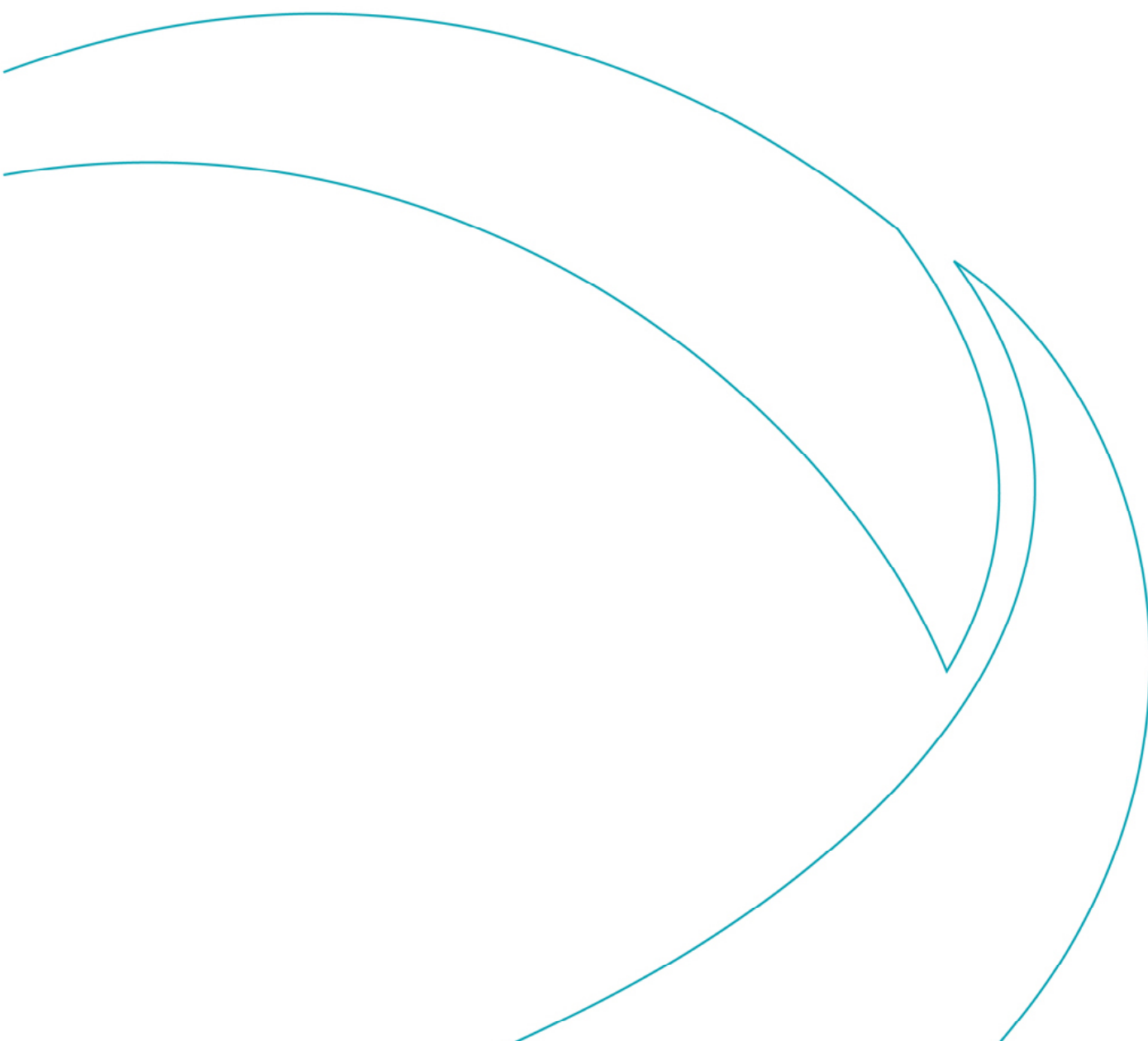




# **Hepatitis B in Residential/ Boarding Schools**

Supporting Information for Managing Incidents



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## 1. Purpose of the Paper

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This paper aims to draw together the evidence relating to hepatitis B prevalence and transmission risks in a residential/boarding school setting. This document is to help Health Protection Units (HPUs) react to, risk assess and manage hepatitis B incidents in boarding/residential school settings.

The paper also brings into the debate the legal and ethical frameworks that apply to residential/boarding schools in relation to pre-admission health checks, confidentiality, infection control, and the protection of student and staff. The guidance and legislation referred to in this paper is subject to change over time, therefore this paper should be interpreted accordingly, and additional independent advice should be sought in relation to the law and any legal issues.

This paper should be used in conjunction with *Hepatitis B in Boarding/Residential Schools - Checklist and Actions* when managing incidents in this setting.

## 2. Introduction

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Hepatitis B is an acute viral infection of the liver. The disease can lead to long-term carriage which eventually can result in cirrhosis and hepatocellular cancer.

The virus is blood borne so is usually spread by sharing injecting equipment, blood transfusions, sharps injuries, poor clinical practice, sexual intercourse, and during or soon after child birth.

