One + all | we care

Royal Cornwall Hospitals NHS Trust

Suspected Bacterial Meningitis or Viral Encephalitis in Adults Clinical Guideline

V2.0

May 2020

1. Aim/Purpose of this Guideline

1.1. Treatment guidelines for clinicians to aid diagnosis, appropriate investigation and treatment for suspected bacterial meningitis or viral encephalitis.

1.2. This version supersedes any previous versions of this document.

1.3. **Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation**

The Trust has a duty under the DPA18 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed and documented. We can't rely on Opt out, it must be Opt in.

DPA18 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the DPA18 please see the 'information use framework policy', or contact the Information Governance Team rch-tr.infogov@nhs.net

2. The Guidance

If bacterial meningitis or viral encephalitis is suspected follow guidance below.

2.1. Viral Encephalitis

Viral encephalitis is diagnosed on the clinical signs and symptoms and findings on CSF examination after a lumbar puncture (following brain imaging).

2.1.1. Symptoms and signs can include:

- Acute febrile illness with
- New onset seizures
- New focal neurological signs
- With or without meningism (Headache, neck stiffness, photophobia, vomiting)

2.1.2. Associated features:

- Disorientation
- Speech disturbances
- Lethargy
- Drowsiness
- Confusion
- Behavioural changes

2.2. Bacterial Meningitis

Bacterial meningitis is diagnosed on the clinical signs and symptoms and findings on CSF examination after a lumbar puncture.

2.2.1. Symptoms and signs:

- Severe headache
- Neck stiffness
- High fever
- Altered mental status

2.2.2. Associated signs and symptoms:

- Photophobia
- Phonophobia
- Positive Kernig's or Brudzinki (Involuntary flexion of knee and hip on flexion of neck) sign
- Non-blanching petechial rash points towards meningococcal meningitis/septicaemia

2.3. Need to perform CT head before lumbar puncture with suspected meningitis if any of the following are met:

- Glasgow Coma score < 12 or declining OR
- New onset seizures OR
- Focal neurological signs OR
- Papilloedema OR
- Immunocompromised

Parameter	Bacterial infections	Viral infections
Appearance	May be cloudy	Usually normal
Opening pressure	May be raised	Usually normal
Cell count	>1000/mm3	<100/mm3
Differential	Predominantly polymorphs	Predominantly Lymphocytes
Protein CSF: Serum Glucose ration	Mild to moderate elevation <0.4	Normal to mild elevation >0.6

2.4. Investigations for Viral Encephalitis and Bacterial Meningitis

- Brain imaging in suspected encephalitis and CT head in suspected meningitis if indicated (see 2.3)
- Blood cultures
- Lumbar puncture STAT or after CT head if indicated
    - CSF for opening pressure
    - Sugar
    - Protein
    - Gram stain if bacteria present
    - Bacterial culture and viral PCR.

- Full blood count, Urea and electrolytes, liver function tests and CRP.
- Throat swabs for meningococcal carriage if bacterial meningitis suspected
- EDTA blood
- Chest X-ray
- If respiratory component check for atypical organisms (e.g. mycoplasma and chlamydophilia pneumoniae)
- HIV test all patients with suspected meningitis or encephalitis.

2.5. Treatment for Viral Encephalitis Supportive Measures:

- Maintain hydration
- Adequate analgesia without too much sedation
- Anticonvulsants if seizures
- Aciclovir 10mg/kg 8 hourly for 14-21 days
- If CT will cause delays of many hours start presumptive treatment with aciclovir whilst awaiting CT and then LP results.
- Initial lumbar puncture may be normal: Consider repeat LP after 24 hrs
- Treat with IV Aciclovir 10mg/kg tds for 14 days in an immune competent adult (21 days if immunosuppressed)
- BMI > 40 use Ideal Body Weight:
- IBW for men= <(height in cm - 154)*0.9> + 50
- IBW for women=<(height in cm - 154)*0.9> + 45.5

2.5.1. Duration of antivirals:

- Treat for 2 weeks (in an immune competent adult) if Herpes simplex virus (HSV) proven by viral PCR
- Stop earlier if definitive alternative diagnosis or viral encephalitis seems unlikely based on clinical, imaging and CSF findings
- Repeat CSF at 2 weeks, if PCR still positive, continue aciclovir treatment.
- Repeat LP every week until PCR is negative.

