participants (80.6%) returned at 12 months. Of 209 intervention participants at baseline, 176 (84.2%) completed a follow-up survey at 12 months. At baseline, 13 (13.3%) of 98 HIV-negative intervention participants indicated that they were currently taking PrEP. At 12 months, this number grew to 25 (32.5%) of 77 HIV-negative intervention participants, indicating that they were currently taking PrEP. A total of 21 participants reported initiating PrEP during their time in the intervention.

Conclusion. PrEP is a valuable biomedical intervention for preventing HIV infection in those at risk. PrEP Chicago, a network intervention designed to promote uptake of PrEP among YB MSM, shows promising results for PrEP adoption among this community.

Disclosures. All authors: No reported disclosures.

864. Therapeutic Immunosuppression to Treat Rabies Encephalitis
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Background. Rabies is nearly universally fatal with about 60,000 annual deaths globally; <0.1% cases survive. Reports of therapeutic coma leading to survival are outnumbered by reports of failure. On the basis of personal discussions with a leading rabies expert (Dr Rodney Willoughby), we hypothesized that limiting CNS immune response based on CSF antibody titre (ABT) might prove useful. We report on successful use of immunosuppression in 1 patient.

Methods. A 26-year-old male was admitted with 2-day history of flu-like syndrome. He had category III dog bite on face 17 days prior. RIG was not given due to nonavailability; he had received ARV day 0, 3, 7, and 14 on time. On 4th day of admission (day 0), neurological features started—difficulty in walking and diplopia; hydrophobia was noted. Working diagnosis of rabies was made. MRI brain on day 1 showed subtle abnormal T2 and flair hyper intensities in pons, medulla, and left hippocampus. CSF (day 1) showed 105 cells; all lymphocytes. The RFFIT serum and CSF ABTs and rabies PCRs are tabulated below. Since ADEM was a possibility, he was begun on IVlg. Work up for other viral encephalitis was negative. Repeat CSF ABT on day 6 confirmed rabies. Postulating risk of death due to cerebral edema due to CNS immune response, dexamethasone (dexe) 6 mg/kg/day in 4 divided doses was begun on day 8. Serial MRI and CSF were done. Dexe taper was done based on MRI and CSF ABT. A leading supportive care was given.

Results. MRI on day 9 and day 12 showed no cerebral edema. Dexe taper was started from day 13 by half every alternate day; it was given till day 28. By day 17, there was intermittent eye opening, withdrawal to pain and some orofacial and limb movements. Further recovery had waxing and waning course. Now he is nearly 1 year post rabies encephalitis. He is unable to talk or comprehend, but can sit independently and is able to walk with support.

Conclusion. Immunosuppressive therapy with dexe to improve outcomes in rabies seems an exciting option. Optimal dose, time of start, and taper schedule need further studies. CSF ABT-based tapering appears promising. Larger studies with this approach are needed.

Table 1

| Day | 1 | 3 | 6 | 13 | 17 | 20 | 55 |
|-----|---|---|---|----|----|----|----|
| Serum ABT | 2048 | X | 8192 | 32788 | 16384 | 16384 | 8192 |
| CSF ABT | 64 | X | 1024 | 8192 | 4096 | 4096 |
| Saliva PCR | Negative | X | Neg | X | X | X |
| CSF PCR | Neg | X | Neg | X | X | X |
| Nuchal biops | X | Neg | X | X | X | X |

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865. Acanthamoeba Disease Associated With the Practice of Nasal Rinsing in Immunocompromised Patients
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Session: 86. Pushing the Envelope in CNS Infections
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Background. The genus Acanthamoeba are free-living ameba found worldwide in water, including tap water, and soil that can cause rare but severe infections of the eye, skin, and central nervous system. Acanthamoeba spp generally cause disease in immunocompromised persons, including those with HIV, hematologic malignancies, and solid organ transplants. The route of transmission and incubation period are not well known in humans, but animal studies have shown that disease can be produced via the intranasal, intrathecal, and intravenous routes. We describe 5 cases of Acanthamoeba disease among immunocompromised patients who practiced nasal rinsing prior to becoming ill.

Methods. The Centers for Disease Control and Prevention (CDC) offers a clinical consultation service for free-living ameba infections and maintains a Free-living Amebas laboratory with confirmatory diagnostic testing capabilities. When an Acanthamoeba case is confirmed in the United States, details about the case are collected on a standardized case report form which includes questions about the case-patient’s water and soil exposure prior to becoming ill. Questions about nasal rinsing were added to the form in 2011.