The epidemiology varies across Europe and, indeed, the rest of the world. The incidence of acute infections ranges from <5 per 100,000 population in some West European countries (including England and Wales) to around 30 per 100,000 in some Eastern European countries (Hawker *et al.*, 2005).

Recent figures from the Health Protection Agency (HPA) showed that the incidence of acute hepatitis B infection during 2010 in England was 0.99 per 100,000 population (range: 0.54 per 100,000 population in the North East to 1.82 per 100,000 population in London).

In England and Wales, acute infectious hepatitis is a statutory notifiable disease under the new Health Protection (Notification) Regulations 2010 of the Public Health (Control of Disease) Act 1984. High-risk groups are those who are likely to be exposed to contaminated body fluids. They include injecting drug users, individuals with high risk sexual practices (men who have sex with men, sex workers etc.), close family contacts of a case of hepatitis B, people in need of blood products (in countries without tight controls to prevent the spread of infections through blood products), individuals who are immunosuppressed, travellers to high prevalence countries, healthcare workers, and individuals who have had body piercings or tattoos.

There is a highly effective vaccination for hepatitis B (95% efficacy). The World Health Organization (WHO: Global Advisory Group) recommended, in 1992, that all countries should (by December 1997) integrate the hepatitis B vaccination into the routine infant

or adolescent schedules (Zuckerman and Langer, 2005). A number of countries worldwide<sup>1</sup> have encouraged universal immunisation of school children against hepatitis B (Schoub and Kew, 1995; Salleras *et al.*, 2005; Centers for Disease Control and Prevention [CDC], 2005; Gidding *et al.*, 2007). For example, since a universal vaccination programme was introduced for children in Catalonia (Spain) in 1991 the number of new cases of hepatitis B being reported has reduced dramatically (Salleras *et al.*, 2005).

The UK has resisted the adoption of a universal vaccination programme because of the low prevalence of hepatitis B in the UK and the costs associated with a national immunisation programme. The UK has adopted a policy of only vaccinating high-risk individuals, such as healthcare workers (their exposure to transmission opportunities is due to the nature of their occupation) or injecting drug users. In addition, all women attending antenatal clinics are screened so that the babies of any infected mothers can be immunised at birth (Banatvala, Van Damme and Emiroglu, 2006).

There is a large amount of interest around hepatitis B in children because infection in childhood is more likely to lead to a chronic infection. In the United States, before hepatitis B vaccination programmes, it was estimated that 30-40% of chronic infections resulted from perinatal (during or shortly after birth) or early childhood transmission, even though <10% of reported cases of hepatitis B occurred in children aged under 10 (CDC, 2005). This is highly relevant because the risk of a HBV infection becoming chronic varies inversely with age of infection (Zuckerman and Langer, 2005):

- 90-95% become chronic when infected at birth,
- 20-50% become chronic when infected between 1 and 5 years,
- 1-10% become chronic when infected as an older child or adult.

In countries with high hepatitis B prevalence, the majority of new infections are acquired at birth or during childhood. In countries with low hepatitis B prevalence (e.g. England), most new infections are acquired through high-risk practices for contracting blood borne viruses, such as anal sex and injecting drug use. Children born to infectious mothers and from communities of high prevalence are also considered to be at higher risk in low hepatitis B prevalence countries.

In England, the actual number of acute infections in children is small. During 2010, 12 new infections were identified in children under the age of 15 years (HPA, 2010); this equates to an incidence rate of 0.13 per 100,000 of the under-15-year population.

A key public health action undertaken in the UK is the post-exposure prophylaxis and immunisation of infants born to hepatitis B surface antigen-positive (HBsAg) women. However, it remains that the majority of new HBV chronic infections in the UK are attributable to the immigration of carriers (HPA, 2006; Zuckerman and Langer, 2005).

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<sup>1</sup> To see which countries vaccinate for Hepatitis B visit the World Health Organization (2010) *WHO Vaccine Preventable Diseases Monitoring System*, at [www.who.int/immunization\\_monitoring/en/globalsummary/scheduleselect.cfm](http://www.who.int/immunization_monitoring/en/globalsummary/scheduleselect.cfm)

### **3. The Need for a Guideline**

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As mentioned in the Introduction, groups who are deemed at higher risk of contracting hepatitis B in the UK are usually considered for the hepatitis B vaccination. Independent schools in the UK often attract students from all over the world (including children from countries with a high prevalence of hepatitis B; Boarding Schools' Association, 2010). The schools offer full board (24 hours a day, each week) as part of the arrangement. There are a number (~35) of state boarding schools across England and Wales (State Boarding Schools' Association, 2010); however these do not accept foreign students.

There is anecdotal evidence of a number of incidents where a student(s) attending boarding school have been found to be infected with hepatitis B. An example was reported in the South West of England where a secondary school-aged pupil was found to be chronically infected with hepatitis B and sharing a dormitory (with a communal bathroom) with four other pupils.

At present, there are no guidelines in the UK on how to manage these specific incidents and what the risks are for other pupils, for example, through contact sports or sharing bathroom facilities.

