those with ILL and those with non-ILL. Having symptoms of ILL was associated with reports of missing work (OR 2.9; 95% CI: 1.9, 4.5), missing class (OR 3.4; 95% CI: 2.3, 5.2), performing poorly on assignments and exams (OR 1.8; 95% CI: 1.2, 2.6), and having high interference with daily life (OR 6.0; 95% CI: 3.8, 9.5) as compared with individuals with a non-ILL illness. These impacts were strongest during January and February.

Conclusion. A high prevalence of ILL was observed on campus. These symptoms were found to have a substantial impact on academic and occupational productivity. This demonstrates the need for greater illness prevention efforts on college campuses during influenza season.

Figure 1. Odds ratios of performance outcomes among those with ILL compared to those with other illness symptoms stratified by enrollment month.

| Month       | January | February | March |
|-------------|---------|----------|-------|
| Odds Ratio  | 2.01(1.2, 3.3) | 2.01(1.2, 3.4) | 1.73(1.2, 2.4) |
| 95% CI      | 1.20-3.50   | 1.20-3.40   | 1.20-2.40   |

Disclosures. All Authors: No reported Disclosures.

96. Human Papilloma Viruses Associated Diseases in a Cohort of Patients with Idiopathic CD4 Lymphopenia

Harry Mylakakis, MD1; Elizabeth Laidlaw, PA2; Megan Anderson, RN1; Peiyi Ye, PhD3; Maura Marion, MD1; Isaac Brownell, MD/PhD1; Irini Sereti, MD1 and Andrea Lisco, MD/PhD1; National Institute of Allergy and Infectious Diseases, Bethesda, Maryland; 2National Institutes of Health, Bethesda, Maryland; 3National Institutes of Health, Potomac, Maryland; 4Division of Clinical Research, National Institute of Allergy and Infectious Diseases, Bethesda, Maryland; 5National Institute of Arthritis and Musculoskeletal and Skin Diseases, Bethesda, Maryland; 6Laboratory of Immunoregulation, NIAID, Bethesda, Maryland; 7National Institute of Allergy of Infectious Diseases, Washington, DC

Session: 34. Virus Infections - Host, Pathogen, and Impact of Intervention
Thursday, October 3, 2019: 11:19 AM

Background. Idiopathic CD4 Lymphopenia (ICL) is a rare immunodeficiency characterized by an absolute CD4+ T count of < 300 cells/µL, in absence of HIV-infection or any other known cause. Patients with ICL have an increased risk of opportunistic infections. The prevalence, natural history, and spectrum of Human Papillomaviruses (HPV) associated diseases in ICL patients are unknown.

Methods. ICL patients were enrolled in a prospective observational study (N = 90). Demographic, clinical, and immunologic data were analyzed by nonparametric methods. Immunophenotyping was performed by flow cytometry.

Results. The median age of ICL patients was 48 years, 47% were women, and 92% were Caucasian. Sixty-five percent of patients had at least one opportunistic infection, with HPV being the most prevalent (34.4%), followed by cryptosporidial disease (22%), shingles (15.5%), molluscum contagiosum (8.8%), Histoplasma capsulatum (4.4%), Mycobacterium avium complex (4.4%), and progressive multilobar encephalopathy (2.2%). HPV-related diseases were identified in 14 women and 13 men. ICL patients with HPV disease were younger compared with those without (median age 34 vs. 53.5 years, P = 0.0001). Nine (29%) had anogenital, 9 (29%) had a cutaneous disease (verruca plana, verrucous carcinoma, squamous cell carcinoma) while 13 (42%) had both anogenital and cutaneous disease. Patients with HPV-related disease were also more likely to have history of cryptococcal disease, shingles or molluscum (P = 0.036, P = 0.22 and 0.11, respectively). Thirteen patients had HPV-associated cancers: 7 both mucosal and skin and 3 either skin or mucosal malignancies. Patients with HPV disease had lower CD4+ T cells (median CD4 70 vs. 114 cells/µL, P = 0.036). No differences were observed in the numbers of CD8+ T cells, B cells, NK cells, and levels of IgG between patients with and without HPV disease.

Conclusion. HPV-related disease represents the most common opportunistic infection in ICL patients. Patients with ICL and HPV disease are younger, have lower CD4+ and high prevalence of HPV-associated malignancies. Therefore, for patients presenting early in life with severe HPV disease further immunological workup should be considered and for patients with ICL excessive screening for HPV-related malignancies should be a priority.

Disclosures. All Authors: No reported Disclosures.

