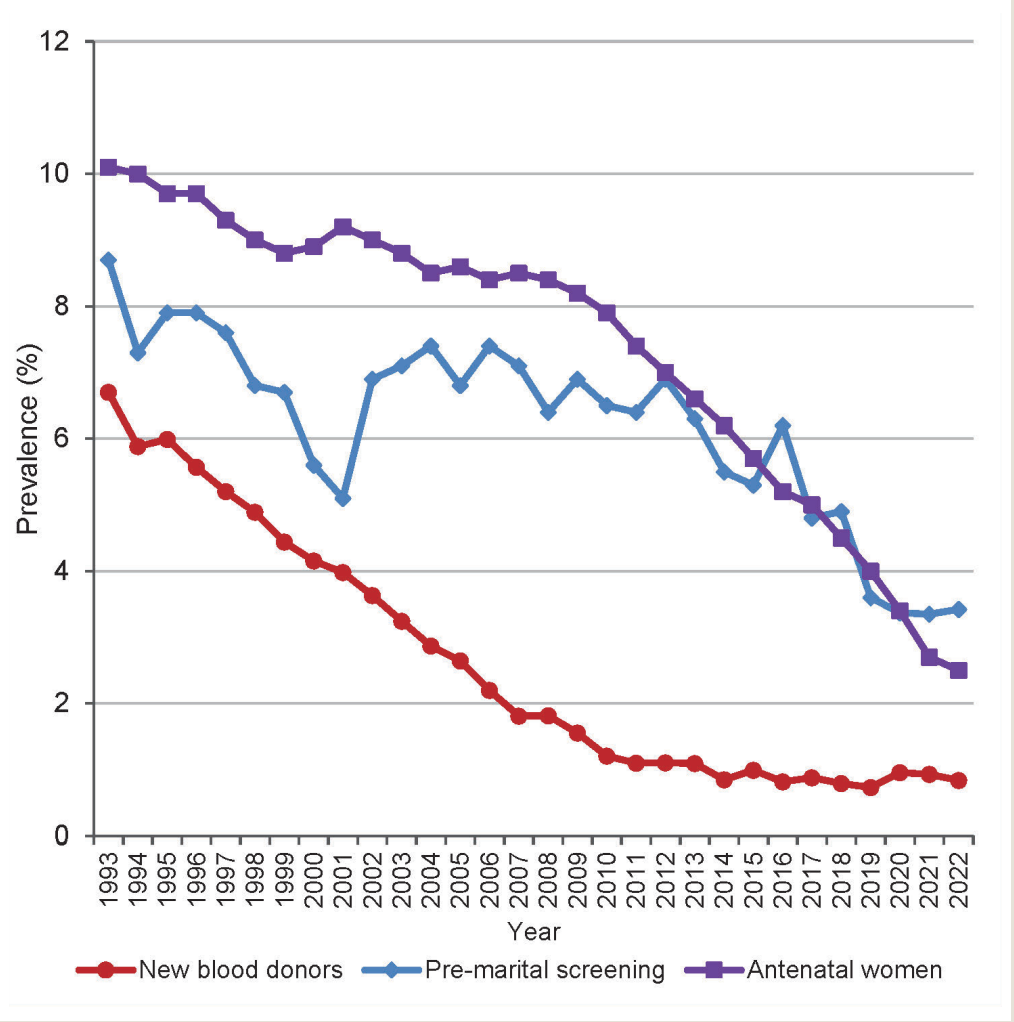
Age group	Male		Female		Total	
	Anti-HEV +ve (%)	Anti-HEV +ve or borderline +ve (%)	Anti-HEV +ve (%)	Anti-HEV +ve or borderline +ve (%)	**Anti-HEV +ve (%)**	**Anti-HEV +ve or borderline +ve (%)**
15 – 24	2.0%	2.6%	1.8%	3.1%	**1.9%**	**2.8%**
25 – 34	2.3%	5.2%	1.9%	6.4%	**2.1%**	**5.8%**
35 – 44	1.8%	4.2%	4.4%	8.8%	**3.2%**	**6.7%**
45 – 54	5.8%	9.9%	9.1%	11.3%	**7.7%**	**10.6%**
55 – 64	9.1%	14.8%	6.4%	11.7%	**7.7%**	**13.2%**
65 – 84	10.8%	21.0%	4.8%	10.9%	**7.7%**	**15.8%**
Total	**5.9%**	**10.7%**	**5.2%**	**9.4%**	**5.5%**	**10.0%**

Seroprevalence of hepatitis B

Box 28

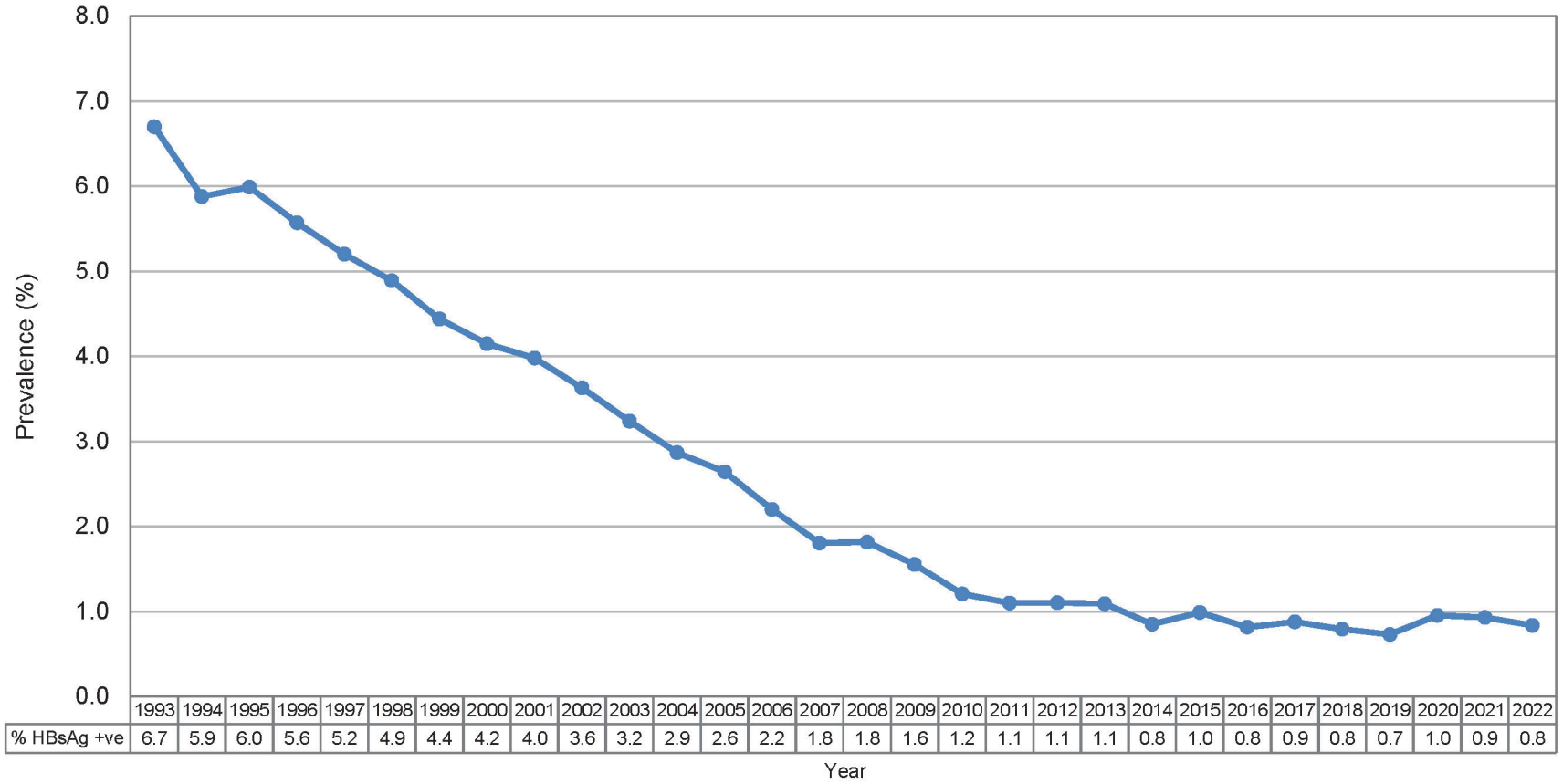
HBsAg prevalence in new blood donors, pre-marital screening and antenatal women from 1993 to 2022 (Data source: HKRCBTS, FPAHK, FHS and PHLSB, CHP, DH)

Year	New blood donors	Pre-marital screening	Antenatal women
1993	6.7	8.7	10.1
1994	5.9	7.3	10.0
1995	6.0	7.9	9.7
1996	5.6	7.9	9.7
1997	5.2	7.6	9.3
1998	4.9	6.8	9.0
1999	4.4	6.7	8.8
2000	4.2	5.6	8.9
2001	4.0	5.1	9.2
2002	3.6	6.9	9.0
2003	3.2	7.1	8.8
2004	2.9	7.4	8.5
2005	2.6	6.8	8.6
2006	2.2	7.4	8.4
2007	1.8	7.1	8.5
2008	1.8	6.4	8.4
2009	1.6	6.9	8.2
2010	1.2	6.5	7.9
2011	1.1	6.4	7.4
2012	1.1	6.9	7.0
2013	1.1	6.3	6.6
2014	0.8	5.5	6.2
2015	1.0	5.3	5.7
2016	0.8	6.2	5.2
2017	0.9	4.8	5.0
2018	0.8	4.9	4.5
2019	0.7	3.6	4.0
2020	1.0	3.4	3.4
2021	0.9	3.3	2.7
2022	0.8	3.4	2.5



Box 29

HBsAg prevalence in new blood donors from 1993 to 2022 (Data source: HKRCBTS)

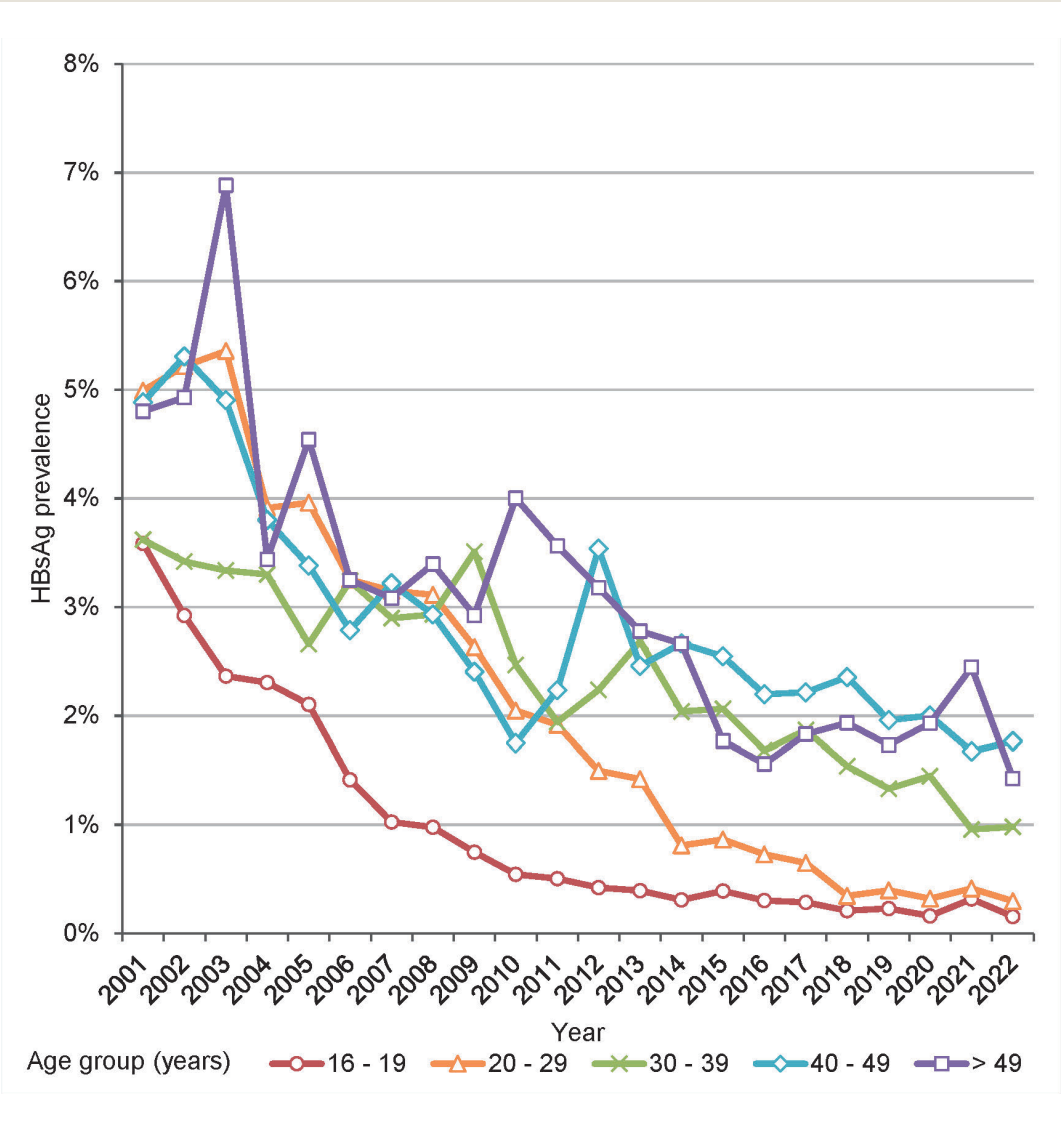


	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
% HBsAg +ve	6.7	5.9	6.0	5.6	5.2	4.9	4.4	4.2	4.0	3.6	3.2	2.9	2.6	2.2	1.8	1.8	1.6	1.2	1.1	1.1	1.1	0.8	1.0	0.8	0.9	0.8	0.7	1.0	0.9	0.8

Box 30 HBsAg prevalence and its sex and age breakdown in new blood donors in 2022 (Data source: HKRCBTS)

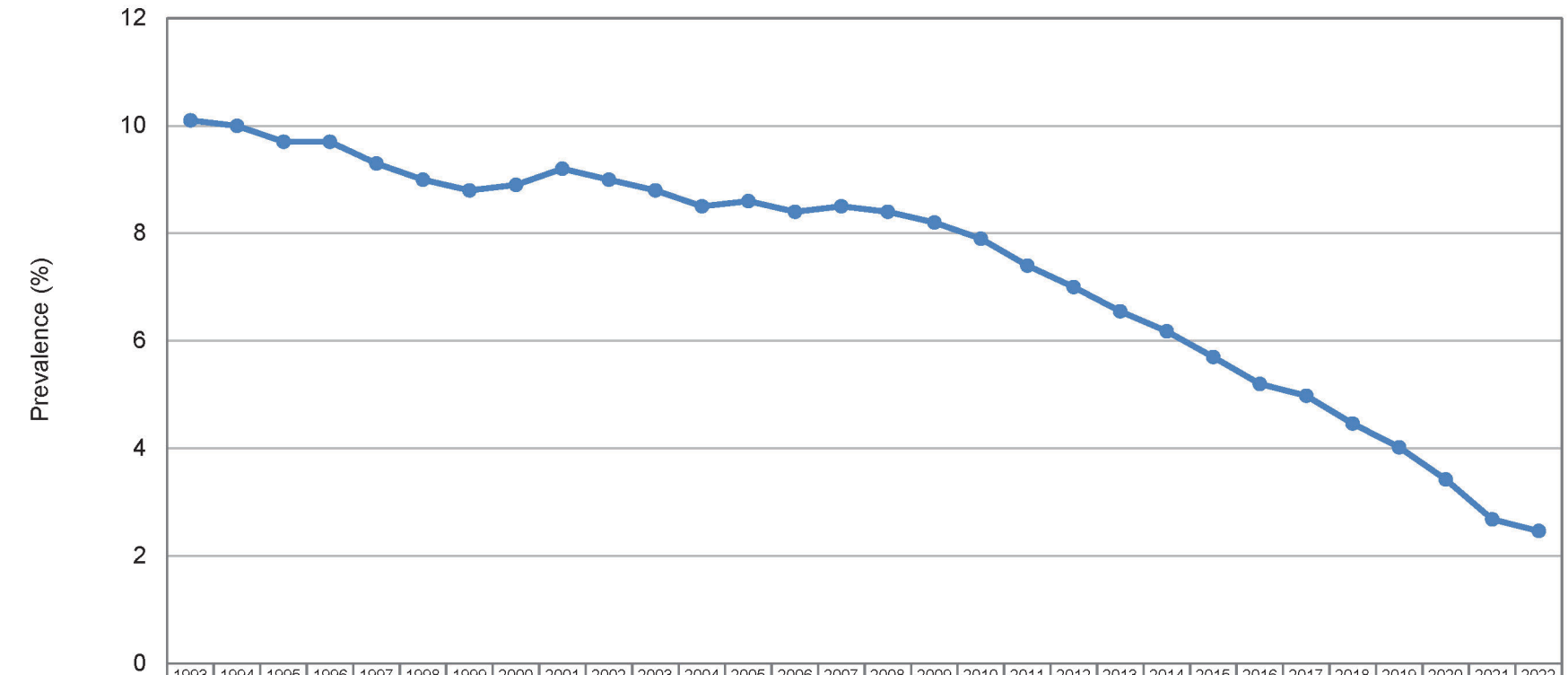
Age group	Male		Female		Total	
	No. tested	HBsAg +ve (%)	No. tested	HBsAg +ve (%)	No. tested	HBsAg +ve (%)
16-19	1959	4 (0.20%)	2517	3 (0.12%)	4476	7 (0.16%)
20-29	2154	7 (0.32%)	2536	7 (0.28%)	4690	14 (0.30%)
30-39	1610	23 (1.43%)	2260	15 (0.66%)	3870	38 (0.98%)
40-49	1310	34 (2.60%)	2316	30 (1.30%)	3626	64 (1.77%)
>49	1026	18 (1.75%)	1777	22 (1.24%)	2803	40 (1.43%)
Total	**8059**	**86 (1.07%)**	**11406**	**77 (0.68%)**	**19465**	**163 (0.84%)**

