Incomplete hepatitis B screening prevents an adequate public health response in Aboriginal communities

Dr Joshua Davis
International Health Division,
Menzies School of Health Research,
PO Box 41096 Casuarina, Darwin, NT 0811, Australia
Ph: (08) 8922 8916
Fax: (08) 8922 7876
Email: Joshua.Davis@menzies.edu.au

Authors:
Emily Carroll ¹
Joshua S Davis ²

¹ Medical Student, Flinders University, Adelaide SA
² Infectious diseases physician, Royal Darwin Hospital; PhD scholar, Menzies School of Health Research and Charles Darwin University.
Abstract

Objective: The prevalence of hepatitis B virus (HBV) infection is substantially higher in Aboriginal communities than in Australia as a whole, but screening for HBV is not systematically performed. We aimed to determine the proportion of patients in an Aboriginal community who were screened for HBV over a one year period, as well as the prevalence of past and current HBV infection.

Methods: Retrospective audit of serology results for all patients who had an Adult Health Check (AHC) in 2008 at an Aboriginal Medical Service in North Queensland.

Results: Two hundred and twenty patients had an AHC, 112 of whom (51%) had at least one hepatitis B virus (HBV) serological test; 107 patients for HBsAg, 11 for HBsAb, and 9 for HBcAb. Only three patients had all three serological tests. One patient (0.9% (95% confidence interval 0.02-5.1%)) had current infection (HBsAg positive).

Conclusions: Only one-half of the patients who had an adult health check had serological testing for HBV and only three people were completely screened. Complete serological HBV screening means testing all high risk patients for HBsAg, HBsAb and HBcAb.

Implications: National guidelines recommend HBV screening for all Aboriginal people. Complete HBV screening is necessary for an appropriate public health response which requires vaccination of non-immune patients or consideration of anti-viral medication for those infected. Clinics need to standardise the way they order hepatitis test results.
Background

There has been limited Australian epidemiological research into hepatitis B Virus (HBV), however, it is known that Aboriginal Australians are infected at a greater rate than the rest of the population [1, 2]. Previous research placed the prevalence of any positive serological marker of HBV in Indigenous Australians between 30-72%, with chronic infection (hepatitis B surface antigen positive (HBsAg positive)) in the range of 3-19% [2, 3]. Antenatal seroprevalence studies in the Northern Territory (NT) found a current infection prevalence of 3.7%-5.5% [4, 5]. Infection in Aboriginal Australians in rural areas has been estimated at 8%, compared with 2% for Aboriginal Australians in urban areas; both of which are significantly higher than the Australia-wide prevalence of less than 1% [2].

Early identification of HBV is important to minimise sequelae and decrease spread of the virus [6]. HBV is difficult to detect as those infected can be asymptomatic for many years, unknowingly infecting close contacts [7]. Effective treatments are now available which can prevent hepatocellular carcinoma and liver failure from developing [8].

In 2008 the first national Australian consensus guidelines for HBV management were published [9]. These guidelines recommend that all high risk groups, including Indigenous Australians, be screened for HBV infection and that anyone in these groups found to be seronegative should be vaccinated [9]. Complete screening requires HBsAg, hepatitis B core antibody (HBCAb) and hepatitis B surface antibody (HBsAb) tests. Medicare Australia rebates for HBV serology changed in 2008, allowing these three serology tests to be performed simultaneously [10]. Previously, Medicare rebates were only provided for two of the three tests, unless the third test was ordered at least 14 days after the initial request [11]. These changes make it easier for clinics to screen high risk patients for HBV and provide an appropriate public health response to HBV in Indigenous communities.

This audit was undertaken at an Aboriginal Medical Service (AMS) in a North Queensland town that has a Rural, Remote and Metropolitan Areas (RRMA) classification of 6. RRMA is an Australian government classification system which groups regions into metropolitan, rural and remote. RRMA 1 and 2 are metropolitan areas, RRMA 3-5 are rural areas, RRMA 6-7 are remote regions. Under the newer Australian Standard Geographical Classification the town is classified outer regional (RA3). This is a 1-5 system that categorises towns by their distance from the nearest urban centre. RA5 is very remote Australia.

