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PREPARE'ing for (re-)emerging infectious disease outbreaks: A Review of European Clinical Management Guidelines on Acute, Community-Acquired CNS Infections

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Introduction

- The **Platform for European Preparedness Against (Re-)emerging Epidemics (PREPARE)** is aimed at facilitating rapid research responses to (re-)emerging infectious diseases (ID) across Europe.
- This work includes reviewing current **ID clinical management guidelines**, such as for acute, community-acquired **Central Nervous System (CNS) infections**.
- There is a **high morbidity and mortality** associated with **CNS infections**, such as meningitis and encephalitis, making them a **public health priority**.
- This poster presents the results of a **systematic review of European clinical management guidelines for CNS infections**.

Methods

- Guidelines were obtained via **systematic searches** and manual review of the references from returned guidelines. No language restriction.
- Inclusion criteria** were guidelines published after Oct. 2004 in a peer reviewed journal or medical society network, and Internationally recognized protocols, relevant to Europe, or specific to a European region.
- Exclusion criteria** were inattention to medical management of patients
- Data was extracted from the selected guidelines by two independent reviewers.
- The **quality of the guidelines** were assessed by two reviewers independently using the **Appraisal of Guidelines for Research and Evaluation II (AGREE II) Instrument**.

Results

Of the 19 guidelines found, **18 guidelines** from **8 European countries** were included. **44% (n=8)** of the guidelines covered **viral aetiologies** only, viral encephalitis and/or viral meningoencephalitis. **56% (n=10)** covered **bacterial aetiologies**, meningitis (n=9) and bacterial meningoencephalitis (n=1). 17% (n=3) covered adults only, 17% (n=3) paediatric populations, 67% (n=12) both.

	International	Pan-European	Denmark	France	Germany	Ireland	Netherlands	Norway	Sweden	United Kingdom
Encephalitis	✓								✓	✓
Meningitis		✓	✓	✓	✓	✓	✓			✓
Meningoencephalitis	✓	✓			✓			✓		✓

Agree II Scores

The median overall AGREE II score was 5 (range:3 - 7).

Domains:	Median % (range)
D1: scope and purpose	90 (56-100)
D2: stakeholder involvement	59 (20-95)
D3: development rigour	49 (21-96)
D4: presentation clarity	89 (64-97)
D5: applicability	42 (7-79)
D6: editorial independence	38 (0-84)

Symptoms

All guidelines described most common symptoms at presentation.
Viral encephalitis or meningoencephalitis: Fever, Seizures, Focal neurological signs, Altered Level of Consciousness
Bacterial meningitis(adults & older children): Rapid onset of: Fever, Headache, Neck stiffness

Diagnostic Tests

- 100% of viral encephalitis or meningoencephalitis** only guidelines recommended CSF and bloods and 75% MRI.
- 90% (n=9/10) of bacterial etiology** guidelines recommended urgent LP, unless contraindicated.

Viral treatment

63% (n=5/8) covering viral CNS infections only included therapeutic therapy recommendations:

- 100%** of these **recommended acyclovir** at **10mg/kg i.v** (adults and children > 3 months dose), duration when available ranging from 21 days for paediatric patients to 10 - 14 days for older children and adults.

Bacterial treatment

90% (n=9/10) of bacterial aetiology guidelines covered treatment and recommended urgent empirical treatment with:

- Adults:** 50% 3rd gen cephalosporin and 50% 3rd gen cephalosporin + ampicillin or penicillin
- Children and infants:** 57% 3rd gen cephalosporin, 29% 3rd gen cephalosporin + beta-lactam and 14% 3rd gen cephalosporin + vancomycin
- Neonates:** 75% 3rd gen cephalosporin + amoxicillin, 25% Cefotaxime + amoxicillin+ gentamicin
- Three guidelines recommended **addition of vancomycin if resistance possible**
- 20%** recommended **pre-hospital antibiotics**
- 100%** recommend corticosteroids **before or with first dose of antibiotics**

Conclusions

The AGREE II tool showed **variance** in overall quality and across domains, e.g. in rigour of development, stakeholder involvement and applicability. Some variance e.g. editorial independence was likely due to lack of information provided.

The guidelines showed **consistencies in initial diagnostics and management**, but also differences, e.g. in recommended first line treatment for suspected bacterial etiologies.

These differences in management of CNS infections should be considered when establishing pre-approved research protocols and pan-European rapid, clinical research studies during outbreaks.

Future Research

To send a survey to sites across Europe to identify any additional guidelines in use and to explore the guidelines further and by geographical location.

References

Brouwers M, et al. for the AGREE Next Steps Consortium. AGREE II: Advancing guideline development, reporting and evaluation in healthcare. *Can Med Assoc J.* 2010. Dec 2010; 182:E839-842; doi:10.1503/090449

Acknowledgments

This research was partially funded by the UNC School of Medicine International Health Fellowship Award and the **Platform for European Preparedness Against (Re-)emerging Epidemics PREPARE:**

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