Box 31 HBsAg prevalence among new blood donors by age, from 2001 to 2022 (Data source: HKRCBTS)



Box 32

HBsAg prevalence in antenatal women from 1993 to 2022 (Data source: FHS and PHLSB, CHP, DH)



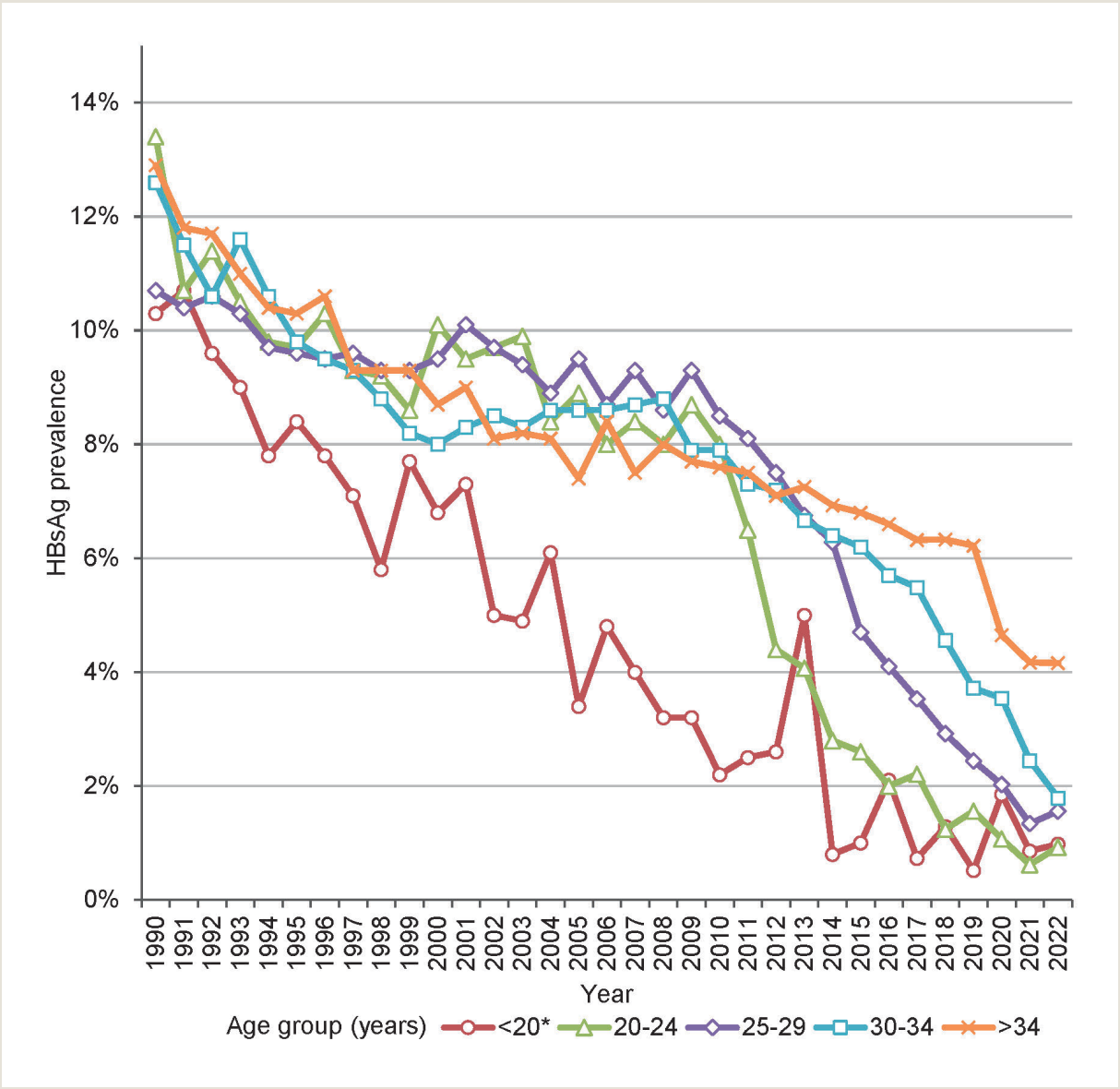
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
% HBsAg +ve	10.1	10.0	9.7	9.7	9.3	9.0	8.8	8.9	9.2	9.0	8.8	8.5	8.6	8.4	8.5	8.4	8.2	7.9	7.4	7.0	6.6	6.2	5.7	5.2	5.0	4.5	4.0	3.4	2.7	2.5
No. tested	34221	32470	30962	31508	25892	24678	23934	19090	23373	22202	21445	22119	21256	22537	26541	27350	26937	27762	32180	31192	29820	31699	34527	30972	27882	27980	26691	21179	19701	16837

Box 33 HBsAg prevalence and age breakdown of antenatal mothers from 1990 to 2022 (Data source: FHS and PHLSB, CHP, DH)

Year	No. tested (% HBsAg +ve) according to age group of antenatal mothers				
	<20*	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	548 (4.9%)	2880 (9.9%)	7614 (9.4%)	6789 (8.3%)	3602 (8.2%)
2004	510 (6.1%)	2854 (8.4%)	7161 (8.9%)	7732 (8.6%)	3856 (8.1%)
2005	445 (3.4%)	2753 (8.9%)	6063 (9.5%)	7869 (8.6%)	4114 (7.4%)
2006	516 (4.8%)	2590 (8.0%)	6271 (8.7%)	8637 (8.6%)	4514 (8.4%)
2007	520 (4.0%)	2929 (8.4%)	7301 (9.3%)	10232 (8.7%)	5551 (7.5%)
2008	533 (3.2%)	2968 (8.0%)	7652 (8.6%)	10354 (8.8%)	5838 (8.0%)
2009	434 (3.2%)	2830 (8.7%)	7444 (9.3%)	10156 (7.9%)	6071 (7.7%)
2010	446 (2.2%)	2903 (8.0%)	7817 (8.5%)	10211 (7.9%)	6385 (7.6%)
2011	447 (2.5%)	2898 (6.5%)	9010 (8.1%)	12273 (7.3%)	7552 (7.5%)
2012	463 (2.6%)	2467 (4.4%)	8161 (7.5%)	12664 (7.2%)	7437 (7.1%)
2013	423 (5.0%)	2237 (4.1%)	7526 (6.8%)	12466 (6.7%)	7168 (7.3%)
2014	366 (0.8%)	2252 (2.8%)	7901 (6.3%)	13488 (6.4%)	7692 (6.9%)
2015	409 (1.0%)	2439 (2.6%)	8589 (4.7%)	14434 (6.2%)	8656 (6.8%)
2016	328 (2.1%)	2123 (2.0%)	7580 (4.1%)	13018 (5.7%)	7923 (6.6%)
2017	274 (0.7%)	1897 (2.2%)	6624 (3.5%)	11476 (5.5%)	7611 (6.3%)
2018	233 (1.3%)	1698 (1.2%)	6376 (2.9%)	11647 (4.6%)	8026 (6.3%)
2019	193 (0.5%)	1474 (1.6%)	5948 (2.4%)	11333 (3.7%)	7743 (6.2%)
2020	162 (1.9%)	1031 (1.1%)	4394 (2.0%)	9291 (3.5%)	6301 (4.7%)
2021	116 (0.9%)	811 (0.6%)	3960 (1.3%)	8586 (2.4%)	6228 (4.2%)
2022	102 (1.0%)	644 (0.9%)	3266 (1.6%)	7468 (1.8%)	5357 (4.2%)

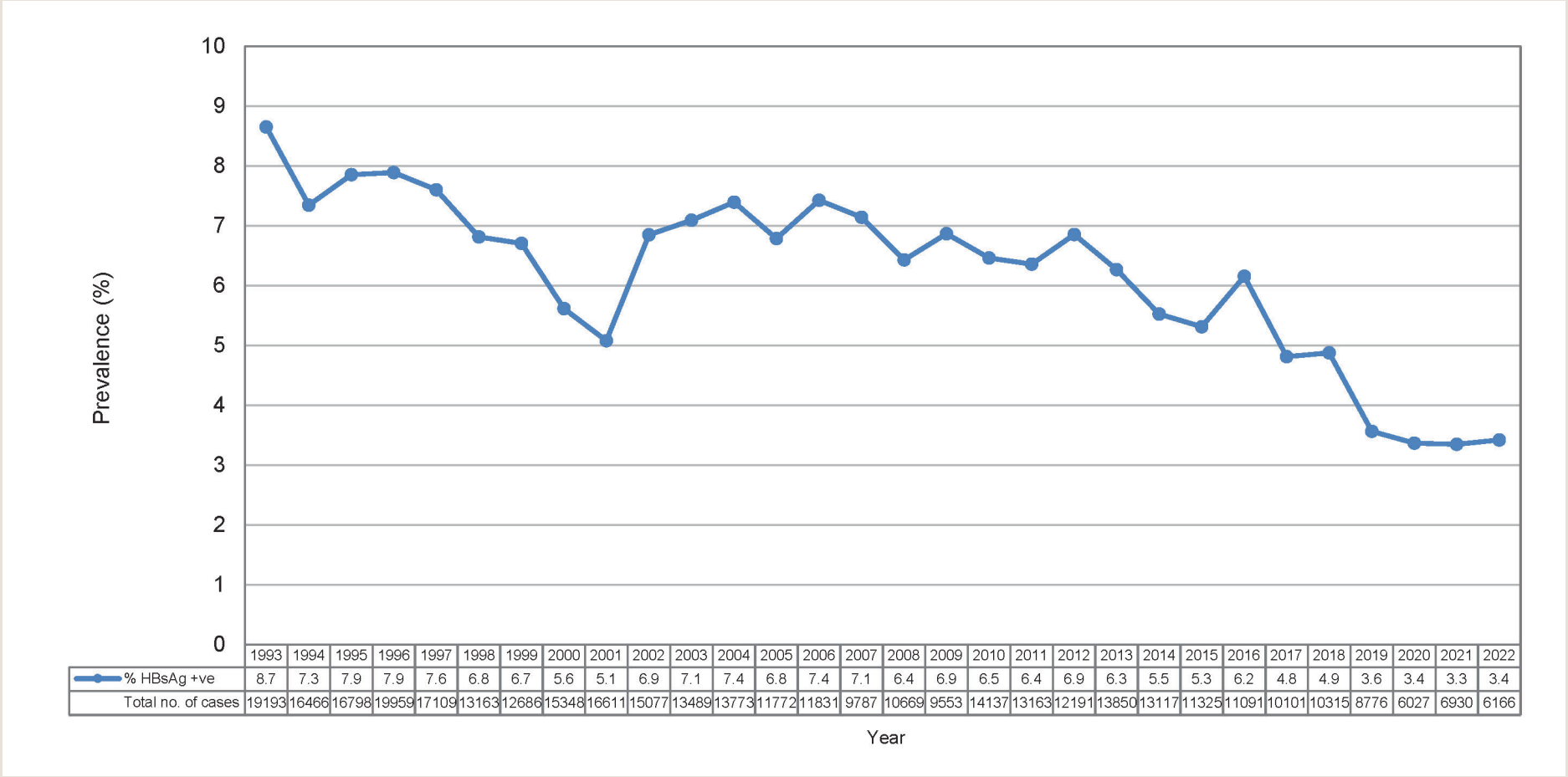
* *Figures before year 2010 refer to age group 15-19; figures in year 2010 and thereafter refer to age group <20*

Box 34 **HBsAg prevalence among antenatal mothers by age, from 1990 to 2022 (Date source: FHS and PHLSB, CHP, DH)**



* *Figures before year 2010 refer to age group 15-19; figures in year 2010 and thereafter refer to age group <20*

Box 35 HBsAg prevalence from the FPAHK's clinical services (Data source: FPAHK)



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
% HBsAg +ve	8.7	7.3	7.9	7.9	7.6	6.8	6.7	5.6	5.1	6.9	7.1	7.4	6.8	7.4	7.1	6.4	6.9	6.5	6.4	6.9	6.3	5.5	5.3	6.2	4.8	4.9	3.6	3.4	3.3	3.4
Total no. of cases	19193	16466	16798	19959	17109	13163	12686	15348	16611	15077	13489	13773	11772	11831	9787	10669	9553	14137	13163	12191	13850	13117	11325	11091	10101	10315	8776	6027	6930	6166

Note: 1991-2010 only contain pre-marital check-up
Start from 2011 contain both pre-marital and pre-pregnancy check-up

Box 36 HBsAg prevalence in other selected populations from 1990 to 2022 (Data sources: DH)

Year	Police officers	Health care workers
1990	-	-
1991	-	6.2
1992	-	-
1993	-	4.4
1994	-	-
1995	-	7.0
1996	6.1	4.2
1997	7.9	-
1998	7.4	-
1999	6.4	2.2
2000	5.6	5.4
2001	5.9	6.0
2002	5.3	5.0
2003	4.6	5.2
2004	4.9	5.3
2005	4.2	5.4
2006	4.6	4.9
2007	-	3.9
2008	-	3.8
2009	-	5.1
2010	-	4.6
2011	-	2.5
2012	3.0*	4.3
2013	2.8	3.9
2014	2.6	2.5
2015	2.8	3.2
2016	1.9	3.5
2017	1.4	3.1
2018	2.3	3.5
2019	1.2	2.7
2020	2.2	2.2
2021	1.8	2.2
2022	2.6	2.4

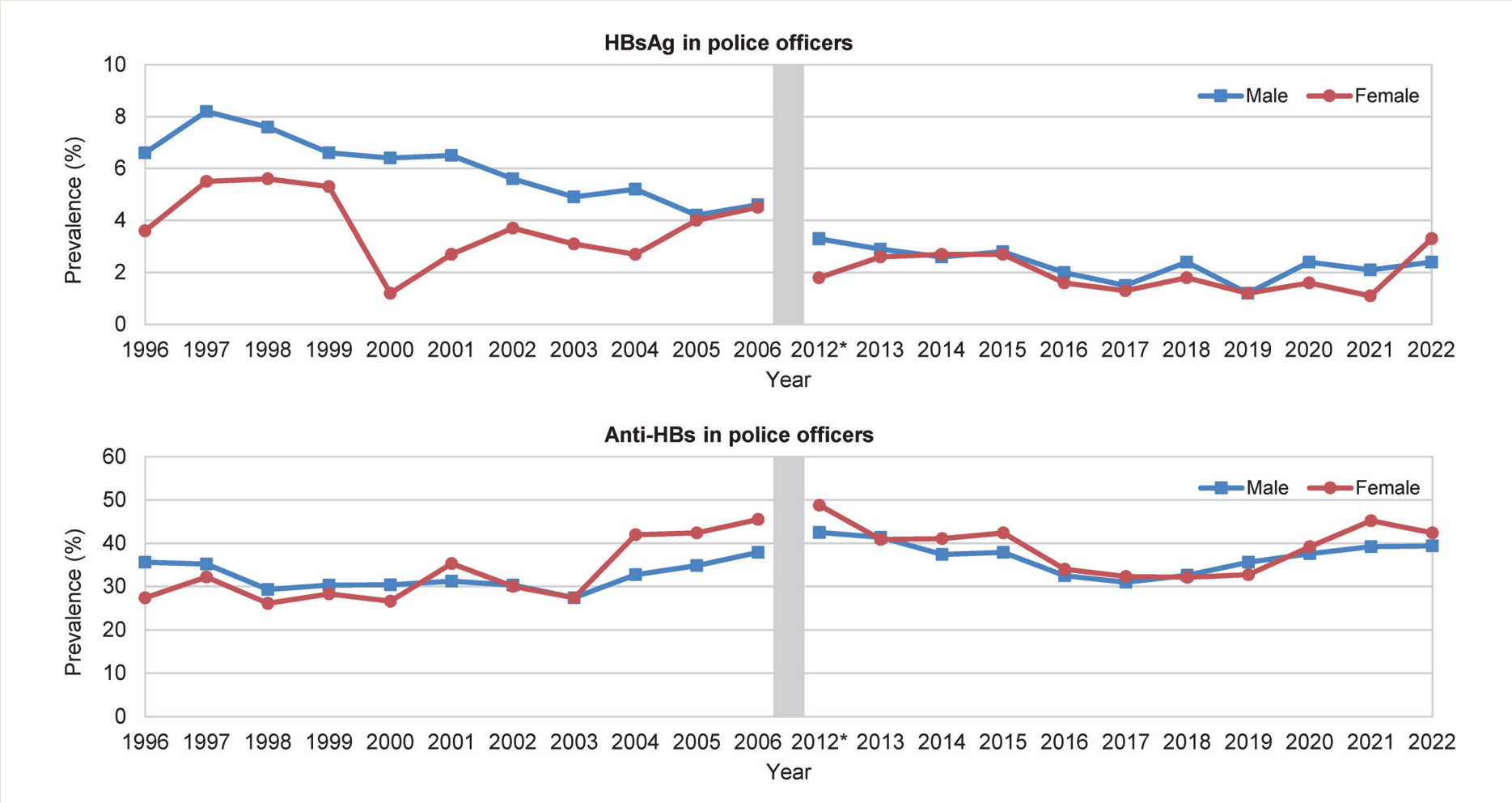
** For a period between Mar-Dec 2012*

Box 37 **Prevalence of hepatitis B markers in police officers, by age from 1996 to 2006 and 2012 to 2022 (Data source: DH)**