97. Competition Experiments for the Baloxavir-Resistant I38T Influenza A Mutant

Liva Checkmahomed, MSc1; Zeineh Mhamdi, Msc1; Jeanne Barbounneau, Msc1; Mariana Baz, PhD2; Yacine Abed, PhD3 and Guy Bovin, MD1; Université Laval, Québec, Canada; 2Centre Hospitalier Universitaire de Quebec, Quebec, Quebec, Canada

Session: 34. Viral Infections - Host, Pathogen, and Impact of Intervention
Thursday, October 3, 2019: 11:31 AM

Background. Baloxavir marboxil (BXM), a cap-dependent endonuclease inhibitor, has been recently approved in the United States for the treatment of influenza infections. It is superior to oseltamivir for reducing the time of viral shedding but is reported to have a low barrier of resistance. We sought to evaluate the viral fitness of the predominant BXM-resistant I38T PA mutant in the A/H1N1 and A/H3N2 viral backgrounds.

Methods. Recombinant A/Quebec/144147/2009 (H1N1) and A/Switzerland/9715293/2013 (H3N2) influenza viruses and their respective I38T PA mutants were generated by reverse genetics. Standardized isolucons (500 PFUs) of wild-type (WT) and mutant viruses were inoculated on a2,6 MDCK cells. On day 3 post-infection (pi), the supernatants were collected and the ratios of WT/mutant viruses were determined by droplet digital PCR using specific LNA probes. Single infections and competitive experiments were also performed in C56/B16 mice with quantification of lung viral titers on days 3 and 6.

Results. In vitro A/H1N1 studies showed similar total copy numbers for the WT and mutant viruses on day 3 pi (1.2 × 10^6 and 1.3 × 10^6 copies/mL, respectively). The initial 50%/50% mixture became 70%/30% (WT/mutant) after one passage in cells. For A/H3N2, the total copy numbers were 8.1 × 10^4 and 1.0 × 10^4 copies/mL for the WT and mutant viruses. The initial 50%/50% mixture became 94%/6% (WT/mutant) after one passage. The I38T mutants remained stable after 4 passages in a2,6 MDCK cells. In mice, the A/H1N1 WT and I38T mutant induced similar weight loss and generated comparable lung titers on days 3 and 6. In contrast, the weight loss of the A/H3N2 mutant was greater than that of the WT between days 3 and 7 with comparable lung titers on days 3 and 6. Following infection with 50%/50% mixtures, the mutant virus predominated over the WT on day 3 pi (73% A/H1N1 and 58% A/H3N2).

Conclusion. The BXM-resistant I38T PA mutant replicates well both in vitro and in vivo in the A/H1N1 and A/H3N2 backgrounds. Surveillance for the emergence and transmission of such mutant in the community is required.

Disclosures. All Authors: No reported Disclosures.

837. Prior Hospitalizations Among Cases of Community-Associated Clostridioides difficile Infection—10 US States, 2014–2015

Kelly M. Hatfield, MSPH1; James Bags, PhD2; Lisa Gail Winstead, MD2; Erin Parker, MPH3; Helen Johnston, MPH3; Geoff Broussseau, MPH3; Danyel M. Olson, MPH3; Scott Frقيد, MD3; Lucy Wilson, MD; Rebecca Permuter, MPH1; E. C. Phipps, DVM, MPH3; Emily B. Hancock, MS3; Ghina Dumyati, MD4; Valerie Ocampo, RN, MPH5; Marion A. Kainer, MBBS, MPH, FRACP, FSHEA6; Lauren C. Khoronen, MSPH7; John A. Irmigain, MD, MS8; L. Clifford McDonald, MD9; MD10; and Alice Goh, MD, MPH1; Centers for Disease Control and Prevention (CDC), Atlanta, Georgia; 2Centers for Disease Control and Prevention, Atlanta, Georgia; 3University of California, San Francisco, San Francisco, California; 4California Emerging Infections Program, Oakland, California; 5Colorado Department of Public Health and Environment, Denver, Colorado; 6Colorado Department of Public Health and Environment, Denver, Colorado; 7Yale School of Public Health, New Haven, Connecticut; 8Emory University and Emory Healthcare, Atlanta, Georgia; 9University of Maryland Baltimore County, Baltimore, Maryland; 10Maryland Department of Health, Baltimore, Maryland; 11University of New Mexico, Albuquerque, New Mexico; 12New York Rochester Emerging Infections Program at the University of Rochester Medical Center, Rochester, New York; 13Oregon Health Authority, Portland, Oregon; 14Tennessee Department of Health, Nashville, Tennessee; 15Division of Healthcare Quality Promotion, CDC, Atlanta, Georgia

Session: 81. Clostridium difficile
Thursday, October 3, 2019: 1:45 PM

Background. Despite overall progress in preventing Clostridioides difficile (CDI), community-associated (CA) infections have been steadily increasing. Although the incubation period of CDI is thought to be relatively short, generation time of microbial dissemination from remote healthcare exposures (e.g., inpatient antibiotic use) may be associated with CA-CDI. To assess this potential association, we linked CA-CDI infections identified through CDC’s Emerging Infections Program (EIP) to Medicare claims data to describe prior healthcare utilization.