Results. Five Acanthamoeba case patients in CDC’s free-living ameba database were reported to have performed nasal rinsing prior to becoming ill. The median age was 60 years (range 36–73 years) and 3 of 5 patients were female. Two were solid-organ transplant patients (heart and kidney), 2 had chronic lymphocytic leukemia, and 1 had HIV. Three patients presented only with encephalitis and died. The 2-organ transplant patients had a combination of rhinosinusitis, osteomyelitis, and skin lesions. One survived and the other died, the cause of which was unrelated to Acanthamoeba. All reported using tap water to perform nasal rinsing, most for sinus congestion using a neti pot or similar device and one for rinsing after the practice of intranasal, intrathecal, and intravenous routes.

Conclusion. Acanthamoeba is an inhabitant of water, including treated tap water. Immunocompromised patients, like those presented here, might be at risk for infections caused by Acanthamoeba transmitted via tap water used for nasal rinsing. Clinicians caring for immunocompromised patients should advise their patients not to use tap water for nasal or sinus rinsing.

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866. Increased Diagnosis of Varicella-Zoster Virus Infection of the Central Nervous System With the BioFire FilmArray Meningitis/Encephalitis Panel
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Session: 86. Pushing the Envelope in CNS Infections
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Background. Varicella-zoster virus (VZV) infection of the central nervous system (CNS) is relatively uncommon. Diagnostic tests historically utilized culture, serologies, and targeted PCR methods. In April 2016, our institution began
using the BioFire FilmArray meningitis/encephalitis (BFME) panel for cerebrospinal fluid (CSF) specimen analysis. We hypothesized that the diagnosis of VZV CNS infection increased at our institution with the implementation of this diagnostic panel.

Methods. We conducted chart reviews of patients from 2 time periods. In the first period, April 2013–March 2016, BFME was not available for CSF analysis (pre-BFME period). We reviewed all positive CSF VZV PCR results during this period. Medical charts of these patients were reviewed for epidemiology, clinical presentation, treatment course, and outcome. In the second period, April 2016–March 2018, BFME was performed on all lumbar puncture (BFME period), Patients with a positive VZV result on BFME underwent chart review.

Results. In the 3-year pre-BFME period, 292 VZV PCR tests were performed. Six patients were diagnosed with VZV CNS infection; median age 63 years. Five of the 6 patients (83%) had cutaneous zoster. All 6 patients received antiviral therapy. Five of the 6 patients clinically improved; 1 patient with VZV encephalitis died. In the 2-year BFME period, 1113 CSF samples were evaluated, and 18 of these were positive for VZV (1.6%); median age 55 years. Only 7 of the 18 (39%) had cutaneous zoster at the time of hospitalization. All 18 received antiviral therapy with clinical improvement.

Conclusion. Prior to implementation of the BFME panel at our institution, VZV CNS infection was rarely diagnosed. Diagnosis at that time relied on physicians' requests for a targeted CSF VZV PCR. The majority of the patients during that period had a concurrent zoster rash. In a shorter period utilizing syndromic testing (BFME) on CSF specimens, we diagnosed 3 times as many cases of VZV CNS disease. Only a minority of these patients presented with a concurrent zoster rash. The use of syndromic testing of CSF will likely identify more cases of VZV CNS disease.

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867. Ureaplagated Matrix Metalloproteinase-2 Relates to Milder Hearing Impairment in Reiter Meningitis

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Background. Hearing impairment is a well-recognized sequela caused by bacterial meningitis, but the underlying pathophysiology remains largely unknown. Matrix metalloproteinase-2 (MMP-2) is known to affect neuronal cell damage and survival in meningitis, but the underlying pathophysiology remains largely unknown. Matrix metalloproteinase-2 (MMP-2) might play a protective role in the development of hearing sequelae due to bacterial meningitis. MMP-2 protects from neuronal damage, and decreased levels of MMP-2 in plasma were observed in patients with meningitis. MMP-2 might play a protective role in the development of hearing sequelae due to meningitis. MMP-2 expression was increased in the central nervous system of meningitis patients and might play a role in the pathogenesis of hearing impairment.

Methods. We conducted chart reviews of patients from 2 time periods. In the first period, April 2013–March 2016, BFME was not available for CSF analysis (pre-BFME period). We reviewed all positive CSF VZV PCR results during this period. Medical charts of these patients were reviewed for epidemiology, clinical presentation, treatment course, and outcome. In the second period, April 2016–March 2018, BFME was performed on all lumbar puncture (BFME period), Patients with a positive VZV result on BFME underwent chart review.

Results. In the 3-year pre-BFME period, 292 VZV PCR tests were performed. Six patients were diagnosed with VZV CNS infection; median age 63 years. Five of the 6 patients (83%) had cutaneous zoster. All 6 patients received antiviral therapy. Five of the 6 patients clinically improved; 1 patient with VZV encephalitis died. In the 2-year BFME period, 1113 CSF samples were evaluated, and 18 of these were positive for VZV (1.6%); median age 55 years. Only 7 of the 18 (39%) had cutaneous zoster at the time of hospitalization. All 18 received antiviral therapy with clinical improvement.