2.6. Treatment for Bacterial Meningitis Supportive Measures:

- Maintain hydration
- Adequate analgesia without too much sedation
- Ceftriaxone 2g IV 12 hourly.
- If CT will cause delays of many hours start presumptive treatment with antibiotics whilst awaiting CT and then LP results.
- All IV antibiotic therapy should be reviewed at the end of 48 hours by the clinical team and an antibiotic management plan should be made based on available Microbiology results and clinical condition of the patient.
- Administer steroids (Dexamethasone 0.15mg/kg QDS for 4 days with or just before the first dose of antibiotics) for suspected pneumococcal meningitis
- Take blood cultures, throat swabs, EDTA blood and CSF prior to antibiotic treatment if possible
- Notify PHE and Microbiologist of any suspected case of meningitis or

meningococcal sepsis

- Chemoprophylaxis contact if meningococcal meningitis is confirmed as per PHE guidance (see below) is PHE on 0300 3038162 or 0344 2578195 (out of hours) - PHE advise on prophylaxis and contact tracing.

2.7. Choice of Antibiotics for Bacterial Meningitis:

Patient Group	Likely organisms	First line therapy	Second line treatment
Community acquired male and nonpregnant female 18-50 years	N. Meningitidis S. Pneumoniae	Ceftriaxone IV 2g 12 hourly	If history of penicillin anaphylaxis Chloramphenicol IV 25mg/kg 6 hourly
Community acquired pregnant female and patients over 50 yrs.	S. Pneumoniae, Listeria, N. Meningitidis	Ceftriaxone IV 2g 12 hourly and consider adding in Amoxicillin IV 2g 4hourly to cover Listeria in presence of known risk factors: older adults, pregnant women, newborn, immunosuppression.	If penicillin allergic Meropenem IV 2g 8 hourly If severe penicillin allergy d/w Microbiology
Meningitis healthcare-associated or post-surgical/CNS Shunt infection	D/W Microbiologists		

2.8. Further Considerations for Bacterial Meningitis

2.8.1. Duration of antibiotics:

N. Meningitidis	7 days
H. influenza	7 days
S. pneumoniae	10-14 days
S. agalactiae	14-21 days
Aerobic GNB	21 days
Listeria monocytogenes	21 days or more

2.8.2. Review the antibiotics when ID and sensitivities are available as this is an opportunity to individualise course length.

2.8.3. Prophylaxis for meningococcal meningitis:

- Usually required for close household contacts or those exposed to respiratory secretions.
- Inform medical microbiologist and Consultant in Communicable Disease Control (CDCC) as soon as the diagnosis is made.
- Information needed to be conveyed: age, occupation, whether at school, name of close contacts, and any other features requiring community follow up.

- The CDCC will co-ordinate the prophylaxis and immunisation of contacts.
- If Ceftriaxone not administered to index case a suitable agent to eradicate throat carriage must be administered.
- Ciprofloxacin recommended for use in all groups and in pregnancy

2.9. Infection Prevention and Control Precautions.

Meningitis can be caused by a number of viruses and bacteria. Many cases of meningitis are caused by viruses. These infections are usually mild and self-limiting. Bacterial meningitis is a less common infection but is more severe and can be life threatening.

Clinicians should notify Public Health England as soon as a case of meningococcal disease is suspected.

2.9.1. Mode of Transmission

Transmission is via the nasopharynx and spread occurs through direct contact with respiratory droplets or secretions. This can be from people who are known to have the infection or from asymptomatic *carriers (Haymann, D.L. (2015). Control of Communicable Diseases Manual. 19th Edition. American Public Health Association. Washington.).*

2.9.2. Isolation

2.9.2.1. All patients with suspected meningitis or meningococcal sepsis should be isolated until:

- meningitis or meningococcal sepsis has been excluded

or

- they have received 24 hours of appropriate antibiotic therapy

2.9.2.2. All patients with confirmed meningitis or meningococcal sepsis should be isolated until they have received:

- 24 hours of IV Ceftriaxone or
- A single dose of ciprofloxacin or
- 48 hours of Rifampicin

(The UK joint specialist societies guideline on the diagnosis and management of acute meningitis and meningococcal sepsis in immunocompetent adults F. McGill et al Journal of Infection (2016) 72)*

2.9.3. Personal Protective Equipment (PPE)

2.9.3.1. Standard precautions as per the Standard Infection Prevention and Control Precautions Policy should be implemented for suspected / confirmed meningitis or meningococcal sepsis cases.

2.9.3.2. Droplet precautions should be taken until a patient has had 24 hours of antibiotics. Surgical masks are to be worn if likely to be in close contact (<3 feet) with respiratory secretions or droplets.

(The UK joint specialist societies guideline on the diagnosis and management of acute
*meningitis and meningococcal sepsis in immunocompetent adults**
F. McGill et al Journal of Infection (2016) 72)

2.9.4. Environment
Daily cleaning of the isolation area should be performed by the domestic staff using dedicated colour coded equipment.

2.9.5. Visiting
For the first 24 hours, visiting should be restricted to those who have already been in close contact with the patient. Visitors who have not had recent close contact and visit within the first 24 hours should be advised of Droplet and Standard precautions.

