STANDARDS FOR LOCAL SURVEILLANCE AND FOLLOW UP OF HEPATITIS B AND C

2011

DOCUMENT INFORMATION	
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DOCUMENT HISTORY

Date	Reason for Change	Issue Number
April 2006		1.0
July 2011	Incident involving error in laboratory reporting in 2010; results of audit of hepatitis surveillance with regard to equality and diversity recommended inclusion of links to patient information in different languages.	2.0

DOCUMENT REVIEW PLAN

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FOREWORD

Hepatitis B and C infections are major causes of chronic liver disease and liver cancer across much of the world. While the UK has been classified as a very low prevalence country for these infections, they still pose a significant challenge in terms of potentially preventable mortality and morbidity.

In 2006, the Health Protection Agency (HPA) developed national standards for local surveillance and follow up of hepatitis B and C.

The standards were revised in 2011 following an incident involving an error in laboratory reporting. The following sections with regard to reports from laboratories, checks and audit were amended and strengthened: 7.13, 8.6, 8.8 and 8.11. In addition, sources of information (Appendix 7), links to patient information in different languages (7.17 and Appendix 7) and the sample GP letters (Appendix 4) were revised.

The standards recognise that the detection and clinical management of hepatitis B and C can involve a number of health professionals, creating a diversity of clinical pathways. The development of the standards has also taken into account the fact that the prevalence of both hepatitis B and C varies markedly across the country and that current systems for the surveillance and follow up of cases also vary.

The standards are designed to support the development of a consistent response across the agency whilst taking these variations into account.

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Area	Standard	Page	Comment
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Acute hepatitis C			
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1. INTRODUCTION

Background

1.1 Surveillance of hepatitis B and C is essential to target prevention and control activities. Investigation and follow up of cases are required to determine risk factors, to detect outbreaks, to identify contacts who require vaccination and to prevent further transmission. Laboratories are required to notify the HPA when they diagnose cases of hepatitis B and C.[1] The HPA is responsible for the surveillance and follow up of cases. However, there was no comprehensive guidance governing how this should be done and anecdotal evidence suggested that practices varied between Health Protection Units (HPUs). The development of standards for surveillance and follow up of hepatitis B and C was therefore included in the HPA's objectives in 2004-5.[2] A working group was established in 2004 to develop standards. Membership of the group is listed in Appendix 1.

Process for developing the Standards

1.2 The group:

- conducted a survey of HPUs, following consultation with the Public Health Medicine Environment Group (PHMEG), to establish current practice on surveillance and follow up;
- reviewed current laboratory reporting of hepatitis B and C;
- considered current epidemiology, and available evidence on which to base guidance;
- used feedback from consultation on the draft standards to develop the final document.

Aims

1.3 The aims of these standards are:

- to reduce the incidence and prevalence of hepatitis B and C;
- to prevent onward transmission from infected persons;
- to facilitate the appropriate clinical management of individuals with acute and chronic hepatitis.

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KEY POINTS FROM THE SURVEY OF HEALTH PROTECTION UNITS

2.1 The survey of current practice, surveillance and follow up across HPUs was conducted following consultation with the Public Health Medicine Environment Group. The results are summarised in Appendix 2 and some of the key points were as follows:

- laboratory reporting was the mainstay of surveillance data for HPUs;
- there was variation in the case definitions used and in definitions of contacts;
- the majority of HPUs used paper-based systems and data bases, most commonly CoSurv (an electronic system that enables laboratories to report infections to the HPA), to store data;
- operational arrangements for following up cases of hepatitis B, hepatitis C and women found to be hepatitis B positive on antenatal screening also varied;
- respondents indicated that roles and responsibilities for follow up needed clarification, particularly for cases identified through antenatal screening;
- laboratory issues were cited as problematic, and a standardised approach across all laboratories was called for.

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3. REVIEW OF CURRENT LABORATORY REPORTING

3.1 Laboratory reporting underpins the national surveillance systems for hepatitis B and C, which are summarised in Appendix 3.

3.2 Laboratories are asked to report all clinically significant infections including hepatitis B and C to HPA Regional Epidemiology Units. These reports are known as routine Communicable Disease Reports (CDR). The Regional Epidemiology Units forward data to the Centre for Infections (CfI). For hepatitis B, the following data are requested: date of birth, sex, date of onset, specimen type, specimen date, identification method and district of residence.

3.3 Reports are submitted to Regional Epidemiology Units electronically via CoSurv or on paper. Data from the paper reports are entered into CoSurv at the Regional Epidemiology Units. One of the CoSurv modules, district CoSurv, enables HPUs to receive laboratory reports electronically. However this is not in place for many HPUs.

3.4 For the past three years, discrimination between acute and chronic hepatitis B has been poor due to changes made to the CoSurv laboratory module. This is seriously affecting both local and national surveillance. The working group recommended urgent changes to the CoSurv module to ensure laboratories

report whether hepatitis B is acute or chronic, including IgM status. These changes are now being addressed.

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4. EPIDEMIOLOGY OF HEPATITIS B AND C AND RATIONALE FOR RECOMMENDATIONS

4.1 Hepatitis B virus (HBV) infection causes acute symptomatic disease in less than 10% of infected children and about 30% of adults.[3] Symptoms can range from abdominal discomfort with or without jaundice to acute liver necrosis. HBV infection can resolve, but about 85% of infections in newborns and 4% in adults become chronic[3,4] potentially leading to cirrhosis and hepatocellular carcinoma.[5] HBV transmission occurs by percutaneous or permucosal exposure to infective body fluids, or perinatally from mother to child.

4.2 Infection occurs worldwide, but the incidence and prevalence of infection in the UK is amongst the lowest in the world. In countries with a high prevalence of HBV, most infections are acquired perinatally or in childhood.[6] In countries with low prevalence, such as the UK, most infections are acquired through adult risk behaviour.[7,8] In England and Wales, injecting drug use and male homosexual contact are the most frequently reported routes of transmission.[7] Other high-risk groups are infants born to infectious mothers and ethnic minorities.[9,10] Acute infections in UK residents give rise to less than 10% of all new chronic infections, with the majority being attributable to the immigration of carriers.[11]

4.3 Hepatitis C virus (HCV) infection was first identified as the major cause of transfusion transmitted non-A non-B hepatitis. Acute symptomatic disease occurs in less than 10% of infected individuals, and the majority of infections become chronic, leading in some cases to cirrhosis and hepatocellular carcinoma.[12] HCV transmission occurs mainly by percutaneous exposure to infective blood. Compared to hepatitis B, transmission by sexual and perinatal exposure is less efficient. Worldwide an estimated 170 million individuals are chronically infected with HCV. Prevalence studies are now available from over 130 countries and the UK is in a low prevalence band.[13] In the UK, most infected individuals have acquired infection through injecting drug use, largely by sharing contaminated needles.[14,15,16] Other less frequently reported exposure categories include recipients of unscreened blood and untreated blood products, patients exposed on renal units and infants born to infected mothers.

Rationale and evidence base for the standards

4.4 The Centers for Disease Control and Prevention (CDC) criteria for classifying grades of evidence have been used:

- strongly recommended - on the basis of more than two consistent, well-conceived, well-executed studies with control groups or longitudinal measurements;

- recommended - on the basis of more than one well-conceived, well-executed, controlled, or time-series study; or more than three studies with more limited execution;

- indicated - on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist;

- not recommended - on the basis of published literature recommending against a practice.

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5. ROLES AND RESPONSIBILITIES

5.1 Diagnosis and management of patients with hepatitis B and C, including public health aspects, are complex and involve different individuals and agencies. The following section summarises the legal basis for reporting cases and attempts to describe roles and responsibilities.

5.2 Viral hepatitis is a statutorily notifiable infectious disease i.e. the clinician suspecting the diagnosis is required to notify the proper officer of the local authority, usually the consultant in communicable disease control (CCDC).[17] The statute does not offer guidance on the definition of viral hepatitis that should be notified nor whether the notification applies to both acute and chronic cases.

5.3 The notifier/sender of the laboratory specimen has the responsibility for case management, including referral. Laboratories that diagnose cases should report data to the HPA. The HPA is responsible for surveillance and control measures including prevention of onward transmission and outbreak investigation. At the local level, control measures are implemented by HPUs. HPUs, in the course of fulfilling the public health role, have an opportunity to ensure that appropriate follow up and referral occurs. Consultant virologists are also well placed to offer advice regarding prevention of onward transmission.

5.4 There is potential for duplicated effort and for mistaken assumptions regarding roles between clinicians, virologists/microbiologists and the HPA. Therefore local agreements between HPUs, clinicians and microbiologists/virologists are very important.

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6. STANDARDS REGARDING ORGANISATION IN HEALTH PROTECTION UNITS (HPUs)

6.1 Each HPU should nominate a lead consultant with special interest in blood-borne viruses to:

- keep staff in the HPU up to date on knowledge/developments;

- ensure that roles and responsibilities are clear within the HPU and between the HPU and key partners;

- ensure that HPA standards are implemented and audited;

- ensure, with surveillance lead as appropriate, that arrangements are in place for high quality surveillance including data flow;

- participate in zonal/regional strategy/policy groups.

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7. STANDARDS FOR ACUTE HEPATITIS B

Surveillance

7.1 Reports of acute hepatitis B from laboratories in England and Wales provide the main information source on the incidence of hepatitis B. Estimation of the true incidence of hepatitis B infection requires adjustment for under-reporting, which is estimated at around 25%[18,] and for the proportion of infections that are asymptomatic.[4,11] Surveillance of acute infection can be used to monitor trends, to evaluate current immunisation programmes and to inform changes to national and local immunisation and control policy. By collecting information on exposure categories in those cases identified, the target groups for selective immunisation can be determined and the effectiveness of current programmes evaluated. Local surveillance data can be used to identify groups where vaccination efforts should be strengthened and where preventable exposures may be reduced, for example, nosocomial exposures.