The audit aimed to establish the percentage of patients who had an Adult Health Check (AHC) in 2008 and were completely screened for HBV, that is, the results of HBsAg, HBCAb and HBsAb are in the patient’s file. These tests did not have to be ordered as part of the AHC, they just needed to be documented in the file. This is because if past serology results indicate the patient had been immunised (HBsAg negative, HBCAb negative, HBsAb positive) then it would be inappropriate over-servicing to retest the patient.
Method

The AMS has a computerised record keeping system with all patient information stored in Medical Director (Health Communications Network, Sydney). A list of patients who had an Adult Health Check (Medicare Item 710) in 2008 was obtained from this program. Adult Health Checks (AHC) are available biennially for Indigenous patients aged 15 – 54 years, and provide an opportunity for primary and secondary preventive health interventions. This AMS has decided to routinely conduct HBV screening during AHCs to comply with national guidelines recommending all Indigenous people be screened for HBV. Not all Queensland AMSs do this.

The hepatitis pathology results for each patient who had an AHC in the selected time frame were viewed in Medical Director and then manually entered into a database. Pathology services for the AMS are provided by Sullivan Nicolaides Pathology using the identifiers of name, date of birth and Medicare number.

We used the following definitions: a positive HBsAg indicated current infection; a patient was considered to have past infection if they were HBsAg negative and HBCAb positive. In accordance with national guidelines, a patient was considered immune if they had a hepatitis B surface antibody level greater then 10mIU/mL [12]. The combination of HBsAg negative, HBCAb negative and HBSAb positive indicates immunity from vaccination.

If a patient had a positive hepatitis B surface antigen (HBsAg) result, an additional HBsAg result more than 6 months later (to confirm chronic infection) was searched for as well as ALT and HBV DNA results.

Results

The selected AMS provides health services to 1,000 people in the age range 15-54 years, 555 (56%) of whom are female. Of these 1,000, 220 (22%) patients had an AHC in the year 2008. Of those who had an AHC in 2008, 128 (58%) were female and the mean age was 35 years (SD 12).

One hundred and twelve patients (51%) had at least one HBV serology result recorded in their file. Three patients had complete serological screening (HBsAg, HBCAb, HBSAb). Of the 107 patients tested for HBsAg only one (0.9%, CI 0.02-5.1%) was positive. This was a 32 year old female who had no subsequent HBsAg tests and no recorded HBV DNA levels. She had normal ALT levels and was hepatitis B e antigen positive, hepatitis B e antibody negative. Subsequent discussion with a doctor at the AMS indicated that she had only attended the clinic while admitted to the local alcohol detoxification centre. She also came from a different town.
HBcAb was tested in nine patients, three of whom were positive. All HBcAb positive patients were aged 51-54 years.

HBsAb was tested in 11 patients, of whom seven were immune. One patient had a serological pattern (HBsAg negative, HBcAb positive, HBsAb positive) indicating immunity due to past infection. Insufficient serological information was available for the other patients to determine whether they were immune from vaccination or prior infection. They were, however, all older than 29 years of age and therefore unlikely to have been vaccinated as part of the national hepatitis B vaccination program. In Queensland, the adolescent vaccination program commenced in March 1998 and the universal infant program began in 2000 [12].

**Discussion**

Despite recommendations that all Indigenous patients undergo complete HBV screening [9], this occurs partially or not at all in many communities. We found just over one-half of the patients undergoing an adult health check had any HBV serological screening performed, and only three patients (1.4% of all those having a health check) had complete serological screening. Of those who were screened, the prevalence of current HBV infection was surprisingly low at 0.9%, similar to the background Australian prevalence.