Year	Age group														
	≤20			21-30			31-40			41-50			>50		
	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)
1996	17	0.0	35.3	733	4.8	24.4	1155	6.8	32.9	544	5.9	49.6	44	18.2	40.9
1997	15	6.7	46.7	1494	6.1	25.4	2081	7.3	35.0	999	11.4	46.6	110	13.6	55.5
1998	387	5.9	20.7	969	5.5	25.0	828	8.3	30.8	356	12.4	40.4	60	6.7	51.7
1999	270	4.4	24.1	799	6.1	27.5	428	6.8	31.8	202	8.9	42.1	22	9.1	40.9
2000	72	4.2	22.2	746	6.4	24.3	460	4.3	31.3	242	5.8	44.6	24	4.2	45.8
2001	68	4.4	30.9	602	5.8	28.4	339	5.6	30.7	225	6.2	40.0	45	8.9	48.9
2002	145	4.8	29.7	697	4.9	25.3	443	3.6	29.6	307	9.1	37.5	52	3.8	61.5
2003	72	1.4	16.7	702	4.8	22.9	505	4.6	26.5	357	5.0	38.1	38	2.6	42.1
2004	8	0.0	37.5	466	5.2	35.6	441	3.4	28.6	321	5.9	39.6	57	8.8	31.6
2005	80	1.3	52.5	791	3.8	32.7	533	4.3	31.0	427	4.2	43.3	105	8.6	45.7
2006	0	-	-	39	0.0	51.3	86	5.8	36.0	90	4.4	36.7	24	8.3	41.7
2012*	267	0.7	20.2	1169	2.1	47.3	122	6.6	53.3	203	5.9	47.8	71	11.3	43.7
2013	393	0.0	24.4	1635	2.7	43.8	95	4.2	57.9	133	11.3	46.6	62	3.2	46.8
2014	456	0.7	24.8	1789	1.9	37.8	188	6.4	48.9	280	6.4	51.1	114	6.1	46.5
2015	455	0.9	24.8	2077	2.4	38.9	221	5.4	50.7	309	5.5	46.9	122	4.1	47.5
2016	428	0.5	17.3	2250	1.6	33.2	154	5.2	53.2	125	7.2	49.6	54	3.7	42.6
2017	391	0.5	21.2	2594	1.3	31.7	182	2.2	46.7	13	38.5	30.8	3	0.0	66.7
2018	332	2.1	27.7	1908	1.9	31.1	176	6.3	53.4	7	0.0	85.7	1	0.0	100.0
2019	274	0.7	33.2	1475	0.8	32.5	217	4.6	49.8	32	0.0	59.4	3	0.0	100.0
2020	149	0.0	34.2	1021	1.7	32.5	360	4.2	52.5	80	3.8	48.8	7	14.3	57.1
2021	157	0.0	31.8	973	1.0	34.6	492	3.0	53.5	136	5.1	61.0	15	6.7	60.0
2022	149	0.7	35.6	1236	1.9	36.7	498	4.4	47.8	115	4.3	47.0	7	0.0	85.7

Note: Data were not available from 2007-Feb 2012
** For a period between Mar-Dec 2012*

Box 38 **Prevalence of hepatitis B markers in police officers, by sex from 1996 to 2006 and 2012 to 2022 (Data source: DH)**



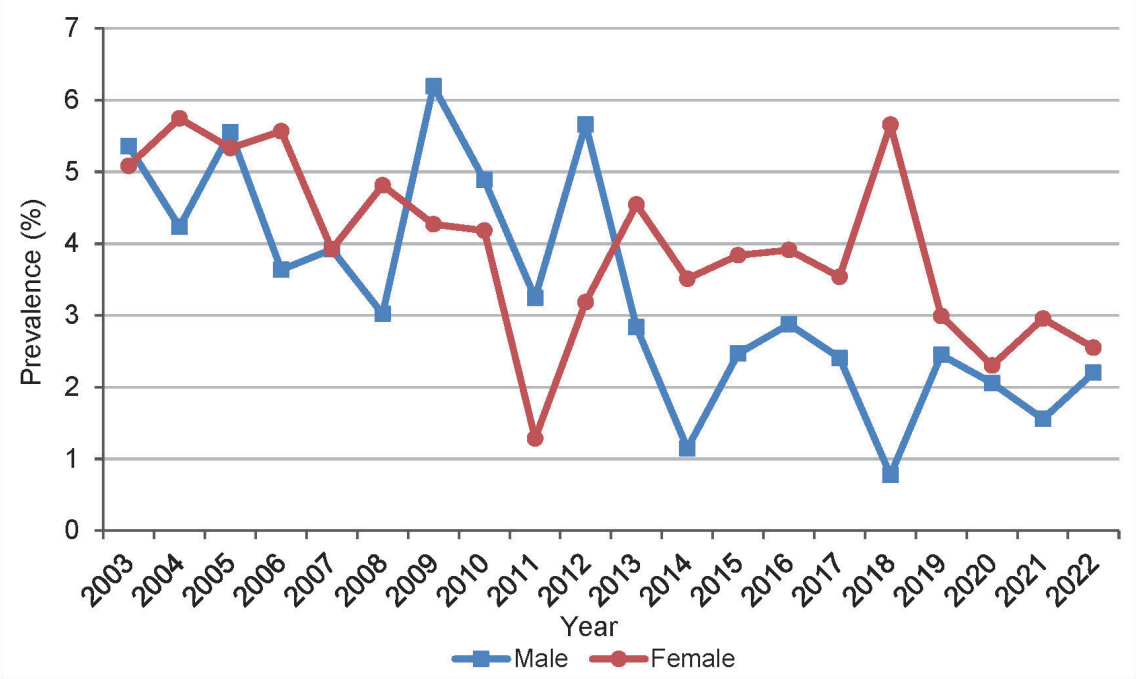
Note: Data were not available from 2007-Feb 2012
** For a period between Mar-Dec 2012*

Box 38 **Prevalence of hepatitis B markers in police officers, by sex from 1996 to 2006 and 2012 to 2022 (Data source: DH) (continued)**

Year	Male			Female			All		
	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)	**No. tested**	**HBsAg +ve (%)**	**Anti-HBs +ve (%)**
1996	2080	138 (6.6%)	740 (35.6%)	413	15 (3.6%)	113 (27.4%)	**2493**	**153 (6.1%)**	**853 (34.2%)**
1997	4227	346 (8.2%)	1489 (35.2%)	472	26 (5.5%)	152 (32.2%)	**4699**	**372 (7.9%)**	**1641 (34.9%)**
1998	2316	177 (7.6%)	678 (29.3%)	284	16 (5.6%)	74 (26.1%)	**2600**	**193 (7.4%)**	**752 (28.9%)**
1999	1399	93 (6.6%)	424 (30.3%)	322	17 (5.3%)	91 (28.3%)	**1721**	**110 (6.4%)**	**515 (29.9%)**
2000	1300	83 (6.4%)	395 (30.4%)	244	3 (1.2%)	65 (26.6%)	**1544**	**86 (5.6%)**	**460 (29.8%)**
2001	1058	69 (6.5%)	330 (31.2%)	221	6 (2.7%)	78 (35.3%)	**1279**	**75 (5.9%)**	**408 (31.9%)**
2002	1374	77 (5.6%)	416 (30.3%)	270	10 (3.7%)	81 (30.0%)	**1644**	**87 (5.3%)**	**497 (30.2%)**
2003	1415	69 (4.9%)	388 (27.4%)	259	8 (3.1%)	71 (27.4%)	**1674**	**77 (4.6%)**	**459 (27.4%)**
2004	1105	58 (5.2%)	361 (32.7%)	188	5 (2.7%)	79 (42.0%)	**1293**	**63 (4.9%)**	**440 (34.0%)**
2005	1613	68 (4.2%)	562 (34.8%)	323	13 (4.0%)	137 (42.4%)	**1936**	**81 (4.2%)**	**699 (36.1%)**
2006	195	9 (4.6%)	74 (37.9%)	44	2 (4.5%)	20 (45.5%)	**239**	**11 (4.6%)**	**94 (39.3%)**
2012*	1494	49 (3.3%)	635 (42.5%)	338	6 (1.8%)	165 (48.8%)	**1832**	**55 (3.0%)**	**800 (43.7%)**
2013	1812	52 (2.9%)	751 (41.4%)	506	13 (2.6%)	207 (40.9%)	**2318**	**65 (2.8%)**	**958 (41.3%)**
2014	2267	59 (2.6%)	847 (37.4%)	560	15 (2.7%)	230 (41.1%)	**2827**	**74 (2.6%)**	**1077 (38.1%)**
2015	2563	71 (2.8%)	972 (37.9 %)	621	17 (2.7%)	263 (42.4%)	**3184**	**88 (2.8%)**	**1235 (38.8%)**
2016	2450	49 (2.0%)	796 (32.5%)	561	9 (1.6%)	191 (34.0%)	**3011**	**58 (1.9%)**	**987 (32.8%)**
2017	2477	36 (1.5%)	768 (31.0%)	706	9 (1.3%)	228 (32.3%)	**3183**	**45 (1.4%)**	**996 (31.3%)**
2018	1913	46 (2.4%)	623 (32.6%)	511	9 (1.8%)	164 (32.1%)	**2424**	**55 (2.3%)**	**787 (32.5%)**
2019	1582	19 (1.2%)	563 (35.6%)	419	5 (1.2%)	137 (32.7%)	**2001**	**24 (1.2%)**	**700 (35.0%)**
2020	1191	29 (2.4%)	448 (37.6%)	426	7 (1.6%)	167 (39.2%)	**1617**	**36 (2.2%)**	**615 (38.0%)**
2021	1291	27 (2.1%)	506 (39.2%)	522	6 (1.1%)	236 (45.2%)	**1813**	**33 (1.8%)**	**742 (40.9%)**
2022	1484	35 (2.4%)	584 (39.4%)	521	17 (3.3%)	221 (42.4%)	**2005**	**52 (2.6%)**	**805 (40.1%)**

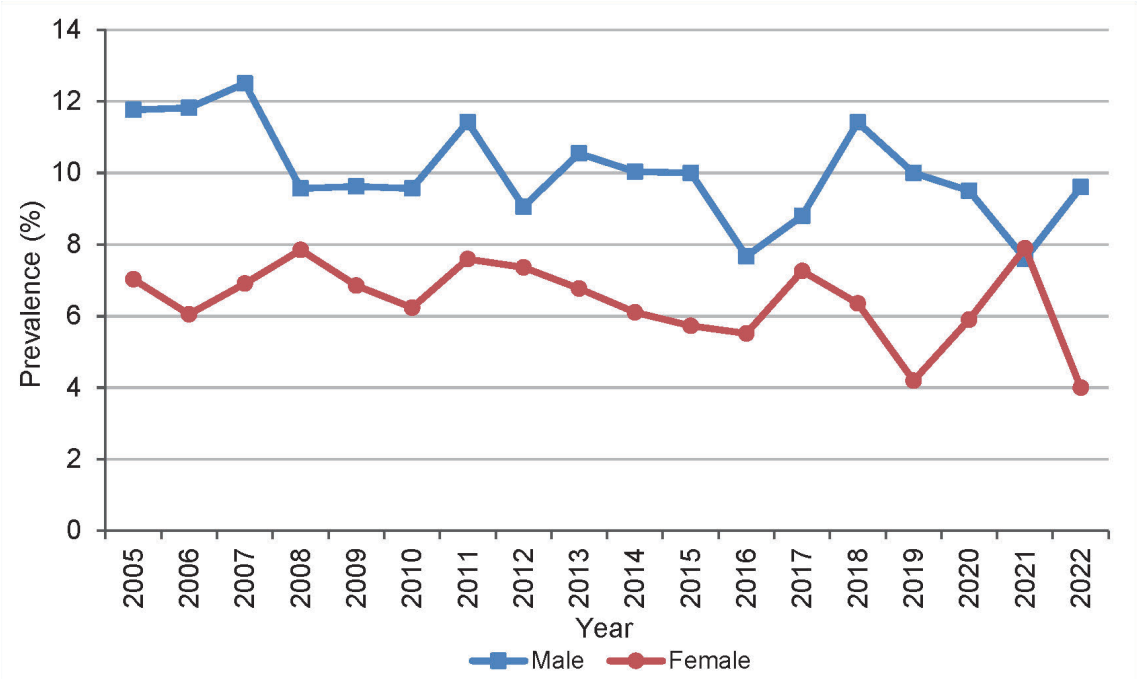
Note: Data were not available from 2007-Feb 2012;
** For a period between Mar-Dec 2012*

Box 39 HBsAg prevalence in newly recruited health care workers of DH from 2003 to 2022 (Data source: DH)



Year	Male		Female	
	No. tested	HBsAg +ve (%)	No. tested	HBsAg +ve (%)
2003	373	20 (5.4%)	531	27 (5.1%)
2004	307	13 (4.2%)	644	37 (5.7%)
2005	396	22 (5.6%)	956	51 (5.3%)
2006	220	8 (3.6%)	449	25 (5.6%)
2007	204	8 (3.9%)	102	4 (3.9%)
2008	232	7 (3.0%)	187	9 (4.8%)
2009	226	14 (6.2%)	328	14 (4.3%)
2010	307	15 (4.9%)	239	10 (4.2%)
2011	370	12 (3.2%)	233	3 (1.3%)
2012	318	18 (5.7%)	377	12 (3.2%)
2013	282	8 (2.8%)	418	19 (4.5%)
2014	261	3 (1.1%)	370	13 (3.5%)
2015	324	8 (2.5%)	391	15 (3.8%)
2016	278	8 (2.9%)	409	16 (3.9%)
2017	291	7 (2.4%)	452	16 (3.5%)
2018	258	2 (0.8%)	318	18 (5.7%)
2019	245	6 (2.4%)	234	7 (3.0%)
2020	243	5 (2.1%)	391	9 (2.3%)
2021	450	7 (1.6%)	440	13 (3.0%)
2022	318	7 (2.2%)	431	11 (2.6%)

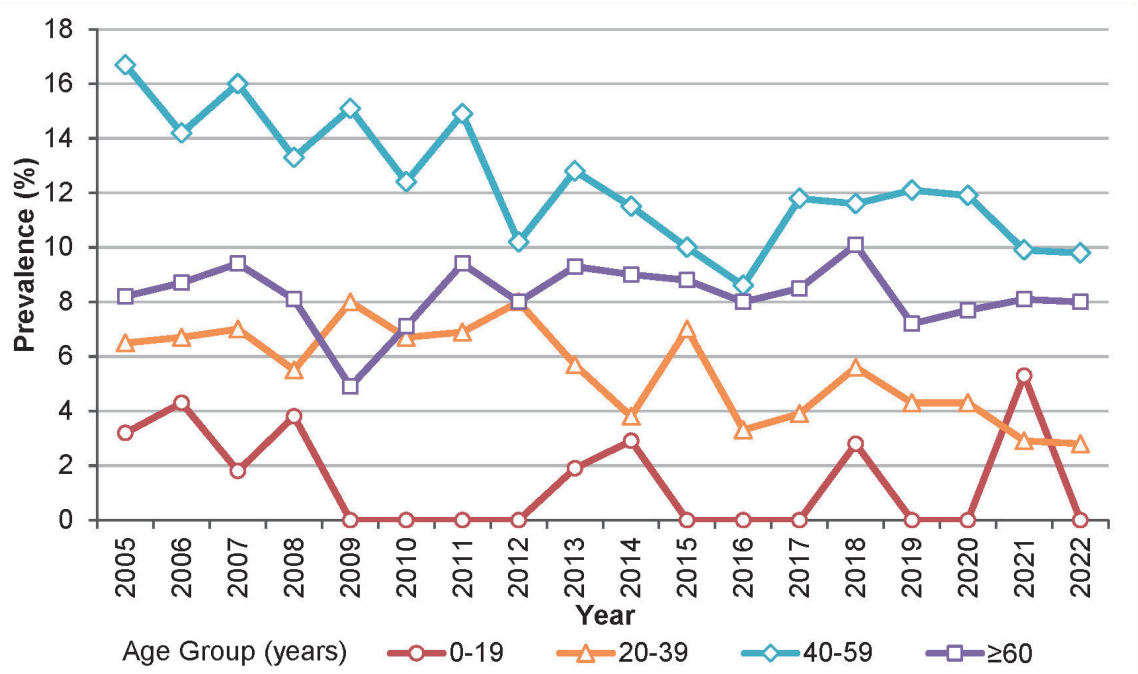
Box 40 **HBsAg prevalence in tuberculosis patients treated at chest clinics, by sex from 2005 to 2022 (March to May) (Data source: Tuberculosis and Chest Service, CHP, DH)**