In light of this, it has been suggested through the Health Protection Service (HPS) network of the HPA that a situation report should be produced on independent schools (who offer boarding arrangements) in order for local HPUs to help prevent the transmission of hepatitis B within the setting, identify individuals who are currently infected and could benefit from treatment, and manage the risk of hepatitis B within the institution.

### **4. Search Strategy**

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A thorough search of the evidence was conducted for this paper. The aim was to find evidence relating to:

- Prevalence of hepatitis B in schools (or other similar settings) with a residential/boarding component.
- Transmission risks for hepatitis B in a variety of situations that may be encountered at a residential/boarding school – class room situation, contact sports, residential exposures.
- Interventions used to reduce the transmission or risk of transmission of hepatitis B in residential/boarding settings (this included schools, young offenders' institutes, children's homes, military etc.).

Research articles were obtained by a computerised search in NHS Evidence: Health Information Resources (2009). NHS Evidence searches:

- Evidence-based reviews (Bandolier, Cochrane Library, Database of Abstracts of Reviews of Evidence [DARE], Health Technology Assessment [HTA] Database, NHS Economic Evaluation Database [EED] and UK Database of Uncertainties about the Effects of Treatments [DUETs]).

- Guidance (Clinical Knowledge Summaries [CKS] formerly PRODIGY, National Library of Guidelines, and selected International Guidelines).
- Specialist collections (collections of the best available evidence for different communities of practice).
- Books, journals and healthcare databases (AMED – Allied and Complimentary Medicines, British Nursing Index, CINAHL, EMBASE – Excerpta Medica Database, E-books, Health Business Elite, Health Management Information Consortium, Medical Literature Analysis and Retrieval System Online [MEDLINE] – US National Library of Medicine, My Journals, and PsycINFO).

Key search terms used, among others were 'hepatitis B', 'hepatitis B prevalence', 'school\*', 'child\*', 'adolescent\*', 'residential', 'horizontal transmission', 'boarding school\*'. These search terms were used in a variety of combinations to produce a range of references. The raw results can be found in Appendix 1 with the details of the searches conducted. Articles were only accepted from scholarly journals that are peer reviewed.

In addition to the search for peer-reviewed literature, an internet search was conducted to find guidelines and recommendations from bodies and agencies that support the residential/boarding schools sector. For example, the HPA website and the Medical Officers of Schools Association website were trawled for any guidelines or recommendations on hepatitis B, infection control, and pre-admission health checks.

The studies and guidelines used in this discussion paper are highlighted in the reference list by an asterisk. Overall, the level and type of published evidence uncovered through the literature search was low. On general screening, the studies were mainly level three or four. The studies were not always relevant to the boarding school setting, but they were considered due to their broader application to the prevention of hepatitis B transmission.

The lack of high quality evidence on hepatitis B transmission was supported by earlier HPA guidelines which make recommendations "indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist" (HPA, 2009).

#### **Level and Type of Evidence (NICE, 2009)**

1++ High-quality meta-analyses, systematic reviews of Randomised Control Trials (RCTs), or RCTs with a very low risk of bias

1+ Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias

1– Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias

2++ High-quality systematic reviews of case–control or cohort studies, and high-quality case–control or cohort studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal

2+ Well-conducted case–control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal

2– Case–control or cohort studies with a high risk of confounding bias, or chance and a significant risk that the relationship is not causal

3 Non-analytic studies (for example, case reports, case series)

4 Expert opinion, formal consensus

## 5. Current HPA Guidance on a New Acute or Chronic Hepatitis B Case

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Current HPA standards exist for the surveillance and follow-up of hepatitis B (and C) infections in the local community (HPA, 2006). These standards were revised in 2011 and are specifically for HPUs acting within their role.

The current standards, in relation to hepatitis B, state that each local HPU should:

- Receive telephone notification of each case of newly diagnosed acute and chronic hepatitis B from the laboratories.
- Collect and collate further information on the new cases – demographic details, clinical, laboratory (distinguishing between acute and chronic cases) and risk factor data.
- Provide information to patients, and their contacts, to avoid onward transmission.
- Ensure arrangements are in place to test, vaccinate, and advise contacts as appropriate.

### 5.1 Acute

The HPA standards (2006, updated in 2011) clearly outline how contacts should be traced and managed following a case of acute hepatitis B:

- Post-exposure prophylaxis with immunoglobulin for sexual contacts has been shown to reduce the risk of secondary cases.
- Other household members and those exposed to blood or other body fluids (see below) of the case can also be offered protection with vaccination. (This recommendation is in the HPA Standards 2011 [p15], however the document does note that this standard is “indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist”.)

### 5.2 Chronic

Likewise, with a newly identified case of chronic hepatitis B:

- Ensure that there is follow-up of individual cases, including referral for clinical assessment. (While the clinician making the diagnosis is primarily responsible for referral, the HPU has the opportunity to reinforce the need for specialist assessment.)
- Sexual and other household contacts of those with chronic hepatitis B are at risk of infection and should be tested and offered vaccination (and immunoglobulin if appropriate).

