GUIDELINE FOR THE CONTROL OF INVASIVE HAEMOPHILUS INFLUENZA (Hib) DISEASE

TARGET AUDIENCE	NHSL WIDE, Acute, Health and Social Care Partnerships
PATIENT GROUP	All in patients and outpatients

Clinical Guidelines Summary

Haemophilus influenzae b (Hib) is a bacterium which can cause a wide range of diseases including severe life threatening diseases. Infections are now most common in the adult population due to the introduction of the Hib vaccine.

Vaccination is the key public health action to reduce the risk of infection. There are 2 main strains of *Haemophilus influenzae*:

- Non-capsulated strains
- Capsulated strains – 6 different types which are classified *a-f*. Only 4.7% of those serotyped were type b (Hib).

Capsulated strains are most often associated with severe invasive disease including:

- Meningitis - infection of the lining of the brain and spinal cord
- Pneumonia - infection of the lungs
- Pericarditis - infection of the lining surrounding the heart
- Epiglottitis - infection of the epiglottis
- Septic Arthritis- infection of the joints
- Cellulitis - infection of the skin and underlying tissues
- Blood stream infections

INTRODUCTION

This guideline has been developed for use in NHS Lanarkshire (NHSL) as part of the National Infection Prevention and Control Manual (NIPCM):

Chapter 1: Standard Infection Control Precautions (SICPS)
Chapter 2: Transmission Based Precautions: (TBPS)
Chapter 3: Healthcare Infection Incidents, Outbreak and Data Exceedance
Chapter 4: Infection Control in the Built Environment and Decontamination
Addendum for Infection Prevention and Control within Neonatal Settings (NNU)

Aim, purpose and outcome

To ensure that patients receive appropriate investigation, care and management in line with current national guidelines and best practice.

To ensure that NHSL staff are aware of the need to identify invasive *Haemophilus influenzae* type b disease (Hib), and take early action to involve the Health Protection Team to prevent secondary infection.

To ensure that any vulnerable contacts of patients with Hib receive appropriate chemoprophylaxis as early as possible to minimise the risk of acquiring infection.

Scope

This guideline is designed to safeguard patients, staff and the wider public from the risk of invasive disease caused by Hib.

The guideline is aimed at all healthcare staff working in NHSL.

Haemophilus Influenzae b (Hib)

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Vaccination is the key public health action to reduce the risk of infection. There are 2 main strains of *Haemophilus influenzae*:

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b. Capsulated strains – 6 different types which are classified *a-f*. Only 4.7% of those serotyped were type b (Hib).

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c. Meningitis - infection of the lining of the brain and spinal cord
d. Pneumonia - infection of the lungs
e. Pericarditis - infection of the lining surrounding the heart
f. Epiglottitis - infection of the epiglottis
g. Septic Arthritis- infection of the joints
h. Cellulitis - infection of the skin and underlying tissues
i. Blood stream infections

Public health action is only required for probable or confirmed cases of Hib invasive diseases.

Causative organism	*Haemophilus influenzae* type b
Clinical manifestation	Cough, headache, drowsiness, vomiting, intermittent fever. Photophobia, acute respiratory obstruction (epiglottitis). Haemorrhagic rash (can be present but unusual).
Incubation period	2-10 days as per NIPCM
Period of infectivity	Until 24hrs of effective antibiotic treatment completed NIPCM- as long as organisms present in nasopharynx.
Mode of transmission	Droplet transmission Direct contact with nose/throat secretions
Reservoirs	Humans
Population at risk	Children under 5, elderly, immunocompromised and household contacts
Vaccine preventable	Yes
Notifiable disease	Yes

Management of Hib invasive disease

For all clinically diagnosed or laboratory confirmed cases, notify the Health Protection Team **as soon as possible** by telephone:

- NHS Lanarkshire Health Protection Team (Mon-Fri 09:00-17:00): 01698 752952
- Out of hours (on call Consultant Public Health Medicine): 01236 748 748

Clinical management – key actions:

- Obtain appropriate specimens (e.g. blood cultures, CSF) to support diagnosis
- Use standard infection control precautions and transmission based precautions for all patient/contact care

Standard Infection Control Precautions Please refer to the Standard Operating Procedure (SOP) for the Control of invasive Haemophilus influenzae (Hib) disease.

Public health management – key actions:

- Public Health action is required up to 1 month after the date of onset of the index case.
- Confirm diagnosis and onset date with clinician.
- Compile contact/s list.
- Risk assess contact/s and offer chemoprophylaxis and/or vaccination as appropriate.
- Check immunisation history of all children under 10 years – arrange immunisation if incomplete.