Year	Male		Female		Total	
	No. tested	HBsAg +ve (%)	No. tested	HBsAg +ve (%)	**No. tested**	**HBsAg +ve (%)**
2005	442	52 (11.8%)	242	17 (7.0%)	**684**	**69 (10.1%)**
2006	821	97 (11.8%)	446	27 (6.1%)	**1267**	**124 (9.8%)**
2007	768	96 (12.5%)	420	29 (6.9%)	**1188**	**125 (10.5%)**
2008	648	62 (9.6%)	382	30 (7.9%)	**1030**	**92 (8.9%)**
2009	759	73 (9.6%)	438	30 (6.8%)	**1197**	**103 (8.6%)**
2010	669	64 (9.6%)	353	22 (6.2%)	**1022**	**86 (8.4%)**
2011	674	77 (11.4%)	382	29 (7.6%)	**1056**	**106 (10.0%)**
2012	651	59 (9.1%)	367	27 (7.4%)	**1018**	**86 (8.4%)**
2013	664	70 (10.5%)	369	25 (6.8%)	**1033**	**95 (9.2%)**
2014	598	60 (10.0%)	393	24 (6.1%)	**991**	**84 (8.5%)**
2015	560	56 (10.0%)	314	18 (5.7%)	**874**	**74 (8.5%)**
2016	534	41 (7.7%)	308	17 (5.5%)	**842**	**58 (6.9%)**
2017	500	44 (8.8%)	303	22 (7.3%)	**803**	**66 (8.2%)**
2018	666	76 (11.4%)	425	27 (6.4%)	**1091**	**103 (9.4%)**
2019	571	57 (10.0%)	312	13 (4.2%)	**883**	**70 (7.9%)**
2020	423	40 (9.5%)	288	17 (5.9%)	**711**	**57 (8.0%)**
2021	511	39 (7.6%)	316	25 (7.9%)	**827**	**64 (7.7%)**
2022	353	34 (9.6%)	251	10 (4.0%)	**604**	**44 (7.3%)**

Box 41

HBsAg prevalence in tuberculosis patients treated at chest clinics, by age from 2005 to 2022 (March to May) (Data source: Tuberculosis and Chest Service, CHP, DH)



Year	Age group							
	0-19		20-39		40-59		≥60	
	No. tested	HBsAg +ve (%)	No. tested	HBsAg +ve (%)	No. tested	HBsAg +ve (%)	No. tested	HBsAg +ve (%)
2005	31	1 (3.2%)	168	11 (6.5%)	204	34 (16.7%)	281	23 (8.2%)
2006	47	2 (4.3%)	314	21 (6.7%)	402	57 (14.2%)	504	44 (8.7%)
2007	57	1 (1.8%)	287	20 (7.0%)	374	60 (16.0%)	470	44 (9.4%)
2008	26	1 (3.8%)	256	14 (5.5%)	316	42 (13.3%)	432	35 (8.1%)
2009	45	0 (0.0%)	275	22 (8.0%)	370	56 (15.1%)	507	25 (4.9%)
2010	34	0 (0.0%)	224	15 (6.7%)	315	39 (12.4%)	449	32 (7.1%)
2011	35	0 (0.0%)	259	18 (6.9%)	303	45 (14.9%)	459	43 (9.4%)
2012	32	0 (0.0%)	261	21 (8.0%)	315	32 (10.2%)	410	33 (8.0%)
2013	54	1 (1.9%)	228	13 (5.7%)	320	41 (12.8%)	431	40 (9.3%)
2014	34	1 (2.9%)	211	8 (3.8%)	313	36 (11.5%)	433	39 (9.0%)
2015	30	0 (0.0%)	187	13 (7.0%)	260	26 (10.0%)	397	35 (8.8%)
2016	25	0 (0.0%)	180	6 (3.3%)	222	19 (8.6%)	415	33 (8.0%)
2017	35	0 (0.0%)	153	6 (3.9%)	237	28 (11.8%)	378	32 (8.5%)
2018	36	1 (2.8%)	197	11 (5.6%)	311	36 (11.6%)	547	55 (10.1%)
2019	11	0 (0.0%)	163	7 (4.3%)	248	30 (12.1%)	461	33 (7.2%)
2020	22	0 (0.0%)	140	6 (4.3%)	210	25 (11.9%)	339	26 (7.7%)
2021	19	1 (5.3%)	138	4 (2.9%)	252	25 (9.9%)	418	34 (8.1%)
2022	17	0 (0.0%)	106	3 (2.8%)	143	14 (9.8%)	338	27 (8.0%)

Box 42 **Prevalence of hepatitis B markers in persons attending Therapeutic Prevention Clinic of ITC for post-exposure management, from 2003 to 2022 (Data source: ITC, CHP, DH)**

Year	Health care workers			Non- Health care workers			Total		
	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)	**No. tested**	**HBsAg +ve (%)**	**Anti-HBs +ve (%)**
2003	96	6 (6.3%)	66 (68.8%)	201	24 (11.9%)	81 (40.3%)	297	30 (10.1%)	147 (49.5%)
2004	66	4 (6.1%)	41 (62.1%)	182	15 (8.2%)	97 (53.3%)	248	19 (7.7%)	138 (55.6%)
2005	49	3 (6.1%)	31 (63.3%)	206	13 (6.3%)	99 (48.1%)	255	16 (6.3%)	130 (51.0%)
2006	54	6 (11.1%)	33 (61.1%)	289	15 (5.2%)	151 (52.2%)	343	21 (6.1%)	184 (53.6%)
2007	54	1 (1.9%)	45 (83.3%)	228	18 (7.9%)	88 (38.6%)	282	19 (6.7%)	133 (47.2%)
2008	54	2 (3.7%)	39 (72.2%)	235	20 (8.5%)	111 (47.2%)	289	22 (7.6%)	150 (51.9%)
2009	56	1 (1.8%)	41 (73.2%)	297	22 (7.4%)	138 (46.5%)	353	23 (6.5%)	179 (50.7%)
2010	47	1 (2.1%)	33 (70.2%)	245	10 (4.1%)	137 (55.9%)	292	11 (3.8%)	170 (58.2%)
2011	54	1 (1.9%)	35 (64.8%)	270	12 (4.4%)	159 (58.9%)	324	13 (4.0%)	194 (59.9%)
2012	70	2 (2.9%)	54 (77.1%)	311	16 (5.1%)	173 (55.6%)	381	18 (4.7%)	227 (59.6%)
2013	82	1 (1.2%)	64 (78.0%)	313	15 (4.8%)	149 (47.6%)	395	16 (4.1%)	213 (53.9%)
2014	79	3 (3.8%)	58 (73.4%)	330	9 (2.7%)	180 (54.5%)	409	12 (2.9%)	238 (58.2%)
2015	85	1 (1.2%)	66 (77.6%)	311	10 (3.2%)	172 (55.3%)	396	11 (2.8%)	238 (60.1%)
2016	118	2 (1.7%)	82 (69.5%)	343	12 (3.5%)	155 (45.2%)	461	14 (3.0%)	237 (51.4%)
2017	83	1 (1.2%)	56 (67.5%)	350	2 (0.6%)	186 (53.1%)	433	3 (0.7%)	242 (55.9%)
2018	82	2 (2.4%)	53 (64.6%)	347	4 (1.2%)	165 (47.6%)	429	6 (1.4%)	218 (50.8%)
2019	115	2 (1.7%)	86 (74.8%)	376	8 (2.1%)	194 (51.6%)	491	10 (2.0%)	280 (57.0%)
2020	74	0 (0.0%)	49 (66.2%)	358	4 (1.1%)	197 (55.0%)	432	4 (0.9%)	246 (56.9%)
2021	123	2 (1.6%)	92 (74.8%)	376	6 (1.6%)	194 (51.6%)	499	8 (1.6%)	286 (57.3%)
2022	101	0 (0.0%)	70 (69.3%)	310	8 (2.6%)	143 (46.1%)	411	8 (1.9%)	213 (51.8%)
Total	**1542**	**41 (2.7%)**	**1094 (70.9%)**	**5878**	**243 (4.1%)**	**2969 (50.5%)**	**7420**	**284 (3.8%)**	**4063 (54.8%)**

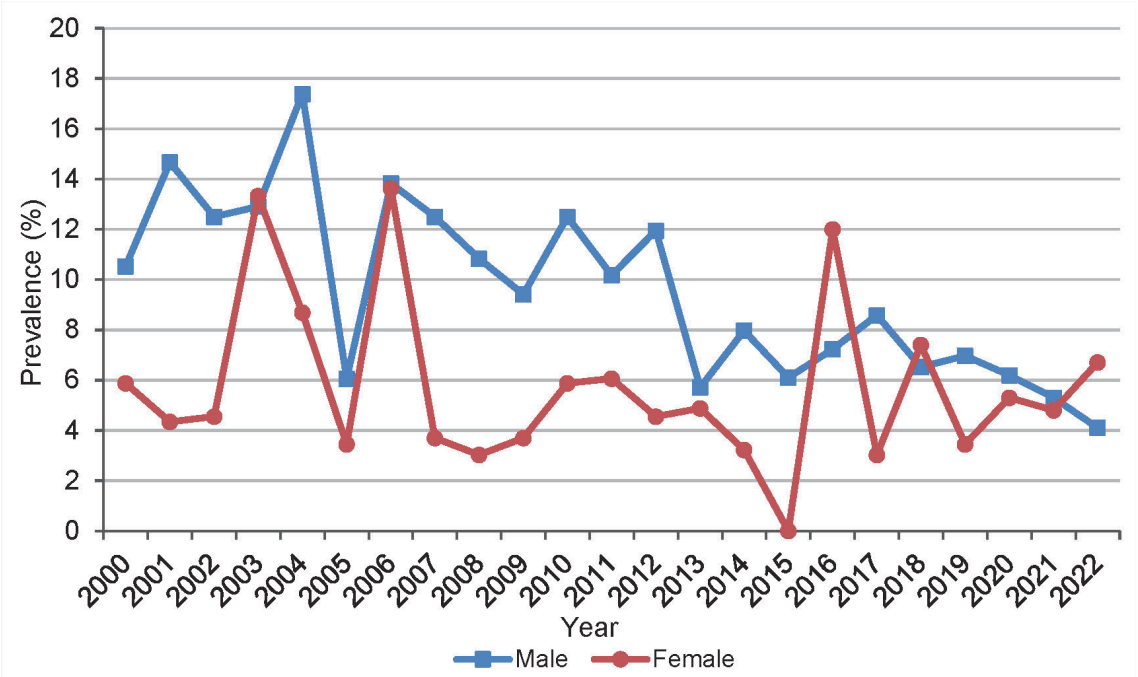
Box 43

HBsAg prevalence in drug users, female sex workers, men who have sex with men and HIV/AIDS patients attending ITC from 1992 to 2022 (Data sources: PHLSB, Social Hygiene Service, ITC, CHP, DH and Action for REACH OUT)

Year	Drug users	Female sex workers	Men who have sex with men	HIV/AIDS patients attending ITC
1992	13.9	-	-	-
1993	14.4	-	-	-
1994	12.9	-	-	-
1995	10.5	6.8^	-	-
1996	8.7	6.8^	-	-
1997	6.6	6.8^	-	-
1998	10.0	6.8^	-	-
1999	11.2	-	-	-
2000	11.4	-	-	9.5
2001	11.6	-	-	12.2
2002	12.7	-	-	11.2
2003	10.1	-	-	13.0
2004	-	-	-	15.9
2005	-	-	-	5.6
2006	-	-	-	13.8
2007	-	10.4*	-	11.5
2008	-	9.0	-	9.7
2009	-	6.5	-	8.6
2010	-	5.0	-	11.3
2011	-	7.2**	-	9.5
2012	-	-	-	10.7
2013	-	-	-	5.6
2014	-	-	-	7.5
2015	-	-	-	5.6
2016	-	-	-	7.6
2017	-	-	-	8.1
2018	-	-	-	6.6
2019	-	-	-	6.5
2020	-	-	-	6.1
2021	-	-	-	5.3
2022	-	16.2***	0.8***	4.5

* *For a period between Aug-Dec 2007;*
** *For a period between Jan-Jul 2011;*
*** *For a period between Aug-Dec 2022;*
^ *Figure is the average of 1995-1998*

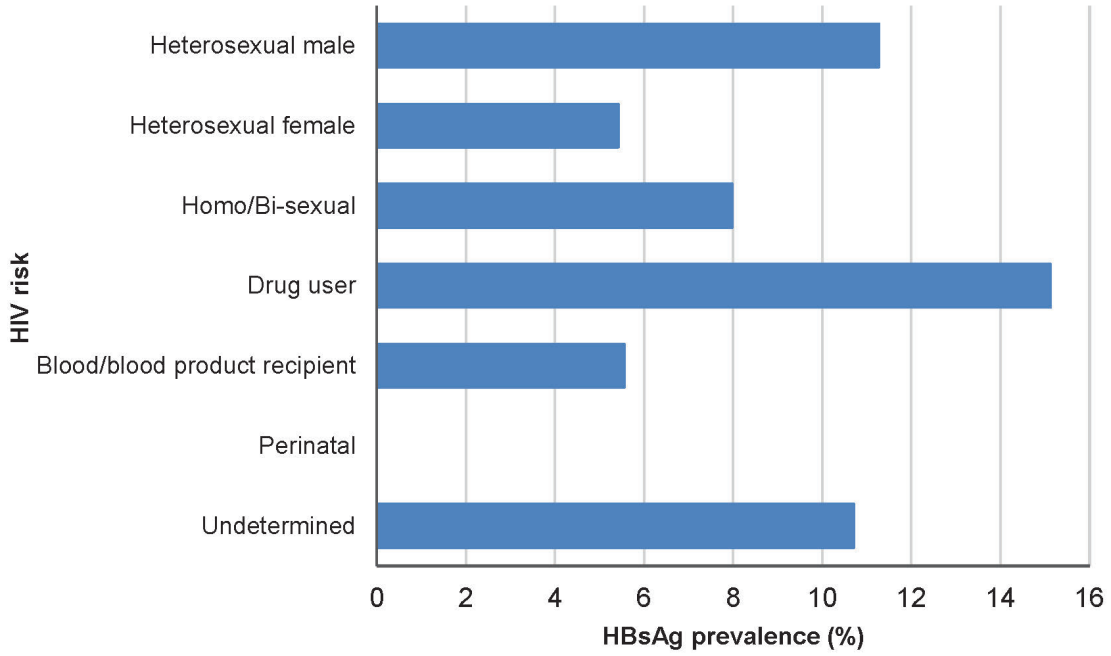
Box 44 Prevalence of HBsAg at baseline screening of HIV/AIDS patients attending ITC from 2000 to 2022 (Data source: ITC, CHP, DH)



Year	Male		Female		Total	
	No. tested	HBsAg +ve (%)	No. tested	HBsAg +ve (%)	**No. tested**	**HBsAg +ve (%)**
2000	57	6 (10.5%)	17	1 (5.9%)	**74**	**7 (9.5%)**
2001	75	11 (14.7%)	23	1 (4.3%)	**98**	**12 (12.2%)**
2002	112	14 (12.5%)	22	1 (4.5%)	**134**	**15 (11.2%)**
2003	93	12 (12.9%)	15	2 (13.3%)	**108**	**14 (13.0%)**
2004	115	20 (17.4%)	23	2 (8.7%)	**138**	**22 (15.9%)**
2005	132	8 (6.1%)	29	1 (3.4%)	**161**	**9 (5.6%)**
2006	188	26 (13.8%)	22	3 (13.6%)	**210**	**29 (13.8%)**
2007	216	27 (12.5%)	27	1 (3.7%)	**243**	**28 (11.5%)**
2008	203	22 (10.8%)	33	1 (3.0%)	**236**	**23 (9.7%)**
2009	170	16 (9.4%)	27	1 (3.7%)	**197**	**17 (8.6%)**
2010	160	20 (12.5%)	34	2 (5.9%)	**194**	**22 (11.3%)**
2011	167	17 (10.2%)	33	2 (6.1%)	**200**	**19 (9.5%)**
2012	226	27 (11.9%)	44	2 (4.5%)	**270**	**29 (10.7%)**
2013	263	15 (5.7%)	41	2 (4.9%)	**304**	**17 (5.6%)**
2014	301	24 (8.0%)	31	1 (3.2%)	**332**	**25 (7.5%)**
2015	328	20 (6.1%)	26	0 (0.0%)	**354**	**20 (5.6%)**
2016	304	22 (7.2%)	25	3 (12.0%)	**329**	**25 (7.6%)**
2017	326	28 (8.6%)	33	1 (3.0%)	**359**	**29 (8.1%)**
2018	230	15 (6.5%)	27	2 (7.4%)	**257**	**17 (6.6%)**
2019	201	14 (7.0%)	29	1 (3.4%)	**230**	**15 (6.5%)**
2020	178	11 (6.2%)	19	1 (5.3%)	**197**	**12 (6.1%)**
2021	169	9 (5.3%)	21	1 (4.8%)	**190**	**10 (5.3%)**
2022	147	6 (4.1%)	30	2 (6.7%)	**177**	**8 (4.5%)**

Box 45

Prevalence of HBV infection per HIV risk at baseline screening of HIV/AIDS patients attending ITC from 2000 to 2022 (Data source: ITC, CHP, DH)