### 5.3 Existing School Specific Guidance

Medical Officers of Schools Association (MOSA) is a professional association for the provision of medical care in (mainly independent) schools. MOSA produce a range of guidelines for their members.

MOSA has prepared a guideline for independent boarding schools for the admission of pupils with complex medical needs or disabilities. The guideline states (2007a):

- Schools should have a considered policy for admission of pupils with complex medical needs or disabilities (as defined under the Disability Discrimination Act 1995).
- This policy should be available to potential pupils and their parents to encourage disclosure of medical information on application.
- On application to school any special medical or physical needs that are disclosed should immediately be brought to the attention of the School Medical Officer.
- Parents should be made aware that if due to non-disclosure of information, adjustments cannot be made in a planned, proactive manner, there is a risk that the school will not be able to accommodate their child safely.
- If appropriate, the parents should meet with the School Medical Officer and a school representative(s) to consider the needs of the pupil and the expectations of the pupil and their parents. This should take place before the pupil is accepted.
- If necessary, a risk assessment should be performed by an appropriate professional. This should be a process which is reviewed at least annually.
- Following the meeting and assessment, the school should decide if any reasonable adjustments need to be made to safely accommodate the pupil within the school.

The MOSA guideline on the *Prevention of Blood Borne Virus Infections*, published in March 2007(b):

- Reinforces the need for good infection control practice to ensure the safety of staff when dealing with blood and body secretions.
- Recommends that school staff make contact with the local Consultant in Communicable Disease Control in the event of a needle stick injury.
- Encourages the promotion of immunisation against hepatitis B in:
  - School nurses,
  - Cleaners working in school medical centres,
  - First aiders and games staff,
  - Those travelling to areas of high risk (it is not made clear if MOSA mean staff, pupils, or both),
  - Pupils applying to medical school (Note: This statement by MOSA is incorrect. Students who are accepted onto a healthcare training course in the UK will be offered hepatitis B vaccination by the university's occupational health department.)
- States that health education about body piercing, tattooing and acupuncture should stress that these should only be carried out under sterile conditions, preferably with single-use needles and instruments.
- Says that people should not share toothbrushes or razors.
- Claims that casual and household contact is not associated with the transmission of blood borne viruses.



The guideline from MOSA does not pick up on pupils from high prevalence countries, vaccination policies in overseas students, potential transmission opportunities through unprotected sex, or substance misuse.

Guidance is also available from the HPA on *Inoculation Injuries and Children in Schools and Similar Settings*. This is specifically for children (under the age of 16) in a school or community setting. This guidance should be referred to following “a penetrating wound with an instrument contaminated with the bodily fluid of another person” (Atenstaedt *et al.*, 2007).

Some HPUs already provide guidance to schools, colleges and nurseries on infection control and communicable disease (Berkshire, Buckinghamshire and Oxfordshire, 2003; North Yorkshire HPU, 2007).

These guidelines cover a range of issues that may arise in school and more generic information on infection control and immunisations.

These guidelines stress that hepatitis B vaccine is not recommended for routine school or nursery contacts of an infected child. However, it is recommended for staff involved in the care of children with severe learning disabilities or challenging behaviour. Likewise, vaccination is recommended for children with learning disabilities or challenging behaviour who live in a residential institution.

## **6. Why Boarding/Residential Schools are different**

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Schools offer a unique opportunity in public health as a setting, not only for children, but for the whole community it serves; including parents, teachers, and partnering schools.

The primary purpose of a school is to educate; however, there is a growing emphasis on schools being holistic institutions that take on a broader role in the lives of children and the community as a whole. For example, the National Healthy Schools Programme focuses on schools as health promoting environments to tackle issues such as obesity and mental health.

The UK education system is predominantly based on state funded, non-residential schools. However, a large independent/private sector school system exists in the UK. This sector includes a variety of schools, including those offering non-residential, daytime education to schools with residential facilities, which are often referred to as boarding schools. In addition there are around 35 state boarding schools.

A number of bodies and organisations represent independent schools. These are brought together under the Independent Schools Council (ISC). The ISC constituent associations are: the Association of Governing Bodies of Independent Schools (AGBIS), the Girls' Schools Association (GSA), the Headmasters' and Headmistresses' Conference (HMC), the Society of Headmasters and Headmistresses of Independent Schools (SHMIS), the Independent Association of Prep Schools (IAPS), the Independent Schools Association (ISA), the Independent Schools' Bursars Association (ISBA) and the Council of British International Schools (COBIS).

### **6.1 Providing Health Services in Boarding/ Residential Schools**

According to guidance from MOSA (Medical Officers of Schools Association, 2006, p1) "each independent school should have its own school doctor to whom the head teacher may refer on any matter relating to school health".

According to the MOSA guidelines, the school doctor would normally be responsible for a variety of things including; appropriate screening of new entrants (although no details are provided on what this entails), immunisations, and advice on any individual patient's health (including day pupils) as appropriate.

