Hepatitis C and B testing among HIV infected individuals in England

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INTRODUCTION

The British HIV Association (BHIVA) guidelines for the management of hepatitis viruses in HIV-positive adults recommends testing for hepatitis B (HBV) and hepatitis C (HCV) at HIV diagnosis, and annually thereafter (1).

The Sentinel Surveillance of Blood-borne Virus Testing in England collects laboratory testing data, irrespective of test result, for all markers of infection for hepatitis A, B, C, D and E from a network of 27 sentinel laboratories, 15 of which also provide HIV and HTLV testing data. This provides detailed information on the population undergoing testing across over 100,000 services in England.

METHODS

Demographic information and HBV and HCV testing histories for persons newly diagnosed with HIV between 2008 and 2013 were extracted from the laboratory information systems of 15 sentinel laboratories in England. Service type and age at HIV diagnosis was recorded. Ethnicity was assigned using self-reported ethnicity where available, and name analysis software, namely OnoMap 2001 Census classification and Nam Pechan South Asian name analysis software. Individuals were grouped into four broad ethnic groups.

Individuals were identified using a unique reference number and linked to all related test results. Individuals were deduplicated, and test results for each individual were linked over time using a combination of soundex of surname, first initial, date of birth and NHS number

Duplicate records, reference testing and individuals aged under 16 at HIV diagnosis were excluded from these analyses. Characteristics of individuals tested and testing positive for HIV, HBV and HCV are described. Data were stored in Oracle database (Oracle Corporation, 2001; Oracle 9i Enterprise Edition Release, Redwood Sores, CA, USA). Statistical analyses were performed in the R (CRAN) statistical environment using Chi-squared test for trend, and multivariate logistic regression.

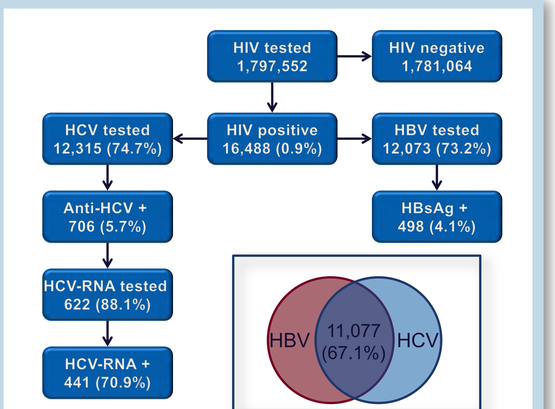


Figure 1. Summary of HCV and HBV testing among HIV-positive individuals, and overlap between HCV and HBV testing

RESULTS

- Between 2008 and 2013 1,797,552 people were tested for HIV, of whom 16,488 (0.9%) tested positive (figure 1).
- Of the 35,437 new HIV diagnoses made in England in the same time period, 46.5% were captured within sentinel surveillance.
- The median age of those testing for, and testing positive for HIV was 28.75 (IQR 23.09-36.33) and 35.98 (IQR 29.02-43.85), respectively.
- Males accounted for 68.7% (11,324) of all HIV-positive individuals tested.
- Overall, 73.2% (12,073) of HIV-positive individuals were tested at least once for HBV, of whom 4.1% (498) tested positive.
- Overall, 74.7% (12,315) of HIV-positive individuals were tested at least once for anti-HCV, of whom 5.7% (706) tested positive. Of those testing positive, 88.1% were tested for HCV-RNA, of whom 70.9% had an active infection (figure 1).
- HCV and HBV testing varied by service type of HIV positive test result. The proportion of HIV-positive individuals undergoing HCV testing was higher among primary care services (76.3%), whereas for HBV it was greatest among secondary care services (75.5%; table 1).

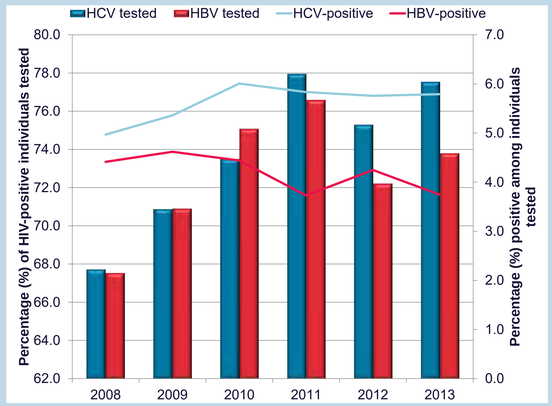


Figure 2. Trends in HCV and HBV testing among HIV-positive individuals, 2008 to 2013.

- Between 2008 and 2013, the proportion of HIV-positive individuals tested for HBV and HCV increased significantly (HBV X^2=22.4; HCV X^2=84.7; p<0.001; figure 2).
  - HBV: 67.5% to 73.8%
  - HCV: 67.7% to 77.5%
- There was no significant change in the proportion of individuals testing positive for either HBV or HCV over the study period.