3. Monitoring compliance and effectiveness

Element to be monitored	It is a guideline only for medical staff in secondary care without broad experience in the care of patients with suspected bacterial meningitis or viral encephalitis compliance will be monitored through outcome of patients with this condition
Lead	Dr Gareth Smith
Tool	Audit and review tool using patient documentation on a Word or Excel template specific to the topic
Frequency	Annually
Reporting arrangements	Neurology meeting
Acting on recommendations and Lead(s)	The Neurology team will change the guidance as necessary in keeping with national and international guidelines.
Change in practice and lessons to be shared	Any changes necessary will be disseminated through changes in practice in the department.

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the 'Equality, Diversity & Human Rights Policy' or the Equality and Diversity website.

4.2. Equality Impact Assessment
The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Document Title	Suspected Bacterial Meningitis or Viral Encephalitis in Adults Clinical Guideline V2.0				
Date Issued/Approved:	13 May 2020				
Date Valid From:	May 2020				
Date Valid To:	May 2023				
Directorate / Department responsible (author/owner):	Dr Gareth Smith, Consultant				
Contact details:	01872 253450				
Brief summary of contents	Contents provide guidance on the symptoms/signs, associated features, investigations and treatment for viral encephalitis and bacterial meningitis.				
Suggested Keywords:	CNS, viral encephalitis and bacterial meningitis				
Target Audience	RCHT	CFT	KCCG		
	✓				
Executive Director responsible for Policy:	Medical Director				
Date revised:	13 May 2020				
This document replaces (exact title of previous version):	Clinical Guideline for suspected bacterial meningitis or viral encephalitis in adults V1.0				
Approval route (names of committees)/consultation:	Neurology Governance Meeting				
Care Group Manager confirming approval processes	Sharon Matson				
Name and Post Title of additional signatories	Not required				
Name and Signature of Care Group/Directorate Governance Lead confirming approval by specialty and divisional management meetings	{Original Copy Signed}				
	Becky Osborne				
Signature of Executive Director giving approval	{Original Copy Signed}				
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet & Intranet	✓	Intranet Only		
Document Library Folder/Sub Folder	Clinical / Neurology				

Links to key external standards	None
Related Documents:	None
Training Need Identified?	N/A

Version Control Table

Date	Version No	Summary of Changes	Changes Made by *(Name and Job Title)*
5 April 2016	V1.0	New document	Dr Gareth Smith, Consultant
13 May 2020	V2.0	Transposed to latest Trust template with changes to guidance contained in section 2 and additional information included at 2.9. Infection Prevention and Control Precautions.	Dr Gareth Smith, Consultant

Appendix 2. Initial Equality Impact Assessment Form

Name of the strategy / policy /proposal / service function to be assessed Suspected Bacterial Meningitis or Viral Encephalitis in Adults Clinical Guideline V2.0					
Directorate and service area: Neurology			**New or existing document:** Existing		
Name of individual completing assessment: Dr Gareth Smith			**Telephone:** 01872 253056		
1. *Policy* Aim* *Who is the strategy / policy / proposal / service function aimed at?*	Medical staff seeking guidance				
2. *Policy* Objectives*	Treatment guidelines for clinicians to aid diagnosis, appropriate investigation and treatment for suspected bacterial meningitis or viral encephalitis.				
3. *Policy* – intended Outcomes*	Safer clinical practice				
4. *How will you measure the outcome?	See monitoring and compliance Section 3.				
5. Who is intended to benefit from the *policy*?	Neurological patients				
6a Who did you consult with	Workforce	Patients	Local groups	External organisations	Other
	✓				
b). Please identify the groups who have been consulted about this procedure.	**Please record specific names of groups** Neurology Governance Meeting				
What was the outcome of the consultation?	Agreed				

7. The Impact
Please complete the following table. **If you are unsure/don't know if there is a negative impact you need to repeat the consultation step**.

Are there concerns that the policy **could** have differential impact on:				
Equality Strands:	Yes	No	Unsure	Rationale for Assessment / Existing Evidence
Age		✓		

Sex (male, female, trans-gender / gender reassignment)		✓		
Race / Ethnic communities /groups		✓		
Disability - Learning disability, physical impairment, sensory impairment, mental health conditions and some long term health conditions.		✓		
Religion / other beliefs		✓		
Marriage and Civil partnership		✓		
Pregnancy and maternity		✓		
Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian		✓		

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:

- You have ticked "Yes" in any column above and
- No consultation or evidence of there being consultation- this excludes any *policies* which have been identified as not requiring consultation**. or**
- Major this relates to service redesign or development

8. Please indicate if a full equality analysis is recommended.	**Yes**		**No**	✓

9. If you are **not** recommending a Full Impact assessment please explain why.

Not indicated

Date of completion and submission	May 2020	Members approving screening assessment	Policy Review Group (PRG) **APPROVED**

This EIA will not be uploaded to the Trust website without the approval of the Policy Review Group.

A summary of the results will be published on the Trust's web site.