This is indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist.

7.2 Effective surveillance enables HPUs to achieve the following objectives**:**

- to monitor trends in incidence;
- to identify major routes of transmission;
- to identify preventable infections;
- to inform local vaccination priorities;
- to ensure appropriate follow up and referral of cases;
- to ensure contact tracing;
- to prevent onward transmission via advice to cases and contacts and vaccination of contacts;
- to identify local outbreaks;
- to inform primary care trusts (or their equivalents) about the burden of acute hepatitis B infection.

Case definition for surveillance of acute hepatitis B

7.3 HBsAg positive **and** anti-HBc IgM[1] positive **and** abnormal liver function tests with a pattern consistent with acute viral hepatitis.

[1] IgM may remain positive in chronic hepatitis B and therefore the level of IgM may help determine whether case is acute or chronic. As different assays are used by different laboratories, the local consultant virologist should define whether IgM is low or high.

Case ascertainment by HPUs

7.4 As early case ascertainment is essential to protect vulnerable contacts:

- laboratories should report each case of newly diagnosed acute hepatitis B by telephone or fax to the HPU, within one working day of laboratory diagnosis. A telephone report should be accompanied or followed by a routine electronic or paper report. Within the HPU, the member of staff dealing with the report should be competent to assess and interpret the report from the laboratory;

- laboratory reports should include IgM status.[9]

7.5 The HPU should encourage notifications by local clinicians:

- doctors in England and Wales have a statutory duty to notify the proper officer of the local authority (usually the CCDC) of suspected cases of viral hepatitis including HBV infection. The doctor should send a certificate stating the name, age, sex of the patient and the address of the premises where the patient is.[17]

Minimum data set

7.6 At local level, each HPU should ensure local collection and collation of demographic, clinical, laboratory and risk factor data as summarised in Table 1. A sample proforma is provided in Appendix 4. Risk factors are also collected as part of the hepatitis sentinel surveillance study, as further described in 7.9 and in Appendix 3.

7.7 Cases notified by doctors in genitourinary medicine (GUM) clinics should contain patient details described in 7.5 as the statutory duty to notify applies. Information on risk factors should be sought for such cases, by arrangement with the GUM clinic as appropriate.

7.8 Data should be stored on a database in each HPU.

Table 1 (Back to List of Tables)
Minimum dataset for surveillance of acute hepatitis B (see also sample proforma in Appendix 4)

Demographic details	Name, address, date of birth, occupation, ethnic group, pregnancy status of women of childbearing age
Clinical features	Abnormal liver function tests, jaundice, asymptomatic
Onset and outcome	Date of onset, whether patient died
Laboratory markers	HBsAg, anti-HBc IgM and confirmation that case considered acute (i.e. meets case definition)
Hepatitis B vaccination history	Hepatitis B immunoglobulin in previous 6 months, one or more doses of hepatitis B vaccine
Risk factors	Injecting drug use, sexual contact (sex between men and sex between men and women), receipt of blood transfusion/blood product,

	acupuncture/tattooing/body piercing, dialysis, surgical or dental procedure, other

7.9 **Reporting onwards/links with regional and national datasets**

The following reporting arrangements should be in place:

- Regional Epidemiology Units should receive laboratory reports of acute hepatitis B via CDR from all laboratories. Laboratory reports should include IgM status;

- HPUs should send data on risk factors to Regional Epidemiology Units and CfI quarterly or, if a web-based system is used, via access to that system;

- collection of risk factor data on cases of acute hepatitis B is also part of the hepatitis sentinel surveillance study (Appendix 3). To ensure that clinicians are not receiving duplicate requests for information, each relevant HPU should confirm with the project co-ordinator of the study arrangements for collection of risk factor data. For example in North Yorkshire HPU, anonymised risk factor data are collected by the HPU and forwarded to the project co-ordinator. Contact details of the project co-ordinator are provided in Appendix 3;

- at the national level, the consultant epidemiologist leading on hepatitis B and C at the CfI, will request risk factor data on each case of acute hepatitis B identified from laboratory reports that are not otherwise available from the hepatitis sentinel surveillance study or from HPU reports. The information will be sought via a proforma sent from CfI to the local HPU or imported from the HPU database.

Analysis and feedback of data

7.10 At the local level, each HPU should regularly analyse data so that:

- clusters are identified;

- trends in numbers of cases and risk factors are monitored and fed back to stakeholders e.g. those supplying data, primary care trusts and strategic health authorities (or their equivalents) at least annually.

7.11 At the regional level, the Regional Epidemiology Unit should regularly analyse and report on data including trends in numbers of cases and risk factors on a region-wide basis and at least annually.

Areas for Audit

7.12 Each HPU should ensure that surveillance data distinguish between acute and chronic hepatitis B.

7.13 Regional Epidemiology Units should monitor laboratory reports of cases, ensuring distinction between acute and chronic cases, timeliness of reporting, and that laboratories only select HBsAg positive results for reporting to the HPA, including via CoSurv. This will involve working with regional microbiologists, HPU colleagues, and colleagues in laboratories, including specialist virology laboratories.

Follow up of cases and their contacts

Referral of acute hepatitis B cases that progress to chronic disease

7.14 Acute hepatitis B resolves in the majority of individuals infected in adulthood.[4] Further assessment of the infection status of all cases at six months will identify those who have become chronically infected and are therefore at risk of chronic liver disease. Such individuals may then require further assessment or monitoring for the development of complications (see below).

- ***Indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist.***

Contact tracing for acute hepatitis B cases that progress to chronic disease

7.15 Identification of acute cases of hepatitis B also offers an opportunity to offer post-exposure prophylaxis to those exposed to infection. Post exposure prophylaxis with immunoglobulin for sexual contacts has been shown to reduce the risk of secondary cases.[20] Based upon the use of post-exposure vaccination in other settings, vaccination and hepatitis B immunoglobulin (HBIG) is likely to be highly effective in this context.

- ***Recommended on the basis of >1 well-conceived, well-executed, controlled, or time-series study; or >3 studies with more limited execution.***

7.16 Other household members and those exposed to blood or other body fluids of the case can also be offered protection with vaccination. Current "Green Book" recommendations should be followed with regard to use of vaccine and HBIG.[21]

- ***Indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist.***

Issues regarding follow up of cases and contacts

7.17 The main roles and responsibilities of HPUs are outlined in Table 2. The HPU role is to:

- arrange collection and collation of data on risk factors for surveillance;

- ensure information in an appropriate language is given to patients and their contacts to prevent onward transmission (see Appendix 7)

- ensure arrangements are made to vaccinate contacts as appropriate.

7.18 How this HPU role is discharged is a local decision and in some cases will depend on the particular circumstances of a patient:

- a proforma for recording details on follow up of contacts should be completed (see Appendix 4);

- where the HPU has an agreement with staff outside the HPA e.g. PCT Infection Control Nurse, to follow up patient and contacts, the HPU is responsible for the protocol and procedure;

- where HPU/PCT staff do not make contact directly with patient, they must be satisfied that arrangements are in place e.g. by liaising with the clinician who makes the diagnosis. Examples of letters to GPs are attached as Appendix 5 and patient information as Appendix 6. Appendix 7 gives other useful sources of information about both hepatitis B and C.

Actions where there is difficulty in obtaining information/access

7.19 In circumstances where attempts to access information and/or access the patient/contacts are unsuccessful, the HPU/PCT staff should:

- ensure that the sender of the specimen makes appropriate efforts to give information and advice;

- ensure that CCDC agrees when efforts to contact patient/contacts can be stopped;

- ensure that the patient's GP is informed that attempts at access have been unsuccessful.

Table 2 (Back to List of Tables)

Tasks and responsibilities of laboratory and HPUs regarding follow up of acute hepatitis B

Task	Responsibility	Comments
Telephone laboratory result to sender of specimen	Laboratory	
Telephone or fax laboratory result (for confirmed and likely results e.g. if virologist strongly suspects acute hepatitis B while IgM result awaited) to HPU within 1 working day	Laboratory	HPU should inform lab of named person(s) to whom results can be telephoned; the person must be competent to assess and interpret the report
Accompany or follow telephone report by a routine Communicable Disease Report (CDR)/hard copy	Laboratory	HPU should work with the laboratory on the preferred mechanisms for this transfer
Inform patient of result	Sender of specimen	
Initiate fact-finding to ascertain who is involved with case to date, whether the patient has been informed and whether there are any known risk factors	HPU	
Seek information from clinician or patient as appropriate for surveillance including risk factors	HPU* ensures data collected directly from patient or via sender of specimen by arrangement, with data collation at HPU	See sections 7.6 – 7.9 on surveillance including minimum data set
Provide information to GP on case with advice on follow up including a follow up blood test in six months	HPU*	See Appendix 5 for sample letter
Refer patient to hepatologist /consultant gastroenterologist/infectious disease consultant/ if necessary	Sender of specimen/GP	
Refer to GUM if sexual history indicates that case/contacts needs to be counselled and tested for other STIs	Sender of specimen/GP/HPU as appropriate	
Provide information to patient on hepatitis B	HPU* ensures, in liaison with sender of specimen	Visit or letter with leaflet; see Appendix 6 for sample patient information
Advise patient on how to prevent onward transmission	HPU* to ensure and agree with sender of specimen who/how this is done	
Identify household/sexual contacts	HPU* to ensure and agree with sender of specimen who/how this is done	
Inform and advise contacts	HPU* to ensure and agree with sender of specimen how this is done	

* or other staff outside HPA e.g. PCT ICN with whom HPA has agreement regarding follow up of cases and contacts, see page 15 – issues regarding follow up of cases and contacts

Task	Responsibility	Comments
Arrange testing and vaccination of contacts	HPU* to ensure and agree with sender of specimen how this is done	
Monitor outcome of patient follow up	HPU	See proforma (Appendix 4)
Monitor outcome of contact tracing		

Training/competencies for HPU staff following up cases and contacts

7.20 Staff whose role involves contact with patients/contacts must have had training to enable them to:

- obtain/discuss sensitive information;
- give appropriate advice on hepatitis B including vaccination issues and infection control, and sources of further advice and support;
- understand issues of confidentiality and public health risk.