- HCV genotype information was available for 312 of all HCV-RNA positive individuals. Genotype 1 infections were the most prevalent (62.2%; 194), followed by genotype 3 (19.2%; 60), genotype 4 (16.3%; 51) and genotype 6 (0.3%; 1).
- Where sex was known (306), males accounted for 88.2% (270) of all individuals genotyped.
- For all three blood-borne viruses, those with a positive test result were significantly older than those who tested negative (p<0.001; figure 3).
- The odds of testing for HCV was significantly associated with being male (1.64), of white ethnicity (1.23), being diagnosed with HIV through GUM services (1.78) and increased with each successive year since 2008 (1.11 per year).
- The odds of testing for HCV was significantly associated with being male (1.62), of Asian ethnicity, being diagnosed with HIV through a GP, and increased with each successive year since 2008 (1.12 per year increase).

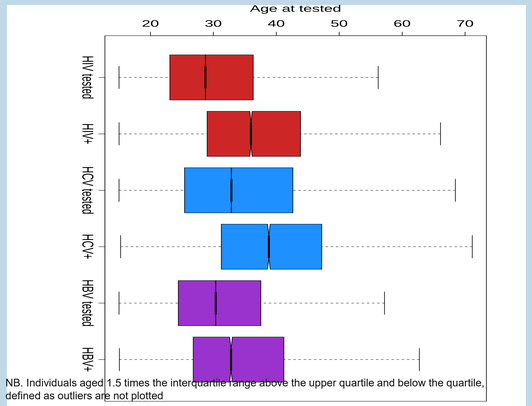


Figure 3. Age distributions of those testing and testing positive for HIV, HCV and HBV.

- Among the HIV negative individuals:
  - 29.6% (526,907) underwent testing for anti-HCV, of whom 2.6% (13,875) were positive.
  - 35.2% (627,601) underwent testing for HBV, of whom 1.5% (9456) tested positive.

DISCUSSION

Data from laboratory information systems, collected as part of a sentinel surveillance programme are a rich and valuable information resource. These data have provided unique insights into changing testing practices, provided context for the interpretation of routine laboratory reports, and have enabled a country-wide analysis of HCV and HBV testing and positivity rates among HIV infected individuals.

These findings underscore the BHIVA recommendations for HCV and HBV screening at the time of diagnosis as well annually thereafter, and more recent based on risk or among those with raised LFTs. Regular and targeted testing will enable HBV and HCV to be diagnosed earlier in the course of infection, improving patient outcomes and reducing transmission.

CONCLUSIONS

- Approximately three-quarters of persons newly diagnosed with HIV were tested for HBV and HCV.
- Since the 2008, the proportion of HIV positive individuals undertaking screening for HBV and HCV has significantly increased.
- Of those tested, 4.1% and 5.7% of HIV-positive individuals tested positive for HCB and HBV, respectively.
- More work is necessary to monitor and improve HCV and HBV testing rates to reduce the significant contribution that HCV and HBV make towards hepatic morbidity and mortality among HIV-infected individuals in England.

ACKNOWLEDGEMENTS

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REFERENCES

1. Brook G, Main J, Nelson M, Bhagani S, Wilkins E, Leen C et al. British HIV Association guidelines for the management of co-infection with HIV-1 and hepatitis B or C. HIV Med. 2010;11(1):1-30

	HIV positive n	HCV tested n (%)	HCV positive n (%)	HBV tested n (%)	HBV positive n (%)
Primary care services					
GUM	10264	7911 (77.1)	387 (4.9)	7354 (71.6)	234 (3.2)
GP	1085	746 (68.8)	51 (6.8)	776 (71.5)	54 (7.0)
Prisons	100	82 (82.0)	19 (23.2)	67 (67.0)	3 (4.5)
Accident and Emergency	292	218 (74.7)	17 (7.8)	222 (76.0)	14 (6.3)
Other primary care	88	70 (79.5)	14 (20.0)	82 (93.2)	2 (2.4)
Total primary care	***11829***	***9027 (76.3)***	***488 (5.4)***	***8501 (71.9)***	***307 (3.6)***
Secondary care services					
Specialist HIV services	497	405 (81.5)	28 (6.9)	399 (80.3)	12 (3.0)
Specialist liver services	655	586 (89.5)	50 (8.5)	586 (89.5)	36 (6.1)
other sencondary care	2497	1459 (58.4)	93 (6.4)	1770 (70.9)	97 (5.5)
Total secondary care	***3649***	***2450 (67.1)***	***171 (7.0)***	***2755 (75.5)***	***145 (5.3)***
Unknown services					
Unknown	1010	838 (83.0)	47 (5.6)	817 (80.9)	46 (5.6)
Total	***16488***	***12315 (74.7)***	***706 (5.7)***	***12073 (73.2)***	***498 (4.1)***

Table 1. HCV and HBV testing among HIV-positive individuals by service type in England

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