Hepatitis B Infection:

Surveillance and Control

in the

Eastern Region

From Policy to Practice.

March 2000

EHA

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GLOSSARY

AMO	Area Medical Officer
SAMO	Senior Area Medical Officer
SPHM	Specialist in Public Health Medicine
CEO	Chief Executive Officer
GP	General Practitioner
GMS	General Medical Services
CCA	Community Care Area
EHB	Eastern Health Board
AHB	Area Health Board
ERHA	Eastern Regional Health Authority
HBV	Hepatitis B Virus
HBsAg	Hepatitis B Surface Antigen
Anti-HBs	Antibody to Hepatitis B Surface Antigen
Anti-HBc	Antibody to Hepatitis B Core Antigen
HBeAg	Hepatitis B e Antigen
Anti-HBe	Antibody to Hepatitis B e Antigen
IgG	Immunoglobulin G
IgM	Immunoglobulin M
HBIG	Hepatitis B Immunoglobulin
AIDS	Acquired Immune Deficiency Syndrome
HIV	Human Immuno-deficiency Virus
GUM	Genito-Urinary Medicine
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
WHO	World Health Organisation
EPI	Expanded Programme on Immunisation
CDC	Centers for Disease Control
DPH	Director of Public Health
VRL	Virus Reference Laboratory
CSSD	Central Sterile Supplies Department
WHP	Women's Health Project
GMHP	Gay Men's Health Project
IDU	Injecting Drug User
IT	Information Technology

Summary

Hepatitis B infection may result in serious illness and death. Although Ireland has a relatively low rate of hepatitis B infection, notifications of the disease have risen in the Eastern Region in the past few years. Adequate control of hepatitis B at population level is dependent upon good systems for surveillance and contact tracing, as well as implementation of appropriate immunisation programmes. A safe and effective hepatitis B vaccine is available.

The national policy on hepatitis B control is outlined in the National Immunisation Guidelines. The Eastern Region policy is nominally in keeping with this national policy. However, deficiencies have been identified in the implementation of this policy in the Region, particularly in relation to the following:

- vaccination coverage in some high risk groups is less than optimal
- surveillance systems are inadequate
- there are no formal contact tracing services
- there is a lack of co-ordination in hepatitis B control and responsibilities are not clearly defined or understood
- adequate resources have not been committed to allow for best practice to be carried out.

The authors of this report have made recommendations to address these deficiencies. The main recommendations are as follows:

- Full implementation of the National Immunisation Guidelines on Hepatitis B Virus (HBV) vaccination. Responsibility and structures for the implementation of this programme should be clearly designated.
- A nationally agreed arrangement whereby General Practitioners (GPs) are paid to deliver HBV vaccine free to their at-risk patients, regardless of General Medical Services eligibility.
- Implementation of the recommendations of the report of the review of HBV vaccination in intellectual disability institutions.
- Audit of vaccination uptake by the relevant AHB services.
- A computerised surveillance system based on electronic notifications from laboratories and complemented by enhanced surveillance data collected at Area Health Board (AHB) level.
- A HBV surveillance and contact tracing service at AHB level, delivered by a designated Area Medical Officer and a contact tracer, and supported by a clerical officer.
- Co-ordination at Regional level by a designated Specialist in Public Health Medicine (SPHM) and at AHB level by a Senior Area Medical Officer (SAMO).
- Allocation of adequate resources to set up and run the service.
- Support and advice to relevant non-health board services by the designated SPHM or SAMO.
- Clarification of roles and responsibilities of all relevant services where contact tracing and/or vaccination are required.

1. Introduction

Hepatitis B infection is one of the commonest causes of morbidity and mortality in the world at present[1]. While Ireland is recognised as a country of relatively low endemicity for this disease, the number of notifications of infected persons annually here has risen in recent years. This may be a reflection not of an actual increase in the numbers of newly infected individuals annually, but of a more active policy of screening for the disease in high risk groups. Many of those identified as hepatitis B positive are chronic carriers rather than newly infected persons.

In 1991, the World Health Organisation (WHO) Expanded Programme on Immunisation (EPI) set targets for the introduction of hepatitis B vaccine into national immunisation programmes[2]. These targets were approved by the World Health Assembly in 1992. Hepatitis B vaccine was to be integrated into the national immunisation programmes in all countries with a hepatitis B carrier prevalence (hepatitis B surface antigen, HBsAg, positive) of 8% or greater by 1995, and in other countries by 1997. Target groups and strategies were to vary with the local epidemiology of the infection. In 1994, the World Health Assembly, in its Ninth General Programme of Work, added a disease reduction target for hepatitis B calling for an 80% decrease in the incidence of new hepatitis B virus (HBV) carriers in children by the year 2001.

The Immunisation Guidelines for Ireland, 1996 edition, recommended hepatitis B vaccination for those in high risk groups who were not already immune or chronic carriers[3]. The 1999 Immunisation Guidelines for Ireland reiterates this policy[4] and states: *"Despite evidence of undernotification, examination of the recent epidemiological data in Ireland indicates a low prevalence of hepatitis B in line with other Northern European countries. Therefore, immunisation is recommended only for individuals who are at increased risk of hepatitis B because of their occupation, lifestyle or other factors (e.g. close contact with a case or carrier). In order to ensure success of this targeted approach, it is essential that a high compliance be achieved in these target populations. Responsibilities and structures for the implementation of this programme should be clearly designated. Uptake of immunisation in the target group should be regularly audited. The policy on hepatitis B immunisation will continue to be reviewed in the light of changing epidemiological data and evidence of the effectiveness of delivery of the hepatitis B immunisation programme."*

It further states: *"Ideally, immunisation should be carried out* ***before*** *the risk of exposure to HBV (pre-exposure prophylaxis) but it may also follow exposure (post-exposure prophylaxis)."*

Notwithstanding these international and national guidelines, there is confusion in their implementation in Ireland and in the Eastern Region. The authors of this report came together in October 1998 to review the current epidemiology, policies and practices regarding the prevention and control of hepatitis B infection in the Eastern Region.

2. Aims and Objectives

2.1 AIM:

The aim of the working group was to produce a comprehensive policy document for the surveillance and control of hepatitis B infection in the Eastern Region.