HIV risk	No. tested	HBsAg +ve (%)	Anti-HBs +ve (%)
Heterosexual male	932	105 (11.3%)	438 (47.0%)
Heterosexual female	590	32 (5.4%)	252 (42.7%)
Homo/Bi-sexual	3118	249 (8.0%)	1692 (54.3%)
Drug user	271	41 (15.1%)	128 (47.2%)
Blood/blood product recipient	18	1 (5.6%)	6 (33.3%)
Perinatal	10	0 (0.0%)	2 (20.0%)
Undetermined	56	6 (10.7%)	28 (50.0%)
Total	**4995**	**434 (8.7%)**	**2546 (51.0%)**

Box 46 Prevalence of hepatitis B markers in drug users from 1990 to 2010 (Data source: PHLSB, CHP, DH)

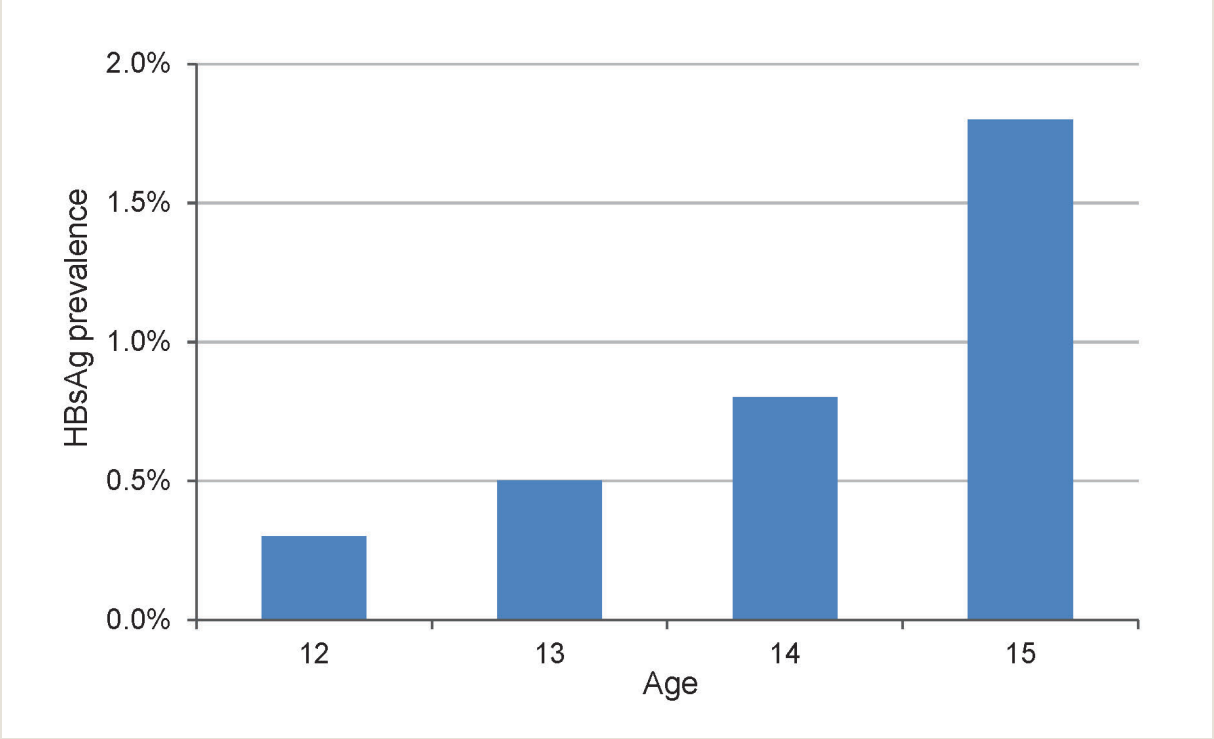
Year	No. tested	HBsAg (%+ve)	Anti-HBs (%+ve)	Anti-HBc* (%+ve)	Any marker (%+ve)
1990	1067	13.4	59.0	15.7	90.8
1991	1517	14.4	54.4	20.5	89.3
1992	832	13.9	49.0	21.4	84.4
1993	744	14.4	43.4	16.4	69.2
1994	607	12.9	38.1	13.5	64.1
1995	190	10.5	36.8	12.1	58.9
1996	358	8.7	43.0	12.6	62.8
1997	290	6.6	36.2	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
2004	45	11.1	57.8	4.4	73.3
2005	26	11.5	46.2	11.5	69.2
2006	6	33.3	50.0	16.7	100.0
2007	11	0.0	81.8	9.1	90.9
2008	7	28.6	28.6	14.3	71.4
2009	11	9.1	72.7	9.1	90.9
2010	12	8.3	58.3	8.3	75.0

**Anti-HBc was not tested in specimens that were HBsAg positive*

Box 47 **Prevalence of HBsAg in participants of Community Research Project on Viral Hepatitis in 2001 (Data source: DH)**

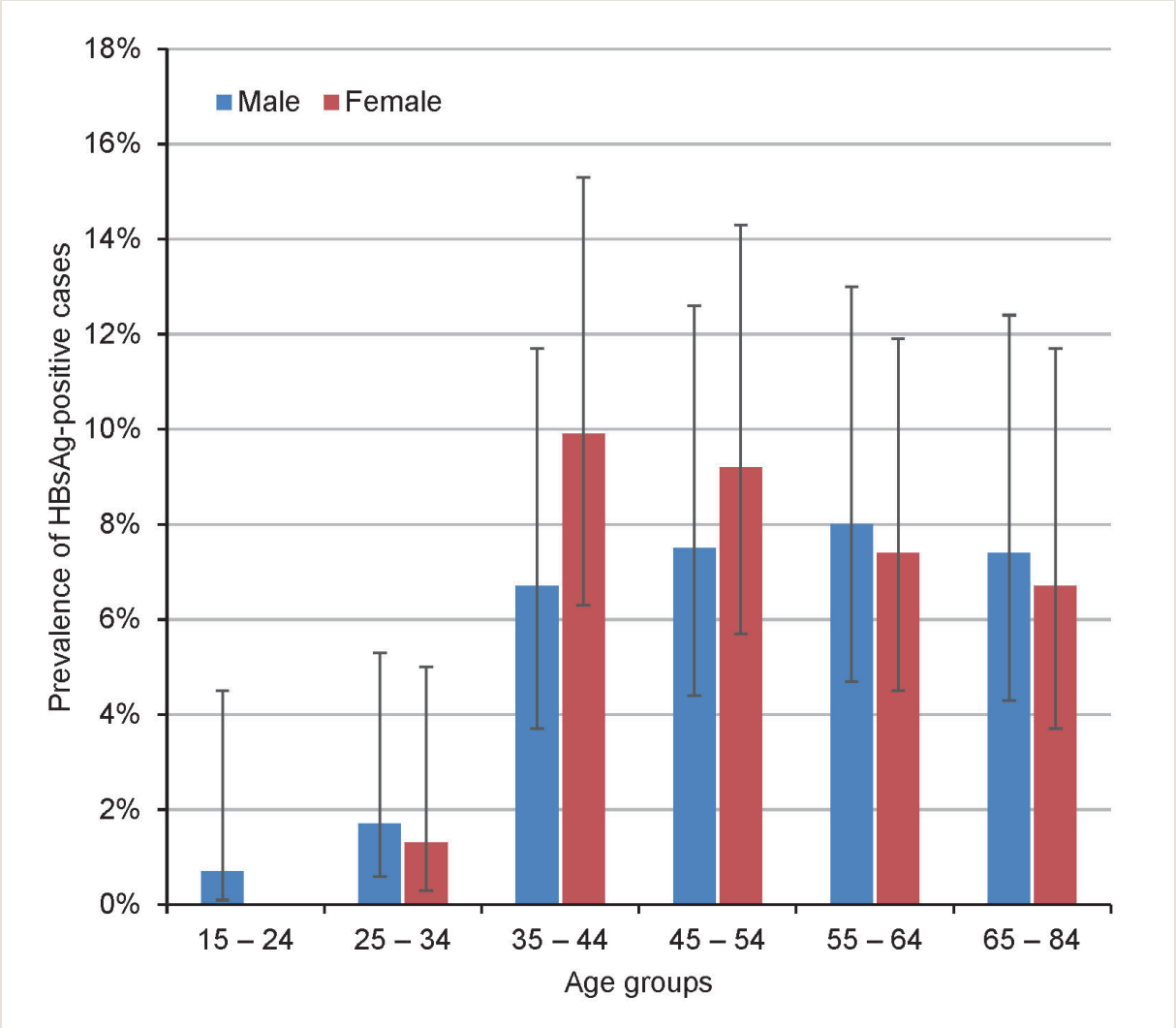
Age Group	Male		Female		Total	
	No. tested	HBsAg +ve (%)	No. tested	HBsAg +ve (%)	**No. tested**	**HBsAg +ve (%)**
18-30	72	6 (8.3%)	87	6 (6.9%)	**159**	**12 (7.5%)**
31-40	93	5 (5.4%)	144	20 (13.9%)	**237**	**25 (10.5%)**
41-50	100	20 (20.0%)	183	10 (5.5%)	**283**	**30 (10.6%)**
51 & Over	111	8 (7.2%)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

Box 48 **HBsAg prevalence by age among children aged 12 to 15 years in 2009 (Data source: unpublished data of DH)**



**The overall seroprevalence of HBsAg was 0.78%.*

Box 49 **Prevalence of HBsAg-positive cases, by sex and age group, among participants of Population Health Survey 2020-22 (Data source: DH)**



Age group	Male		Female		**Total**	
	HBsAg +ve (%)	95% CI	HBsAg +ve (%)	95% CI	**HBsAg +ve (%)**	**95% CI**
15 – 24	0.7%	0.1% - 4.5%	-	NA	**0.3%**	**0.0% - 2.3%**
25 – 34	1.7%	0.6% - 5.3%	1.3%	0.3% - 5.0%	**1.5%**	**0.6% - 3.6%**
35 – 44	6.7%	3.7% - 11.7%	9.9%	6.3% - 15.3%	**8.4%**	**5.9% - 11.8%**
45 – 54	7.5%	4.4% - 12.6%	9.2%	5.7% - 14.3%	**8.4%**	**6.0% - 11.8%**
55 – 64	8.0%	4.7% - 13.0%	7.4%	4.5% - 11.9%	**7.6%**	**5.4% - 10.8%**
65 – 84	7.4%	4.3% - 12.4%	6.7%	3.7% - 11.7%	**7.0%**	**4.7% - 10.4%**
Total	**5.8%**	**4.5% - 7.5%**	**6.5%**	**5.0% - 8.3%**	**6.2%**	**5.2% - 7.4%**

CI: confidence interval

Vaccination coverage of hepatitis B

Box 50 **Estimated coverage of birth-dose hepatitis B vaccine between 2010 and 2022 (Data source: DH and Census and Statistics Department)**

Year	No. of first-dose hepatitis B vaccine administered to newborn babies at public and private hospitals	Number of live births	Birth-dose coverage
2010	88 148	88 584	99.5%
2011	95 113	95 451	99.6%
2012	91 073	91 558	99.5%
2013	56 565	57 084	99.1%
2014	61 813	62 305	99.2%
2015	59 520	59 878	99.4%
2016	60 522	60 856	99.5%
2017	56 403	56 548	99.7%
2018	53 506	53 716	99.6%
2019	52 603	52 856	99.5%
2020	42 876	43 031	99.6%
2021	36 849	36 953	99.7%
2022	32 322	32 501	99.4%

Box 51

Hepatitis B immunisation coverage among children aged 2 to 5 by year of birth (Data source: ref 46 - 53 & unpublished DH data)

Year of Survey	Year of Birth	First dose (%)	Second dose (%)	Third dose (%)
2001	1995	99.5	99.5	99.1
	1996	99.1	99.0	98.6
2003	1997	99.5	99.3	99.1
	1998	99.9	99.9	99.6
	1999	100	100	99.7
2006	2000	99.9	99.8	99.6
	2001	99.9	99.9	99.6
	2002	99.9	99.8	99.5
2009	2003	99.9	99.8	99.5
	2004	99.9	99.9	99.8
	2005	99.7	99.7	99.5
	2006	100	100	99.7
2012	2006	99.6	99.5	99.0
	2007	99.8	99.8	99.3
	2008	99.8	99.8	99.3
	2009	100	100	98.8
2015	2009	99.7	99.6	99.2
	2010	99.6	99.6	99.2
	2011	99.6	99.5	99.2
	2012	100	100	99.2
2018*	2012	100	100	99.8
	2013	100	99.9	99.5
	2014	99.9	99.8	99.7
2021*	2015	99.9	99.9	99.5
	2016	99.7	99.6	99.2
	2017	99.8	99.4	98.9

* Children aged 3 to 5 by year of birth

Box 52 **Cumulative statistics of the supplementary hepatitis B vaccination programme for Primary 6 students from the school years 2003 to 2022 (Data source: DH)**

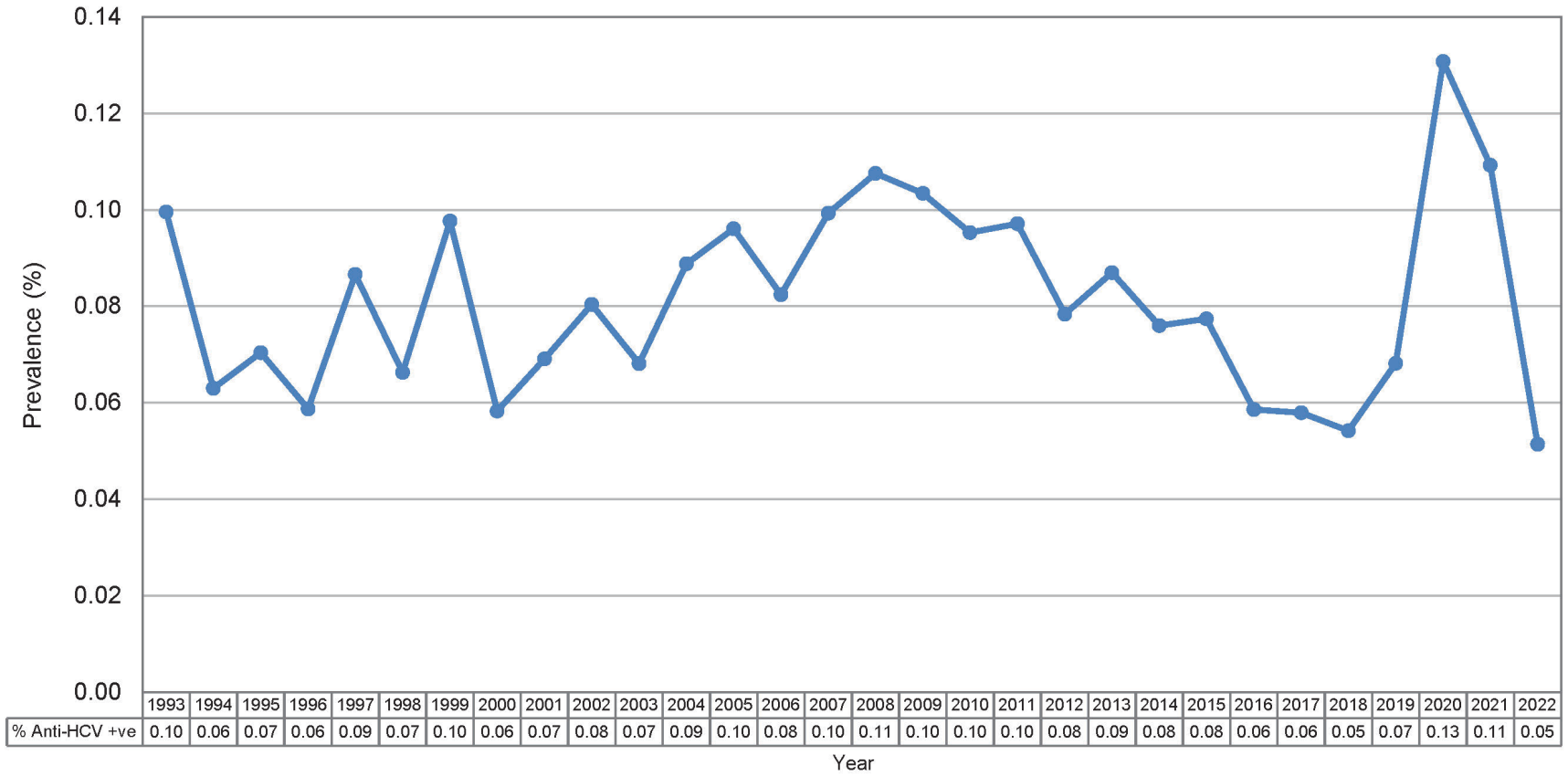
	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020*	2020-2021*	2021-2022*
Cumulative no. of Primary 6 students	86208	83974	83164	81818	77273	73757	67310	63332	63394	57487	54845	52013	51009	52848	55660	59481	59339	58710	55966
First Dose																			
Cumulative no. eligible for vaccination	10625	8433	6648	6351	6204	5165	4698	3736	2509	2376	1992	1797	982	710	483	407	429	889	516
Cumulative no. administered	10519	8313	6591	6262	6095	5043	4520	3563	2318	2237	1810	1606	729	588	346	218	148	105	148
Acceptance rate (at the present campaign)	99.0%	98.6%	99.1%	98.6%	98.2%	97.6%	96.2%	95.4%	92.4%	94.1%	90.9%	89.4%	74.2%	82.8%	71.6%	53.6%	34.5%	11.8%	28.7%
Coverage (for the whole Primary 6 population)	99.9%	99.8%	99.9%	99.9%	99.9%	99.8%	99.7%	99.7%	99.7%	99.8%	99.7%	99.6%	98.4%	98.6%	98.5%	98.5%	98.0%	98.2%	99.1%
Second Dose																			
Cumulative no. eligible for vaccination	10626	8545	6710	6392	6243	5165	4698	3787	2573	2432	2033	1825	1025	753	540	443	453	918	537
Cumulative no. administered	10341	8185	6573	6278	6068	4969	4398	3516	2286	2203	1718	1578	675	589	384	224	151	87	77
Acceptance rate (at the present campaign)	97.3%	95.8%	98.0%	98.2%	97.2%	96.2%	93.6%	92.8%	88.8%	90.6%	84.5%	86.5%	65.9%	78.2%	71.1%	50.6%	33.3%	9.5%	14.3%
Coverage (for the whole Primary 6 population)	99.7%	99.6%	99.8%	99.8%	99.8%	99.7%	99.5%	99.6%	99.5%	99.6%	99.4%	99.5%	98.2%	98.6%	98.5%	98.5%	98.0%	98.1%	98.9%
Third Dose																			
Cumulative no. eligible for vaccination	11222	9300	7397	6986	6741	5575	5032	4104	2825	2692	2283	2096	1307	1071	965	938	711	1116	735
Cumulative no. administered	10069	8478	6965	6607	6273	4817	4409	3526	2344	2232	1777	1708	835	839	734	579	320	186	212
Acceptance rate (at the present campaign)	89.7%	91.2%	94.2%	94.6%	93.1%	86.4%	87.6%	85.9%	83.0%	82.9%	77.8%	81.5%	63.9%	78.3%	76.1%	61.7%	45.0%	16.7%	28.8%
Coverage (for the whole Primary 6 population)	98.7%	99.0%	99.5%	99.5%	99.4%	99.0%	99.1%	99.1%	99.2%	99.2%	99.1%	99.3%	97.9%	98.4%	98.3%	98.2%	97.8%	98.0%	98.8%

* Acceptance rate refers to percentage of eligible students who have received the required vaccine doses within the campaign period. Due to on-off school suspension in school years 2019/20, 2020/21 and 2021/22, students may not be able to receive vaccine at school outreach immunisation activities as scheduled. They may however receive vaccinations at SIT sub-offices outside campaign period. The coverage rate of 1st, 2nd and 3rd dose of HBV maintain at very high rate, over 98%.