Disclosures. All Authors: No reported Disclosures.
Methods. We defined an EIP CA-CDI case as a positive C. difficile test collected in 2014–2015 from an outpatient or inpatient within 3 days of hospital admission, provided there was no positive test in the prior 8 weeks and no admission to a health-care facility in the prior 12 weeks. We linked EIP CA-CDI cases aged ≥65 years to a Medicare beneficiary using unique combinations of birthdate, sex, and zip code. Cases were included if they maintained continuous fee-for-service coverage for 1 year prior to the event date. To calculate exposure odds ratios for previous hospitalizations, each case was matched to 5 control beneficiaries on age, sex, and county of residence. We used logistic regression to calculate adjusted matched odds ratios (amOR) that controlled for chronic conditions.

Results. We successfully linked 2,287/3,367 (68%) EIP CA-CDI cases. Of these, 1,236 cases met inclusion criteria; the median age was 77 years and 63% were female. We identified 69 (5.6%) cases with misclassification of prior healthcare exposures, most of whom (48, 70%) were hospitalized in the 12 weeks prior to their event. Among the 1,167 true CA-CDI cases, 33% were hospitalized in the prior 12 weeks to 1 year. The median number of weeks from prior hospitalization to CA-CDI was 27 (IQR 18–38, Figure 1). Cases had a higher risk of hospitalization than matched controls in the prior 3–6 months (amOR: 2.33, 95% CI: 1.87, 2.90) and 6–12 months (amOR: 1.43 95% CI: 1.18, 1.74).

Conclusion. Remote hospitalization in the previous year was a significant risk factor for CA-CDI, especially in the 3–6 months prior to CA-CDI. Long-lasting prevention strategies implemented at hospital discharge and enhanced inpatient antibiotic stewardship may prevent CA-CDI among older adults.

Disclosures. All Authors: No reported Disclosures.

839. Effect of Clostridiods difficile (C. difficile) Toxin Test Reporting on Clinical Treatment and Outcomes of Toxin-Negative PCR Positive Patients at Five California Hospitals

Christopher R. Polage, MD, MAS;1 Jonathan Grein, MD;2 Margie Morgan, PhD, D-ABMM;3 Sarah B. Doernberg, MD, MAS;3 Steve Miller, MD, PhD;4 Raymond Chinn, MD;3 Cathy Woerle, BS, CSL, MT ASCP;3 Jennifer Yim, BS, BSN, RN, CRC;3 Cassiana Bittencourt, MD;3 Sneha Krishna, MSc;3 Nilco Anne Ocampo, BS;3 Laurel Gibbs, CBSL/MT(ASCP), CIC;4 Shannon C. Mahalot, MPH, CIC;5 Kathleen A. Quan, MSN, RN, PHN, CIC, CPHQ, FAPIC;6 Usme Khabu, MA1,1 Keith M. Madye, MAFIS-BBA;4 Carzina Ganzon, MD;3 Fatemeh Memar, Bachelors of Science: Neuroscience Physiology and Behavior;7 Christian B. Pascual, BS;6 Stuart Cohen, MD;3 Catherine Liu, MD;3 Deborah S. Yokoe, MD, MPH1 and Susan S. Huang, MD MPH;3 Duke University Health System, Durham, North Carolina; Cedars-Sinai Medical Center, Los Angeles, California; University of California, San Francisco, San Francisco, California; Sharp Metropolitan Medical Campus, San Diego, California; Sharp HealthCare, San Diego, California; UC Irvine Health, Orange, California; University of California, Irvine, Orange, California; University of California, Davis Medical Center, Sacramento, California; UCSF Health, San Francisco, California; Sharp Memorial Hospital, San Diego, California; University of California, Irvine Health, Orange, California; University of California Davis Health, Elk Grove, California; Nova Southeastern University College of Osteopathic Medicine, Davie, Florida; University of California, Davis, New York, New York; UC Davis Health System, Sacramento, California; Fred Hutchinson Cancer Research Center, Seattle, Washington; University of California, Irvine, School of Medicine, Irvine, California.

Session: 81. Clostridium difficile
Thursday, October 3, 2019: 2:00 PM

Background. Clostridium difficile infections (CDI) cause approximately 500,000 cases a year with an estimated cost that exceeds $4.8 billion. Despite interventions that addressed environmental disinfection, antibiotic stewardship, and infection control, many institutions continue to have a significant burden of disease. Public reporting and “pay for performance” have increased the impetus and infection control, many institutions continue to have a significant burden of disease. Public reporting and “pay for performance” have increased the impetus for better control of CDI. We describe the use of an unpublished scoring system to assess the risk of CDI with subsequent use of OVP to prevent exsporulation and infection in high-risk groups.