2.2 OBJECTIVES:

i) To review the current situation regarding the epidemiology of hepatitis B infection in the Eastern Region.

ii) To describe the current policy and practices in relation to the surveillance and control of hepatitis B infection in the Eastern Region.

iii) To define best practice in the surveillance and control of hepatitis B infection.

iv) To make appropriate recommendations regarding the development of a comprehensive policy for the prevention of spread of hepatitis B within the Eastern Region.

v) To make recommendations on the implementation of that policy.

3. International Epidemiology

Over one third of the world's population, or 2 billion people, have already been infected by the hepatitis B virus and it is estimated that at least 380 million of those people have gone on to become chronically infected carriers with a high risk of eventual death from acute fulminating hepatitis, cirrhosis or primary hepatocellular cancer[5]. Hepatitis B virus is second only to tobacco as a human carcinogen. Not all countries in the world are equally affected. Generally African and Asian countries, including China, and parts of South America and the Middle East have the highest prevalence of the disease with over half of their populations being infected with the virus by the age of 20 years[5]. Because of this, hepatitis B infection is seen globally as predominantly a disease of childhood, with vertical transmission from mother-to-child and child-to-child transmission being the most important modes of transmission.

Those countries with a high prevalence have chronic carrier rates of 8 - 20% of their populations[5]. Countries of intermediate prevalence include those in Southern and Eastern Europe, the countries of the former Soviet Union, some countries of Central Asia, Japan, Israel and some countries of South America, and have a prevalence of chronic infection of between 2 - 7%. A low prevalence is seen in Western Europe, North America, Australia, New Zealand and other parts of South America where the prevalence of chronic infection is less than 2%. In Europe, North America and Australia, most hepatitis B infection occurs in adults in 'high risk behaviour' groups, defined by lifestyle, occupation or medical conditions necessitating repeated exposure to blood or blood products.

In Europe, the prevalence of hepatitis B surface antigen is estimated to be 0.2 - 2% but rises steeply from north to south and from west to east, reaching a peak in the Mediterranean and in some countries in Eastern Europe[5]. In the low prevalence countries of Western Europe, it is estimated that the average incidence of hepatitis B infection annually is 29 per 100,000 population. Ireland, the United Kingdom and the Scandinavian countries are estimated to have the lowest prevalences for the disease in this region, thought to be between 0.1 and 0.5%[5].

4. Epidemiology of Hepatitis B in Ireland and in the Eastern Region

4.1 National Data

Epidemiological data for hepatitis B infections in the Irish population is available from a number of sources and studies:

i. The seroprevalence of HBsAg in new blood donors was approximately 1 in 4,000 or 0.026% during the period 1993-97, having fallen from 1 in 1,700 (0.058%) in new blood donors between 1980 and 1991[4]. These are, however, a self-selected 'healthy' population who have low levels of lifestyle risk factors.

ii. Between 1 in 2,000 and 1 in 6,000 pregnant women in Ireland are HBsAg positive[4].

iii. Unpublished figures from the National Virus Reference Laboratory (VRL) for HBsAg positive cases for the years 1981-1993 show an average of 172 new cases (i.e. new to the laboratory) of hepatitis B nation-wide per year, with 36.9% classified as injecting drug users (IDUs). Diagnosis by the VRL of HBsAg positive cases is likely to be an underestimate of regional/ national numbers of cases due to the occurrence of asymptomatic cases, of cases not being tested or of cases being tested initially in another laboratory, with no subsequent confirmatory test by the VRL. Provisional figures for HBsAg positives in the years since 1996 are: 1996 - 110; 1997 - 166; and 1998 - 369. The total number of HBsAg tests has increased, but much of the increase in positive cases in 1998 has come from the more active screening practices in high risk groups. These results do not indicate whether these are new cases or carriers. The increase in positive tests resulting from more active screening is more likely to be due to carriers than new cases.

iv. A cross-sectional survey of bloodborne infections in the Irish prisoner population was recently completed. This showed a prevalence of infection with hepatitis B (anti-core antibody, anti-HBc, positive) of 9% overall, with a prevalence of 19% in prisoners who were drug users[6].

v. A recent national study of hepatitis B anti-core antibody in the general population showed an estimated prevalence figure of 0.51%[7].

vi. In a recent study of the health needs of the homeless in Dublin, a provisional rate of 7.5% for prevalence of hepatitis B anti-core antibody has been reported.

vii. Despite being a statutorily notifiable disease, the number of notifications of cases of hepatitis B infection in the Eastern Region over recent years has generally been very low, much lower than the number of new cases

confirmed each year by the VRL (Table 1). The increase seen in 1998 is thought to be due to the more active screening of risk groups and improved practices regarding notifications by some doctors working with these groups.

Table 1. Notifications of hepatitis B infections in the Eastern Region (1990 - 1998):

Year	Number notified
1990	8
1991	9
1992	6
1993	3
1994	12
1995	7
1996	7
1997	9
1998	104

(Source: Department of Public Health, EHB/ERHA.)

4.2 Data for High Risk Groups

i) Injecting Drug Users

Ireland adopted a harm reduction approach to the problem of illicit opiate use in 1992. There are estimated to be between 10,000 and 13,000 opiate users in the Eastern Region and over 4,000 of these are on methadone. Clean needles are provided in eleven needle exchanges.

Injecting drug users are known to be at high risk of acquiring blood-borne infections, including hepatitis B. However, the prevalence of these infections has not been comprehensively documented in this group in Ireland to date. The prevalence of hepatitis B was estimated for a 20% sample of opiate users attending EHB addiction centres in 1997 by reviewing their clinical records. Of those whose records indicated that they had been tested, 5% were HBsAg positive and hepatitis B core antibody (an indicator of past infection) had been detected in 28.1%. Amongst the drug users whose immune status was known, less than 50% of those who were not already immune to hepatitis B had been vaccinated. Following this study a standard protocol for screening for blood borne diseases in the people attending the Board's Drugs Services was established and a summary sheet was developed so that the protocol could be more easily followed.

ii) Patients and carers in institutions for persons with intellectual disability

In 1996, there were 8,730 individuals included in the EHB's Regional Intellectual Disability Database. Of these, 29.3% were in full time residential care, 50.3% were attending for day care and 20% were receiving no services[8].

