Management of Meningococcal Infection Guideline

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

Clinical Guidelines Summary

Neisseria Meningitidis is a bacterium which is commonly found in the upper respiratory tract of humans. In most cases, this will cause no harm and occurs as asymptomatic carriage. In some individuals, *N. Meningitidis* can cause severe invasive life threatening disease. This includes:

4.1 Meningitis
4.2 Septicaemia

Vaccination is the key public health action to reduce the risk of infection.

There are many strains of the bacteria, but only a small number of these cause invasive disease. Serogroups A, B, C, W135, X and Y account for the overwhelming majority of invasive infections.

Guideline Body

1.0 INTRODUCTION

This guideline has been developed for use in NHS Lanarkshire (NHSL) to be read in conjunction with 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.
Also refer to NHSL Standard Operating Procedure for the Management of Meningococcal Infection: Management of a patient in an in-patient area.

2.0 AIM, PURPOSE & OUTCOME

To ensure that healthcare workers (HCWs) consider meningococcal disease as a possible diagnosis in patients with indicative symptoms.

To ensure that all HCWs take appropriate actions to minimise the risk of cross infection to themselves and others by urgent and appropriate referral in line with the guidance developed by the Health Protection

Agency.

To ensure that all HCWs apply appropriate infection prevention and control precautions when providing care for patients with possible, probable or confirmed Meningococcal disease.

3.0 SCOPE

This guideline is designed to safeguard patients, staff and the wider public from the risk of Meningococcal Disease.
The guideline is aimed at all healthcare staff working in NHS Lanarkshire

4.0 MENINGOCOCCAL DISEASE

Neisseria Meningitidis is a bacterium which is commonly found in the upper respiratory tract of humans. In most cases, this will cause no harm and occurs as asymptomatic carriage. In some individuals, *N. Meningitidis* can cause severe invasive life threatening disease. This includes:

4.1 Meningitis
4.2 Septicaemia

Vaccination is the key public health action to reduce the risk of infection.

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Table 1: Summary table

Causative organisms	*Neisseria meningitidis*
Clinical manifestation	Headache, neck stiffness, drowsiness, vomiting, fever, photophobia, petechial, lethargy, myalgia, purpuric or haemorrhagic rash. rarely acute respiratory obstruction (epiglottitis).
Incubation period	3 - 5 days
Period of infectivity	Until 48hrs of effective antibiotic treatment completed
Mode of transmission	Droplet transmission Direct contact with nose/throat secretions

Reservoirs	Human
Population at greatest risk	Young children <5 years, 16-25 year olds, immunocompromised patients, household contacts, individuals living in close proximity e.g. student halls of residence, homeless hostels, residential schools, military barracks.
Notifiable disease	Yes

4.1 Management of a case

The classical features of fever, vomiting, neck stiffness, severe headache, purpuric rash (a non-blanching rash, malaise and joint pain t), drowsiness and photophobia rarely occur together.

A diagnosis of meningitis or septicaemia should be considered in any person, particularly an ill child, with an unexplained fever.

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 858 232**
- Out of hours (on call Consultant Public Health Medicine): **01236 748 748**

4.1.1 Pre-admission management

Suspected bacterial meningitis

Children and young people with suspected bacterial meningitis **WITHOUT a non-blanching rash** should be transferred directly to secondary care without giving parenteral antibiotics.

If urgent transfer to hospital is not possible; for example, in remote locations or adverse weather conditions; antibiotics should be administered to children and young people with suspected bacterial meningitis or signs of shock.

Suspected meningococcal disease
Urgent transfer to hospital should **NOT** be delayed in order to give parenteral antibiotics. Patients with a suspected meningococcal disease; either:

- meningitis **WITH non-blanching rash** OR
- meningococcal septicaemia;

An immediate dose of Intra Venous (IV) or Intra Muscular (IM) Benzylpenicillin administered as below:

	Adults and Children > 10years to	**Children aged 1-9 years**	**Infants < 1year**
Antibiotic	Benzylpenicillin	Benzylpenicillin	Benzylpenicillin
Dose	1.2 g	600mg	300mg
Route	IV or IM	IV or IM	IV or IM

If a patient has a history of mild (non-severe) penicillin allergy, cefotaxime can be given.'

In cases of true (severe) allergy to penicillin (anaphylaxis): immediate transfer to hospital should be priority.

Hospital Management

Guidance on Antibiotic choice
Penicillin Allergy Poster

Clinical management – key actions:

- Obtain appropriate specimens e.g. blood culture, throat swab, CSF, CRP specimens required to support diagnosis as per the NICE Guidance (if safe to perform lumbar puncture) to support diagnosis

- Treat with antibiotics in line with the following Guidelines:
  - NICE Guideline 102
  - Empirical First Line Antibiotic Therapy for Paediatrics
  - Empirical First Line Antibiotic Therapy for Adult Patients'

- Isolate until 24 hours of appropriate compliant antimicrobial treatment completed

- Use standard infection control precautions and transmission based precautions for all patient contact/care

- Use respiratory protective equipment (RPE) if carrying out Aerosol Generating Procedures (AGP's) and if performing intubation of a patient as per transmission based precautions NIPCM

- Check vaccination status and arrange vaccination/follow up as required

Laboratory Investigation

The following specimens should be collected on, or soon after, admission to hospital from all patients when meningococcal infection is included in the differential diagnosis.