7.21 Staff who visit patients/contacts should follow appropriate guidelines e.g. with regard to lone working and ensure they do not take unnecessary/inappropriate risks.

Special circumstances

7.22 In the event of possible/probable nosocomial transmission:

- the CCDC should discuss with a consultant virologist and work with the director of infection prevention and control and the consultant microbiologist if further investigation is appropriate;
- where investigation is likely to be complex/involve different organisations (e.g. suspected transmission in a dialysis unit, suspected transmission from a healthcare worker), an incident team should be convened.

7.23 Where there is potential for transmission in a setting such as a school, e.g. hepatitis B positive child who bites:

- the CCDC should assess the risks, discuss with a consultant virologist, seek further expert advice as necessary.

7.24 Linked cases/outbreak suspected:

- the CCDC should discuss molecular epidemiological investigations with a consultant virologist.

7.25 Cases identified in persons who received blood or blood products:

- the CCDC should liaise with the local consultant virologist and the National Blood Service; the National Blood Service will conduct an investigation.

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8. STANDARDS FOR CHRONIC HEPATITIS B

SURVEILLANCE
(See 8.12 regarding antenatal infectious diseases screening surveillance)

8.1 Chronic hepatitis B infection can lead to cirrhosis, liver failure and hepatocellular cancer. In the UK, most chronic infections are in ethnic minority populations who acquired infection prior to arrival in this country, usually in childhood.

8.2 Surveillance of chronic infection can be used to inform planning but is likely to be strongly influenced by testing patterns. Collection of exposure category information in all such cases is likely to be resource intensive and unlikely to offer valid data to inform UK policy. It is not routinely recommended that HPUs should attempt to collect this data on chronic hepatitis B infections. Sentinel surveillance may be conducted in some areas in response to local needs.

8.3 Seroprevalence studies, including those in groups being routinely screened, e.g. antenatal women, are likely to be more helpful in informing service planning. Data on the uptake of antenatal screening and prevalence of HBsAg positivity can be collected from all maternity units, and, combined with the follow up of babies born to HBsAg positive women can be used to evaluate the antenatal screening programme.

- ***Indicated on the basis of previous scientific observation and theoretical rationale but case-controlled or prospective studies do not exist.***

8.4 Effective surveillance triggers action to achieve the following objectives:

- to estimate the burden of known infections in populations at increased risk of long term sequelae (e.g. children) and those at higher risk of infection, including GUM clinic attenders, injecting drug users, and prisoners;
- to inform health care planning;
- to identify pregnant women who are positive so that appropriate action is taken for babies born to such women and their household/sexual contacts;
- to ensure contact tracing and action to prevent onward transmission ;
- to ensure follow up and referral of cases;

- to enable monitoring of vaccine uptake among babies born to positive mothers.

8.5 Case definition for surveillance:

HBsAg positive twice at least six months apart
Or
HBsAg positive **and** anti-HBc IgM[2] negative **and** anti-HBc positive.

Case ascertainment

8.6 In order to trigger the appropriate public health response:

- laboratories should report each case of newly diagnosed chronic hepatitis B to the HPU via fax, post or electronically. Within the HPU, the member of staff dealing with the report should be competent to assess and interpret the report;

- laboratory reports should include markers of chronic infection as per case definition above, and HBeAg and/or hepatitis B DNA status;

- laboratories must use the HBsAg test result as the primary marker for selecting reports to the HPA, including CoSurv reports.

8.7 The HPU should encourage local clinicians to notify cases of viral hepatitis:

- doctors in England and Wales have a statutory duty to notify the proper officer of the local authority (usually the CCDC) of suspected cases of viral hepatitis including hepatitis B. The doctor should send a certificate stating the name, age, sex of the patient and the address of the premises where the patient is.[17]

Minimum data set

8.8 At local level, each HPU should collect demographic, and laboratory data as summarised in Table 3. Routine collection of data on risk factors is **not** recommended for chronic cases but sentinel surveillance may be conducted in some areas in response to local needs. Data should be stored on a database. If the same database is used for both acute and chronic hepatitis B, the status, acute or chronic, should be recorded. HPUs should assure themselves that reporting laboratories correctly assign the status, acute or chronic, in line with the case definition above.

Table 3 **(Back to List of Tables)**
Minimum dataset for surveillance of chronic hepatitis B

[2] IgM may remain positive in chronic hepatitis B and therefore level of IgM may help determine whether case is acute or chronic. As different assays are used by different laboratories, the local consultant virologist should define whether IgM is low or high.

Demographic details	Name, address, date of birth, pregnancy status of women of childbearing age. Country of acquisition of infection is desirable.
Laboratory markers	HBsAg, anti-HBcIgM, anti-HBc, HBeAg/HBV DNA and confirmation that case considered chronic (i.e. meets case definition)

Reporting onwards/links with regional and national datasets

8.9 The following reporting arrangements should be in place:

- Regional Epidemiology Units should receive laboratory reports of chronic hepatitis B via CDR from all laboratories in the region;

- laboratories should include HBsAg and IgM status, indicate that case is chronic and if female, whether pregnant or not.

Analysis and feedback of data

8.10 Depending on prevalence, it may be appropriate to analyse data on trends annually.

8.11 **Areas for audit**

- Each HPU should ensure that reports received distinguish between acute and chronic hepatitis B and that reporting laboratories correctly assign the status, acute or chronic, in line with the case definitions in this document. This is important for surveillance and is imperative if public health action is taken.

- In areas of high prevalence with large volumes of reports, where it is not possible to review each single report of chronic hepatitis B, the HPU if taking public health action, should review a representative sample of reports every six months and ensure that the markers meet the case definition. If the findings of the first two audits are satisfactory, consider auditing annually.

- Regional Epidemiology Units should work with regional microbiologists, NHS microbiologists and virologists, HPUs, and laboratories to help ensure that reports distinguish between acute and chronic hepatitis B.

- Regional Epidemiology Units should monitor laboratory reports, ensuring distinction between acute and chronic cases, the timeliness of reporting and that laboratories only select HBsAg positive results for reporting to the HPA, including via CoSurv. This should include regularly checking numbers of reports and if there are significant changes, checking in liaison with the HPU and the relevant laboratory, whether changes are due to

reporting practice anomalies; if so, appropriate action should be taken to correct reporting.

Antenatal infectious diseases screening surveillance

8.12 Regional Epidemiology Units should:

- co-ordinate collection of the following data on hepatitis B as part of the antenatal infectious diseases screening surveillance:
  - the number of women booked for antenatal care;
  - the number of women tested for hepatitis B and found to be HBsAg positive;
- send data to the CfI every six months;
- report on the data at least annually.

Follow up of cases and their contacts

Referral of chronic hepatitis B cases

8.13 Individuals who are identified as being chronically infected should be referred for assessment of liver function and viral replication. Further investigation by liver ultrasound and liver histology will identify individuals who are at risk of progressive liver disease and need to be assessed for treatment or monitored for the development of hepatocellular carcinoma.

- ***Indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist.***

8.14 Effective antiviral treatments for chronic infection are available, and new more effective treatments are currently being assessed by the National Institute for Clinical Excellence (NICE).[22]

- ***Strongly recommended (on the basis of >2 consistent, well-conceived, well-executed studies with control groups or longitudinal measurements).***

Contact tracing for chronic hepatitis B

8.15 Identification of chronic hepatitis B infections also offers an opportunity to offer post-exposure prophylaxis to those exposed to infection. Infants born to hepatitis B infected mothers are at high risk of perinatal hepatitis B infection,[23]

and at high risk of becoming chronically infected. Immunisation with HBIG and vaccine, starting at birth, reduces this risk to less than 10%.[24]

- ***Strongly recommended (on the basis of >2 consistent, well-conceived, well-executed studies with control groups or longitudinal measurements).***

8.16 Sexual and other household contacts of those with chronic hepatitis B are at risk of infection and should be screened and offered vaccination (and HBIG if appropriate).[21]

- ***Indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist.***

8.17 The HPU should ensure that follow up of all newly diagnosed cases is undertaken locally, including:

- referral for clinical assessment and follow up. While the clinician making the diagnosis is primarily responsible for referral, the HPU has the opportunity to reinforce the need for specialist assessment;
- identification of contacts, followed by advice, screening and vaccination, as appropriate;
- information to the general practitioner of the case (see sample letter, Appendix 5).

8.18 How this role is achieved by HPUs will depend on local circumstances. For example, some HPUs will wish to follow up individual cases; others will have arrangements in place with PCTs/primary care staff to ensure that this is done. Where the HPU has an agreement with staff outside the HPA to follow up patients and contacts, the HPU is responsible for the protocol and procedure.

Pregnant women who screen positive for hepatitis B in pregnancy and babies born to positive women

8.19 The HPU should:

- receive result from laboratory;
- record result in surveillance database (see sample proforma in Appendix 4);
- work with maternity units and PCTs to ensure arrangements are in place to:
    - inform and counsel patient;

- inform the patient's GP of patient's result;
- identify, advise, test and vaccinate contacts as appropriate;
- administer vaccine to the baby and complete the vaccination course;
- monitor result of the baby's blood test at 12 months;

- work with PCTs to ensure results are received and recorded on child health information systems in accordance with national parameters for Cover of Vaccination Evaluated Rapidly (COVER) data;
- monitor uptake of vaccine in liaison with child health system co-ordinator in PCTs;
- encourage audit of the outcome for babies. A template data set/proforma to audit the outcome for the baby is given in Appendix 4).

