Type III hypersensitivity immune response during the chronic course of the illness. This immune response presents as systemic symptoms and neutrophilic leukocytosis, sim- ilar to sepsis. Capsule Thalidomide is considered the drug of choice, when it comes to the treatment of this acute immunological emergency. A rational study into the immunological markers involved in the pathogenesis of erythema nodosum leprosum and its successful resolution by Thalidomide should be helpful in early diagnosis, and prompt successful therapy. On the basis of previous studies, our aim was to find a correlation with interferon-γ, tumour necrosis factor-α, and Cd-64 expression on activated circulating neutrophils during Type II lepra reaction and successful response to capsule Thalidomide.

Methods. This case-controlled study included one group of patients diagnosed to have leprosy and the other group was healthy controlled individuals with matched age, sex, and area of residence. All the patients with type II lepra reaction responded to Capsule Thalidomide clinically, and all the skin lesions resolved in 7–14 days. Blood samples and skin biopsy were subjected to histopathology, immunofluorescence assay, immunohistochemical staining, quantitative RT-PCR (reverse transcriptase-polymer-ase chain reaction), and flow cytometry.

Results. Interferon-γ and TNF-α are sensitive markers in diagnosing erythema nodosum leprosum and Cd-64 expression on activated circulating neutrophils is both a specific and sensitive marker in Type II lepra reaction. Cd-64 expression also had a positive correlation with Thalidomide treatment and clinical response. High polymor-
phic avium infection.

Conclusion. Cd-64 expression on circulating neutrophils is a potential early bio-
physical marker for diagnosing erythema nodosum leprosum and can be used as a tool to assess thalidomide response. It is however not a good index to diagnose leprosy infection as it was specific for Type II lepra reaction. Interferon-γ and TNF-α are sen-
sitive markers to screen for lepra reactions and this study showed no significant corre-
lation with Thalidomide therapy.

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813. Combination of N-Acetyl-Cysteine With Clarithromycin Against Mycobacterium avium Infection Arkayo Shiozawa, MD; Chikako Kajiwara, PhD; Yoshikazu Ishii, PhD and Kazuhiro Tateda, PhD, MD,1 Department of Microbiology and Infectious Diseases, Toho University School of Medicine, Tokyo, Japan

Session: 70. Tuberculosis and Other Mycobacterial Infections Thursday, October 4, 2018: 12:30 PM

Background. N-Acetyl-cysteine (NAC) is widely used in patients with chronic pulmonary diseases. In previous studies, its antimicrobial and antimycobacterial effects have been reported. Among its effect in Mycobacteria, it has been mainly stud-
ied in Mycobacterium tuberculosis. Here, we examined whether NAC has antibiotic activity against M. avium.

Methods. The antimycobacterial effect of NAC was assessed in JCM 15430 M. avium strain infected A-549 (human lung epithelial cells) and MH-S (mouse alveo-
lar macrophages). These cells were infected with M. avium at multiplicity of infection of 10 for 1 hours, washed and then cultivated for 5 days. Bacterial uptake was evaluated at 0 days and 5 days of cultivation. For the NAC treatment group, 5% FBS medium at multiplicity of infection (MOI) of 10 for 1 hours, washed and then cultivated for 5 days. Bacterial uptake was evaluated at 0 days and 5 days of cultivation. For the NAC treatment group, 5% FBS medium and were given NAC (400 mg/kg) or clarithromycin (100 mg/kg) or both by gavage daily for 5 days. On day 7 of infection, lungs were harvested and CFU, cytokines and antimicrobial peptides were measured.

Results. NAC treatment of M. avium-infected A-549 and MH-S resulted in a signi-
ficant reduction of mycobacterial loads (P = 0.014 and P = 0.014). In vivo, NAC treatment resulted in a significant reduction of mycobacterial loads in the lungs of M. avium-infected mice (P = 0.007). When in combination with clarithromycin, we also observed additional reduction (vs. clarithromycin monotherapy; P = 0.001). Several antimicrobial peptides significantly increased when treated with NAC and clarithro-
mycin combination therapy.

