

Underreporting and overreporting of hepatitis B at a tertiary hospital

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Objective. To assess the level of underreporting and overreporting of hepatitis B infection at a tertiary hospital.

Design. Retrospective record review.

Setting. King Edward VIII Hospital, Durban.

Main outcome measures. Hepatitis B notification was assessed. Underreporting was ascertained on the basis of the proportion of hepatitis B-positive laboratory results that were not notified. Overreporting was indicated by duplication of notifications and the reporting of patients who have not tested positive for hepatitis B.

Results. 83.7% (95% confidence interval 79.4 - 88.0%) of patients with hepatitis B virus infection were not reported, no hospital outpatients were reported and 6% (95% confidence interval 0 - 12.6%) of the reported hepatitis B cases were not hepatitis B.

Conclusion. Underreporting of hepatitis B virus infection is the result of an inadequate notification system at a health institution level. A new, user-friendly system of surveillance that actively monitors the reporting rate is recommended to improve the reporting rate and thus generates useful information.

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Hepatitis B virus infection is a notifiable condition in South Africa. Nationally, this is undertaken by a process of passive surveillance. While notification is required by law, the process needs the voluntary participation of health workers to initiate the process. The Department of Health collates these data nationally.

Since this information is intended for planning purposes, it is important that it should provide an estimate of the incidence rate of hepatitis B that is reasonably accurate. However, it has been found that the incidence rate of hepatitis B is at least 7-fold greater than that calculated from notification data.¹

This seriously alters the quality of health information in the country and has the consequence of misdirecting health planning and interventions. Further, the Expanded Programme on Immunisation vaccination schedule,² introduced on 28 February 1995, includes hepatitis B

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vaccination, making reliable information essential for monitoring the effectiveness of this proposed policy.

Since tertiary hospitals are a major source of hepatitis B notifications, this study set out to determine the accuracy of notification of hepatitis B at the regional tertiary hospital of KwaZulu-Natal, King Edward VIII Hospital (KEH).

Methods

The reporting of hepatitis B for the 6-month period July 1993 - December 1993 was investigated at KEH, a tertiary referral centre with a considerable outpatient care facility.

At KEH, the reporting process for notifiable conditions is sometimes initiated by doctors who complete notification forms after receiving laboratory evidence of hepatitis B virus infection. In addition, clerks in the medical registry section of the hospital sometimes identify evidence of hepatitis B virus infection in inpatient charts, and refer these to the hospital's notification clerk who then proceeds to complete a notification form. These notification forms, together with the hospital records, are forwarded via the medical registry to the medical superintendent for verification. Thereafter confirmed notifications are entered into the hospital notification register and submitted to the Local Health Authority.

Three sets of data were obtained from these sources, viz. notification data from the hepatitis B notification register, laboratory data from hepatitis B laboratory test results and discharge data on hepatitis B from medical registry computer records.

Hospital inpatient charts of patients notified for hepatitis B as well as patients with a discharge diagnosis of hepatitis B were retrieved and examined for corresponding hepatitis B laboratory test results, clinical evidence of hepatitis B virus infection and evidence of previous notification.

An underreporting rate was calculated from the proportion of hepatitis B-positive laboratory results that exceeded the notifications. Overreporting was assessed on the basis of duplication of notifications and the proportion of reported patients who had not tested positive for hepatitis B.

The Ethics and Higher Degrees Committee of the University of Natal approved this study.

Results

Laboratory data showed that of the 1 904 hepatitis B laboratory tests performed for KEH patients from July 1993 to December 1993, 288 were HBsAg-positive. Notification data revealed only 50 (17.4%) notifications during this period.

The underreporting rate was 83.7%. There were 47 correct notifications, making the calculated notification rate a mere 16.3% (47/288) (95% confidence interval 12.0 - 20.6%). Of these 47, 17 (36.2%) were children.