Hepatitis B infection is endemic in institutions for people with intellectual disability in Ireland with prevalence rates for markers of previous infection ranging from 41 - 60% and carrier rates for HBsAg of 9 - 10% in the residential population[9,10]. Devlin et al[11] studied the non-residential population in 1987/88 and found that they had higher rates than the general population for markers of previous infection with hepatitis B (11%) and for carriage of HBsAg (4%). The immediate family of patients were also found to be at risk with one in five showing evidence of a previous infection, rising to 43% if the patient was HBsAg positive. A study by Lyons et al[12] found a prevalence of 49.5% for past or present infection among 220 patients, and a carrier rate of 9%.

iii) Homosexuals

It is difficult to estimate the number of homosexual and bisexual men in the region. In a study of the sexual behaviour and HIV risk of gay and bisexual men in Dublin in 1992, 4% of the 445 men who responded gave a definite history of previous hepatitis B infection and only 14% of the 395 men who answered a question about vaccination status had been vaccinated[13]. A review of men attending the Gay Men's Health Project (GMHP) in 1998 showed that, of the 283 clients tested for hepatitis B, 6 were positive, 4 showing evidence of resolved past infection and 2 having acute hepatitis B when tested[14].

iv) Other high risk groups

No detailed epidemiological studies regarding hepatitis B infections in the other high risk groups referred to in the National Immunisation Guidelines have been done yet. These risk groups include: sex workers, health care workers, haemophiliacs, people already infected with hepatitis C virus; family contacts of cases or carriers of hepatitis B including spouses, sexual partners, family and household contacts if they are not themselves already immune; infants born to hepatitis B infected women; and security and emergency personnel.

5. Guidelines, Policies and Practices at National and Health Board Level

5.1 National Policy on Hepatitis B Immunisation.

The Immunisation Guidelines for Ireland, 1999[4] recommend that the following groups should receive pre-exposure prophylaxis with hepatitis B vaccine, if non-immune:

1. Health care personnel
Doctors, nurses, dentists, midwives, laboratory staff, mortuary technicians, ambulance personnel, cleaning staff, porters, medical and dental students, health care professionals and anyone who is at particular risk through contact with blood or body fluids.

2. Patients and family contacts
i. The spouses, sexual partners, family and household contacts of acute cases and carriers of HBV, if the potential recipient is non-immune (anti-HBc negative).
ii. Families adopting children from countries with a high prevalence of hepatitis B. These children should be tested for hepatitis B markers and the household contacts offered immunisation if required, preferably before the adoption.
iii. Babies born to mothers who are chronic carriers of hepatitis B virus or to others who have had acute hepatitis B during pregnancy.
iv. People with haemophilia and those receiving regular transfusions.
v. Patients and carers in institutions for those with intellectual disability (including day care facilities).
vi. Patients with chronic renal failure are at risk of acquiring hepatitis B and their response to immunisation is poor. As it is anticipated they may require dialysis or transplantation, early immunisation of patients with evolving chronic renal failure is advised.
vii. Patients with chronic hepatitis, including persistent hepatitis C infection, if susceptible should be vaccinated against hepatitis A and B.

3. Security and emergency services personnel
Some members of the police and emergency services and prison officers may be at high risk and should be vaccinated.

4. Susceptible members of high risk groups

i. Individuals who change sexual partner frequently, particularly homosexual and bisexual men, and men and women who are sex workers.

ii. Intravenous drug users

iii. Prisoners

iv. Tattoo artists

v. Immigrants from, or travellers to, areas with a high prevalence of HBV.

The recommended course is three doses of hepatitis B vaccine intramuscularly at 0, 1 and 6 months in the deltoid region in all patients except infants, who are given the injections in the anterolateral thigh. A single booster is recommended at five years for those who respond to the initial course and who are at a continued increased risk of infection.

An accelerated schedule may be given if urgent protection is required, as for example after accidental exposure to blood. The three doses of vaccine are then given at monthly intervals if the individual has not previously been vaccinated. A booster dose is recommended at 12 months. This accelerated schedule may be offered to travellers going to high risk areas, for post-exposure protection and to prevent neonatal transmission of hepatitis B from mothers who are infected.

According to the Guidelines, routine post-vaccination testing for antibodies to the surface antigen (anti-HBs) is not necessary for everyone, but it is advised 2-4 months after the third vaccine dose for persons who are considered to be at higher risk including chronic renal failure/haemodialysis patients, persons with HIV infection, those at occupational risk of exposure to hepatitis B, immunocompromised patients at risk of exposure to hepatitis B, the regular sexual partners of hepatitis B carriers and infants born to HBsAg positive mothers. The Immunisation Guidelines make recommendations for the action required depending on the anti-HBs level achieved; 10-15% of those vaccinated will not respond to a course of hepatitis B vaccine. A repeat course of a different brand of the vaccine may be tried after checking anti-HBc and HBsAg levels to exclude past infection or chronic carriage.

Post-exposure prophylaxis using specific hepatitis B immunoglobulin (HBIG) for passive protection combined with a course of hepatitis B vaccine to confer active immunity is recommended for the following groups:

1. Babies born to mothers who are hepatitis B e antigen (HbeAg) positive, who are HBsAg positive without e markers (or where e marker status has not been determined), or who have had acute hepatitis during pregnancy should receive HBIG as well as active immunisation. Hepatitis B vaccine, but not HBIG, is recommended for babies born to mothers who are HBsAg positive but known to be positive for antibody to hepatitis B e antigen (anti-HBe).

2. Health care workers or others accidentally exposed to the blood or body fluids of HBsAg positive individuals unless they have adequate antibody levels.

3. Those who have been sexually exposed to a HBsAg positive person.

4. Infants of less than 12 months of age who have exposure to a primary care giver in the household who has acute hepatitis B.

5.2 Statutory notification of hepatitis B.

Under the Infectious Disease Regulations, 1981, all cases of hepatitis B should be notified to the Medical Officer of Health in each Health Board.

5.3 Eastern Region Policy

The Eastern Region policy is in keeping with national policy in this area as advised in the Immunisation Guidelines for Ireland (see section 5.1). Hepatitis B vaccine is supplied, where requested by GPs, for individually named GMS patients where the proposed recipient of the vaccine falls within the recommendations as set out in the Immunisation Guidelines for Ireland.