Case and contact definitions:

Probable case	Any individual who presents with epiglottitis **and** where *H. influenzae* was isolated from a sterile site.
Confirmed case	Any individual who presents with clinical diagnosis of infection **and** Hib is isolated or detected from a normally sterile site. Conjunctivitis is not considered to be a high risk of developing invasive disease for Hib.
Vulnerable individual	An immunosuppressed or asplenic person of any age, **or** any child younger than ten years of age regardless of immunisation status.

Contact	Any individual who has had prolonged close contact with the index case in a household type setting **during the seven days before** the onset of illness. Examples of a household contact include: • living or sleeping in the same house • boyfriends/girlfriends, and • sharing a dormitory, flat or hospital ward with the index case. Other contacts (e.g. work, school) are not usually considered close contacts, but will be individually risk assessed by the Health Protection Team.
Pre-school or Primary School Outbreak	Two or more cases of invasive Hib disease among pre-school or primary school contacts (staff and children) within 120 days of each other.

Chemoprophylaxis

Chemoprophylaxis should be offered to all eligible contacts **up to four weeks** after onset of illness in the index case to eliminate any carriage.

Irrespective of immunisation history, chemoprophylaxis should be offered to:

- All index cases < 10 years with confirmed or probable invasive Hib disease
- All index cases of any age with confirmed or probable invasive Hib if there is a vulnerable household contact
- If there is a vulnerable contact, all individuals who meet the definition of household contact of confirmed or probable case, including the vulnerable contact

Chemoprophylaxis should be given to all contacts as soon as diagnosis is confirmed in the index case.
If a delay in serotype results is anticipated, chemoprophylaxis should be given to household contacts of **probable** index cases.

	Infants < 3months	**Children > 3months to adult**
Antibiotic	Rifampicin	Rifampicin
Dose	10 mg/kg once a day	20 mg/kg (maximum 600 mg) once a day
Duration	Four days	Four days

If the patient is unable to receive Rifampicin, please contact the Infectious Diseases Consultant at Monklands Hospital for advice. Telephone: 01236 748 748

PRECAUTIONS (TBPS)
(refer also to the National Infection Prevention & Control Manual)

SICPs & TBPs	
Patient placement	• Isolate patient in a single room until 24 hours following appropriate antimicrobial treatment. • Place isolation sign on the outside of the single room door (Yellow "Please see Nurse in Charge" sign) • The room door should be kept closed unless this is not appropriate for patient. • A Risk Assessment is required if the isolation room door is unable to be closed. This must be documented in the notes.
Hand hygiene	• Strict adherence to hand hygiene guidelines, hands must be decontaminated before and after each direct patient care episode. • Patients and visitors should be offered guidance on appropriate hand hygiene. • Refer to National Infection Prevention and Control Manual (NIPCM) Standard Infection Control Precautions (SICPs). • Hand hygiene should be performed with liquid soap and water after contact with the patient, their environment or equipment and on leaving the isolation room • Ensure patients are encouraged to perform hand hygiene with liquid soap and water after using the toilet, before meals etc. • As an alternative Hand Rub can be utilised.
Moving between wards, hospitals and departments	Discuss patient transfers/discharge to offsite facilities with the IPCN. • Patient movement/transfer should be restricted except for clinical emergencies until 24 hours of appropriate compliant antimicrobial treatment completed. • The receiving ward/area must be fully informed of the patient's status prior to transfer. • Prior to transfer, Healthcare Workers (HCW) from the ward where the patient is located must inform the receiving ward/hospital of patients with *Haemophilus influenza.* • A record of this can be documented on the SBAR transfer document and inserted into the patient's personal care record. • When the patient requires to attend other departments the receiving area should put in place arrangements to minimise contact with other patients and arrange for additional cleaning if required. • Patients can attend physiotherapy/occupational therapy departments provided SICPs and TBPs are adhered to. The IPCT can be contacted for advice if required.
Equipment	• Use single-use items if possible. • Where possible allocate equipment for individual patient use e.g. washbowl, commodes etc.

