

Testing for blood borne viruses in the emergency department of a large London hospital

Bradshaw D¹, Rae C¹, Turner R¹, Pickard G², Patel D², Rezende D², Roberts P¹, Pillay K¹, Foxton M¹, Sullivan A¹

1. Chelsea and Westminster Hospital NHS Foundation Trust, London, United Kingdom 2. Imperial College Healthcare NHS Trust, London, United Kingdom

Objectives

Novel therapies against hepatitis C virus (HCV) have recently been licensed but access to treatment may be limited due to a high proportion of undiagnosed infection. UK national HCV and hepatitis B virus (HBV) seroprevalence is estimated at 0.4% and 0.3% respectively but this conceals hotspots of high seroprevalence and local data are lacking.

Aim

The aim was to identify local HIV, HCV and HBV seroprevalence in the ED through the use of simultaneous testing for all three viruses performed as part of routine clinical care.

Methods

This was an opt-out blood borne virus (BBV) testing program in the emergency department (ED) of a large London hospital. Individuals of age 16-65 years were offered either routine BBV testing (HIV, HBV, HCV) or a standalone HIV test.

Testing was performed by ED clinicians, who were reminded to offer a test by an automated pop-up prompt which appeared on selecting a patient for assessment from the ED electronic list.

The following assays (Abbot Architect) were performed: anti-HCV IgG, HBV surface antigen (HBsAg) Qualitative II, and HIV-1/-2 Ag/Ab Combo. The laboratory cost of diagnosing a new case of HIV, HBV or HCV was estimated based on a price per test of £4.89, £3.64 and £3.51 respectively.

Results

Of 25520 ED attendees over 55 weeks between Nov 2015 and Dec 2016, 6921 (27%) accepted BBV screening; 1295 (5%) accepted a standalone HIV test; 8216 (32%) therefore tested for HIV. The proportion of individuals receiving a standalone HIV test vs a BBV test decreased over time (Fig 1). The positivity rate for new diagnoses of HIV, HCV and HBV was 0.15 - 0.19%, 0.25 - 0.64% and 0.14 - 0.17% respectively. (See Table.)

Table. Testing for HIV, HCV and HBV

	HIV	HCV	HBV
Total no. tests	8216	6921	6921
No. positive tests	88	120	36
No. 'new' reactive tests	16	44	12
Confirmed new diagnoses	12	*17	10
% new positives	0.15 - 0.19	0.25 - 0.64	0.14 - 0.17
'Uncontactable'	4	27	2

* 12/17 were HCV RNA negative

Figure 1. Proportion of ED attendees receiving a BBV test

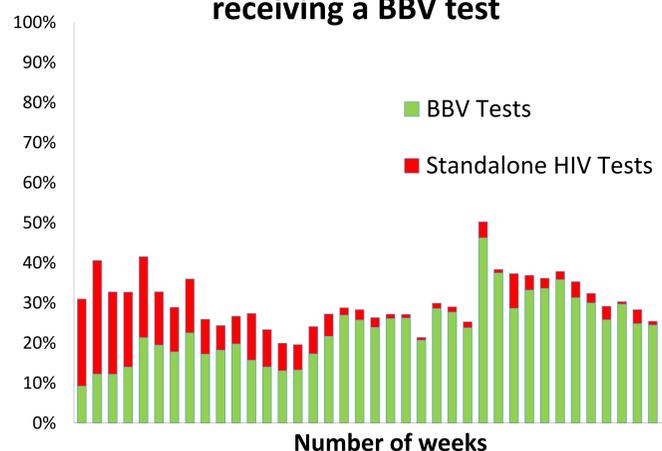
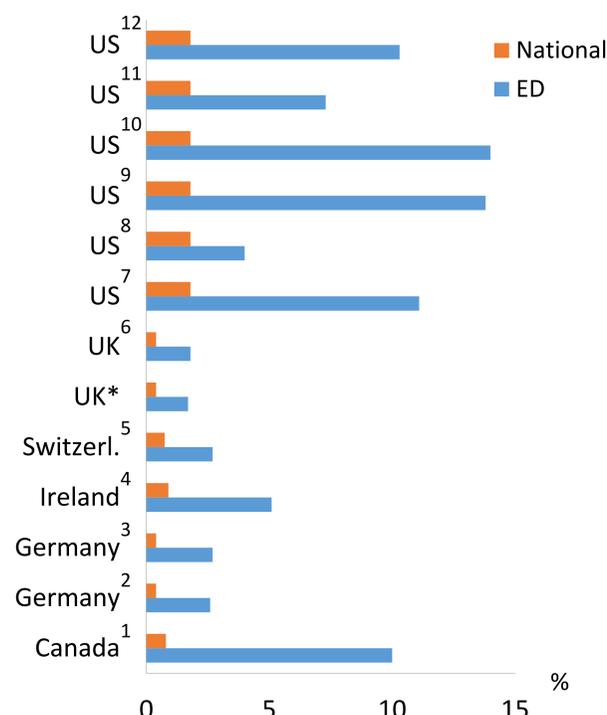


Figure 2. Seroprevalence of anti-HCV for attendees of urban emergency departments and national populations in Europe and N. America



*=current study

References. 1. Houston et al 2004 2. Vermehren et al 2012 3. Bert et al 2016 4. O'Connell et al 2016 5. Russmann et al 2007 6. Orkin et al 2016 7. Galbraith et al 2015 8. Hall et al 2010 9. Patel et al 2016 10. Lyons et al 2016 11. Allison et al 2016 12. White et al 2016

Results (continued)

The overall seroprevalence of anti-HCV was high at 1.7%, consistent with findings in similar ED surveillance studies in industrialised countries. (See Fig. 2.) For HIV and HBV, this figure was 1.1% and 0.52% respectively. For 'new' reactive tests for HIV, HBV and HCV, 4/16 (25%), 2/12 (17%) and 27/44 (61%) cases could not be contacted to confirm the diagnosis. For anti-HCV positive cases, 12 of the 17 (71%) confirmed new diagnoses had cleared the infection (RNA negative).

The positive test cost per diagnosed new infection was: £3350, £2520 and £5860 for HIV, HBV and HCV, respectively.

Conclusions

The overall level of BBV testing was low at 27% for all three viruses and 32% for HIV alone; this could have been due to low uptake and/or offer of testing. As most of those who accepted an HIV test also accepted HCV and HBV testing, simultaneously testing for all three is likely to be acceptable.

The prevalence of anti-HCV was higher than the UK national seroprevalence (1.7% versus 0.4%), confirming results from other ED seroprevalence studies. However, the proportion with a confirmed new diagnosis was lower at 0.25 - 0.64%. A significant number could not be contacted to confirm the HCV diagnosis.

Automated pop up prompts and common order sets, an ED champion, a tester of the week prize and weekly performance reports are likely to have been important for promoting testing in this setting.

Study limitations included lack of data regarding reasons for the low testing rate, and difficulties in contacting patients with positive results. Further work is required on the cost effectiveness of universal screening for HCV in the ED and other non-traditional settings.