8.20 The quarterly data required to assess hepatitis B vaccine coverage are:

- total number of children for whom the PCT is responsible on a specified date with maternal status positive (HBsAg) and reaching their first birthday in the evaluation quarter;
- the total number of such children who receive a third dose of vaccine before their first birthday;
- total number of children for whom the PCT is responsible on a specified date with maternal status positive (HBsAg) and reaching their second birthday in the evaluation quarter ;
- the total number of above children who receive a fourth dose of vaccine before their second birthday.

8.21 Suggested roles and responsibilities are set out in Table 4.

Table 4 (Back to List of Tables)
Women who screen positive for hepatitis B in pregnancy and babies born to HBsAg positive women: suggested roles and responsibilities

ACTION	PERSON RESPONSIBLE	COMMUNICATION AND RECORD KEEPING
Booking		
Offer hepatitis B testing	Antenatal midwife	Late booking: request urgent test
Test booking blood for HBsAg **Positive result**	Laboratory	Inform midwife Inform GP Inform CCDC
Antenatal		
Repeat test	Midwife/laboratory	
Perform e-markers	Laboratory	If anti-HBe negative order HBIG
Inform and counsel mother	Midwife/counsellor	Arrange referral of mother to hepatitis specialist Advise testing and vaccination of sexual and family contacts
Arrange prescription of vaccination	Midwife/counsellor	Record in notes need for infant vaccination (+/- HBIG)
Term		
Baby born	Laboratory	Named HBIG, if needed, stored in designated fridge
Day 1		
Give dose one of vaccine	Midwife/paediatrician Give HBIG if indicated	Record in notes
Discharge	Midwife/paediatrician	Inform GP Inform child health system co-ordinator Provide page for parent held-record
Age one month		
Give dose two of vaccine	GP/paediatrician	Record in parent held record Inform child health system co-ordinator
Postnatal check	GP	Confirm referral of mother
Age two months		
Give dose three of vaccine	GP/paediatrician	Record in parent held record Inform child health system co-ordinator
Age one year		
Give dose four of vaccine Take blood specimen	GP/paediatrician	Record in parent held record Inform child health system co-ordinator
Test specimen for HBsAg	Laboratory	
Positive result	GP/paediatrician	Refer to specialist Inform child health system co-ordinator
Ongoing		
Monitoring uptake of vaccine	HPU	In liaison with child health system co-ordinator and PCT

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9. STANDARDS FOR ACUTE HEPATITIS C

Surveillance

9.1 Acute hepatitis C infection is rarely recognised because the clinical symptoms are usually absent or mild and there is no laboratory marker that can reliably distinguish acute from chronic infection. Acute infection or documented seroconversion is, however, a marker of recent transmission and therefore may offer the potential for early preventive measures to reduce onward transmission. Data on local cases can be used to identify groups where preventable exposures may be reduced e.g. nosocomial exposures.

- ***Indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist.***

9.2 Surveillance triggers action to achieve the following objectives:

- to detect outbreaks;
- to ensure contact tracing and prevention of onward transmission;
- to ensure referral and follow up of cases.

Case definition for surveillance

9.3 Recent seroconversion
or
Hepatitis C RNA or antigen positive **and** anti-HCV negative or equivocal in otherwise immunocompetent individual
or
Anti-HCV positive,[3] anti-HAV IgM negative, and anti-HBc IgM negative **and** abnormal liver function tests with a pattern consistent with acute viral hepatitis in someone with recent exposure to HCV e.g. needlestick injury, dialysis, recent injecting drug use.

Case Ascertainment

9.4 In order to trigger the appropriate public health response:

- laboratories should report acute hepatitis C cases to the HPU;

[3] Or anti-HCV/Ag positive on combined assay

- where practical this telephone report should be accompanied or followed by a routine electronic or paper report. Although acute infections are currently rarely recognised, laboratories should be encouraged to report those that are. At the current time, HPUs and laboratories should not invest resources in attempting to clarify which infections may be acute, but the advent of new tests, such as combined antigen/antibody assays, may facilitate the establishment of formal mechanisms for surveillance of acute hepatitis C in the future. Within the HPU, the member of staff dealing with the report should be competent to assess and interpret the report.

9.5 The HPU should encourage local clinicians to notify cases of viral hepatitis:

- doctors in England and Wales have a statutory duty to notify the proper officer of the local authority, usually the CCDC, of suspected cases of viral hepatitis including hepatitis C. The doctor should send a certificate stating the name, age, sex of the patient and the address of the premises where the patient is.[17]

Minimum data set

9.6 At local level, each HPU should ensure local collection and collation of demographic, clinical, laboratory and risk factor data. See Table 5. A sample pro forma is also provided in Appendix 4. Data should be stored on a database in each HPU.

Table 5 (Back to List of Tables)
Minimum data set for surveillance of acute hepatitis C (see template data set/proforma in Appendix 4)

Demographic details	Name, address, date of birth, occupation, ethnic group, pregnancy status of women of childbearing age
Clinical features	Abnormal liver function tests, jaundice, asymptomatic
Onset and outcome	Date of onset, whether patient died
Laboratory markers	Hepatitis C RNA, anti-HCV and confirmation that case considered acute (i.e. meets case definition)
Risk factors	Injecting drug use, sexual contact, receipt of blood transfusion/blood product, acupuncture/tattooing/body piercing, dialysis, surgical or dental procedure, other

Reporting onwards/links with regional and national datasets

9.7 The following reporting arrangements should be in place:

- Regional Epidemiology Units should receive laboratory reports via CDR of acute hepatitis C from laboratories in the region;

- HPUs should send data on risk factors to Regional Epidemiology Units, and CfI quarterly or, if a web-based system is used, via access to that system.

FOLLOW UP OF CASES AND THEIR CONTACTS

9.8 The HPU roles are to:

- arrange collection and collation of data on risk factors for surveillance;
- ensure information is given to patients and their contacts to prevent onward transmission; patient information is available from several of the websites listed in Appendix 7;
- recommend that the patient is referred to a specialist for assessment.

Referral of acute hepatitis C infection

9.9 Evidence is emerging that newly infected individuals respond better to standard and reduced treatment regimens than those with chronic infection.[25] Although there are doubts about the appropriate timing for successful treatment,[26,27] such individuals should be referred for urgent clinical assessment.

Recommended on the basis of >1 well-conceived, well-executed, controlled, or time-series study; or >3 studies with more limited execution.

9.10 How this HPU role is discharged is a local decision and in some cases will depend on the particular circumstances of patient.

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10. STANDARDS FOR CHRONIC HEPATITIS C

SURVEILLANCE

10.1 Chronic hepatitis C infection can lead to cirrhosis, liver failure and liver cancer. Surveillance of chronic HCV infection identified through diagnostic testing can be used to inform short term planning but is likely to be strongly influenced by testing patterns. In the UK, most chronic infections are in injecting drug users, and often the date of acquisition is unknown. Collection of exposure category information in all such cases is also likely to be resource intensive and unlikely to offer valid data to inform UK policy.

10.2 It is not routinely recommended that all local HPUs should conduct surveillance of chronic HCV infections. Sentinel surveillance may be conducted in some areas and routine laboratory data may be used for service planning. Prevalence studies, including those in groups being routinely screened e.g. those attending services for injecting drug users (IDUs) and prison are likely to be more helpful in informing service planning. Surveillance of HCV testing can also be used to monitor testing in high-risk groups and the diagnosis of those infected. Such data can be used to:

- evaluate the impact of awareness campaigns;

- increase the identification of those that can benefit from treatment;[8]
- better plan service provision.

10.3 Surveillance is essential for the achievement of the following objectives**:**

- to identify major routes of transmission;
- to identify preventable infections;
- to monitor the prevalence of different genotypes;
- to ensure appropriate follow up through local policy and arrangements;
- to ensure babies born to hepatitis C positive mothers receive appropriate follow up. This is achieved through case finding rather than screening;
- to inform healthcare planning.

Case definition for surveillance

10.4 Anti-HCV positive

or

hepatitis C RNA positive and not meeting case definition for acute HCV.

Case Ascertainment

10.5 HPUs who wish to have laboratory data on individual cases could do so via CDR, CoSurv District module.

Dataset

10.6 It is not recommended that data on individual cases are collected. However HPUs and Regional Units can, by arrangement with the project co-ordinator of the hepatitis sentinel surveillance study, have access to data from sentinel laboratories in their area that participate in the study - see Appendix 3 for details of the sentinel surveillance study.

Reporting onwards/links with regional and national data sets

10.7 The following reporting arrangements should be in place:

- Regional Epidemiology Units should receive laboratory reports of chronic hepatitis C from all laboratories in the region; laboratories should include markers specified in case definition above;
- Regional Epidemiology Units should forward the laboratory data to CfI.

Analysis and feedback of data

10.8 Each HPU should feedback sentinel data for their area from the hepatitis sentinel surveillance study at least annually. At regional level, the Regional Epidemiology Units should monitor and report on number of cases and trends region-wide, at least annually to key local stakeholders. Data from CfI on prevalence among risk groups e.g. drug users should be included in both local and regional reports.

Follow up of cases and their contacts

10.9 Transmission of hepatitis C to sexual and household contacts of cases is uncommon, although such individuals may share other risk factors for infection. Active follow up of all contacts is likely to be resource intensive and of low public health benefit. It is not therefore recommended for HPUs to follow up all cases of chronic hepatitis C infection. Such follow up may be conducted as part of clinical assessment and follow up of each individual, following a risk assessment.

10.10 Once an individual is identified as being infected with hepatitis C, tertiary prevention activities to reduce the risks for HCV transmission and chronic liver disease can be undertaken. Advice of avoidance of other hepatotoxic exposures, including alcohol, can be given and vaccination against hepatitis A and B considered.[21] Anti-HCV positive individuals can be further evaluated for chronic HCV infection and the presence of liver disease.

- ***Indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist.***

10.11 Combination antiviral therapy is recommended by NICE for individuals with moderate fibrosis and inflammation on the liver biopsy.[29] Treatment of mild disease is currently being evaluated by a Health Technology Assessment.