Methods. A large urban hospital in the Chicago area of approximately 400 beds, after following recommended guidelines for prevention of C. difficile, instituted an assessment tool to predict the risk of developing C. difficile infection. This is an observational, cohort study reviewing the pre- and post-implementation of OVP (oral Vancomycin prophylaxis) in hospitalized patients. From January 2017 to December 2017, eligible patients were assessed for risk of C. difficile. The intervention period, from January 2018 to December 2018, we prospectively gave eligible patients oral vancomycin (OVP) 125 mg twice daily if the risk score was 13 or above. No changes in environmental cleaning, antimicrobial stewardship, or restriction of testing were instituted during the periods of enrollment. The analysis was approved by the institutional review board.

Results. In 2017, 82 patients had a score of 13 or over. Of the 82 patients, 72 (87.8%) developed CDI. In 2018, eligible patients had a score of 13 or over and were given OVP. Of the 62 patients, 5 (8%) developed CDI. The relative risk comparing C. difficile in ≥13 vs. <13 patients (RR = 19.2625; 95% CI = 7.3656, 50.3899). The tool is associated with a specificity of 88.54% and sensitivity of 94.67%, along with a negative predictive value of 95.51% and positive predictive value of 86.59%. Fisher’s exact test was performed between OVP and no OVP in relation to the development of CDI in high-risk patients (P < 0.01). VRE rates reported on the antimicrobial remained consistent throughout the study period. No significant differences in baseline characteristics were noted.

Conclusion. In institutions where appropriate infection control measures and antibiotic stewardship have been implemented, the use of a prediction tool to guide OVP is effective in preventing C. difficile.

Protocol for OVP in high-risk patients

| History of CDI within 1 year | 13 pts |
| History of CDI greater than 1 year | 8 pts |
| High antibiotic use | 5 pts |
| Hospital length of stay > 7 days | 3 pts |
| Immuensuppressed | 3 pts |
| Age >65 years of age | 2 pts |
| Long-term care facility resident | 1 pt |
| PPI/IBRA use in hospital | 1 pt |
| Age ≥70 years of age | 1 pt |
| Recently hospitalized (within 50 days) | 1 pt |

**High risk antibiotics:** 1. cefazolin (cefazolin IV, cefotaxime IV, cefazidime IV, cefdinir (PO), cefpodoxime PO, 2. cefuroxime (cefuroxime IV, ceftriaxone IV, meropenem IV, aztreonam IV, imipenem IV), ketolofin (PO or IV), ciprofloxin (PO or IV), moxifloxacin (PO or IV), clindamycin (PO or IV)

***Immunosuppressed defined as:***

- Active malignancy receiving some form of immunosuppression
- Lupus
- Rheumatoid arthritis
- Multiple sclerosis
- Allogeneic transplant
- Solid organ transplant
- Immunosuppressive drugs including:
  - tacrolimus, sirolimus, mycophenolate, cyclosporine
  - steroids (at least Prednisone 20mg or equivalent for 20 days)
- Biologics
- Monoclonal antibodies

Disclosures. All Authors: No reported Disclosures.

838. Oral Vancomycin Prophylaxis Works!

Nicholas W. Van Hise, PharmD; David Hines, MD; Vishal Didwania, MD; David Beelzholt, DO;5 Vishnu Chundi, MD;3 Robert Fliegelman, MD; Alice Han, MD; Alyssa Van Hise, PharmD; Vashali Chundi, MPH;3 Farrin Manian, MD and Russell M. Pettrak, MD;1 Metro Infectious Disease Consultants, Burr Ridge, Illinois; Kindred Hospital Chicago, Burr Ridge, Illinois; Amtia St. Joseph Medical Center-Joliet, Joliet, Illinois; Columbia University Mailman School of Public Health, Oak Park, Illinois; Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts.

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Methods. A large urban hospital in the Chicago area of approximately 400 beds, after following recommended guidelines for prevention of C. difficile, instituted an assessment tool to predict the risk of developing C. difficile infection. This is an observational, cohort study reviewing the pre- and post-implementation of OVP (oral Vancomycin prophylaxis) in hospitalized patients. From January 2017 to December 2017, eligible patients were assessed for risk of C. difficile. The intervention period, from January 2018 to December 2018, we prospectively gave eligible patients oral vancomycin (OVP) 125 mg twice daily if the risk score was 13 or above. No changes in environmental cleaning, antimicrobial stewardship, or restriction of testing were instituted during the periods of enrollment. The analysis was approved by the institutional review board.

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Conclusion. Remote hospitalization in the previous year was a significant risk factor for CA-CDI, especially in the 3–6 months prior to CA-CDI. Long-lasting prevention strategies implemented at hospital discharge and enhanced inpatient antibiotic stewardship may prevent CA-CDI among older adults.