According to Section 3 (Welfare Support to Boarders) of National Minimum Standards of Boarding Schools (DH, 2002, p13) the school has an obligation to provide "appropriate first aid and minor illness treatment to boarders at all times, with access to medical, dental and optical services as required". The school can provide medical, dental and optical attention for boarders through registration with a local GP or through a School Medical Officer. The standards also require that "significant health and personal problems of individual boarders should be identified and managed appropriately" (DH, 2002, p14). This standard stresses that any boarder who requires special treatment because of health, emotional or welfare needs is given suitable support, and activities are adapted as appropriate.

## 6.2 Students from Overseas

In January 2009, the Independent Schools Council (ISC) conducted a census of its 1,265 member schools. Out of more than 514,000 pupils in ISC member schools, 68,131 were boarders and 21,533 were overseas students, the majority of whom were from China, Hong Kong, and Germany.

Information from the WHO shows that Germany, China, and Hong Kong currently immunise against hepatitis B (WHO, 2010). However, it is also likely that children from affluent families will already have had the hepatitis B vaccinations even when their country of birth does not offer routine hepatitis B vaccinations. According to Zuckerman and Langer (2005; supported by Goldstein *et al.*, 2001 and Wallace *et al.*, 2004), pupils from lower socioeconomic or educational backgrounds have a significantly reduced vaccination uptake rates, i.e. the more affluent families that send their children to school in the UK are more likely to have made use of the routine hepatitis B vaccination in their home country.

Child students (between the ages of 4 and 17 years) and general students (post-16 education) who are foreign nationals coming to the UK have to apply to do so through the Points Based System Tier 4: (General) Student and (Child) Student (UK Border Agency, 2010). Under current arrangements, foreign nationals who are staying for longer than six months in the UK are required to be screened for tuberculosis and, if necessary, undergo treatment. There is currently no other health screening process for foreign nationals when obtaining a UK visa.

## 6.3 What are the Increased Risks in Boarding/ Residential Schools

When searching for evidence in relation to hepatitis B in the school setting (particularly residential/boarding institutions) no evidence could be uncovered around the risk of hepatitis B transmission. Generally, the evidence uncovered revolved around the implementation of school hepatitis B vaccination programmes.

No evidence could be found of seroprevalence studies conducted in a residential/boarding school setting. There is some evidence that residential institutions for persons with learning disabilities have an increased prevalence of HBV in comparison to the general population (Laurichesse *et al.*, 1998). The risk of developing hepatitis B appears to be greater for permanent residents who have been living in the institution for a long period of time.

Hepatitis B is transmitted by blood or mucosal contact with infectious blood or body fluids that contain blood. All hepatitis B surface antigen (HBsAg) positive people are infectious. However, those who are also positive for Hepatitis B e-antigen (HBeAg) are more infectious because their blood contains higher levels of the hepatitis B virus.

According to a variety of reviews and guidelines by the HPA, the evidence around hepatitis B transmission risk is “largely direct observation, supported by theoretical consensus”.

The HPA considers children to be an increased risk as a source when (Welfare, 2009):

- Born in a high prevalence country.
- Linked with a community from a high prevalence country or another high risk community (e.g. substance abusing).
- Their parents are known to be infected/ carrying Hepatitis B, C, or HIV.
- Their parents or grandparents were born in a high prevalence county.

The potential increased transmission risks in residential/boarding schools relate to:

- The sharing of razors between pupils.
- The sharing of hair clippers.
- Sexual relationships between pupils.
- Contact/collision sports that invoke bleeding injuries (Kordi and Wallace, 2004).
- Fighting between pupils.
- Drug taking.

A paper by Kordi and Wallace (2004) suggested that contact and collision sports are at higher risk because of the higher likelihood of bleeding and prolonged body contact.

- Higher-risk sports – rugby, wrestling, boxing, tae kwon do etc.
- Medium-risk sports – basketball, field hockey, ice hockey, judo, football etc.
- Low-risk sports – gymnastics, racket sports etc.

There are a number of reports worldwide that link outbreaks of hepatitis B to sporting situations including a sumo wrestling club, an American football club, and cross country runners (where cuts and grazes often occur [Kordi and Wallace, 2004]).

However, HPA guidance currently states that hepatitis B is not spread by normal day-to-day activities, such as sharing bathroom facilities, plates, cups or food; coughing and sneezing; kissing or unbroken skin-to-skin contact.

### **6.3.1 In the School setting**

Borg (2005) aimed to investigate the frequency of exposure to blood and other body fluids within day schools. The study collected data via a self-completed questionnaire to head teachers in charge of public schools (the study does not state if the schools were residential) in Malta. The frequency of exposure incidents were extremely rare, however the study only investigated exposure incidents from a student to teacher, as opposed to student to student. For example, the rate of 'heavy bleeding' incidents (i.e. nosebleeds) was 0.071 (95% confidence intervals 0 to 0.148) per 1,000 student days.

Borg concluded that exposure to quantities of blood sufficient to result in a HBV transmission in a day school is rare and that each individual situation should be handled on a risk basis.

### **6.3.2 In the Household setting**

A household (in health protection terms) is usually defined as one person living alone or a group of people who share common housekeeping or a living space, i.e. a living room.