- ***Strongly recommended on the basis of >2 consistent, well-conceived, well-executed studies with control groups or longitudinal***

The HPU role in follow up of cases

10.12 It is not recommended that HPUs routinely follow up individual cases. However, HPUs (through the lead consultant for blood-borne viruses, for example) should work with drug services, prison medical services, primary care staff, consultant virologists, clinicians in secondary care and others involved in testing to ensure that appropriate information and advice is given to patients who test positive. This should include advice on prevention of onward transmission and the need for follow up.

Input to strategy/policy/implementation of hepatitis C action plan

10.13 HPUs should work with:

- infectious disease consultants, hepatologists/gastroenterologists, primary care staff, on protocols to ensure patient pathways for medical and social care;

- PCTs and hospital trusts in implementation of other aspects of the hepatitis C action plan including commissioning of services and development of clinical networks;

- local authorities to promote and audit good infection control practice in cosmetic skin piercing businesses.

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11. MONITORING THE STANDARDS

11.1 The following key standards should be monitored:

- distinction between acute and chronic cases of hepatitis B reported from laboratories;

- completeness of risk factor data for cases of acute hepatitis B;

- vaccination of contacts of cases of acute hepatitis B;

- the proportion of babies born to mothers with hepatitis B, who complete their immunisation schedule of four doses of hepatitis B vaccine.

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APPENDIX 1

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APPENDIX 2

RESULTS OF SURVEY OF HEALTH PROTECTION UNITS

A questionnaire was sent to each HPU in England and Northern Ireland to evaluate local surveillance and contact tracing of hepatitis B and C in February 2005. Questionnaires were distributed via the HPA's regional directors. By April 2005, 60 questionnaires were returned from 51 HPUs. There was a 100% response rate from HPUs in six of the 10 regions surveyed, with a minimum response rate of 71%. The majority of respondents were consultants in communicable disease control (CsCDC) (34, 61%).

Key results

Laboratory reporting: This was almost universally the mainstay of surveillance data for HPUs, although there was variation depending on the type of viral hepatitis. Laboratory data on individual cases were received by HPUs for: acute hepatitis B (43, 86%), chronic hepatitis B (39, 78%), unspecified hepatitis B (39, 78%) and hepatitis C (37, 74%).

Clinical notifications: Only four HPUs, based in London and Yorkshire, were entirely dependent on clinical notifications. Approximately half the HPUs received clinical notifications of acute hepatitis B from GPs and hospital clinicians (and less than 20% from drug clinics and GUM clinics). For chronic and unspecified hepatitis B and hepatitis C, less than 33% of HPUs received clinical notifications.

Aggregated data: On the whole this was accessed relatively infrequently by HPUs. Data from the CfI and Regional Epidemiology Units were accessed most frequently compared with HPA laboratories, other trust laboratories, blood service, maternity units, hepatitis sentinel surveillance study and the hepatitis C register. This pattern was observed most notably for aggregated surveillance data for acute hepatitis B accessed from the CfI (16, 32%) and Regional Epidemiology Units (14, 28%). For chronic and unspecified hepatitis B and hepatitis C, aggregated data were accessed in less than one third of HPUs.

Case definitions: Of the 55% of HPUs responding to this question, the majority (12) used the definition 'HBsAg positive and anti-HBc IgM positive' for acute hepatitis B. None met the case definition for chronic hepatitis B proposed in this document, and two met the case definition for chronic hepatitis C infection proposed in this document.

Contact definitions: For all of the hepatitides, contact definitions were various permutations and combinations of sexual, parenteral and household.

HPU storage of data on individual cases:

- The majority used **paper based systems and databases** (most commonly CoSurv) to store data. Web based systems were used by 12% of respondents to store any data on hepatitis B and C.

- **Data were stored** on individual cases by HPUs as follows: acute hepatitis B by 46 (90%), chronic hepatitis B by 37 (73%), unspecified hepatitis B by 39 (76%), hepatitis C by 42 (83%) and none by two (4%).
- **Demographic information** was stored by HPUs as follows: acute hepatitis B by 47 (92%), chronic hepatitis B by 34 (67%), unspecified hepatitis B by 34 (67%), hepatitis C by 38 (75%) and none by one (2%).
- **Risk factor information** was stored by HPUs as follows: acute hepatitis B by 42 (82%), chronic hepatitis B by 25 (49%), unspecified hepatitis B by 27 (53%), hepatitis C by 10 (20%) and none by 21 (41%).
- **Vaccination history** recording by HPUs varied widely as follows: acute hepatitis B by 30 (59%), chronic hepatitis B by 17 (33%), unspecified hepatitis B by 18 (35%), hepatitis C by 10 (20%) and none by 21 (41%).

Decision-making and action taken

Hepatitis B (except women found to be hepatitis B positive on antenatal screening) and hepatitis C

- The three most frequent **uses of locally stored data** were to follow up cases particularly of acute hepatitis B (40, 65%), to monitor local trends and to identify clusters. The majority did not use the information to inform commissioners of health services.
- Reponses indicated that **identification of cases or contacts** triggered a visit, letter or phone call to varying degrees, most frequently a visit for acute hepatitis B cases (26, 44%) and advice for contacts of cases of acute hepatitis B via a telephone call (18, 31%).
- **Follow up** varied. For cases of acute hepatitis B, 34 HPUs (59%) reported that they would ensure that the GP would follow up; 20 (34%) would ensure that the sender of the specimen would follow up and five (9%) would ensure that the PCT would follow up.
- **Vaccination of contacts** was organised by HPUs as follows**:** contacts of acute hepatitis B by 32 (56%), contacts of chronic hepatitis B by 20 (35%), contacts of unspecified hepatitis B by 17 (30%), contacts of hepatitis C by three (5%) and none by 25 (44%).

Women found to be hepatitis B positive on antenatal screening

- In twelve (21%) HPUs, **staff advised the case via** a follow up visit; six HPUs (10%) sent a letter directly to patient and four (12%) telephoned patients.
- **Responsibility for follow up of positive women** varied: 16 (28%) HPUs ensured that the sender of the specimen did follow up; details were passed to GPs to follow up in 16 HPUs (28%) or to PCT staff to follow up in nine HPUs (16%). Where HPUs did not take any action (7, 12%) this was generally because arrangements were in place with other agencies.
- **Responsibility for follow up vaccinations of babies born to hepatitis B positive mothers** was assigned to midwife/maternity units (13, 22%), HPUs (16, 28%), PCTs (9,16%), GPs (31, 53%), hospital or community paediatricians (10) and health visitors (2).

- **Informing the child health system** of babies born to hepatitis B positive mothers: 34 (59%) respondents knew that this was in place. The child health system was informed by the CCDC (1), midwife/maternity service (12), obstetrician (2), paediatrician (3) and health visitor (2).
- **Audit of hepatitis B vaccine given to babies born to hepatitis B positive mothers** was undertaken by 32 HPUs (56%). This was mainly achieved by contacting GPs who were asked to provide dates of follow up vaccinations. Other auditors were maternity units (4, 17%), PCTs (3, 13%) and health visitors (2, 9%).

Comments on surveillance and follow up

Respondents indicated that roles and responsibilities for follow up needed clarification, particularly for cases identified through antenatal screening. Laboratory issues were cited as problematic, and a standardised approach across all laboratories was called for. There was concern that the public health significance in terms of the need for contact tracing and vaccination was often not clear from laboratory reports.

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APPENDIX 3

CURRENT NATIONAL SURVEILLANCE OF HEPATITIS B AND C

The HPA Centre for Infections carries out surveillance of hepatitis B and C infection in England and Wales. The aim is to monitor trends in incidence and prevalence, to determine the major risk factors associated with infection and to inform healthcare planning, prevention and control strategies.

Laboratory surveillance of hepatitis B

The main aim of the laboratory surveillance of hepatitis B is to monitor the trends in cases of acute hepatitis B infection. Active follow-up of cases to ascertain whether they are acute or chronic and to identify risk factors is an essential part of surveillance.

Evaluation of hepatitis B antenatal testing

Surveillance schemes that evaluate the uptake of antenatal hepatitis B testing and the prevalence of hepatitis B in antenatal women include the following:

- uptake of hepatitis B testing data has been collected via regional antenatal coordinators;
- monthly collection of prevalence data from blood transfusion centres carrying out hepatitis B testing;
- antenatal hepatitis B prevalence data has been gathered from sentinel laboratories.

Babies born to hepatitis B surface antigen positive mothers

Children born to high risk hepatitis B surface antigen positive mothers are followed up to ensure they receive specific hepatitis B immunoglobulin and vaccine at birth and subsequent doses of vaccine. They are also followed up to ensure they are tested for hepatitis B surface antigen at 12 months after birth.

Preliminary data on uptake of hepatitis B vaccination is now being collected as part of the COVER scheme.

Hepatitis B vaccine coverage in prisons

Monitoring of hepatitis B vaccine coverage in selected prisons is currently being conducted by the HPA.

Hepatitis B coverage in men who have sex with men

A surveillance system to monitor hepatitis B vaccine coverage in men who have sex with men and who attend GUM clinics has recently been set up as part of the National Strategy for Sexual Health and HIV. Hepatitis B vaccine coverage in this specific high-risk group is monitored by the HPA.

Unlinked Anonymous Surveys

The Unlinked Anonymous Prevalence Monitoring Programme's Survey of Injecting Drug Users uses oral fluids to detect antibodies to hepatitis B and C in injectors attending specialist services. The study collects detailed behavioural information regarding injecting on the survey participants. The survey also collects data on self-reported hepatitis B vaccination coverage in those injecting drugs.

Collaboration with the National Blood Service
The prevalence of hepatitis B surface antigen and anti-HCV is monitored through a joint collaboration of the National Blood Service with the HPA. This involves the surveillance of donor testing and transfusion transmitted infections, including hepatitis B and C.