Seroprevalence of hepatitis C

Box 53

Anti-HCV prevalence in new blood donors from 1993 to 2022 (Data source: HKRCBTS)



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
% Anti-HCV +ve	0.10	0.06	0.07	0.06	0.09	0.07	0.10	0.06	0.07	0.08	0.07	0.09	0.10	0.08	0.10	0.11	0.10	0.10	0.10	0.08	0.09	0.08	0.08	0.06	0.06	0.05	0.07	0.13	0.11	0.05

Box 54 **Anti-HCV prevalence and its sex and age breakdown in new blood donors in 2022 (Data source: HKRCBTS)**

Age group	Male		Female		Total	
	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)
16-19	1959	0 (0.00%)	2517	1 (0.04%)	4476	1 (0.02%)
20-29	2154	0 (0.00%)	2536	0 (0.00%)	4690	0 (0.00%)
30-39	1610	2 (0.12%)	2260	0 (0.00%)	3870	2 (0.05%)
40-49	1310	1 (0.08%)	2316	2 (0.09%)	3626	3 (0.08%)
>49	1026	1 (0.10%)	1777	3 (0.17%)	2803	4 (0.14%)
Total	**8059**	**4 (0.05%)**	**11406**	**6 (0.05%)**	**19465**	**10 (0.05%)**

Box 55 **Prevalence of anti-HCV in participants of Community Research Project on Viral Hepatitis in 2001 (Data source: DH)**

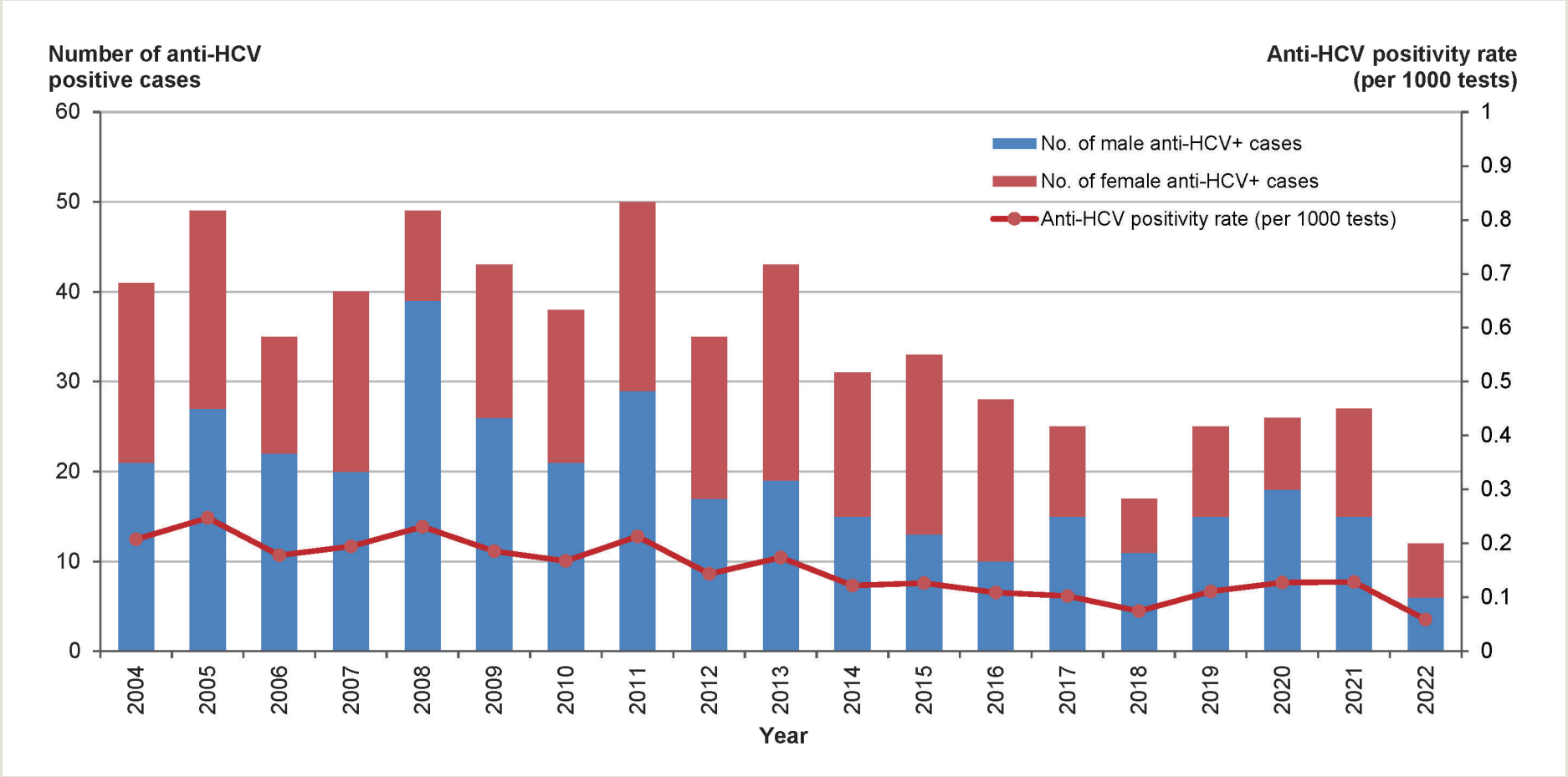
Age group	No. Tested	Anti-HCV +ve (%)
18-29	137	0 (0.0%)
30-39	223	1 (0.4%)
40-49	291	0 (0.0%)
50-59	170	2 (1.2%)
60 & over	115	0 (0.0%)
All	**936**	**3 (0.3%)**

Box 56 **Prevalence of HCV infection by age group among participants of Population Health Survey 2020-22 (Data source: DH)**

Age group	Anti-HCV positive (%)	HCV RNA detected (%)
15 – 39	0.00%	0.00%
40 – 64	0.54%	0.43%
65 – 84	0.31%	0.31%
Total	**0.32%**	**0.26%**

Box 57

Prevalence of anti-HCV from screening of blood donors from 2004 to 2022 (Data source: HKRCBTS)

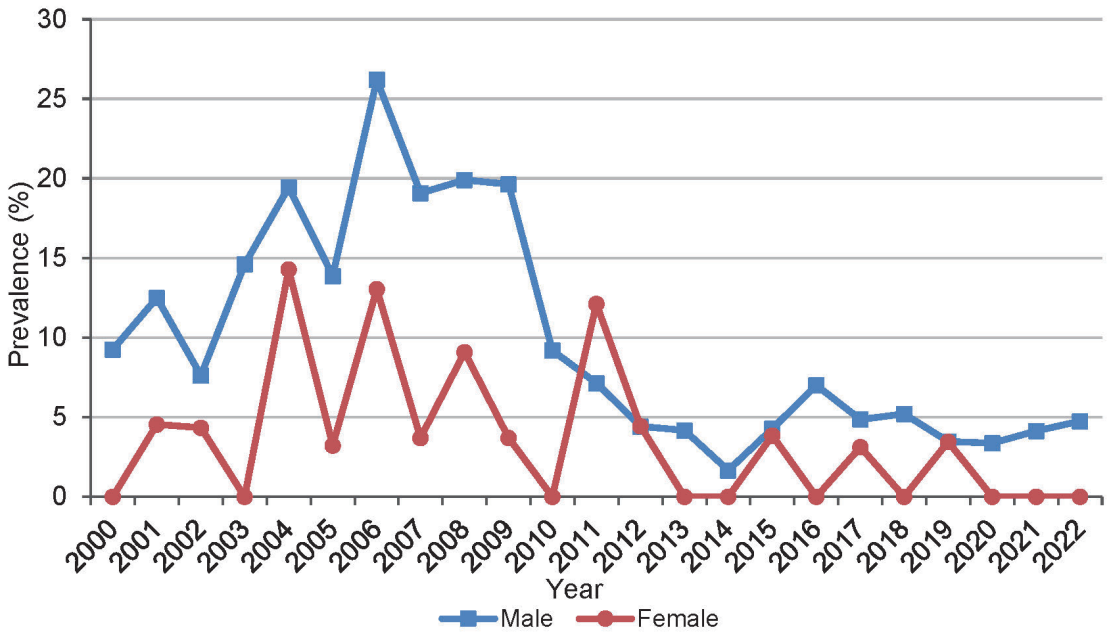


Box 58

Prevalence of anti-HCV in persons attending Therapeutic Prevention Clinic of ITC for post-exposure management, from 2003 to 2022 (Data source: ITC, CHP, DH)

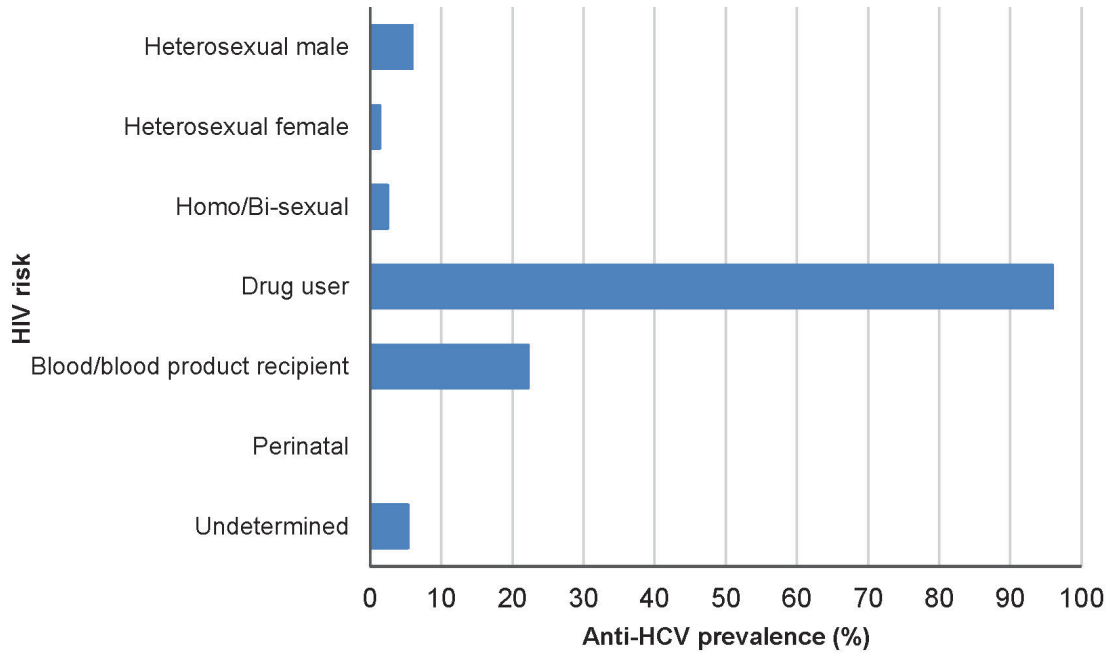
Year	Health care workers		Non-Health care workers		Total	
	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)
2003	18	0 (0.0%)	43	0 (0.0%)	61	0 (0.0%)
2004	17	0 (0.0%)	40	0 (0.0%)	57	0 (0.0%)
2005	10	0 (0.0%)	57	0 (0.0%)	67	0 (0.0%)
2006	33	0 (0.0%)	139	0 (0.0%)	172	0 (0.0%)
2007	36	0 (0.0%)	118	0 (0.0%)	154	0 (0.0%)
2008	23	0 (0.0%)	126	3 (2.4%)	149	3 (2.0%)
2009	25	0 (0.0%)	161	1 (0.6%)	186	1 (0.5%)
2010	25	0 (0.0%)	131	0 (0.0%)	156	0 (0.0%)
2011	17	0 (0.0%)	145	0 (0.0%)	162	0 (0.0%)
2012	37	0 (0.0%)	154	0 (0.0%)	191	0 (0.0%)
2013	26	0 (0.0%)	162	1 (0.6%)	188	1 (0.5%)
2014	29	0 (0.0%)	157	0 (0.0%)	186	0 (0.0%)
2015	34	0 (0.0%)	150	0 (0.0%)	184	0 (0.0%)
2016	47	1 (2.1%)	145	1 (0.7%)	192	2 (1.0%)
2017	38	0 (0.0%)	165	0 (0.0%)	203	0 (0.0%)
2018	41	0 (0.0%)	172	0 (0.0%)	213	0 (0.0%)
2019	66	0 (0.0%)	172	0 (0.0%)	238	0 (0.0%)
2020	38	0 (0.0%)	189	1 (0.5%)	227	1 (0.4%)
2021	46	1 (2.2%)	187	1 (0.5%)	233	2 (0.9%)
2022	47	0 (0.0%)	177	1 (0.6%)	224	1 (0.4%)
Total	**653**	**2 (0.3%)**	**2790**	**9 (0.3%)**	**3443**	**11 (0.3%)**

Box 59 **Prevalence of anti-HCV at baseline screening of HIV/AIDS patients attending ITC from 2000 to 2022 (Data source: ITC, CHP, DH)**



Year	Male		Female		Total	
	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)
2000	54	5 (9.3%)	15	0 (0.0%)	69	5 (7.2%)
2001	72	9 (12.5%)	22	1 (4.5%)	94	10 (10.6%)
2002	118	9 (7.6%)	23	1 (4.3%)	141	10 (7.1%)
2003	89	13 (14.6%)	14	0 (0.0%)	103	13 (12.6%)
2004	108	21 (19.4%)	21	3 (14.3%)	129	24 (18.6%)
2005	137	19 (13.9%)	31	1 (3.2%)	168	20 (11.9%)
2006	187	49 (26.2%)	23	3 (13.0%)	210	52 (24.8%)
2007	215	41 (19.1%)	27	1 (3.7%)	242	42 (17.4%)
2008	201	40 (19.9%)	33	3 (9.1%)	234	43 (18.4%)
2009	168	33 (19.6%)	27	1 (3.7%)	195	34 (17.4%)
2010	163	15 (9.2%)	33	0 (0.0%)	196	15 (7.7%)
2011	168	12 (7.1%)	33	4 (12.1%)	201	16 (8.0%)
2012	226	10 (4.4%)	45	2 (4.4%)	271	12 (4.4%)
2013	264	11 (4.2%)	40	0 (0.0%)	304	11 (3.6%)
2014	301	5 (1.7%)	31	0 (0.0%)	332	5 (1.5%)
2015	327	14 (4.3%)	26	1 (3.8%)	353	15 (4.2%)
2016	300	21 (7.0%)	25	0 (0.0%)	325	21 (6.5%)
2017	330	16 (4.8%)	32	1 (3.1%)	362	17 (4.7%)
2018	230	12 (5.2%)	27	0 (0.0%)	257	12 (4.7%)
2019	201	7 (3.5%)	29	1 (3.4%)	230	8 (3.5%)
2020	178	6 (3.4%)	19	0 (0.0%)	197	6 (3.0%)
2021	169	7 (4.1%)	21	0 (0.0%)	190	7 (3.7%)
2022	147	7 (4.8%)	30	0 (0.0%)	177	7 (4.0%)