5.4 Health Board Health Care Staff.

The Health Board policy[15] recognises that healthcare professionals are at higher risk of contracting hepatitis B because they are more likely to be in contact with blood or other body fluids than those in other occupations. The policy also recognises that healthcare staff who have themselves been infected may pass on the infection to their patients.

It advises that its staff follow the universal precautions recommended by the Centers for Disease Control (CDC) at all times. These precautions include good hand washing technique, prevention of sharps injuries, proper use of protective clothing, safe decontamination of clinical spillage and safe handling and storage of clinical waste. It also offers vaccination to all health care staff considered to be at risk.

According to the Health Board policy, the response to the vaccine should be checked 2-4 months after completion of the primary course. Those who fail to respond to the vaccine and who are not infectious carriers of hepatitis B or are not naturally immune to hepatitis B, can be employed. They must recognise that they are not protected against hepatitis B and agree to report blood exposure incidents in accordance with the standard procedures.

The policy defines exposure prone procedures (EPPs) and describes the screening for hepatitis B of new employees for posts involving such procedures. Employment in these posts is dependent on the submission of evidence that the potential staff member is not a carrier of the hepatitis B virus or is willing to consent to screening and vaccination as appropriate. In practice, implementation of this aspect of the policy has occurred only on a voluntary basis due to unresolved industrial relations issues. In practice, implementation of this policy has not been possible yet, except on a voluntary basis, due to industrial relations issues that have not been clarified.

Implementation of the Health Board policy is the responsibility of the Occupational Health Department or a designated Medical Practitioner. Under the policy, arrangements are made for the counselling and redeployment or modification of the duties for existing staff who are found to be hepatitis B surface or e antigen positive.

In practice, the Community Care Areas take responsibility for screening and vaccinating their own staff in exposure prone jobs. In the major hospitals, the Occupational Health staff are responsible. Other Health Board hospitals are visited by a doctor from the Occupational Health Department who supervises the screening and vaccination of staff who are in exposure prone posts. There is no central system for documenting staff vaccination status. This means that when staff transfer between sites, information about their vaccination status may be lost, and there is no centrally held information about the vaccination status of the Health Board staff.

The grades of staff covered by this policy include: all Consultant Surgeons and all Theatre staff; all Ambulance Personnel and all Accident and Emergency staff; all staff working in Surgical Units; all Dentists, Dental Assistants, Dental Hygienists, Orthodontists and Laboratory staff; staff working in the Psychiatric and Mental Handicap Services; all Out Patient Department staff; all medical staff including Radiologists; Public Health Nurses, General Nurses and Student Nurses working in hospitals and homes; Community Welfare Officers and Social Workers; Morticians, Laundry Staff and staff in the Central Sterile Supplies Department (CSSD); Physiotherapists; Radiographers; Ward Attendants, Cleaning Staff and Porters in Hospitals, Homes and Health Centres; staff in Hostels for the homeless and in Children's/Adolescent Day Centres and Residential Centres; all Phlebotomists; and all Chiropodists.

5.5 Management of notifications of hepatitis B by Community Care medical staff.

As yet, no agreed protocol exists for the management by Community Care medical staff of notifications of cases of hepatitis B infection. In some areas, follow-up of cases and contacts is attempted but is often difficult as there are no systems in place, staffing is inadequate at times, and there is a lack of facilities and training. There may be language and cultural barriers. There are concerns about the safety of staff engaged in this contact tracing. In some areas, GPs or other agencies are notified and the contact tracing is left to them, while in other areas no contact tracing is carried out.

5.6 Practices in Eastern Region's major hospitals for the notification and contact tracing of hepatitis B cases.

The main hospitals in the Eastern Region operate differing policies. Practices vary regarding the notification of cases and the tracing of contacts. As evidenced by the discrepancy between laboratory data and notifications, most clearly do not notify. The hospitals generally do not trace contacts beyond advising the index cases about the risks to contacts and the need for those contacts to seek medical advice. Sometimes immediate family members may be offered screening and vaccination, if appropriate, by hospitals.

5.7 Role of General Practitioners

In January 1999, the Board's (then the EHB) General Practice Unit informed all GPs that "hepatitis B vaccine is available on a named patient basis for those patients within the GMS Scheme who were at risk of contracting hepatitis B as defined by the National Immunisation Committee". GPs were advised that if they wished to receive

supplies of hepatitis B vaccine for their at risk GMS patients they should write to their Senior Area Medical Officer (SAMO) in the local Community Care Area giving the patient's name, address and GMS number. They were also instructed to say why the patient needed vaccination using the eligible groups as defined in the National Immunisation Guidelines for Ireland. In practice, GPs are often unhappy to disclose personal details of people who are eligible for hepatitis B vaccination and may just request a supply of vaccine from their CCA who in turn may see it as counter-productive to Public Health policy to refuse to supply that vaccine .

5.8 Drug Addiction Service

The policy in the AIDS/Drugs service is that all drug users who come into contact with the harm reduction programme should be offered screening for blood-borne viral infections in the methadone dispensing clinics, by their GP or at the needle exchanges[16]. Susceptible drug users will then be offered hepatitis B vaccination. Screening may also be offered to contacts. Because of the illegal nature of the practice, contact tracing may be difficult. Drug users may also refuse screening or vaccination or may not complete the course of vaccinations. To overcome these difficulties, the AIDS/Drugs service has recently introduced a standard protocol to be followed throughout the service. A summary page of the client's status regarding blood-borne diseases has also been developed for their case notes and it is planned to computerise these data so that the information will be available wherever the drug user accesses the service. It was also agreed in February 1999 that all clients attending the AIDS/Drugs service will be offered dual vaccination against hepatitis A and B.

5.9 Proposed protocol for hepatitis B immunisation and screening of clients and staff of institutions for intellectual disability

In 1995, vaccination for clients and staff at risk of contracting hepatitis B in intellectual disability institutions, both in day and residential care facilities, was recommended in a letter to the Health Boards from the Department of Health, and extra funding was provided for this purpose.

In 1998, a review of the hepatitis B vaccination programme in the EHB Mental Handicap Institutions was undertaken[10]. It pointed to the difficulty of targeting high-risk groups such as those with intellectual disability and the variable coverage of clients in different institutions so that the proportion protected against hepatitis B was only 14% overall. It suggested that staff tended to be protected preferentially in this situation with overall an 82% uptake. Communicating strategies throughout the sector was difficult, particularly to the smaller, voluntary institutions, and some agencies were not aware of the policy of client immunisation. It was also noted that there was some confusion about roles and responsibilities in this area.