There is evidence that chronically infected individuals can pass on the virus to susceptible household contacts (Shimizu *et al.*, 2003). In risk information summarised

by the CDC (2005), the hepatitis B virus transmission rates to susceptible household contacts of chronically infected individuals have varied from 14% to 60%.

In 1991-92, Van Damme *et al.* (1995) conducted a cross-sectional study examining the seroprevalence of hepatitis B in family members of positive and negative institutionalised mentally handicapped persons. The study found that exposed relatives were 7.6 (odds ratio with 95% confidence intervals: 3.4-17.4) times more likely to be infected with hepatitis B than non-exposed.

Caveats to bear in mind are that this study looked at mentally handicapped people in a residential setting who were likely to have posed a greater risk in terms of hygiene and potential aggressive behaviours than children in a boarding/residential school. The study was also cross-sectional in nature, meaning that the order of exposure could not be determined, i.e. whether the relative infected the child or vice versa.

A study by Gupta *et al.* (2008) investigated the role of horizontal hepatitis B transmission in household contacts in North India. This, again, was a cross-sectional study that looked at 265 household contacts of 91 index chronic hepatitis B patients. Among the total 265 contacts, 81 (30.6%) were found to be carrying HBsAg, 77 (29.1%) were carrying markers of past and cured infection, and 28 (10.5%) showed immunity due to vaccination. The highest proportion of HBsAg positive contacts was in children under 15 years.

This study took place in North India, which is a dramatically different setting to that of England and Wales. The prevalence of hepatitis B in India should be considered (~10%), along with the different cultural background of the subjects in comparison to the English and Welsh population.

### **6.3 Considerations When Managing a Situation/ Case in a Boarding/ Residential School**

It is very important that schools that offer residential facilities are engaged with managing a new case of hepatitis B. Often schools with boarding facilities are private institutions and therefore have a commercial interest to protect. HPUs must be mindful of this when trying to work with a private school on a case of infectious disease.

Verweij and van Seenbergen (2008, p88), when faced with the dilemma of a two-year-old hepatitis B carrier in a nursery school, concluded that “striving to avoid a possible risk [of transmission of hepatitis B] – and informing parents [of other children at the nursery] about even the remotest risk – would be detrimental to the welfare of hepatitis B carrier and their family, i.e. the risk of transmission in the nursery setting did not outweigh the harm telling other parents and compromising the child and their family’s welfare”.

Key considerations when managing an infectious disease case are:

- Confidentiality and health of the pupil.
- Avoiding stigmatisation of particular ethnic groups (Banatvala, Van Damme and Emiroglu, 2006).
- Protecting others – both pupils and staff.
- The concerns of parents and guardians.

- The reputation of the school and its commercial interests.

The HPA (2009) developed blood borne virus risk assessment guidelines for inoculation injuries and for children in schools or similar settings. The guidelines were designed to quantify the transmission risks following an incident.

The guideline defined significant injuries as:

- Percutaneous injury (from needles, instruments, significant bites which break the skin).
- Exposure of broken skin (abrasions, cuts, eczema etc.).
- Exposure of mucous membranes.
- Sexual exposure.

Non-significant injuries were defined as:

- Superficial graze not breaking the skin.
- Exposure to intact, undamaged skin.
- Exposure to sterile or uncontaminated sharps.

## 7. Legal Considerations

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Schools have a very important and active role in securing the health of their pupils and staff. This is even more apparent when schools house children as part of boarding arrangements. Boarding/residential schools have a responsibility and a duty of care for pupils when they are under their supervision (DH, 2002).

Formal exclusion of pupils from school on medical grounds is enforceable by the head teacher acting on behalf of the school. However, under the Special Educational Needs and Disability Act 2001 (Part 2: Disability Discrimination in Education, Chapter 1 Schools) and the Disability Discrimination Act 1995 (from October 2010, the Equality Act replaced most of the Disability Discrimination Act (DDA):

- It is unlawful for the body responsible for a school to discriminate against a disabled person –
  - In the arrangements it makes for determining admission to the school as a pupil;
  - In the terms on which it offers to admit him/her to the school as a pupil; or
  - By refusing or deliberately omitting to accept an application for his/her admission to the school as a pupil.
- It is unlawful for the body responsible for a school to discriminate against a disabled pupil in the education or associated services provided for, or offered to, pupils at the school by that body.
- It is unlawful for the body responsible for a school to discriminate against a disabled pupil by excluding him/her from the school, whether permanently or temporarily.

This is reinforced in *Boarding Schools National Minimum Standards*, published by the Secretary of State for Health under section 23(1) of the Care Standards Act 2000 (DH, 2002).

The Acts also clearly state that disabled pupils are not to be substantially disadvantaged and they make specific reference to confidentiality. A 'confidentiality request' is one that asks for the nature or the existence of a disabled person's disability to be treated as confidential. The request must satisfy either of the following conditions:

- It is made by that person's parent; or
- It is made by that person him/herself and the responsible body reasonably believes that he has sufficient understanding of the nature of the request and of its effect.