There are several possible explanations for this lower than expected prevalence of chronic HBV infection. First, the community in question is an urban fringe community, and thus unlikely to be representative of remote Aboriginal communities, which have a higher prevalence of HBV [2, 3]. Second, only around 10% of the community were screened in 2008, and it is possible that, either by random chance or undetected bias, this subgroup had a lower HBV prevalence than the whole community. The upper limit of the 95% confidence interval for this estimate of 0.9% was 5.1%, much closer to the prevalence found in most other Aboriginal communities where HBV has been studied. Finally, there is significant regional variation in HBV prevalence, and this region may just truly have a lower prevalence than other areas.

The low rate of screening that we found is similar to our anecdotal experience in other Aboriginal communities, and is at odds with national guidelines. However, given that very few patients had complete serological screening it is difficult to accurately estimate the rate of HBV infection in this community.

Screening patients for all three HBV serology tests simultaneously allows a patient’s status to be determined (current infection, immunity due to past infection, immunity due to vaccination or non-immune). This information is important for contact tracing and for informing vaccination programs, and has several other advantages. Patients who have no evidence of past infection and are not immune (HBsAb<10 and HBcAb/HBsAg negative) should be vaccinated [9]. Furthermore, once a patient has documentation indicating immunity from vaccination or previous infection, there is no need to continue screening.
HBsAg serological results provide an indicator of infection at that moment in time. Therefore, if HBsAg is the only HBV test performed, and it is found to be negative, it will need to be repeated at every health check. By contrast, complete serological testing allows a patient’s HBV status to be determined and can prevent the need for future screening. For example, if the patient is HBsAg negative, HBcAb negative, HBsAb positive, they have been immunised and will not require further screening. Similarly, a patient with serology indicating past infection is unlikely to require further screening [13]. A patient’s HBV status needs to be accurately and consistently documented in patient files and computerised medical records. Practice policy and staff education can ensure this occurs uniformly. Obtaining complete HBV serology, and ensuring proper documentation, decreases the need for subsequent testing, therefore reducing patient discomfort, pathology costs and practitioner workload.

Furthermore, the immunisation of patients who are not immune, and do not show evidence of past infection, prevents the likelihood of subsequent HBV infection and is an effective long-term public health response. Currently, government-funded HBV vaccination is only available for certain ‘high risk’ patients, as well as household contacts of infected people [12]. Being Indigenous is not currently a qualifier for government-funded HBV vaccination.

This study has several limitations. It is retrospective and based on a convenience sample. Although it has a large sample number, very few tests results are available for HBcAb and HBsAb. Furthermore, just over one-half of the sample group had any tests performed. This could mean that the results do not represent the broader community. It is unlikely that there has been any selection bias as HBV testing is a routine part of the AHC process, rather than being performed if risk factors other than Aboriginal status are identified during the consultation.

As a result of these data, the clinic has reviewed the methods they use for HBV testing, to try and ensure complete screening. Changes to improve the rate of HBV testing include: education for staff about the importance of HBV testing and current guidelines; uniform documentation of patients’ HBV status; and standardising the wording for HBV testing on the pathology form to ensure comprehensive testing. The clinic is planning to repeat this audit in 2012, to measure the effect of these changes.

In conclusion, we found low rates of any HBV screening in this Aboriginal community, and almost no complete HBV screening. Among those patients who were screened, the rate of current infection was low, but the rate of past infection could not be determined. This is in contrast to most other Aboriginal communities where HBV seroprevalence has been explored, where rates of chronic infection were substantially higher than those for the background Australian population. The importance of complete HBV serological screening in Aboriginal communities should be widely promoted, particularly for most adults, who are not eligible for the national immunisation program. HBV vaccination should also be government-funded for all Aboriginal people. For many Aboriginal people, HBV remains a substantial and poorly addressed problem.
Acknowledgments

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Ethics

Ethics approval for this audit was granted by Flinders University Clinical Research Ethics Committee. Application number 331/09.
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