Many young children with intellectual disability may be cared for at home and it is important that they are vaccinated before they may be exposed to the infection when they attend an institution at a later age. This would ideally be done by their GP, if he/she was aware of the policy. Responsibility for screening and vaccination in institutions themselves may also be unclear, particularly in the smaller ones.

Other issues raised included the need to obtain consent, maintaining confidentiality to avoid stigmatisation and the need for family screening. The need for an accurate centralised system of recording individual client's immune status was also highlighted. A protocol for the hepatitis B immunisation and screening of new clients and staff in institutions for those with intellectual disability has been proposed, together with a programme to allow for a catch-up phase for existing clients[17]. However, responsibility for its implementation remains unclear.

5.10 People with haemophilia and those receiving regular blood transfusions.

On diagnosis, all children with haemophilia are screened for hepatitis B and C and are vaccinated against hepatitis A and B, if appropriate. Their immune status is checked when they are followed-up for their blood dyscrasia and they are given boosters as required. Adults with other blood dyscrasias are also screened for viral diseases and offered vaccination, if appropriate. Patients who have hepatitis are referred to the Hepatology Unit in St James's Hospital for management of their liver disease. The policy is also to immunise spouses and family contacts, but it is not clear how complete this is. There are no formal policies for contact tracing or notification.

5.11 Patients infected with hepatitis C.

It is the Department of Health and Children's policy that patients who have chronic infection with hepatitis C are to be offered dual vaccination against hepatitis A and B, if susceptible, as super-infection with a second virus can frequently produce a fulminant hepatitis.

5.12 Newly arrived asylum seekers and refugees.

Newly arrived asylum seekers in the Eastern Region are offered a health screening in the Refugee Health Unit at the Refugee Application Centre in Lower Mount Street. To date, since the Unit opened in December 1997, less than 50% of new arrivals have actually availed of this service. All adults who are screened are offered blood screening for hepatitis B. In the first year that the service was provided, of the almost 1,300 adults who were screened for hepatitis B, just over 5% were positive for HBsAg which is less than would be expected in the general populations in their countries of origin, generally areas of high endemicity.

Those who test HBsAg positive are referred to a hepatologist for further management. Their partners and children, if they are in Ireland, and/or sexual contacts, are offered screening for hepatitis B and, if not already antibody positive, are offered hepatitis B vaccination free of charge in the Refugee Health Unit or may go to their own GP, if they prefer. After the initial dose, asylum seekers may also choose to attend their own GPs for subsequent doses or may get them at the Refugee Health Unit. The Unit does not do active contact tracing and, if asylum seekers do not return there, will refer positive cases to the Community Care Areas for follow-up. The Maternity Hospitals have also been referring hepatitis B positive asylum-seeker women to the CCA for follow-up. This causes some difficulty because there may be language problems which the CCA is not equipped to deal with.

5.13 Prison inmates and staff.

Since 1992, the Irish Prison Medical Services have advocated a policy of offering hepatitis B immunisation to prisoners who are likely to be in custody for at least six months, that being the minimum period required to complete the standard immunisation schedule, and to staff. They also advised that antibody titres should be done prior to vaccination and two months after completion of the course. In practice, because of potential remission, only prisoners whose initial sentence is eight months or more are offered vaccination. Antibody titre testing may not always be done. In practice, even for prisoners who stay in prison more than six months, the course is often not completed and no arrangements are made to complete the course outside prison.

5.14 Gay Men's Health Project

The Gay Men's Health Project has had contact with almost 2,000 men since it was established in 1992. These men are offered screening for sexually transmitted diseases (STDs), including hepatitis B, and are offered a course of vaccination for hepatitis B, if appropriate. Of those who have screened negative for hepatitis B in 1998, 63% subsequently accepted vaccination[14]. The Project offers counselling and support for people who are infected with hepatitis B. Contact tracing is not generally attempted, although if clients are found to be infected with the virus they are encouraged to take precautions with their sexual partners and to advise partners to attend for screening themselves.

5.15 Genito-Urinary Medicine (GUM)/Sexually Transmitted Disease (STD) Clinics

Clients attending GUM/STD Clinics may be offered hepatitis B screening and vaccination as appropriate. Some contact tracing is carried out by these clinics.

5.16 Sex workers

The Women's Health Project (WHP) has had contact with over 600 female sex workers, some of whom are IDUs or have partners who are IDUs[18]. In addition there are a small number of male sex workers some of whom are also IDUs[19]. Both the WHP and the GMHP encourage clients who are sex workers to be screened for STDs including hepatitis B and, where appropriate, offer individuals a course of hepatitis B vaccination. Contact tracing for those who are currently infected with hepatitis B is obviously difficult with this risk group and is generally not attempted.

5.17 Travellers/Tourists.

No written or agreed policy exists in Ireland for offering vaccination to people going overseas for short or long periods. Clinics specialising in travel medicine generally do not actively encourage travellers to have hepatitis B vaccination unless they are medical staff or are going abroad for an extended period. Hepatitis B vaccination is generally only actively offered to those going abroad for six months or more.

5.18 Screening of antenatal women.

Following the success of a pilot programme for linked HIV testing of antenatal women at the Rotunda Hospital, universal linked HIV testing by maternity hospitals on booking was introduced nationally in 1999. The Department of Health and Children is now planning to introduce linked screening of all pregnant women for hepatitis B infection nationally, so that the infants of those who are HBsAg positive can be protected from birth by passive and active immunisation. At present this is usually only done for those mothers who are identified as being at high risk in the antenatal clinics. The Rotunda Hospital has had a programme of linked screening for HBsAg in all antenatal women attending there since January 1998. Those who are positive are referred immediately to a hepatologist and also referred antenatally to a paediatrician who will later follow up the infant for one year and ensure that he/she receives a complete course of immunisation. At birth the baby receives active and/or passive immunisation as required.

5.19 Laboratory testing

The Virus Reference Laboratory carries out hepatitis B tests as requested by hospitals and by GPs in the Eastern Region.