- Blood for culture

- Blood for PCR (EDTA blood specimen)

- ***CSF for microscopy, culture, PCR

- Aspirate from other sterile sites suspected of being infected (e.g. joints) for microscopy, culture, PCR

- Pharyngeal swab (per-nasal if patient unable to co-operate)

Lumbar puncture should not be done until the patient's condition has been stabilised and assessment made to rule out raised intracranial pressure.

4.2 Case Definitions

Table 3: Meningococcal disease – case definitions

Definition	Criteria	Public Health Action Required
Confirmed	Clinical diagnosis of meningitis, septicaemia or other invasive disease (orbital cellulitis, septic arthritis) **AND** at least one of: • *Neisseria meningitidis* isolated from normally sterile site • Gram negative diplococci in normally sterile site • Meningococcal DNA in normally sterile site • Meningococcal antigen in blood CSF or Urine	**YES**
Probable	Clinical diagnosis of meningitis or septicaemia or other invasive disease where the public health physician, in consultation with the physician and microbiologist, considers that meningococcal infection is the most likely diagnosis. Some microbiological tests (e.g. rising antibody levels) that are not considered sufficient to confirm the diagnosis of meningococcal disease may change the case category from 'possible' to 'probable'.	**YES**
Possible	Clinical diagnosis of meningitis or septicaemia or other invasive disease where public health physician, in consultation with the clinician and microbiologist, considers that diagnoses other than meningococcal disease are at least as likely. In such cases, prophylaxis for contacts is not indicated but giving out information about meningococcal disease may be helpful.	**NO**

Definition	Criteria	Public Health Action Required
Infection in non-sterile site	Isolation of meningococci from sputum, bronchoalveolar lavage or from swabs taken from nasopharynx or genital tract is not by itself an indication for public health action. However, when assessed together with other clinical and microbiological parameters, a positive throat swab may increase the index of suspicion that this is a probable case, especially if the isolate is a virulent strain. Non-bacteraemic Meningococcal pneumonia is not an indication for public health action but may carry a low risk of transmission in healthcare settings especially to the immunocompromised.	**NO**
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 contacts include: • living or sleeping in the same household (including extended household) • boyfriends/girlfriends, and • sharing a dormitory, flat or hospital bay with the index case. • sharing a kitchen in a hall of residence Other contacts (e.g. work, school) are not usually considered close contacts, but will be individually risk assessed by the Health Protection Team.	**YES**

4.3 NOTIFICATION OF CASES & PUBLIC HEALTH ACTIONS

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

NHS Lanarkshire Health Protection Team (Mon-Fri 09:00-17:00): 01698 858 232
Out of hours (on call Consultant Public Health Medicine): 01236 748 748

Public health management – key actions:

- Public Health action is required up to 4 weeks after the date of onset of the index case
- Confirm diagnosis, onset date and case definition with clinician (table 3)

- Compile list of contacts

Risk assess contacts and offer chemoprophylaxis to household contacts and vulnerable individuals regardless of immunisation status (post mortem contact does not indicate need for prophylaxis)

Individuals who were identified as close prolonged contacts of cases, due to vaccine preventable strains of N. meningitidis who received chemoprophylaxis should be offered an appropriate vaccine, with the exception of serotype B, once diagnosis has been confirmed and up to 4 weeks after illness onset.

Advise Communications Department, GP's and other key groups of the case.

4.4 CHEMOPROPHYLAXIS

Chemoprophylaxis should be offered to all eligible cases and contacts **up to four weeks** after onset of illness in the index case (ideally within 24 hours after diagnosis of the index case) irrespective of vaccination status. This includes:

- All index cases on discharge from hospital UNLESS already treated with ceftriaxone
- All individuals who meet the definition of household contact of confirmed or probable case
- Those who have been exposed to large particle droplets/secretions from the respiratory tract around the time of admission to hospital, even if this was only 'transient close contact' with the case

The CPHM will assess other individuals for whether or not to advise prophylaxis for those who do not clearly fall into the above categories (e.g. when a case occurs in a group of children looked after by the same child-minder or among a circle of close friends).

A single dose of Ciprofloxacin is recommended for use in all age groups and pregnancy for chemoprophylaxis of meningococcal infection.

Breast feeding should be avoided where possible (for at least 48 hours based on drug half-life), if this is not possible amounts in breast milk are likely to be too small to be harmful.