Under the Health Protection (Local Authority Powers) Regulations 2010, (Hele and Harvey-Vince, 2011) the local authority has the power to keep a child away from school in order to prevent, protect against, or control a significant threat to human health when the local authority has satisfied itself that a child (DH, 2010):

- (a) is or may be infected or contaminated;
- (b) the infection or contamination is one which presents or could present significant harm to human health;
- (c) there is a risk that C might infect or contaminate others;
- (d) it is necessary to keep C away from school in order to remove or reduce that risk; and
- (e) keeping C away from school is a proportionate response to the risk to others presented by C.

Health protection powers should be used where voluntary cooperation to avert a health risk cannot be secured and where other methods of control are ineffective, unsuitable or disproportionate to the risk involved. These powers can be enforced by the authorised officer of the local authority. This officer may be the local Consultant in Communicable Disease Control/Consultant in Health Protection.

In addition, the local authority has the power to require a head teacher to provide a list of contact details of pupils attending their school in order to manage a health protection incident (DH, 2010).

## **8. Conclusion**

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A wide sweep of peer-reviewed journal articles, UK guidelines, and policies and advice from independent advisory bodies uncovered no evidence on the prevalence and incidence of hepatitis B in residential/boarding schools. In addition, very little good quality evidence was found on hepatitis B transmission risk in a residential/boarding schools setting. Therefore, there seems to be very little compelling evidence that hepatitis B in residential/boarding schools is a priority issue.

The HPA already has clear guidelines and standards in place for the monitoring and surveillance of hepatitis B. Currently hepatitis B is managed in a day school setting by rigorous and thorough infection control, i.e. any incident involving bodily fluid/secretion is handled with the utmost care. No special arrangements are made to deal with students or teachers that are infected with hepatitis B.

The Medical Officers of Schools Association provide support and advice to medical officers of private/boarding schools. They currently have guidelines for infection control, the screening of new pupils and the handling of blood borne viruses. The MOSA guidelines lack any detail on the above issues, which in turn suggests that it is up to schools themselves to develop their policies. What is not known is:

- How many schools have their own infection control, new pupil screening and blood borne virus policies?
- What is the quality of the policies?
- How well adhered to are the policies?

This paper has highlighted some of the key legal issues that may be applicable in the case of hepatitis B. These relate to the school's obligations on confidentiality and equality. Again, this raises more questions about how schools view these obligations and how they are adhered to in the school setting.

Another key consideration is that there are other important communicable diseases that could easily be spread in a residential school setting, e.g. sexually transmitted infections, influenza etc. Therefore, hepatitis B infection may not be the only situation that is considered to be a problem or issue in residential/boarding schools. Should there be more dialogue between HPU's and institutions that house children on a temporary or permanent basis?

Some suggested actions for HPU's have been outlined below for proactive and preventative work, and reactive work with boarding schools. A supplementary document has been developed to aid the management of hepatitis incidents in boarding/residential schools: *Hepatitis B in Boarding/Residential Schools - Checklist and Actions*.

## 9. Possible Further Work

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### 9.1 Establish the Current Position of Residential/ Boarding Schools

Very little is known about the current policies and practices of residential/boarding schools in relation to:

- Pre-admission checks on immunisations and vaccinations.
- Admission of pupils with complex medical needs or disabilities (as defined under Disability Discrimination Act 1995/ Equality Act 2010).
- School hygiene and infection control.
- Managing pupils with pre-existing or newly established health conditions.
- Education and awareness-raising for children, parents and staff on preventing the spread of communicable diseases, e.g. on vaccinations, sexual health, personal hygiene and infection control.

School head teachers could be surveyed on the above practices relatively quickly to help establish a baseline position. Schools can often provide excellent access to groups that are often more difficult to engage (Lindley *et al.*, 2007), e.g. immigrant populations. Schools have detailed information on their current and immanent



students. This information could be used to risk assess the schools situation in relation to hepatitis B (and other blood borne viruses).

## 9.2 Potential Proactive Work with Residential/ Boarding Schools

Depending on the results of Section 9.1, schools could be advised to develop their own policy on the issue of hepatitis B, or more broadly, blood borne viruses (BBV). Local HPUs could work with the local education community to:

- Understand the local situation with regards to residential/boarding schools – pupil numbers, demographics etc.
- Establish the vaccination status of new pupils from countries of high hepatitis B prevalence during the application process.
- Communicate with schools regularly on health protection issues e.g. in unit Newsletters.
- Encourage schools to foster good practice in relation to hygiene, infection control and good all round health. E.g. safe sex, hand hygiene, safe management of injuries (i.e. sports injuries) etc.
- Stress the importance of confidentiality, but also the need to protect other susceptible pupils from infection. This may be done more discretely by moving an infected child into a room with private facilities that are not to be shared with other pupils.
- Conduct some research with residential/boarding schools on:
  - Seroprevalence – especially in different sub-populations within residential schools.
  - Attitudes of boarding/residential institutions towards BBV.