Table 2 indicates the relevance of the different hepatitis B markers used. Anticore antibody (anti-HBc) is a marker of past infection and anticore IgM is a marker of recent infection. Hepatitis B e antigen (HBeAg) indicates active viral replication and how infectious a person is. Hepatitis B e antibody (anti-HBe) is a marker of resolving infection.

Table 2. Interpretation of HBV serological markers.

	Anti HBc	Anti HBc IgM	HBsAg	HBsAb	HbeAg	HBeAb
Acute Infection	+	+	+	-	+ -	- +
Persistent Carrier	+	-	+	-	+ -	- +
Recovery/ Immunity	+	-	-	+	-	+
Immunity From Vaccination	-	-	-	+	-	-

Adapted from: Occupational Health Series No. 8. Copenhagen: WHO Regional Office for Europe.

Accurate figures are not available for how many tests are done in total on individuals in the Region each year. Approximately 20,000 HBsAg screens are done each year in the Virus Reference Laboratory, but many of these are repeat tests on the same individuals.

6. Discussion and Recommendations

As outlined in the previous chapters, there are guidelines and policies in place at national, health board and institutional level regarding hepatitis B prevention and control. However, it is clear that best practice is not always implemented. The main issues are:

- vaccination coverage in some high risk groups is less than optimal
- surveillance systems are inadequate
- there are no formal contact tracing services
- there is a lack of co-ordination in hepatitis B control and responsibilities are not clearly defined or understood
- adequate resources have not been committed to allow for best practice to be carried out.

Each of these deficiencies will be addressed here and recommendations made for how they may be rectified.

6.1 Vaccination

The current national policy of vaccination of high-risk groups should be fully implemented and every effort made to ensure the highest uptake in all these groups. For many of these high-risk groups, a service already exists through which vaccination is delivered but for others there is no existing service. These two scenarios will be dealt with in turn:

Existing services:
High risk groups for whom a vaccination service already exists include:

- Health care workers
- Staff and clients in intellectual disability institutions
- Prisoners
- Immigrants and refugees
- Babies born to mothers who are acute cases or carriers of HBV
- People with haemophilia and those receiving regular transfusions
- Patients with chronic hepatitis, including persistent hepatitis C infection
- Intravenous drug users attending harm reduction services
- Persons attending STD clinics.

However, even where such a service apparently exists, vaccine uptake rates are known to be less than optimal and action is required to address this deficiency. Some of these services are run by the Board, and others are outside of the Board's services. These will be dealt with separately:

ERHA/AHB services
General recommendations: Health Board-run services, such as those for health board health care workers, clients in institutions for the intellectually disabled run by the AHBs, refugees and IDUs, should carry out a regular audit of their hepatitis B

vaccination uptake, identifying ways in which that uptake may be improved. The Specialist in Public Health Medicine and the Senior Area Medical Officer should have an advisory role in this. Each service should be required to publish annual vaccination uptake figures.

Health Board health care workers: The responsibility for vaccinating health care staff rests with the Occupational Health Department and that department should make arrangements for a structured system of delivery of vaccination at all sites. There is a need for a centrally co-ordinated arrangement for vaccination, including the recording of data, on all ERHA/AHB staff. The current informal arrangement whereby SAMOs arrange for vaccination of Community Care staff is inappropriate and inadequate.

Intellectual disability institutions: The deficiencies in the vaccination programme in intellectual disability institutions have been addressed in detail in a report to the then Programme Manager[10] and recommendations made regarding structures, responsibilities, resources and information in order to rectify these. These recommendations should be implemented as a matter of urgency.

Refugee service: In keeping with the National Immunisation Guidelines, all immigrants from areas with a high prevalence of HBV should receive hepatitis B vaccine if non-immune. There is a need to develop and improve contact tracing and surveillance in the refugee clinic. This will require additional resources.

IDUs attending AHB clinics: The recent improvements in recording of data at these clinics should continue. The appointment of an Area Medical Officer (AMO) to promote surveillance of bloodborne viruses in the drug-using population should lead to improved vaccination rates.

Non-health board services

Although health board staff do not have a formal role in relation to hepatitis B vaccination in services which are not health board-run, such as the prison medical service, and non-health board health care workers, the public health staff in the Health Board should offer advice and support where this is requested and feasible.

In March 2000 the voluntary hospitals and large voluntary organisations came under the new Eastern Regional Health Authority (ERHA) structure. Arrangements for hepatitis B vaccination of relevant staff and clients should be included in the service contracts between these organisations and the ERHA.

In relation to the prison medical service, it would be beneficial if there was a formal commitment from the Departments of Health and Children, and Justice, Equality and Law Reform to work together on improving hepatitis B vaccination uptake.

Where no service exists –

A GP based hepatitis B vaccination service is recommended:

There are some categories of individuals for whom hepatitis B vaccination is indicated, but no service currently exists for delivery of the vaccine. We recommend that an arrangement be negotiated with GPs whereby they would be remunerated for delivering hepatitis B vaccine to their patients who are at risk and who are not

covered by one of the existing services (as above). These patients would fall into the following categories:

- Contacts of cases or carriers of HBV. These may be identified through a variety of sources e.g. contact tracing service, hospital services, drugs service, refugee health screening service.
- Individuals identified by the GP as being in a high-risk group; e.g. those who change sexual partner frequently, IDUs, homeless people.
- Ex-prisoners who were not in prison for a sufficiently long duration to complete a course of vaccination. This information could be communicated from the prison doctor to the GP on release of the prisoner.
- Intellectually disabled individuals, prior to entry to institutional care.
- Families of intellectually disabled individuals.
- Patients with persistent hepatitis C infection.
- Other at risk individuals who may not fall into the above categories.

The GP should be paid an appropriate fee on submission to the health board of details about the vaccinated patient, including name, address, sex, date of birth, risk category, GMS status and details of the vaccination delivered, including dates of delivery. The vaccine should be supplied to the GP by the local Community Care office. This service, both the vaccine and its delivery, should be available free to all patients, regardless of GMS eligibility. We recommend that this GP service be negotiated and implemented as a matter of urgency.

In order for this service to become operational the following would be required:

1. An appropriate fee would have to be negotiated nationally between the Department of Health and Children and GPs.
2. The health board should develop systems for (i) payment of GPs, (ii) for recording and analysing details of those vaccinated, and (iii) for delivery of vaccines to GPs.
3. GPs should receive an information package outlining the new service and updating them about HBV infection and vaccination (as per the National Immunisation Guidelines). This should emphasise the importance of opportunistically vaccinating high-risk patients who may attend for an unrelated matter.
4. A publicity campaign would be required to inform the public and relevant services about the new GP-run service.