Table 4: Chemoprophylaxis for case contacts

	Adults and children over 12 years	**Children aged 5–12 years**	**Children 1 month– 4years**
Antibiotic	Ciprofloxacin	Ciprofloxacin	Ciprofloxacin
Dose	500 mg	250 mg	125 mg
Duration	Stat	Stat	Stat

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

A patient information leaflet is available here: Ciprofloxacin Patient Information Leaflet

4.5 VACCINATION SCHEDULE

Table 5: Meningococcal vaccination schedule

Type	Case & Contacts
Confirmed Group C	• MenC should be offered to all unimmunised or partially immunised cases regardless of age • If immunisation has been greater than one year ago, they should be offered a booster
Confirmed Group B	• MenC or MenACWY should be offered to all unimmunised or partially immunised cases under the age of 25 years. • Cases should not be immunised with MenB unless at risk (asplenia, splenic dysfunction or known complement deficiency) and were previously unimmunised or were partially immunised. • After a single case of confirmed or probable meningococcal disease, MenB vaccination should not be routinely offered to cases or household contacts. • MenB vaccine should be offered for all household contacts after a 2nd MenB case occurs in the same family (even if the interval between the 2 cases is >30days).
No Group Identified	• Men C should be offered to all unimmunised or partially immunised cases under the age of 25 years.
For confirmed serogroup A, W135 or Y infection	**Cases:** Cases in high risk groups (asplenia and complement deficiency) to receive MenACWY conjugate; and have not been immunised or are partially immunised **Contacts:** MenACWY conjugate vaccine should be offered to all close contacts of cases. **Probable cases:** For probable cases, with serogroup A, W135, or Y infection, vaccination with quadrivalent conjugate vaccine should be offered to all close contacts.

Type	Case & Contacts
Healthcare Staff contacts	• Routine vaccination of healthcare workers with meningococcal conjugate vaccines is not recommended. • Staff identified as being in contact with index case should be identified to Occupational Health who will then contact the staff member and follow up as required.

5.0 Standard Infection Control Precautions (SICPs) / Transmission Based Precautions (TBPs)

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

SICPs & TBPs	
Patient Placement	• Isolate patient in a single room. • Place isolation sign (Please see Nurse in Charge before entering the room) on the outside of the single room door. • 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, hand hygiene should be carried out using soap and water or hand rub, 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).
Moving between wards, hospitals and departments	Discuss patient transfers/discharge to offsite facilities with the IPCT • Prior to transfer, Healthcare Workers (HCW) from the ward/department where the patient is located must inform the receiving ward/hospital of patients with Meningococcal Infection. • A record of this can be documented in the patient's personal care record. • When the patient requires to attend other wards/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. • Reusable non-invasive care equipment e.g. commodes and Dinamaps should be dedicated to the isolation room in possible
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, follow manufacturer instructions for use. • 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,

SICPs & TBPs	
	discarded as clinical waste and hand hygiene carried out.
Patient Information	• The clinical team with overall responsibility for the patient must inform the patient of their status and provide information to the patient/relatives.
Linen	Linen should be treated as 'infectious linen' as outlined in the Laundry: 'Bagging & Tagging' poster and the National Infection Prevention and Control Manual (NIPCM). • 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 Meningococcal Infection Guidelines.
Waste	• Waste from patients with Meningococcal Infection must be designated as clinical waste and placed in an orange bag.
Removing Precautions	Precautions can be removed 24hours after initiation of effective therapy on resolution of symptoms. Discuss further arrangements with the IPCT.
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) Standard Operating Procedure (SOP)Terminal Clean of a Multi-bed Bay or Ward following Outbreak The room should be decontaminated using: • a combined detergent disinfectant solution (Chlorine releasing agent) at a dilution, (1,000ppm av.cl.) (this process applies for **domestic staff** for the environment only) • Disinfectant wipes (**clinical staff** only for decontaminating the environment including near patient equipment) • The room must be cleaned from the highest to lowest point and from the least to most contaminated point.
Last Offices	No additional precautions required.

SICPs & TBPs	
Visitors	No restrictions on visitors. Advise visitors to perform hand hygiene with either alcohol based hand rub or liquid soap and water before entering and leaving the facility.

5.0 ROLES AND RESPONSIBILITIES

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

6.0 RESOURCE IMPLICATIONS

There are no resource implications.

7.0 COMMUNICATION PLAN

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

- Staff Brief
- Hospital and Health and Social Care Partnership Hygiene Groups
- NHS Lanarkshire intranet-Firstport
- NHS Lanarkshire external website

8.0 REFERENCES

Health Protection Agency (2012) *Guidance for public health management of meningococcal disease in the UK London Health Protection Agency*
Online: http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947389261

National Institute for Clinical Excellence (NICE) (2012) Bacterial meningitis and meningococcal septicaemia Online: https://pathways.nice.org.uk/pathways/bacterial-meningitis-and-meningococcal-septicaemia

Ladhani, S.N. et al (2014) Preventing secondary cases of invasive meningococcal capsular group B (MenB) disease: benefits of offering vaccination in addition to antibiotic chemoprophylaxis to close contacts of cases in the household, educational setting, clusters and the wider community V1.1

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CONSULTATION AND DISTRIBUTION RECORD	
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CHANGE RECORD			
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19/05/2016	Jim White	Content Reviewed	V2.0
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