# A Retrospective Audit of the Diagnostic Testing and Management of Adults Presenting with Suspected Central Nervous System Infections

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## Aim

The aim of this audit was to assess standard practice of care in adults presenting with suspected central nervous system (CNS) infections over a one year period.

## Methodology

Patients investigated for suspected CNS infections at University Hospital Galway (UHG).

Patients identified retrospectively via cerebrospinal fluid (CSF) samples received in the laboratory from 1st November 2021 to 31st October 2022.

Clinical notes were reviewed using online electronic patient record and physical medical charts.

The clinical presentation, investigations and antimicrobial managements were assessed.

Adherence to Infectious Diseases Society of America and local prescribing guidelines were investigated.

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## Results

79 patients had lumbar punctures performed for investigation of suspected CNS infection

49.4% (39) males, and 50.6% (40) females

19% (15) had a clinical diagnosis of meningitis, but only 8.9% (7) had a confirmed microbiological diagnosis
- 6 cases of *Enterovirus*
- 1 case of *Herpes simplex virus* 2

8.9% (7) had a clinical diagnosis of encephalitis, none of whom had a microbiological diagnosis

Infectious Speciality Involvement

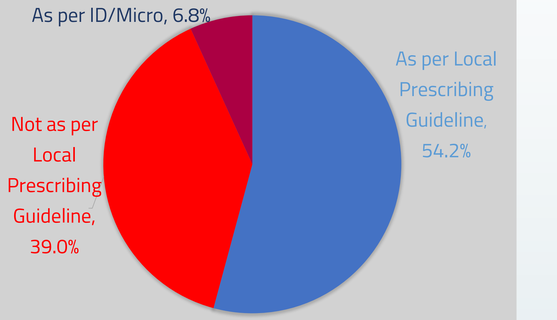
62% (49) were discussed or seen by either Infectious Diseases or Microbiology

Additional Testing

- Blood Cultures
  - 73.4% (58) blood cultures taken
  - 2 positives: both contaminants
- HIV Testing
  - 1 patient known HIV
  - 48.7% (38) HIV test sent
- Paired Glucose
  - 34.2% (27) paired glucose taken
- Opening Pressure
  - 8.9% (7) recorded
  - 1 of 7 had an abnormal OP (>40cm)

Antibiotics

74.7% (59) prescribed antibiotics of which 11.9% (7) were prescribed after CSF results were returned




Antibiotic Dosage and Frequency

Excluding those who had the incorrect antibiotic prescribed:
- 2.1% (1) had the incorrect dosage of antibiotic prescribed (Ceftriaxone)
- 18.7% (9) had the incorrect frequency of antibiotic prescribed
  - 7 Ceftriaxone
  - 1 Amoxicillin
  - 1 both Ceftriaxone and Amoxicillin

Antibiotic De-escalation

Difficult to appreciate in retrospective audit
- 88.1% (52) de-escalated appropriately
- 11.9% (7) not de-escalated appropriately

Aciclovir
- 62% (49) prescribed Aciclovir, of which 32.7% (16) were prescribed after CSF results were returned
- 28.6% (14) of those prescribed Aciclovir did not display features of encephalopathy
- In those prescribed Aciclovir, 100% had the correct dosage and frequency prescribed

Steroids
- 1.3% (n = 1) patients prescribed steroids
- Dexamethasone was given 15 minutes after Ceftriaxone, and 30 minutes prior to Vancomycin

## Conclusion

This study demonstrates:
- Incomplete compliance with local antimicrobial prescribing guidelines for suspected CNS infections
- Incomplete adherence to international guidelines in the investigation of suspected CNS infections, particularly in regards to blood culture sampling, and other adjunctive testing.

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