Combined hepatitis A and B vaccine: There are some high risk groups for whom both hepatitis A and hepatitis B vaccine are recommended. The recommendations of the National Immunisation Guidelines should be followed in relation to this.

6.2 Surveillance

The purpose of surveillance is to provide information for action:

- For the purpose of following trends in infection and for comparison with international figures, the most relevant information is that of incident cases, i.e. acute cases.
- For the purpose of gathering information so that contact tracing can be carried out, information about both acute cases and newly diagnosed chronic carriers is needed.

- If the purpose of the surveillance system is to establish the burden of disease associated with hepatitis B it would be necessary to carry out special sero-surveillance surveys. This purpose will not be addressed in this report.

Therefore, the following should be notified to the Director of Public Health (DPH)/Specialist in Public Health Medicine (SPHM)/Senior Area Medical Officer (SAMO):

- acute cases of hepatitis B, laboratory confirmed as either HBsAg positive or anti-core IgM positive
- newly diagnosed carriers, i.e. HBsAg positive.

Laboratory reporting: Although clinicians should be encouraged to notify such cases under the Infectious Disease Regulations 1981, the cornerstone of the hepatitis B notification system should be laboratory reporting. This will mean putting in place a new system of reporting as this is not currently taking place. Such a system of laboratory notification would allow for completeness and timeliness of reporting and higher quality data recording. Arrangements should be put in place for the transfer of these data from the Virus Reference Laboratory to the Department of Public Health. In order to maximise timeliness and quality of data, consideration should be given to the electronic transfer of these data, taking into account issues of confidentiality and data protection. Initially, laboratory reporting would take place on a voluntary basis as there is no statutory requirement on laboratories to report notifiable diseases. However, it is hoped that the review of the Infectious Disease Regulations that is currently underway may recommend that this be changed.

Clinical and laboratory notification systems should be harmonised to remove duplicate notifications. Data from both clinical and laboratory sources should be entered on the CoSurv computer system in the Department of Public Health. CoSurv will assign a unique identification number, which should be used in the enhanced surveillance database (described below) so that the databases may be linked. Notifications thus received by the DPH should be transmitted without delay to the relevant SAMO (one in each Area Health Board, AHB) for further action, including contact tracing.

Enhanced surveillance: Initial notifications will be sufficient to initiate action in terms of contact tracing but more detailed information is required to improve our understanding of the epidemiology of the disease and to inform prevention strategies. An enhanced surveillance form (see Appendix) should be used to gather additional information, e.g. demographic details, occupation, risk behaviour, clinical details, and information about contacts. The responsibility for completing this form should rest with the SAMO (or designated AMO) who may need to liaise with the laboratory, the attending physician, the contact tracing service (see below) and other services to gather the required information.

A copy of the completed surveillance form should be sent to the DPH (or designated Specialist) and the data held on computer in the Department of Public Health. This will require the design of a hepatitis B database (on Epi Info or Access) that can be related to CoSurv. Each CCA or AHB should be able to access this database to allow for analysis of data relating to their own area. The designated SPHM in the Department of Public Health should prepare quarterly and annual reports of the

regional data. These reports should be sent to the Department of Health and the National Disease Surveillance Centre.

Although laboratory reporting should result in a more comprehensive coverage of notifications, efforts should be made to complement this with more complete clinical notification. We recommend that the DPH/SPHM/SAMOs write to all GPs and hospital physicians in the region to remind them of the obligation to notify all cases of HBV. This advice should be repeated at intervals.

6.3 Contact tracing

There is clearly a large gap in the services in relation to tracing of contacts of cases and carriers of HBV. As outlined earlier in this report, some of the specialised services carry out limited contact tracing, and some contact tracing has been carried out from time to time by SAMOs. However, for many newly diagnosed cases and carriers, there is no arrangement in place for contact tracing.

A HBV contact tracing service for the AHBs is urgently required. This service should be managed by SAMOs (see 6.4) and be delivered by professionals, such as nurses, who have additional training or experience in contact tracing. This expertise is necessary because of the often-sensitive nature of issues around HBV infection. It is recommended that one such contact tracer, with clerical support, be located in each AHB. The contact tracers would deal with contacts of HBV cases or carriers not covered by any existing service. The role of the contact tracers would be to obtain information about contacts, either directly from the case or indirectly from another service, and for each contact, to investigate the level of risk and susceptibility, and manage accordingly. The contact tracers would liaise closely with other agencies already dealing with the patient. This may involve arranging for blood tests to be carried out and referral to a GP for vaccination. The contact tracers would work under the direction of and report to the SAMO (or designated AMO). It is recommended that, for logistical and safety reasons, blood testing be carried out in existing hospital phlebotomy clinics, rather than by the contact tracer or AMO.

6.4 A new Health Board hepatitis B service

In order that the above recommendations regarding surveillance and contact tracing can be carried out, it will be necessary to set up a new service. We recommend that this take the following form:

In each of the three new Area Health Boards responsibility for the service would rest with an existing SAMO (to be agreed between the two or three Community Care Areas/districts in that AHB). The day to day duties would be carried out by an AMO and a contact tracer, supported by a clerical officer. The workload will vary between the AHBs and may necessitate the creation in each AHB of up to one new full-time post for each of these staff positions.

The AMO would have responsibility for following up each newly notified case or carrier of HBV to ensure that all contacts are traced and appropriately managed – whether by another specialised service (e.g. the Drugs Service, the Refugee Health Screening Clinic, a hospital service), or by the health board contact tracer with

referral to the GP. The AMO will complete an enhanced surveillance form in respect of each notified case or carrier. The AMO will carry out analysis of data on the surveillance forms for the AHB, and will submit copies of the forms to the Department of Public Health for collation of regional data. The AMO will collate and analyse data on HBV vaccinations carried out by GPs in the area.

The contact tracer will trace contacts of all notified cases or carriers, except where this is being carried out by another service. The contact tracer will record details of all contacts, including their management, on a form to be linked with the index case record. Contacts who are found to be acute cases or carriers will themselves become index cases and further contact tracing will be required.