Conclusion. Prior to implementation of the BFME panel at our institution, VZV CNS infection was rarely diagnosed. Diagnosis at that time relied on physicians' requests for a targeted CSF VZV PCR. The majority of the patients during that period had a concurrent zoster rash. In a shorter period utilizing syndromic testing (BFME) on CSF specimens, we diagnosed 3 times as many cases of VZV CNS disease. Only a minority of these patients presented with a concurrent zoster rash. The use of syndromic testing of CSF will likely identify more cases of VZV CNS disease.

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868. Prospective Pathogen Detection in Patients With Central Nervous System Inflammation Using Metagenomic Sequencing

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Background. Metagenomic sequencing can identify pathogens in patients with central nervous system (CNS) inflammation, who often have no diagnosis achieved despite extensive clinical testing.

Methods. This prospective study enrolled patients with CNS inflammation at a tertiary hospital from 2016 to 2017. Total nucleic acid was extracted from cerebrospinal fluid (CSF) or blood (leukocyte pellets). Libraries were prepared and sequenced by random primer cDNA synthesis from RNA, and Nextera XT preparation from both cDNA and DNA. Sequencing was performed on an Illumina platform. Reads from human and environmental contaminants were removed. Metagenomic analysis was performed with Kraken and confirmed with viral-ngs. The Institutional Review Board approved the study; and informed consent was obtained.

Results. Of 68 subjects enrolled, 63% were men and 84% were white. The median age was 58 years. The median CSF pleocytosis was 80 cells/mm[3] (IQR 17–132). A median of 2.4 million RNA and 6.8 million DNA sequencing reads were generated per sample. Twenty-five subjects had no diagnosis achieved by routine clinical testing; metagenomic sequencing identified enterovirus in 2 of these subjects, and no pathogens in 23. Thirty-six subjects were clinically diagnosed with an infection. In 12 of these, pathogen nucleic acid was detected in CSF by clinical polymerase chain reaction (PCR) or metagenomic sequencing; pathogen detection was not achieved in 2 of these subjects (83%). The other 24 subjects were clinically diagnosed with infection by serology or PCR from blood. Among these, metagenomic sequencing detected the CSF presence of HIV and locally important tick-borne pathogens Powassan virus, Borrelia burgdorferi, and Anaplasma phagocytophilum in leukocyte pellet specimens from patients with West Nile Virus (WNV) infection did not have WNV RNA detected in CSF by sequencing or clinical PCR testing. Among 7 subjects diagnosed with malignancy or autoimmune disease, no pathogens were detected by metagenomic sequencing.

Conclusion. When applied broadly to patients with CNS inflammation, metagenomic sequencing identified known and unexpected pathogens in CSF, including emerging tick-borne pathogens, highlighting its potential as a diagnostic tool. Patients in whom no pathogen nucleic acid was detected could have had an infection with low pathogen burden or short duration in CSF or a noninfectious syndrome.

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869. Evaluation of Broad-Spectrum Antibiotic De-escalation in Patients with Health-Care Associated Pneumonia (HCAP) and No Microbiological Diagnosis

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Session: 87. Respiratory Infections: An Update

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Background. Broad-spectrum (BS) antibiotics directed against Pseudomonas aeruginosa and methicillin-resistant Staphylococcus aureus (MRSA) are commonly used for health-care associated pneumonia (HCAP) treatment. Many patients with HCAP do not have a microbiologically confirmed diagnosis. The goal of this study was to evaluate the impact of antibiotic de-escalation on clinical outcomes in patients with HCAP without a microbiological diagnosis.

Methods. This is a retrospective cohort study of adult, non-ICU, medical patients hospitalized with HCAP between January 2016 and February 2018 at 46 Michigan hospitals. Exclusions included extrapulmonary infection, severe immune suppression, or clinical instability on day 4. Included patients: (1) lacked any positive culture (blood/sputum); (2) started on empiric anti-P. aeruginosa and anti-MRSA therapy by hospital day 2; (3) switched to a narrow-spectrum (NS) regimen (no anti-P. aeruginosa or anti-MRSA coverage) and maintained on BS antibiotic therapy for anti-P. aeruginosa ± anti-MRSA by therapy day 4 (Figure 1). Mortality, readmission, Clostridium difficile infection, and adverse events from antibiotics were compared between the BS and NS groups. Data were analyzed using logistic generalized estimating equation models and inverse probability of treatment weighting.

Results. Of 363 patients with HCAP included, 73 (20%) were switched to an NS regimen. Of 290 patients maintained on anti-PSA BS regimens, 47.6% also continued anti-MRSA therapy. The median age was 72 (IQR, 61–81) and Charlson comorbidity index was 4 (IQR, 0–6) of the entire HCAP population. Results were similar between BS and NS groups, except more patients had chronic kidney disease in the BS group. On multivariable analysis, no other baseline factors were