SICPs & TBPs	
Equipment & Environmental cleaning	• **Domestic Staff** - Daily environmental cleaning must be undertaken with a solution of 1,000ppm available Chlorine releasing agent. • **Nursing Staff** - Dedicated equipment should be cleaned after each use with Disinfectant wipes. • Additional cleaning may be advised by the IPCT.
Personal Protective Equipment (PPE)	• Aprons must be worn for direct contact with the patient or the patient's environment/equipment. Gloves and aprons must be worn when exposure to blood and/or other body fluids is anticipated/likely. Gloves and aprons are single use and must be discarded immediately after completion of task, discarded as clinical waste and hands decontaminated.
Patient Information	• The clinical team with overall responsibility for the patient must inform the patient of their status and provide the patient/relatives with further information.
Linen	Linen should be treated as 'infectious linen' as outlined in the Laundry: 'Bagging & Tagging' poster. • Linen hamper bags must be tagged appropriately (e.g. date, hospital ward/care area) to ensure traceability. • Bed linen and patient clothing should be changed daily.
Patient Clothing	• There are no special requirements when handling patients clothing, however, advise relatives to wash hands thoroughly after clothing is put into the washing machine. Clothes should be washed at the temperatures advised on the clothing labels. Laundry Guidelines information leaflet is available if required – if this leaflet is provided document this in the personal care record. • HCWs handing patient clothing should use the appropriate PPE. Refer to *Haemophilus influenze* Guidelines.
Waste	• Waste from patients with HiB must be designated as clinical waste and placed in an orange bag.
Removing Precautions	Precautions can be removed on resolution of symptoms or 24 hours after the start of antimicrobial therapy Discuss further arrangements with the IPCT following terminal clean.
Terminal Cleaning ***Following transfer, discharge or once the patient is no longer considered infectious***	Remove all of the following from the vacated single room: • healthcare waste and any other disposable items (bagged before removal from the room); • bedding/bed screens/curtains and manage as infectious linen (bagged before removal from the room); and • reusable non-invasive care equipment (decontaminated in the room prior to removal). The room should be decontaminated using:

SICPs & TBPs	
	• a combined detergent disinfectant solution (Titan Plus) at a dilution, (1,000ppm av.cl.) (this process applies for **domestic staff** for the environment only). • Universal Disinfectant wipes (disinfectant wipes) (**clinical staff** only for decontaminating the environment including near patient equipment). Some equipment will need to be cleaned with 70%Alcohol wipes as per manufacturer instructions. • The room must be cleaned from the highest to lowest point and from the least to most contaminated point. **(Please refer to NHSL Terminal Clean of a multi-bed bay or ward following an outbreak SOP on First Port)**
Last Offices	No additional precautions required.
Visitors	No restrictions on visitors. Advise visitors to perform hand hygiene with either hand rub or liquid soap and water before entering and leaving the facility. An information leaflet should be provided if required.

Roles and responsibilities

All staff are responsible for implementing and following the information provided in this guideline.

Resource implications

There are no resource implications.

Communication plan

This policy is available on the NHS Lanarkshire intranet and external website.
Changes to policy or guidance will be communicated to key personnel via:

- Email
- Discussion at departmental meetings
- Note on staff briefing on First Port
- Educational sessions

Summary of frequently asked questions

If you have any questions about this policy or how to implement it, please contact the Health Protection Team to discuss your query on **01698 752952**

References

Department of Health (2013) Revised recommendations for the prevention of secondary Haemophilus influenzae type b (Hib) disease

Department of Health (2013) The Green Book- Chapter 16 Haemophilus influenza type B

Health Protection Agency (2012) Guidance for public health management of meningococcal disease in the UK

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CONSULTATION AND DISTRIBUTION	
Contributing Author/Author	• Lead Nurse Health Protection
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Distribution:	• NHS Lanarkshire intranet - Firstport • NHS Lanarkshire external website • Hospital and Health and Social Care Partnership Hygiene Groups

CHANGE RECORD			
Date	**Author**	**Change**	**Version No.**
10/12/2013	L Guthrie	Content revised & updated. New policy template applied	V1.1
10/02/2014	L Guthrie	Updated to reflect comments received on draft policy	V1.3
24/03/2014	L Guthrie	Updated to reflect comments received. Approved version.	V1.4
25/05/2016	A Goodfellow	Content reviewed and updated.	V2.0
08/06/2016	A Goodfellow	Comments from CPHM incorporated.	V2.1
23/05/2018	C Thomson	Reviewed and updated by Policy Review Group	V2.2
13/07/2020	Governance Review Group (GRG)	Reviewed and updated by Governance Review Group	V3.0
03/08/2022	GRG	Reviewed in line with Vale of Leven recommendations	V4.0
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