Box 60 Prevalence of anti-HCV per HIV risk at baseline screening of HIV/AIDS patients attending ITC from 2000 to 2022 (Data source: ITC, CHP, DH)



HIV risk	No. tested	Anti-HCV +ve (%)
Heterosexual male	927	55* (5.9%)
Heterosexual female	586	8 (1.4%)
Homo/Bi-sexual	3116	77 (2.5%)
Drug user	270	259 (95.9%)
Blood/blood product recipient	18	4 (22.2%)
Perinatal	10	0 (0.0%)
Undetermined	56	3 (5.4%)
Total	**4983**	**406 (8.1%)**

**31 out of 55 had a history of injecting drug use*

Box 61 Prevalence of anti-HCV from clinical testing of patients in 2 hospital clusters under Hospital Authority from 2012 to 2022 (Data source: PMH Microbiology Laboratory and PWH Microbiology Laboratory)

Category	2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		Overall	
	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)	No. tested	Anti-HCV +ve (%)
(a) Screening																								
Pre-transplant	96	0 (0.0%)	82	0 (0.0%)	111	1 (0.9%)	118	0 (0.0%)	108	0 (0.0%)	128	0 (0.0%)	90	0 (0.0%)	75	1 (1.3%)	48	0 (0.0%)	69	1 (1.4%)	42	0 (0.0%)	967	3 (0.3%)
Drug users	103	53 (51.5%)	112	63 (56.3%)	114	66 (57.9%)	124	51 (41.1%)	81	41 (50.6%)	87	38 (43.7%)	103	40 (38.8%)	90	35 (38.9%)	90	39 (43.3%)	80	32 (40.0%)	87	25 (28.7%)	1071	483 (45.1%)
Needlestick injuries	592	6 (1.0%)	610	4 (0.7%)	537	6 (1.1%)	494	3 (0.6%)	516	5 (1.0%)	667	9 (1.3%)	614	2 (0.3%)	678	7 (1.0%)	674	11 (1.6%)	790	13 (1.6%)	584	10 (1.7%)	6756	76 (1.1%)
Haemodialysis/ peritoneal dialysis	2452	34 (1.4%)	2449	37 (1.5%)	2569	34 (1.3%)	2535	48 (1.9%)	2613	34 (1.3%)	3557	60 (1.7%)	3021	44 (1.5%)	2713	33 (1.2%)	2526	33 (1.3%)	2645	33 (1.2%)	2581	28 (1.1%)	29661	418 (1.4%)
Post-renal transplant	737	17 (2.3%)	718	16 (2.2%)	692	15 (2.2%)	863	18 (2.1%)	541	6 (1.1%)	708	9 (1.3%)	611	6 (1.0%)	636	5 (0.8%)	432	4 (0.9%)	396	2 (0.5%)	382	3 (0.8%)	6716	101 (1.5%)
Haematology (pre-chemotherapy)	415	4 (1.0%)	444	2 (0.5%)	472	2 (0.4%)	489	4 (0.8%)	533	2 (0.4%)	687	6 (0.9%)	622	2 (0.3%)	615	2 (0.3%)	655	5 (0.8%)	711	5 (0.7%)	718	6 (0.8%)	6361	40 (0.6%)
Rheumatology (pre-methotrexate)	449	2 (0.4%)	471	4 (0.8%)	580	3 (0.5%)	689	5 (0.7%)	730	5 (0.7%)	1285	3 (0.2%)	1310	8 (0.6%)	1501	6 (0.4%)	1484	2 (0.1%)	1713	5 (0.3%)	1575	8 (0.5%)	11787	51 (0.4%)
History of blood transfusion	197	17 (8.6%)	275	28 (10.2%)	224	22 (9.8%)	222	15 (6.8%)	166	14 (8.4%)	292	16 (5.5%)	222	18 (8.1%)	211	18 (8.5%)	238	16 (6.7%)	211	13 (6.2%)	148	9 (6.1%)	2406	186 (7.7%)
Pre-vaccination	0	0 (0.0%)	0	0 (0.0%)	0	0 (0.0%)	0	0 (0.0%)	0	0 (0.0%)	0	0 (0.0%)	0	0 (0.0%)	0	0 (0.0%)	5	0 (0.0%)	0	0 (0.0%)	21	0 (0.0%)	26	0 (0.0%)
Subtotal (a)	5041	133 (2.6%)	5161	154 (3.0%)	5299	149 (2.8%)	5534	144 (2.6%)	5288	107 (2.0%)	7411	141 (1.9%)	6593	120 (1.8%)	6519	107 (1.6%)	6152	110 (1.8%)	6615	104 (1.6%)	6138	89 (1.4%)	65751	1358 (2.1%)
(b) Clinical indication*	9815	308 (3.1%)	10911	323 (3.0%)	11229	316 (2.8%)	12360	351 (2.8%)	15472	383 (2.5%)	15889	329 (2.1%)	15208	338 (2.2%)	16028	302 (1.9%)	15307	278 (1.8%)	18289	302 (1.7%)	17530	316 (1.8%)	158038	3546 (2.2%)
(c) Others or unknown	9026	131 (1.5%)	9615	136 (1.4%)	11213	150 (1.3%)	10836	107 (1.0%)	10701	125 (1.2%)	15527	171 (1.1%)	18844	179 (0.9%)	19100	182 (1.0%)	19027	166 (0.9%)	21781	179 (0.8%)	24167	205 (0.8%)	169837	1731 (1.0%)
Total (a+b+c)	**23882**	**572 (2.4%)**	**25687**	**613 (2.4%)**	**27741**	**615 (2.2%)**	**28730**	**602 (2.1%)**	**31461**	**615 (2.0%)**	**38827**	**641 (1.7%)**	**40645**	**637 (1.6%)**	**41647**	**591 (1.4%)**	**40486**	**554 (1.4%)**	**46685**	**585 (1.3%)**	**47835**	**610 (1.3%)**	**393626**	**6635 (1.7%)**

**includes suspected hepatitis, work up for liver function derangement and others*

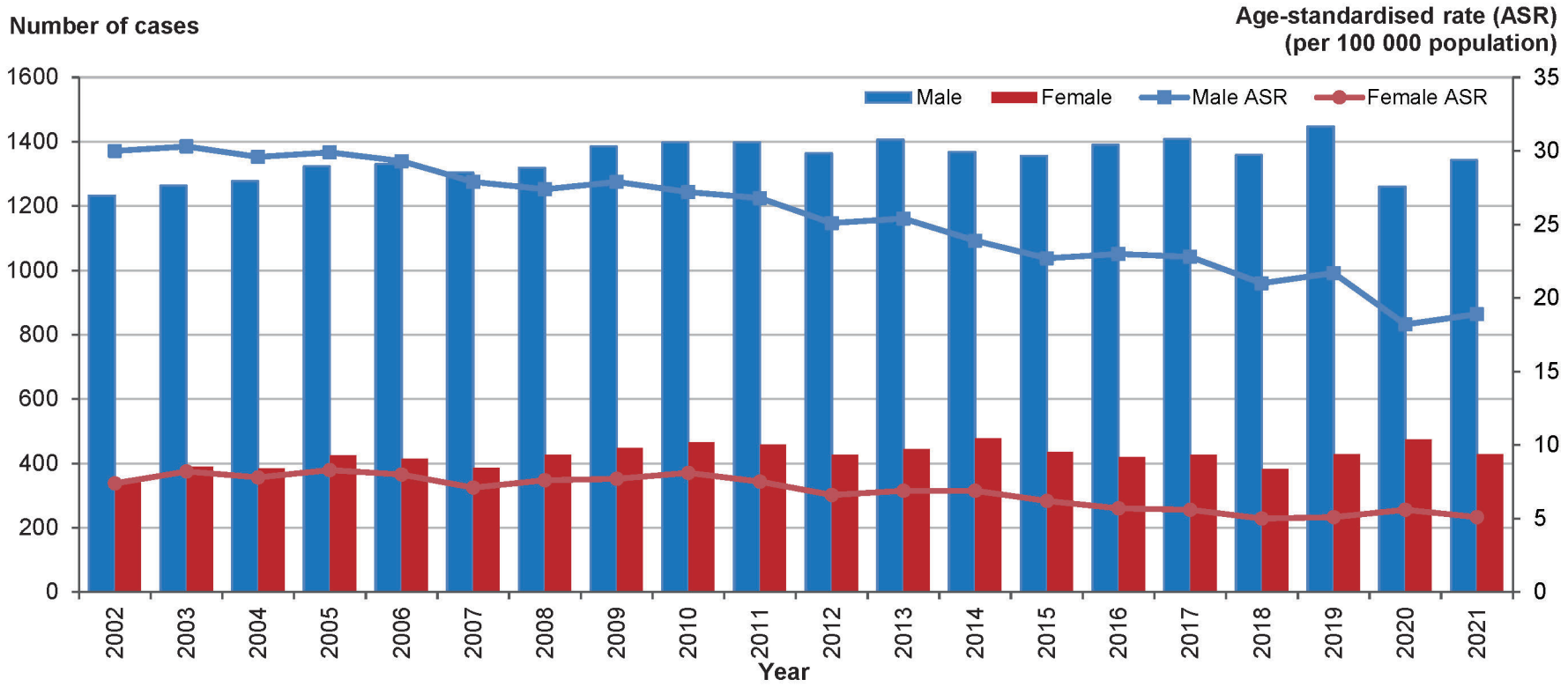
Box 62 Characteristics of anti-HCV positive subjects detected in 2 hospital clusters under Hospital Authority from 2009 to 2022 (Data source: PMH Microbiology Laboratory and PWH Microbiology Laboratory)

		2009 (n=542)	2010 (n=537)	2011 (n=565)	2012 (n=574)	2013 (n=616)	2014 (n=615)	2015 (n=602)	2016 (n=615)	2017 (n=641)	2018 (n=638)	2019 (n=592)	2020 (n=554)	2021 (n=585)	2022 (n=610)	**Overall (n=8286)**
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	**No. (%)**
Lab	PMH	273 (50.4%)	271 (50.5%)	280 (49.6%)	298 (51.9%)	279 (45.3%)	297 (48.3%)	354 (58.8%)	372 (60.5%)	340 (53.0%)	363 (56.9%)	312 (52.7%)	300 (54.2%)	295 (50.4%)	281 (46.1%)	**4315 (52.1%)**
	PWH	269 (49.6%)	266 (49.5%)	285 (50.4%)	276 (48.1%)	337 (54.7%)	318 (51.7%)	248 (41.2%)	243 (39.5%)	301 (47.0%)	275 (43.1%)	280 (47.3%)	254 (45.8%)	290 (49.6%)	329 (53.9%)	**3971 (47.9%)**
Sex	Male	389 (71.8%)	384 (71.5%)	405 (71.7%)	421 (73.3%)	445 (72.2%)	425 (69.1%)	421 (69.9%)	443 (72.0%)	439 (68.6%)	460 (72.2%)	419 (70.8%)	409 (73.8%)	432 (73.8%)	440 (72.1%)	**5932 (71.6%)**
	Female	153 (28.2%)	153 (28.5%)	160 (28.3%)	153 (26.7%)	171 (27.8%)	190 (30.9%)	181 (30.1%)	172 (28.0%)	201 (31.4%)	177 (27.8%)	173 (29.2%)	145 (26.2%)	153 (26.2%)	170 (27.9%)	**2352 (28.4%)**
	Unknown	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	1 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	**2 (<0.1%)**
Age at diagnosis	Mean	55.1	52.9	52.5	52.5	52.4	53.2	55.0	55.5	56.3	56.2	56.4	56.7	56.9	59.1	**55.1**
	S.D.	16.7	16.2	15.8	15.6	15.9	15.7	15.1	15.1	15.1	15.2	14.6	15.0	15.2	14.3	**15.5**
	Range	1 – 102	0 – 90	0 – 90	0 – 99	0 – 113	0 – 95	1 – 95	0 – 97	0 – 94	0 – 99	0 – 96	0 – 96	0 – 99	0 – 102	**0 – 113**
Category	Pre-transplant	1 (0.2%)	2 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	0 (0.0%)	1 (0.2%)	0 (0.0%)	**6 (0.1%)**
	Drug users	93 (17.2%)	75 (14.0%)	61 (10.8%)	53 (9.2%)	63 (10.2%)	66 (10.7%)	51 (8.5%)	41 (6.7%)	38 (5.9%)	40 (6.3%)	35 (5.9%)	39 (7.0%)	32 (5.5%)	25 (4.1%)	**712 (8.6%)**
	Needlestick injuries	5 (0.9%)	5 (0.9%)	4 (0.7%)	6 (1.0%)	4 (0.6%)	6 (1.0%)	3 (0.5%)	5 (0.8%)	9 (1.4%)	2 (0.3%)	7 (1.2%)	11 (2.0%)	13 (2.2%)	10 (1.6%)	**90 (1.1%)**
	Pre-haemodialysis/ peritoneal dialysis	34 (6.3%)	36 (6.7%)	34 (6.0%)	34 (5.9%)	37 (6.0%)	34 (5.5%)	48 (8.0%)	34 (5.5%)	60 (9.4%)	44 (6.9%)	33 (5.6%)	33 (6.0%)	33 (5.6%)	28 (4.6%)	**622 (6.3%)**
	Post-renal transplant	19 (3.5%)	25 (4.7%)	18 (3.2%)	17 (3.0%)	16 (2.6%)	15 (2.4%)	18 (3.0%)	6 (1.0%)	9 (1.4%)	6 (0.9%)	5 (0.8%)	4 (0.7%)	2 (0.3%)	3 (0.5%)	**163 (2.0%)**
	Haematology	2 (0.4%)	6 (1.1%)	1 (0.2%)	4 (0.7%)	2 (0.3%)	2 (0.3%)	4 (0.7%)	2 (0.3%)	6 (0.9%)	2 (0.3%)	2 (0.3%)	5 (0.9%)	5 (0.9%)	6 (1.0%)	**49 (0.6%)**
	Pre-methotrexate	5 (0.9%)	1 (0.2%)	2 (0.4%)	2 (0.3%)	4 (0.6%)	3 (0.5%)	5 (0.8%)	5 (0.8%)	3 (0.5%)	8 (1.3%)	6 (1.0%)	2 (0.4%)	5 (0.9%)	8 (1.3%)	**59 (0.7%)**
	History of blood transfusion	32 (5.9%)	21 (3.9%)	19 (3.4%)	17 (3.0%)	28 (4.5%)	22 (3.6%)	15 (2.5%)	14 (2.3%)	16 (2.5%)	18 (2.8%)	18 (3.0%)	16 (2.9%)	13 (2.2%)	9 (1.5%)	**258 (3.1%)**
	Clinical Indication	216 (39.9%)	262 (48.8%)	293 (51.9%)	308 (53.7%)	323 (52.4%)	316 (51.4%)	351 (58.3%)	383 (62.3%)	329 (51.3%)	338 (53.0%)	302 (51.0%)	278 (50.2%)	302 (51.6%)	316 (51.8%)	**4317 (52.1%)**
	Others or unknown	135 (24.9%)	104 (19.4%)	133 (23.5%)	133 (23.2%)	139 (22.6%)	150 (24.4%)	107 (17.8%)	125 (20.3%)	171 (26.7%)	180 (28.2%)	183 (30.9%)	166 (30.0%)	179 (30.6%)	205 (33.6%)	**2110 (25.5%)**

Liver cancers

(Data source: Hong Kong Cancer Registry, Hospital Authority)

Box 63 **Number of new liver cancer cases and age-standardised incidence rate by gender from 2002 – 2021 (Data source: Hong Kong Cancer Registry, Hospital Authority)**