Occupational exposure to hepatitis B and C
Surveillance of needlestick and sharps injuries to HBV and HCV positive sources in the hospital setting is carried out by the HPA. Incidents are followed up to establish information on seroconversions.

Laboratory surveillance of hepatitis C
The surveillance system monitors trends in laboratory reports of hepatitis C. Risk factor information is requested. The absence of serological markers to indicate acute infection means that hepatitis C laboratory reports include both prevalent and incident cases.

Hepatitis sentinel surveillance study (previously known as the Hepatitis C Denominator Study)
This surveillance study collects information on individuals being tested for hepatitis B and C in sentinel laboratories around the country using electronic reporting. Follow up information is collected on a sub-set of reports. This information will be used to derive prevalence estimates among groups that are being tested, to identify preventable exposures and help to evaluate the impact of testing and inform the planning of services for the assessment and treatment of infected individuals. This study will also provide information that can be used to estimate HCV incidence in specific risk populations.

Surveillance of the molecular diversity of prevalent and incident hepatitis infections is being undertaken as part of the sentinel laboratory surveillance. Representative samples from anti-HCV positive individuals and acute hepatitis B cases are being referred for HCV genotyping and HBV DNA sequencing at the HPA.

A national register of "known date" HCV infections
A registry of individuals infected with HCV on a known date has been established jointly with NHS Blood and Transplant. Annual follow up on clinical status, liver biopsy results and mortality are collected.

Surveillance of chronic liver disease due to viral hepatitis
Sentinel surveillance is in place in collaboration with hepatologists to monitor end-stage liver disease due to HBV or HCV. This will be used to inform healthcare planning and models of disease burden.

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APPENDIX 4

SAMPLE PROFORMAS

SURVEILLANCE OF ACUTE HEPATITIS B

PATIENT DETAILS			
Surname:			**M / F**
First Name:		**Date of Birth :**	
Address:			
	Postcode:	**Tel No:**	**Mobile No:**
***Pregnant:** ☐ Yes ☐ No ☐ DK		***EDD:**	

OCCUPATION	
Occupation (specify):	**Place of Work/Education/*Other** (*i.e. prison, home)
Please give details if patient works in **health-care setting** (inc hospitals, primary care, care homes) looking after patients, or **education-settings** (work or student):	
Name of Premises:	**Address of Premises:**

ETHNIC GROUP and COUNTRY of ACQUISITION			
Black-African	Black-Other (specify)	South Asian	White
Black-Caribbean	Chinese	Other Asian	Other (specify)
Was infection acquired abroad? ☐ Yes* ☐ No *If yes, specify country:			

GP AND HOSPITAL ADMISSION DETAILS	
GP Name:	**Tel No :**
Practice Address :	
Admitted to Hospital: ☐ Yes* ☐ No	***Name of Admitting Hospital:**
***Ward:**	***Consultant:**
***Admission Date:**	***Discharge Date:**

CLINICAL FEATURES

☐ **Abnormal LFTs** ☐ **Clinical Jaundice** ☐ **Hepatic Failure** ☐ **Asymptomatic**

Onset Date:	**Did patient die**: ☐ Yes* ☐ No
***Cause of death**:	☐ **Acute** ☐ **Chronic**

LABORATORY CONFIRMATION / SPECIMEN DETAILS

	Pos	Neg	Equiv	Not Detected	Date Positive	
Hepatitis B surface antigen (HBsAg)						
IgM antibody to hepatitis B core antigen (anti-HBc IgM)						
Total antibody to hepatitis B core antigen (anti-HBc)						
Hepatitis B e antigen (HBeAg)						
Antibody to hepatitis B e antigen (anti-HBe)						
Hepatitis B DNA					Date positive:	Value:

1st Specimen Date:	**Lab Ref No:**
Laboratory:	**Other Laboratory:**

VACCINATION

Has the Patient Received:	**Yes**	**No**	**Don't Know**
Hepatitis B immunoglobulin 6 months prior to onset			
One or more doses of hepatitis B vaccine			
Human *normal* immunoglobulin in 3 months prior to onset			

RISK FACTORS (TICK AS MANY BOXES AS APPLY)							
	Yes	**Date**	**No**	**NK**	**Abroad**	**UK**	**Where**
Contact hepatitis case							
Contact hepatitis carrier							
Mother to baby transmission							
Family/household exposure							
Sex between men							
Sex between men and women							
Injecting drug user:							
Needle sharing							
Sharing other injecting paraphernalia							
Drug abuse (unspecified)							
Needlestick/sharps Injury							
Dental treatment							
Hostel							
Prison							
Homeless							
Surgical treatment							
Specify where surgical treatment was carried out and type of surgical intervention:							
Therapeutic/prophylactic injections							
Occupational exposure							
Healthcare worker							
Blood transfusion							
Other blood products							
Tattoo							
Ear piercing							
Other body piercing							
Acupuncture							
Electrolysis							
Other risk							
Please specify:							
No relevant history							

OUTBREAK			
Is this case part of an outbreak: ☐ Yes* ☐ No	*Community	*Family	*Other
*If 'yes', please give details:			
OTHER RELEVANT INFORMATION/COMMENTS			
PERSON COMPLETING FORM			
Name:			
Title:	**Date:**		

FOLLOW UP OF CASES and CONTACTS OF ACUTE HEPATITIS B

CASE			
Leaflet on hepatitis B given: ☐ Yes ☐ No			
Advice on prevention of onward transmission given: ☐ Yes ☐ No			
Additional Information/Comment:			
CONTACTS			
Name, address	Vaccinated previously Y/N/DN	Vaccination arranged Y/N Standard schedule Accelerated schedule	HBIG required Y/N
Name, address	Vaccinated previously Y/N/DN	Vaccination arranged Y/N Standard schedule Accelerated schedule	HBIG required Y/N
Name, address	Vaccinated previously Y/N/DN	Vaccination arranged Y/N Standard schedule Accelerated schedule	HBIG required Y/N
Name, address	Vaccinated previously Y/N/DN	Vaccination arranged Y/N Standard schedule Accelerated schedule	HBIG required Y/N
PERSON COMPLETING FORM			
Name:			
Title:		**Date:**	

SURVEILLANCE and FOLLOW UP OF HEPATITIS B POSITIVE PREGNANT WOMEN AND THEIR BABIES

PATIENT AND HOSPITAL DETAILS

Surname:	**M / F**
First Name:	**Date of Birth :**
Address:	
Postcode:	**Tel No:** **Mobile No:**
EDD:	**Name of Hospital/premises of birth**:
Name of consultant:	**Name of midwife:**

ETHNIC GROUP AND COUNTRY OF ACQUISITION

Black-African	Black-Other (specify)	South Asian	White
Black-Caribbean	Chinese	Other Asian	Other (specify)

Was infection acquired abroad: ☐ Yes* ☐ No
*If yes, specify country:

GP DETAILS

GP Name:	**Tel No :**
Practice Address :	

LABORATORY CONFIRMATION / SPECIMEN DETAILS

	Pos	Neg	Equiv	Not Detected	Date Positive
Hepatitis B surface antigen (HBsAg)					
IgM antibody to hepatitis B core antigen (anti-HBc IgM)					
Total antibody to hepatitis B core antigen (anti-HBc)					
Hepatitis B e antigen (HBeAg)					
Antibody to hepatitis B e antigen (anti-HBe)					
Antibody to hepatitis B surface antigen (anti-HBs)					
Hepatitis B DNA					

Infection status: ☐ **Acute** ☐ **Chronic**

1st Specimen Date:	**Lab Ref No:**

Laboratory:	**Other Laboratory:**

AUDIT OF OUTCOME FOR BABY BORN TO HEPATITIS B POSITIVE MOTHER

BABY'S DETAILS				
Surname:				**M / F**
First Name:	**Date of Birth :**			
Address if different from mother's				
	Postcode:			
	Yes	**No**		**Don't know**
Has child health system been informed				
Has the Baby Received:	**Yes**	**No**	**Not needed**	**Don't Know**
Hepatitis B immunoglobulin at delivery				
	Yes (if schedule does not follow recommended one, please state when given e.g. specify month)		**No**	**Don't know**
Hepatitis B vaccine at delivery (0 month) – First dose				
Hepatitis B vaccine at 1 month – Second dose				
Hepatitis B vaccine at 2 months – Third dose				
Hepatitis B vaccine at 12 months – Fourth dose				

Result of blood test at 12 months:

	Pos	**Neg**	**Equiv**	**Date of result**
Hepatitis B surface antigen (HBsAg)				
Total antibody to hepatitis B core antigen (anti-HBc)				
Antibody to hepatitis B surface antigen (anti-HBs)				

PERSON COMPLETING FORM:	
Name:	
Title:	**Date:**

SURVEILLANCE OF ACUTE HEPATITIS C

PATIENT DETAILS

Surname/GUM Number:	**M / F**
First Name:	**Date of Birth :**
Address:	
Postcode:	**Tel No:** **Mobile No:**
***Pregnant:** ☐ Yes ☐ No ☐ DK	***EDD:**

OCCUPATION

Occupation (specify):	**Place of Work/Education/*Other** (*i.e. prison, home)

Please give details if patient works in **health-care setting** (inc hospitals, primary care, care homes) looking after patients, or **education-settings** (work or student):

Name of Premises:	**Address of Premises:** **Postcode:**

ETHNIC GROUP and COUNTRY of ACQUISITION

Black-African	Black-Other (specify)	South Asian	White
Black-Caribbean	Chinese	Other Asian	Other (specify)

Was infection acquired abroad: ☐ Yes* ☐ No

*If yes, specify country:

GP AND HOSPITAL ADMISSION DETAILS

GP Name:	**Tel No :**
Practice Address :	
Admitted to Hospital: ☐ Yes* ☐ No	***Name of Admitting Hospital:**
***Ward:**	***Consultant:**
***Admission Date:**	***Discharge Date:**