Three notified patients did not test positive for hepatitis B and were incorrectly notified, thus giving an overreporting rate of 6% (3/50) (95% confidence interval 0 - 12.6%). There was no duplication of notifications.

There were no notifications for the hospital outpatients with hepatitis B-positive laboratory results, despite a larger

proportion of positive laboratory results in this group.

Discharge data revealed that the admission rate for current hepatitis B infection was low, estimated at 21%. Of the inpatients with a discharge diagnosis of hepatitis B, 75.4% were correctly notified.

Discussion

The current system for the reporting of hepatitis B at KEH is inadequate because 83% of patients with hepatitis B virus infection were not reported, no hospital outpatients were reported and 6% of the reported hepatitis B cases were not hepatitis B.

Effective surveillance of hepatitis B, through notification, can only be achieved if the purposes of surveillance³ are being achieved, viz. to identify disease trends and high-risk groups, institute preventive measures and evaluate the effectiveness of intervention programmes. While it might be argued that complete reporting is not essential to satisfy the aims of surveillance,⁴ the high rates of hepatitis B infection, the complications and the potential for primary prevention support a need for vigilant surveillance.

Moreover with the launch of a national immunisation programme that includes hepatitis B vaccine, surveillance is required to assess the effectiveness of the programme and to identify groups in which the programme is not having the desired effect. At present this cannot be done given that age-specific incidence rates based on notifications will be inaccurate because hospital outpatients are not reported and there is gross underreporting. Although the notification rate based on discharge data was relatively high (75.4%), it is a mechanism of reporting that will only capture inpatients.

It becomes necessary to look at reasons for the shortcomings in hepatitis B notification. The need for a system that includes hospital outpatients is obvious. Further, the possibility that hepatitis B serology is not understood and therefore misinterpreted by medical staff as a reason for underreporting needs to be investigated. A recent study⁵ attributed the reasons for underreporting of notifiable conditions to poor overall knowledge about notifiable conditions by doctors at KEH.

A new system of surveillance for hepatitis B virus infection at the health institution level is required. This new system should focus on treating the various data sources such as laboratory results, patient notes and doctor-initiated notification as a continuum. Each patient will need an individual identity number such as a hospital number; this would access the data on that patient and form the basis for active data tracking and notification. Using this identity number, all positive laboratory results should be checked against the patient's discharge diagnoses and notification reports to see if that patient has been correctly notified. In the event of a notification not being made, a reminder should be sent to the health care providers of the need to notify hepatitis B-positive patients. This will help to increase the reporting rate and provide training for clerks, doctors and nurses to reduce over-reporting. Correlation of laboratory results with clinical diagnoses and doctor-initiated notifications will avoid duplications and detect incorrect notifications, thereby reducing the overreporting rate.

In a study of the New York State Perinatal Hepatitis B Prevention Program the use of multiple reporting sources for perinatal hepatitis B surveillance improved the reporting rate to 96% from 77 - 83% with the existing individual reporting system.⁶ In addition the programme identifies and ensures vaccination of exposed infants and thus also functions as a case management system.

While the results from this study reflect the situation at KEH only, this is a teaching hospital and practices at KEH are likely to be similar to or, at most, no better those in the rest of the health service. The occurrence of clinical illness is not essential for the diagnosis and notification of hepatitis B virus infection. Asymptomatic cases and cases of routine screening form part of the positive laboratory results. However, these cases are not reflected in notification data.

Conclusion

Underreporting of hepatitis B virus infection is caused by an inadequate notification system at a health institution level. A better and more accurate data tracking and notification system is required to improve information intended for surveillance and planning purposes.

A new system which actively monitors the reporting rate is required. In the proposed system, data sources should be

linked and potential cases of notifiable conditions tracked until discharge to ensure that the patient is notified. Such a system requires better organisation, clear procedures and not necessarily substantial additional resources. The clear benefit will be information that is useful for planning and monitoring purposes.

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