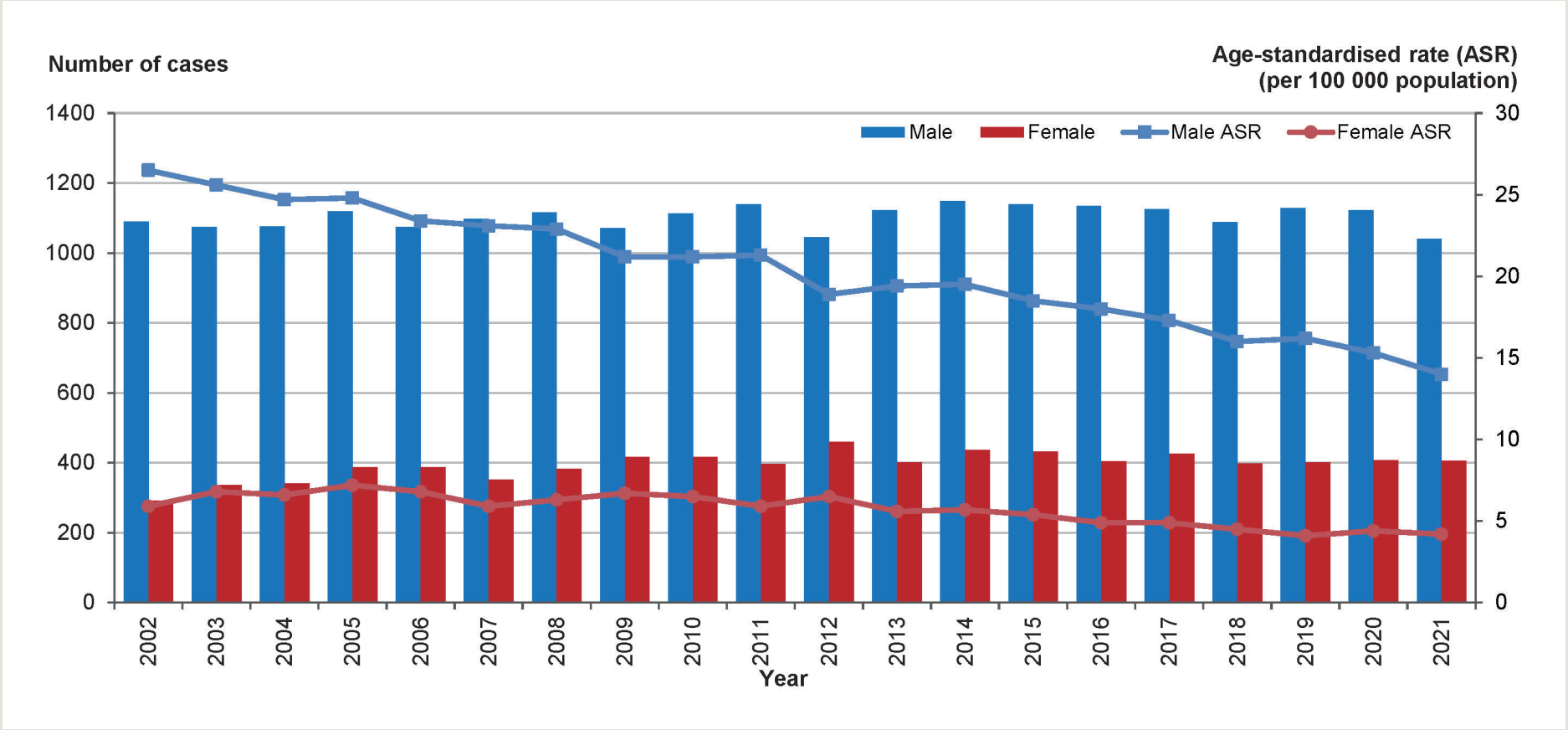
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Female	343	390	385	425	414	386	426	447	465	459	426	445	478	435	419	426	383	428	474	428
Male	1233	1264	1278	1324	1331	1304	1319	1385	1398	1399	1364	1407	1369	1356	1391	1408	1359	1448	1261	1343
Total	**1576**	**1654**	**1663**	**1749**	**1745**	**1690**	**1745**	**1832**	**1863**	**1858**	**1790**	**1852**	**1847**	**1791**	**1810**	**1834**	**1742**	**1876**	**1735**	**1771**

Box 64 Number of new liver cancer cases and incidence rate by age and gender, from 2002 – 2021 (Data source: Hong Kong Cancer Registry, Hospital Authority)

Year	0-19						20-44						45-64						65+						Crude rate			ASR		
	Male		Female		**Total**		Male		Female		**Total**		Male		Female		**Total**		Male		Female		**Total**		Male	Female	**Total**	Male	Female	**Total**
	N	I	N	I	**N**	**I**	N	I	N	I	**N**	**I**	N	I	N	I	**N**	**I**	N	I	N	I	**N**	**I**	CR	CR	**CR**	ASR	ASR	**ASR**
2002	4	0.5	2	0.3	**6**	**0.4**	130	9.7	17	1.1	**147**	**5.1**	534	67.1	79	10.5	**613**	**39.5**	565	157.6	245	58.5	**810**	**104.2**	37.6	9.9	**23.4**	30.0	7.4	**18.6**
2003	6	0.8	2	0.3	**8**	**0.5**	110	8.4	25	1.6	**135**	**4.7**	581	70.5	100	12.6	**681**	**42.1**	567	154.5	263	61.4	**830**	**104.4**	38.8	11.2	**24.6**	30.3	8.2	**19.1**
2004	2	0.3	1	0.1	**3**	**0.2**	121	9.4	18	1.2	**139**	**4.9**	554	64.6	91	10.9	**645**	**38.1**	601	159.2	275	62.3	**876**	**107.0**	39.1	10.9	**24.5**	29.6	7.8	**18.5**
2005	2	0.3	0	0.0	**2**	**0.1**	110	8.7	21	1.4	**131**	**4.7**	605	67.5	110	12.4	**715**	**40.1**	607	157.8	294	65.3	**901**	**107.9**	40.6	12.0	**25.7**	29.9	8.3	**18.9**
2006	6	0.8	1	0.1	**7**	**0.5**	88	7.1	21	1.4	**109**	**3.9**	637	68.5	109	11.8	**746**	**40.2**	600	152.6	283	61.7	**883**	**103.6**	40.7	11.5	**25.4**	29.3	8.0	**18.4**
2007	2	0.3	1	0.2	**3**	**0.2**	83	6.8	13	0.8	**96**	**3.5**	621	64.7	95	9.8	**716**	**37.1**	598	148.3	277	59.1	**875**	**100.3**	39.7	10.6	**24.4**	27.9	7.1	**17.2**
2008	1	0.1	1	0.2	**2**	**0.1**	90	7.5	24	1.6	**114**	**4.2**	636	64.0	135	13.2	**771**	**38.3**	592	144.6	266	56.2	**858**	**97.2**	40.1	11.6	**25.1**	27.4	7.6	**17.2**
2009	2	0.3	2	0.3	**4**	**0.3**	87	7.4	20	1.3	**107**	**4.0**	695	68.0	131	12.3	**826**	**39.6**	601	143.8	294	61.1	**895**	**99.6**	42.2	12.1	**26.3**	27.9	7.7	**17.5**
2010	0	0.0	4	0.7	**4**	**0.3**	78	6.7	23	1.5	**101**	**3.8**	711	67.9	140	12.6	**851**	**39.5**	609	142.4	298	60.7	**907**	**98.7**	42.4	12.5	**26.5**	27.2	8.1	**17.3**
2011	6	0.9	3	0.5	**9**	**0.7**	85	7.4	22	1.5	**107**	**4.0**	694	65.0	122	10.7	**816**	**36.9**	614	140.1	312	62.0	**926**	**98.4**	42.4	12.2	**26.3**	26.8	7.5	**16.8**
2012	2	0.3	1	0.2	**3**	**0.2**	69	6.0	25	1.6	**94**	**3.5**	654	60.6	108	9.2	**762**	**33.9**	639	140.1	292	55.7	**931**	**95.0**	41.0	11.1	**25.0**	25.1	6.6	**15.5**
2013	6	1.0	2	0.3	**8**	**0.7**	64	5.6	19	1.2	**83**	**3.1**	698	64.3	126	10.6	**824**	**36.2**	639	134.5	298	54.7	**937**	**91.9**	42.3	11.6	**25.8**	25.4	6.9	**15.8**
2014	3	0.5	1	0.2	**4**	**0.3**	69	6.0	17	1.1	**86**	**3.2**	644	59.2	130	10.8	**774**	**33.7**	653	131.7	330	58.1	**983**	**92.4**	40.9	12.3	**25.5**	23.9	6.9	**15.0**
2015	1	0.2	2	0.3	**3**	**0.3**	51	4.4	14	0.9	**65**	**2.4**	621	57.2	107	8.7	**728**	**31.5**	683	131.3	312	52.5	**995**	**89.3**	40.3	11.1	**24.6**	22.7	6.2	**14.1**
2016	1	0.2	2	0.4	**3**	**0.3**	64	5.6	9	0.6	**73**	**2.7**	679	62.6	118	9.5	**797**	**34.2**	647	119.2	290	46.8	**937**	**80.6**	41.2	10.6	**24.7**	23.0	5.7	**13.9**
2017	3	0.5	3	0.5	**6**	**0.5**	71	6.2	17	1.1	**88**	**3.3**	618	56.8	111	8.7	**729**	**30.9**	716	126.1	295	45.6	**1011**	**83.2**	41.5	10.7	**24.8**	22.8	5.6	**13.7**
2018	1	0.2	2	0.4	**3**	**0.3**	48	4.2	15	1.0	**63**	**2.4**	587	53.7	91	7.0	**678**	**28.3**	723	121.9	275	40.7	**998**	**78.7**	39.8	9.5	**23.4**	21.0	5.0	**12.5**
2019	1	0.2	1	0.2	**2**	**0.2**	60	5.3	7	0.5	**67**	**2.6**	594	54.2	115	8.7	**709**	**29.3**	793	127.7	305	43.2	**1098**	**82.7**	42.3	10.5	**25.0**	21.7	5.1	**12.9**
2020	3	0.5	2	0.4	**5**	**0.5**	27	2.4	10	0.7	**37**	**1.4**	515	47.3	109	8.2	**624**	**25.8**	716	110.3	353	48.2	**1069**	**77.4**	36.9	11.7	**23.2**	18.2	5.6	**11.5**
2021	2	0.4	4	0.8	**6**	**0.6**	32	3.0	19	1.3	**51**	**2.1**	513	47.8	98	7.4	**611**	**25.4**	796	116.7	307	39.9	**1103**	**76.0**	39.7	10.6	**23.9**	18.9	5.1	**11.5**
Average	**3**	**0.4**	**2**	**0.3**	**5**	**0.4**	**77**	**6.5**	**18**	**1.2**	**95**	**3.5**	**620**	**61.2**	**111**	**10.1**	**731**	**34.5**	**648**	**135.3**	**293**	**53.3**	**941**	**91.5**	**40.5**	**11.2**	**24.9**	**25.1**	**6.6**	**15.4**

Notes:
I: Incidence rate per 100 000 population
N: Number of new cases by selected age groups
ASR: Age-standardised rate (per 100 000 population) is calculated based on the reference standard population used
CR: Crude rate per 100 000 population

Box 65 **Number of liver cancer deaths and age-standardised mortality rate by gender from 2002 – 2021 (Data source: Hong Kong Cancer Registry, Hospital Authority)**



Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Female	291	337	341	387	387	351	383	416	417	396	460	401	436	432	405	426	398	401	407	406
Male	1090	1075	1076	1119	1075	1098	1116	1072	1113	1140	1045	1123	1149	1139	1135	1126	1089	1129	1123	1041
Total	**1381**	**1412**	**1417**	**1506**	**1462**	**1449**	**1499**	**1488**	**1530**	**1536**	**1505**	**1524**	**1585**	**1571**	**1540**	**1552**	**1487**	**1530**	**1530**	**1447**

Box 66 Number of liver cancer deaths and mortality rate by age and gender from 2002 – 2021 (Data source: Hong Kong Cancer Registry, Hospital Authority)

Year	0-19						20-44						45-64						65+						Crude rate			ASR		
	Male		Female		**Total**		Male		Female		**Total**		Male		Female		**Total**		Male		Female		**Total**		Male	Female	**Total**	Male	Female	**Total**
	N	I	N	I	**N**	**I**	N	I	N	I	**N**	**I**	N	I	N	I	**N**	**I**	N	I	N	I	**N**	**I**	CR	CR	**CR**	ASR	ASR	**ASR**
2002	3	0.4	1	0.1	**4**	**0.3**	98	7.3	15	1.0	**113**	**3.9**	425	53.4	51	6.7	**476**	**30.7**	564	157.3	224	53.5	**788**	**101.4**	33.2	8.4	**20.5**	26.5	5.9	**16.1**
2003	2	0.3	0	0.0	**2**	**0.1**	80	6.1	15	1.0	**95**	**3.3**	436	52.9	69	8.7	**505**	**31.2**	557	151.8	253	59.0	**810**	**101.8**	33.0	9.7	**21.0**	25.6	6.8	**15.9**
2004	2	0.3	0	0.0	**2**	**0.1**	66	5.1	15	1.0	**81**	**2.9**	428	49.9	69	8.2	**497**	**29.3**	580	153.6	257	58.2	**837**	**102.2**	32.9	9.7	**20.9**	24.7	6.6	**15.4**
2005	0	0.0	1	0.1	**1**	**0.1**	93	7.4	17	1.1	**110**	**3.9**	432	48.2	75	8.5	**507**	**28.5**	594	154.4	294	65.3	**888**	**106.4**	34.3	10.9	**22.1**	24.8	7.2	**15.8**
2006	2	0.3	0	0.0	**2**	**0.1**	49	3.9	12	0.8	**61**	**2.2**	420	45.2	64	6.9	**484**	**26.1**	604	153.6	311	67.8	**915**	**107.4**	32.9	10.8	**21.3**	23.4	6.8	**14.8**
2007	3	0.4	0	0.0	**3**	**0.2**	57	4.7	7	0.5	**64**	**2.3**	470	49.0	62	6.4	**532**	**27.6**	568	140.8	282	60.1	**850**	**97.5**	33.4	9.7	**21.0**	23.1	5.9	**14.2**
2008	1	0.1	0	0.0	**1**	**0.1**	68	5.7	17	1.1	**85**	**3.1**	480	48.3	82	8.0	**562**	**27.9**	567	138.5	284	60.0	**851**	**96.4**	33.9	10.4	**21.5**	22.9	6.3	**14.3**
2009	2	0.3	0	0.0	**2**	**0.2**	43	3.7	10	0.7	**53**	**2.0**	442	43.3	95	8.9	**537**	**25.7**	585	140.0	311	64.7	**896**	**99.7**	32.6	11.3	**21.3**	21.2	6.7	**13.7**
2010	0	0.0	0	0.0	**0**	**0.0**	35	3.0	15	1.0	**50**	**1.9**	474	45.3	89	8.0	**563**	**26.1**	604	141.2	313	63.8	**917**	**99.8**	33.8	11.2	**21.8**	21.2	6.5	**13.6**
2011	1	0.2	1	0.2	**2**	**0.2**	52	4.5	8	0.5	**60**	**2.2**	462	43.3	72	6.3	**534**	**24.1**	625	142.6	315	62.6	**940**	**99.9**	34.5	10.5	**21.7**	21.3	5.9	**13.2**
2012	0	0.0	1	0.2	**1**	**0.1**	50	4.3	10	0.7	**60**	**2.2**	431	39.9	95	8.1	**526**	**23.4**	564	123.7	354	67.6	**918**	**93.7**	31.4	12.0	**21.0**	18.9	6.5	**12.4**
2013	3	0.5	1	0.2	**4**	**0.3**	38	3.3	13	0.8	**51**	**1.9**	437	40.3	82	6.9	**519**	**22.8**	645	135.8	305	56.0	**950**	**93.1**	33.7	10.4	**21.2**	19.4	5.6	**12.1**
2014	2	0.3	0	0.0	**2**	**0.2**	48	4.2	11	0.7	**59**	**2.2**	469	43.1	71	5.9	**540**	**23.5**	629	126.8	354	62.3	**983**	**92.4**	34.4	11.2	**21.9**	19.5	5.7	**12.2**
2015	1	0.2	1	0.2	**2**	**0.2**	37	3.2	6	0.4	**43**	**1.6**	427	39.4	76	6.2	**503**	**21.8**	674	129.6	349	58.7	**1023**	**91.8**	33.8	11.0	**21.5**	18.5	5.4	**11.6**
2016	1	0.2	1	0.2	**2**	**0.2**	39	3.4	7	0.5	**46**	**1.7**	445	41.1	75	6.0	**520**	**22.3**	650	119.7	322	51.9	**972**	**83.6**	33.6	10.2	**21.0**	18.0	4.9	**11.0**
2017	3	0.5	0	0.0	**3**	**0.3**	32	2.8	8	0.5	**40**	**1.5**	409	37.6	70	5.5	**479**	**20.3**	682	120.1	348	53.8	**1030**	**84.8**	33.2	10.7	**21.0**	17.3	4.9	**10.7**
2018	0	0.0	1	0.2	**1**	**0.1**	39	3.4	11	0.7	**50**	**1.9**	351	32.1	62	4.8	**413**	**17.3**	699	117.8	324	48.0	**1023**	**80.7**	31.9	9.8	**20.0**	16.0	4.5	**9.9**
2019	0	0.0	0	0.0	**0**	**0.0**	35	3.1	3	0.2	**38**	**1.4**	386	35.2	67	5.1	**453**	**18.7**	706	113.7	331	46.8	**1037**	**78.1**	33.0	9.8	**20.4**	16.2	4.1	**9.7**
2020	0	0.0	1	0.2	**1**	**0.1**	25	2.3	2	0.1	**27**	**1.0**	363	33.3	67	5.0	**430**	**17.8**	735	113.2	337	46.0	**1072**	**77.6**	32.9	10.0	**20.5**	15.3	4.4	**9.5**
2021	2	0.4	1	0.2	**3**	**0.3**	20	1.9	13	0.9	**33**	**1.3**	329	30.7	67	5.0	**396**	**16.5**	690	101.1	325	42.3	**1015**	**69.9**	30.8	10.1	**19.5**	14.0	4.2	**8.8**
Average	**1**	**0.2**	**<1**	**0.1**	**2**	**0.2**	**50**	**4.2**	**11**	**0.7**	**61**	**2.3**	**426**	**42.0**	**73**	**6.6**	**499**	**23.6**	**626**	**130.7**	**310**	**56.3**	**936**	**91.0**	**33.2**	**10.4**	**21.0**	**20.0**	**5.6**	**12.4**

Notes:
I: Mortality rate per 100 000 population
N: Number of death cases by selected age groups
ASR: Age-standardised rate (per 100 000 population) is calculated based on the reference standard population used
CR: Crude rate per 100 000 population

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