CLINICAL FEATURES

☐ **Abnormal LFTs** ☐ **Clinical Jaundice** ☐ **Hepatic Failure** ☐ **Asymptomatic**

Onset Date:	**Did patient die**: ☐ Yes* ☐ No
***Cause of death**:	

LABORATORY CONFIRMATION / SPECIMEN DETAILS

	Pos	Neg	Equiv	ND	Date Positive
Antibody to hepatitis C (anti-HCV)					
Hepatitis C (HCV) RNA					

Recent seroconversion ☐ Yes ☐ No

Reported as acute case by consultant virologist/microbiologist: ☐ Yes ☐ No

1st Specimen Date:	**Lab Ref No:**
Laboratory:	**Other Laboratory:**

RISK FACTORS (TICK AS MANY BOXES AS APPLY)

	Yes	Date	No	NK	Abroad	UK	Where
Contact with person with hepatitis C							
Injecting drug user:							
Needle sharing							
Sharing other injecting paraphernalia							
Drug abuse (unspecified)							
Needlestick/sharps Injury							
Sex between men							
Sex between men and women							
Family/household exposure							
Mother to baby transmission							
Dental treatment							
Hostel							
Prison							
Homeless							
Surgical treatment							
Specify where surgical treatment was carried out and type of surgical intervention							
Therapeutic/prophylactic injections							
Occupational exposure							
Healthcare worker							
Blood transfusion							
Other blood products							
Tattoo							

Ear piercing							
Other body piercing							
Acupuncture							
Electrolysis							
Residence abroad at any time							
Specify country(ies)							
Travel abroad in previous 6 months							
Specify country(ies)							
Other risk							
Please specify							
No relevant history							

OUTBREAK			
Is this case part of an outbreak: ☐ Yes* ☐ No	*Community	*Family	*Other
*If 'yes', please give details:			

OTHER RELEVANT INFORMATION/COMMENTS	
PERSON COMPLETING FORM	
Name:	
Title:	**Date:**

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APPENDIX 5

SAMPLE LETTERS

Standard letter to GP for cases of acute hepatitis B* - to be amended to reflect local arrangements for completing standard surveillance questionnaires and issuing hepatitis B immunoglobulin

Dear Doctor

Name of Patient

As we discussed on the phone, the above patient has been notified as suffering from acute hepatitis B and I am writing to confirm the action agreed.

During the acute infection, the patient is highly infectious and poses a risk to any sexual partners or in the case of injecting drug users, to others sharing needles or injecting equipment. Infection rates of 18% have been reported in heterosexual regular partners. Other household contacts are at a smaller but significant risk of infection through the sharing of razors, toothbrushes and similar items. ***You/we/GUM/another clinical service*** have identified contacts at potential risk of transmission of hepatitis B from the index case as set out in the attached table.

That information was obtained using a standard surveillance questionnaire that also identifies any known risk factors for the index case. ***You/we/GUM/another clinical service*** have provided information to the patient and will ask contacts to telephone the general practice with which they are registered to arrange an appointment for immunisation and blood tests as follows:

- Sexual partners identified within seven days of the index case of hepatitis becoming jaundiced/developing acute symptoms should be offered immunoglobulin *[insert local arrangements for organising the provision of immunoglobulin].*

- All sexual partners and household contacts of the index case should be tested for hepatitis B markers and where necessary vaccinated with three doses of hepatitis B vaccine at monthly intervals. This includes children. For sexual contacts, vaccination should begin immediately even though the test results for the hepatitis B markers may not be available. If evidence of ongoing infection/existing immunity is found, i.e. the patient is found to be positive for HBsAg, anti-HBc or anti-HBs, then further doses of vaccine are not necessary and the course can be discontinued. For household contacts, it is appropriate to wait for the test results before starting vaccination. If testing is not feasible in children, they should be vaccinated because this will not be harmful if they are already immune or chronically infected. Their hepatitis B status can then be checked when they are older.

* letter would be amended where contacts are IDUs to reflect need for super accelerated course of vaccine.

- For those patients who do require vaccination, a booster dose of vaccine will be required at 12 months and again at five years if the patient is at ongoing risk of infection.

- Contacts can be checked for hepatitis B infection with a blood test requesting HBsAg and core anti-HBc at six months after starting vaccination.

The index case should be advised to avoid unprotected sexual intercourse, including oro-anal and oro-genital contact, until immunity in their partner is established or they themselves are known to be no longer infectious. I would be grateful if you could arrange for the patient to be tested for HBsAg six months after onset. If the patient is found to be positive, referral to a local hepatologist/consultant gastroenterologist for assessment is advisable given the risk of chronic liver disease and hepatocellular carcinoma. Details of local services are appended to this letter.

Child contacts who are HBsAg positive should be referred to a local consultant paediatrician for assessment and any adult contacts who are HBsAg positive should be referred to a local hepatologist/consultant gastroenterologist for assessment.

Details of the accelerated hepatitis B vaccine schedule and hepatitis B immunoglobulin are attached together with information for the patient and their contacts. *[Insert locally].*

For female patients - (amend according to local arrangements)
If the patient is pregnant, or becomes pregnant in the next few months, please let me know as soon as possible because immunisation of the newborn infant must be arranged.

Please contact the Health Protection Team if you have any queries about the content of this letter.

Yours sincerely

Contacts of case of acute hepatitis B registered with your practice*

Name	Date of birth	Address	Type of contact – household, sexual, injecting

* letters will also be sent to GPs of contacts who are registered with other practices

Standard Letter to GP for chronic cases of hepatitis B*

Dear Doctor

Name of Patient

The above patient has recently been reported to me as having the serological markers of chronic infection with hepatitis B virus. While chronic infection is most commonly acquired overseas either at birth or during childhood, infection can of course occur during adulthood through blood to blood contact, e.g. during sexual intercourse, sharing needles or less frequently through household contact and the sharing of toothbrushes, razors or other similar items.

If the patient is not already under the care of a local hepatologist or consultant gastroenterologist, I recommend making a referral for assessment, given the risk of chronic liver disease and hepatocellular carcinoma that is associated with chronic hepatitis B. Details of local services are appended to this letter.

As your patient is infectious, I would be grateful if you could advise them that if sexual and household contacts have not already been tested for hepatitis B markers they should see yourself or their own GP in order that appropriate blood testing can be arranged. Contacts who are vulnerable to hepatitis B infection should then be vaccinated as set out below. I would be grateful if you would make the necessary arrangements for any contacts that are registered with you. The patient should also be advised that any new sexual partners will be at risk of infection.

A factsheet about hepatitis B is also enclosed, which may be helpful for your patient and their family.

The following course of action is recommended:

- Sexual partners and close household family contacts, including children, should have their blood tested for hepatitis B markers. This may be difficult for younger children, but older children, born to HBsAg positive mothers and where vaccination was not given at birth, are at particular risk.

* letter would be amended where contacts are IDUs to reflect the need for a super accelerated course of vaccine

- Any contacts who are HBsAg positive, indicating that they are already infected or anti-HBs or anti-HBc positive indicating immunity, do not require further immunisation. Otherwise contacts should be vaccinated with three doses of hepatitis B vaccine at monthly intervals and with a booster dose at one year and again at five years if at continuing risk. For sexual contacts, it would be unwise to wait for the results of the blood tests before starting the course of vaccination; immunoglobulin may be added if unprotected sexual contact occurred in the last seven days *[insert local arrangements for organising the provision of immunoglobulin].* If sexual contacts are subsequently found to be either immune or to have ongoing infection, the course of vaccination can be discontinued. Details of the accelerated hepatitis B vaccine schedule are appended.

- For young children where testing is not feasible, vaccination can be given safely even if they are either immune or already have chronic infection. The child's hepatitis B status should however be checked when the child is older.

- After a course of vaccination, immunity can be tested by rechecking hepatitis B markers at six months after the first dose was given.

- Contacts who are found to be HBsAg positive should be referred to a local hepatologist/gastroenterologist. In the case of children, they should be referred to a local consultant paediatrician with expertise in this area and details of local services are appended.

For female patients – (amend according to local arrangements)

If the patient is pregnant, or becomes pregnant in the next few months please let me know as soon as possible because immunisation of the newborn infant must be arranged.

Please contact the local Health Protection Team on the above number if you have any queries about the contents of this letter.

Yours sincerely

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APPENDIX 6

Hepatitis B Information Leaflet for Patients - Sample[4]

What is hepatitis?

Hepatitis means inflammation of the liver. The commonest cause is infection with a virus, but hepatitis can also be caused by drinking too much alcohol or by the side effects of some drugs and chemicals.

There are several different hepatitis viruses that affect the liver. The main ones are hepatitis A, B, C, D and E. The viruses differ from each other in how they are spread, the way they cause liver damage and the effects they can have on your health. This leaflet is about hepatitis B virus (HBV).

What are the symptoms of hepatitis B?

There is a time, known as the incubation period, of between six weeks and six months after the virus enters the body before any symptoms may appear. Many people never have any symptoms. Some adults notice a short 'flu-like illness, which may include tiredness, aches and pains, nausea and loss of appetite. These symptoms are sometimes diagnosed as 'flu unless more serious symptoms such as vomiting, abdominal pain and yellow jaundice occur. Jaundice causes the skin and whites of the eyes to go a yellow colour.

Acute and chronic hepatitis B

Hepatitis B can cause an acute or a chronic illness.

An **acute** illness is one that gets better quickly, usually within weeks or at most a few months.

A **chronic** illness is one that lasts a long time, possibly for the rest of life, sometimes waxing and waning. Chronic hepatitis B is hepatitis B that has lasted longer than six months.

Most adults recover fully from acute hepatitis B, normally within six months and remain immune for life. Some people may be ill for days or weeks and then recover. Others may recover without realising they have been infected. On rare occasions an acute infection causes fatal liver damage.