A rough estimate of the cost of this service is as follows:

Salary costs to each AHB annually –

AMO	£32,000
Contact tracer	£22,000
Clerical officer	£10,000

In addition there would be travel expenses, and the cost of office accommodation, including ongoing running costs, e.g. heating, lighting, phones. There may also be training needs for new staff at the set-up.

In relation to surveillance, the following costs would apply:
A non-recurring cost for information infrastructure, i.e. development of a computerised surveillance system, purchase of software and hardware, and IT training: an estimated £50,000.

It must be emphasised that this rough costing does not address the cost of vaccination, either in terms of vaccine, disposables, staff time or fees.

6.5 Co-ordination at ERHA level

The Director of Public Health (or designated SPHM) will be responsible for policy development, epidemiology of HBV at regional level, co-ordination of surveillance systems, and monitoring of prevention services in relation to HBV at ERHA level. The co-ordination of surveillance will require the support of a designated clerical officer, and also the support of an I.T. officer at start-up and then on an intermittent basis.

6.6 Summary

In order that there can be a more comprehensive approach to hepatitis B surveillance and control in the Eastern Region the following is recommended:

- Full implementation of the National Immunisation Guidelines on Hepatitis B Virus vaccination. Responsibility and structures for the implementation of this programme should be clearly designated.

- A nationally agreed arrangement whereby GPs are paid to deliver HBV vaccine free to their at-risk patients, regardless of GMS eligibility.
- Implementation of the recommendations of the report of the review of HBV vaccination in intellectual disability institutions.
- Audit of vaccination uptake by the relevant health board services.
- A computerised surveillance system based on electronic notifications from laboratories and complemented by enhanced surveillance data collected at AHB level.
- A HBV surveillance and contact tracing service at AHB level, delivered by a designated Area Medical Officer and a contact tracer, and supported by a clerical officer.
- Co-ordination at ERHA level by a designated SPHM and at AHB level by a SAMO.
- Allocation of adequate resources to set up and run the service.
- Support and advice to relevant non-health board services by the designated SPHM or SAMO.
- Clarification of roles and responsibilities of all relevant services where contact tracing and/or vaccination are required.

As stated in the National Immunisation Guidelines (1999): "Strengthened surveillance of hepatitis B, supported by population based epidemiological studies, is necessary to monitor the effectiveness of the current policy. Laboratory reporting to Public Health Departments followed by enhanced epidemiological surveillance and management of contacts is required in all cases."

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Acknowledgements

The authors would like to thank the following for their helpful contributions in the preparation of this report:

Dr Mary Cafferkey
Dr John Crowe
Dr Bartley Cryan
Dr Elizabeth Cullen
Dr John Devlin
Dr Fiona Donnelly
Dr Enda Dooley
Mr Seamus Dooley
Dr Fred Ffeifer
Dr Derek Freedman
Dr Graham Fry
Dr Nancy Gallagher
Dr Kieran Harkin
Dr John Hegarty
Dr Tony Holohan
Dr Derval Igoe
Dr Shay Keating
Prof Dermot Kelleher
Dr Brian Keogh
Dr Fiona Mulcahy
Dr Frank Murray
Dr Seamus O'Dea
Dr Darina O'Flanagan
Ms Mary O'Neill
Dr Ruth Pilkington
Mr Mick Quinlan
Dr Alan Shattock
Dr Gerard Sheehan
Dr Owen Smith

EASTERN REGIONAL HEALTH AUTHORITY
Údarás Réigiúnd Sláinte Oirthir

HEPATITIS B SURVEILLANCE FORM

To be completed as soon as possible after notification of an acute case or carrier of hepatitis B

PERSONAL DETAILS

Surname:_____ Forename:_____ Cosurv ID Number: _____

Address:_____ DED:_____ CCA:_____

_____ Telephone No:_____

Country of Birth:_____ If non-national, duration of residence in Ireland:_____(yrs)

Date of Birth:__/__/____ Age (years):_____ Sex: Male ❑ Female ❑

Occupation: _____

GP Name & Address:_____

_____ Telephone No:_____

Source of Notification: Lab. ❑ GP. ❑ Hospital ❑ Give details: _____

CLINICAL DETAILS

Symptomatic: Yes ❑ No ❑ If yes, date of onset of illness: __/__/____

Hospitalised: Yes ❑ No ❑ If yes, name of hospital _____

Hospital Physician (if applicable) _____

Hepatitis B immunisation history 3 doses ❑ 1 -2 doses ❑ No vaccination ❑

If vaccinated, what year?__/__/____ Clinical status at diagnosis _____

R.I.P. Yes ❑ No ❑

LABORATORY DETAILS

Laboratory _____

	Positive	Negative	Date of Test	Not Tested/ Unknown
HBsAg	❑	❑	__/__/____	❑
HBeAg	❑	❑	__/__/____	❑
Anti-HBc	❑	❑	__/__/____	❑
Anti-HBcIgm	❑	❑	__/__/____	❑
Anti-HBe	❑	❑	__/__/____	❑

PTO →

RISK EXPOSURE

Please indicate how the infection was thought to have been acquired:

Known risk exposure(s) Yes ❑ No ❑ If yes, please tick any known exposures below.

- Injecting drug use ❑
- Recipient of blood or blood products ❑ If yes, please complete below:

  Date of receipt: ___/___/_____ Product:_____ Hospital_____

- Invasive surgery ❑ If yes, date ___/___/_____

  Type of Surgery _____ Hospital_____

- Contact with known hepatitis B case, carrier or high risk individual ❑
  If yes, type of contact: (tick all that apply)
  - Sex between man & woman ❑
  - Sex between men ❑
  - Household ❑
  - Other ❑ Please give details _____

- Mother to baby ❑
- Occupational exposure ❑ Please specify: _____
- Other known risk ❑ Please specify: _____
  (e.g. renal dialysis, dental treatment, accidental needlestick injury, tattooing, acupuncture, body piercing)

- Was this infection thought to be acquired abroad? Yes ❑ No ❑

If yes, in which country?: _____

CONTACTS SUMMARY

Number of contacts to be investigated: _____

Number of contacts successfully investigated: _____

Form completed by:

Name: _____ Location: _____ Date: ___/___/_____

Please send a copy of this completed form to the Director of Public Health