## 9.3 Reacting to a New Case of Hepatitis B

If a child is found to be hepatitis B positive, three main policy options are available (Verweij and van Steenberg, 2008):

- I. Exclude the child from the school.
- II. Allow the child to remain at school (maintaining confidentiality) but impose restrictions to reduce the risk to other children at the school, e.g. exclude the child from high-risk contact sports such as rugby.
- III. Offer vaccination to all close contacts (a definition should be developed when considering the context of the situation) within the school.

A fourth option would be to allow the child to remain at school (keeping the infection confidential) and allow the child to be involved in routine activities, but regularly reinforce the need for excellent infection control procedures, particularly in relation to bleed incidents.

A checklist has been developed to complement this discussion paper *Hepatitis B in Boarding/Residential Schools - Checklist and Actions*. This checklist could be used by a Consultant in Communicable Disease Control (CCDC)/Consultant in Health Protection (CHP) when investigating an incident of this nature.

Actions by a HPU could include:

- Establish markers.
- Refer for treatment.

- Regularly stress the implications of their infection to the case, i.e. their responsibilities in preventing onward transmission.
  - Agree a definition of close contacts, such as room-mates, needle sharing partners and sexual contacts (see British Association for Sexual Health and HIV guidance (Fisher *et al.*, 2006)).
  - Establish if any other children are at high-risk, e.g. in a susceptible group.
  - Protect close contacts, for example, by vaccination. Due to the safety profile of the hepatitis B vaccine and the infectivity of hepatitis B, a low threshold for initiating hepatitis B immunisation is recommended. The HPA Standards (2006 updated in 2011, p23) say that sexual and other household contacts of those with chronic hep B are at risk of infection and should be screened and offered vaccination. However, this recommendation is only “indicated on the basis of previous scientific observation and theoretical rationale, but case-controlled or prospective studies do not exist”.
  - Develop a care plan for the case in conjunction with the parents/guardian. This could include restrictions/adaptations to their living arrangements and activities in school, e.g. participation in contact sports.
  - Maintain confidentiality.
  - Communicate with other parents and guardians (if it is deemed necessary).
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## Appendix 1- Search Results

“Double Click” on the documents for the full search results.

### Search Results

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3. Prevalence of infection with hepatitis B and C viruses and co-infection with HIV in three jails: A case for viral hepatitis prevention in jails in the United States .....	page 5
4. Immunization Rates in a Canadian Juvenile Corrections Facility .....	page 6
5. Seroprevalence of hepatitis B and C infections among young adult males in Pakistan .....	page 7
6. Effect of a school-entry vaccination requirement on racial and ethnic disparities in hepatitis B immunization coverage levels among public school students .....	page 7
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**31. The epidemiology of hepatitis B in a residential institution for the mentally retarded.**

**Citation:** Australian & New Zealand Journal of Medicine, December 1976, vol./is. 6/6(521-9), 0004-8291;0004-8291 (1976 Dec)

**Author(s):** Boughton CR; Hawkes RA; Schroeter DR; Harlor JA

**Language:** English

**Abstract:** A longitudinal study carried out over 43 months in a residential home for the mentally retarded confirmed the marked propensity of individuals with Down's syndrome (DS) to develop chronic HB antigenaemia. This could not be accounted for by environmental factors, and a genetic basis is postulated. In addition, DS subjects appeared innately more susceptible to hepatitis B virus (HBV) infection, requiring one-third the patient-months of exposure of non-Down's subjects (ND) before showing evidence of infection. The reciprocal geometric mean titre of anti-HBS in DS subjects was 110 compared with 705 in ND subjects, suggesting a deficiency of humoral immunity in the DS subjects. Transmission of HBV was occurring by means other than therapeutic, prophylactic, dental or diagnostic procedures, in the institution, and possible modes of transmission are discussed. These were probably both parenteral and non-parenteral. Eighty-one per cent of HBV infections in the Home were subclinical.

**Publication Type:** Journal Article

**Source:** MEDLINE

**32. [Ecology of HBsAg in an institution for the mentally retarded and muscular dystrophy (author's transl)].**

**Citation:** Rinsho Byori - Japanese Journal of Clinical Pathology, September 1975, vol./is. 23/9(701-3), 0047-1860;0047-1860 (1975 Sep)

**Author(s):** Kashiwagi S

**Language:** Japanese

**Publication Type:** Journal Article

**Source:** MEDLINE

**33. [Immunological study of HB antigen carriers; with special emphasis on the study at an institution for the mentally retarded].**

**Citation:** Nippon Rinsho - Japanese Journal of Clinical Medicine, December 1974, vol./is. 32/12(3501-8), 0047-1852;0047-1852 (1974 Dec 10)

**Author(s):** Matsushita K; Shigematsu I; Okada S; Ashida H; Endo R

**Language:** Japanese

**Publication Type:** Journal Article

**Source:** MEDLINE

**34. Letter: Frequency of hepatitis-B antigen or antibody in household contacts of HBsAg carriers.**

**Citation:** Lancet, November 1974, vol./is. 2/7891(1267-8), 0140-6736;0140-6736 (1974 Nov 23)

**Author(s):** De la Concha EG; Masllorens FO; Hernandez-Guio C

**Language:** English

**Publication Type:** Journal Article

**Source:** MEDLINE

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