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[4] Leaflet for pregnant women, Hepatitis B: How to protect your baby, is available on Department of Health website http://www.dh.gov.uk/assetRoot/04/10/16/64/04101664.pdf (accessed 29 December 2005)
Hepatitis C leaflets are available on Department of Health website:
http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4098008andchk=Jj5at8
(accessed 29 December 2005)

A few people carry the virus without symptoms. They are known as carriers and may be unaware that they are infected. Some carriers develop liver disease while others remain healthy. Most carriers are infectious (i.e. capable of spreading the virus to others) although the degree of infectiousness ranges from very low to very high. Some carriers clear the virus after varying intervals. Approximately 25% of carriers develop serious liver disease, including chronic hepatitis and cirrhosis. Over time, some develop liver cancer.

How do you catch hepatitis B?

In the UK, Europe and North America, hepatitis B is mainly passed from person to person during sexual contact. Worldwide, the main route of transmission is through infected blood, particularly when babies are born to infected mothers. The virus may be present in other secretions, such as saliva and vaginal fluid, which may transmit the infection.

Blood

A tiny amount of blood, too small to be visible to the naked eye, from someone who has the virus will transmit the infection if it gets into someone else's bloodstream. This can happen through an open wound, cut or scratch, or from a contaminated needle. Injecting drug users who share injecting equipment have a high risk of infection. The virus can also be passed on from medical and dental treatment in countries where equipment is not adequately sterilised. All blood donated in the UK is now screened for hepatitis B, but before screening it was possible to become infected by receiving blood or blood products from an infected person. In countries where blood is not screened, blood transfusions may still be a cause of infection.

Sex

Hepatitis B can be passed on during unprotected sex with an infected person.

Mother to baby

Infected mothers can pass on the virus to their babies around the time of the birth. Babies infected at birth are very likely to develop chronic infection unless they are vaccinated. Vaccination of babies born to hepatitis B positive mothers at birth is extremely effective at preventing infection. Since April 2000 all pregnant women have been offered testing for hepatitis B. If they are infected, their baby will be vaccinated and may be given immunoglobulin immediately after the birth. Immunoglobulin contains active agents known as antibodies that give extra short-term protection against infection.

Treatment

Most people with acute hepatitis B do not need treatment because they do not develop long-term liver damage. They may feel more tired than usual and need rest but they eventually recover and acquire lifelong protection against the virus. A blood test should be done six months after the diagnosis of acute hepatitis B.

People who are infected for longer than six months may benefit from treatment. They need to be regularly monitored by a specialist in liver disease to detect whether liver damage is occurring and whether treatment is necessary. A number of antiviral drugs are currently being used for treatment.

Family and friends

Sexual partners, children, and other household members of an acutely infected person or a chronic carrier should be vaccinated. Anyone who has shared needles with an acutely infected person or a chronic carrier should also be vaccinated. Advice on protection of close contacts can be obtained from your GP or local Health Protection Unit. There is no risk of infection from normal social contact so occasional visitors and friends do not need protection. For example, you cannot catch hepatitis B from a toilet seat or just by touching an infected person. No special precautions are needed when handling crockery and cutlery used by someone with Hepatitis B. They can be washed up in hot soapy water or a dishwasher in the normal way.

Hepatitis B vaccine

Hepatitis B vaccine is given by injection as three separate doses. When there is no immediate risk of infection, the first dose is followed by one a month later and another five months after that. The vaccine is given routinely to those who are at risk of getting infected, for example doctors, nurses and dentists who are at risk during the course of their work, injecting drug users, babies born to infected mothers and contacts of acute cases or carriers of hepatitis B.

If there has been an exposure to possible hepatitis B with an immediate risk of infection, then a faster vaccination course is given, with three doses each one month apart, plus a fourth dose after a year. A blood test is sometimes recommended before or at the same time as vaccination and again after the final injection to find out whether the vaccine has worked.

The vaccine is given routinely to those who are at risk of getting infected, for example doctors, nurses and dentists who are at risk during the course of their work, injecting drug users, babies born to infected mothers and contacts of acute cases or carriers of hepatitis B.

How someone with hepatitis B can reduce the risk of infecting others:

- carefully clean and cover cuts, scratches and open wounds with a waterproof plaster;
- clean up blood from floors and work surfaces with undiluted household bleach;
- do not use anyone else's toothbrush, razor, scissors or other personal item;
- if having sex, practise safer sex by using a condom
- do not donate blood or semen or register as an organ donor.

Hepatitis B can be prevented by:

- being vaccinated if you are at risk of getting infection e.g. healthcare workers, injecting drug users, contacts of acute cases and carriers;
- not sharing needles if you are a drug user;
- having a blood test for hepatitis B if you are pregnant and, if you are hepatitis B positive, by making sure your baby has the full course of vaccination ;
- using condoms if you are having sex with someone other than a steady partner;
- not sharing items such as razors or toothbrushes that might have blood on them;
- considering the risks of tattooing or body piercing (not all tattoo artists/piercers follow good health practices).

USEFUL SOURCES OF FURTHER INFORMATION

British Liver Trust
http://www.britishlivertrust.org.uk

NHS Choices, Hepatitis section
http://www.nhs.uk/conditions/Hepatitis/Pages/Introduction.aspx

Health Protection Agency
http://hpa.org.uk

Hepatitis on NHS Direct Online
http://www.nhsdirect.nhs.uk

Children's Liver Disease Foundation
http://www.childliverdisease.org/

HPA Migrant Health Guide (includes links to patient information in different languages)
http://www.hpa.org.uk/MigrantHealthGuide/HealthTopics/InfectiousDiseases/HepatitisB/

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APPENDIX 7

SOURCES OF INFORMATION ON HEPATITIS B AND HEPATITIS C

Link to hepatitis B pages on the HPA web site:

www.hpa.org.uk/infections/topics_az/hepatitis_b/menu.htm

Link to hepatitis C pages on the HPA web site:

www.hpa.org.uk/infections/topics_az/hepatitis_c/menu.htm

Link to unlinked anonymous survey of injecting drug users page on the HPA web site:
http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1202115519183

Hepatitis B and hepatitis C key documents on DH website

Health clearance for tuberculosis, hepatitis B, hepatitis C and HIV: New healthcare workers, 2007

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_073132

Hepatitis B infected healthcare workers and antiviral therapy, 2007

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_073164

Hepatitis B Chapter of Immunisation against Infectious Diseases - the 'Green Book' – 2006 updated version
http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_108820.pdf

Hepatitis B antenatal screening and newborn immunisation programme: Best practice guidance, April 2011
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_126195

Hepatitis B: Pathway stages to protection - Actions, roles, responsibilities and standards, April 2011

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_126202

Good practice guidelines for renal dialysis/transplantation units: prevention and control of blood-borne virus infection,2002
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4005752

Prevention and control of blood-borne virus infection addendum: guidelines for dialysis away, 2010
http://www.dh.gov.uk/en/Publicationsandstatistics/Lettersandcirculars/Dearcolleagueletters/DH_120686from base

Hepatitis C: quick reference guide for primary care, 2009

Hepatitis C: Action Plan for England, 2004
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4084521

General

CDC hepatitis pages
www.cdc.gov/hepatitis

British Liver Trust
http://www.britishlivertrust.org.uk

Children's Liver Disease Foundation
www.childliverdisease.org

Viral Hepatitis Prevention Board
www.vhpb.org

The National Blood Service
www.blood.co.uk

The Hepatitis C Trust
www.hepcuk.info

NHS Choices, Hepatitis section
http://www.nhs.uk/conditions/Hepatitis/Pages/Introduction.aspx

Links to Patient Information Leaflets in different languages*:*
http://www.hpa.org.uk/MigrantHealthGuide/HealthTopics/InfectiousDiseases/HepatitisB/#patient_info_english_and_other

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GLOSSARY/DEFINITIONS

Anti-HBc: Total antibody to hepatitis B core antigen
Anti-HBc IgM: Immunoglobulin M antibody to hepatitis B core antigen
Anti-HBe: Antibody to hepatitis B e antigen
Anti-HBs: Antibody to hepatitis B surface antigen
Anti-HAV: Antibody to hepatitis A
Anti-HAV IgM: Immunoglobulin M antibody to hepatitis A
Anti-HCV: Antibody to HCV
CDC: Centers for Disease Control and Prevention, USA
CCDC: Consultant in communicable disease control
Communicable Disease Reports (CDR): Laboratories are asked to report all clinically significant infections including hepatitis B and C to the Health Protection Agency Regional Epidemiology Unit; these reports are known as routine Communicable Disease Reports (CDR)
CoSurv: an electronic system that enables laboratories to report infections to the Health Protection Agency; separate modules exist for laboratories, HPUs and Regional Epidemiology Units of the Health Protection Agency
CfI: Centre for Infections (division of Health Protection Agency), formerly CDSC (Communicable Disease Surveillance Centre) and the Central Public Health Laboratory
HBIG: Hepatitis B immunoglobulin
HBeAg: Hepatitis B e antigen
HBsAg: Hepatitis B surface antigen
HBV: Hepatitis B virus
HBV DNA: Deoxyribonucleic acid from HBV
HCV: Hepatitis C virus
HCV RNA: Ribonucleic acid from HCV
HPU: Health Protection Unit
LaRS: Local and Regional Services (division of Health Protection Agency)
NICE: National Institute for Health and Clinical Excellence
Notifiable disease: Doctors in England and Wales have a statutory duty to notify a “proper officer” of the local authority of suspected cases of certain infectious diseases known as notifiable diseases; the proper officer is usually the consultant in communicable disease control; the proper officers are required every week to inform the Centre for Infections details of each case that has been notified
PCT: Primary Care Trust
PHMEG: Public Health Medicine Environmental Group: A group that promotes interest in communicable disease control, environmental health and other aspects of the work of CCDCs, epidemiologists and specialists working in public health
SHA: Strategic Health Authority

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