Conclusion. NAC exhibits potent anti-mycobacterial effects and may limit M. avium growth. In combination with clarithromycin, it showed an additive effect in reduction of mycobacterial loads. Interestingly, in our study, several antimicrobial peptides increased significantly which may be one of the possibility on how NAC is involved in antimycobacterial effects. These results indicate that NAC may be an addi-
tional option in treating M. avium-infected patients in future, along with its classical drug regimens containing clarithromycin.

Disclosures. All authors: No reported disclosures.

984. Maternal and Infant Factors Influencing Influenza Vaccination Among Young Children Born in Colorado From 2008 to 2016 Musseng Alishahi, MS1; Lauren De Crevecœur, BA2 and Suchitra Rao, MBBS1

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Session: 130. Adult and Pediatric Influenza Vaccine Friday, October 5, 2018: 12:30 PM

Background. Factors influencing influenza vaccination in the first 2 years of life are important to identify and target strategies to increase vaccination rates, since this group is at high risk of morbidity from influenza. The objectives of our study were to determine maternal and neonatal factors associated with influenza vaccination in the first 2 years of life.

Methods. We conducted a retrospective cohort study using linked data from the Colorado Birth Registry Database and the Colorado Immunization Information System for 2008–2016. Our population was limited to infants born in Colorado, first births with first varicella vaccination documented in the immunization registry. Our primary outcome was receipt of at least one influenza vaccination in children 52 years. Exploratory variables included maternal (number of prenatal visits, urban vs. rural residence) and infant factors (term birth, admission to neonatal intensive care unit [NICU] at birth). Multivariable logistic regression was used to assess the association between these factors and influenza vaccination.

Results. Among 126,763 births in the cohort, 50.2% were vaccinated against influenza in the first 2 years of age. Mothers of unvaccinated children were older (27 vs. 26 years), married (67.8% vs. 66.8%), and more likely to have at least some college education (25.4% vs. 24.1%). A higher proportion of infants admitted to the NICU or who received oxygen were unvaccinated compared with vaccinated (8.5% vs. 8.0% and 2.5 vs 2.1, respectively), P = 0.001 for all. There were no differences between urban vs. rural residence. In adjusted/stratified analyses, an increase in pre-natal visits was asso-
ciated with a decrease in early influenza vaccination (IR = 0.992, 95% CI 0.986–0.998, P = 0.0084 for Hispanic mothers and IR = 0.984, 95% CI 0.973–0.996, P = 0.0069 for whites). There were statistically significant differences in maternal and neo-
natal factors between vaccinated and unvaccinated children with influenza in the first 2 years of life, but the differences were too small to be clinically significant. Ongoing studies are needed to devise strategies to target early influenza vaccination.

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985. Safety of Guidelines Recommending LAIV for Routine Use in Children and Adolescents With Asthma Damaris G. Montes, MD, MPH; Gabriela Vasquez-Benitez, PhD; Avalon Olsen, BS; Leslie Kuckler, MPH and Elyse Kharbanda, MD, MPH; Research, HealthPartners Institute, Minneapolis, Minnesota

Session: 130. Adult and Pediatric Influenza Vaccine Friday, October 5, 2018: 12:30 PM

Background. Asthma is the most common chronic medical condition in chil-
dren. Prior observational studies of live attenuated influenza vaccine (LAIV) safety in asthmatic children have been limited due to confounding by indication, with LAIV restricted to patients with mild asthma. To minimize bias, we evaluated safety of LAIV in children with asthma using a natural experimental in which two medical groups, within a single health system, serving similar populations, differed in vaccination guidelines. Prior to 2010 both groups recommended inactivated influenza vaccine (IIV). Starting in 2010, one group began recommending LAIV for children with asthma.

Methods. Asthmatic children age 2–18 years with visits to two large medical groups in the upper Midwest from 2007 to 2015 were identified and classified by severity and control using validated algorithms. Primary outcomes were lower respiratory events (LRE) per subject were included when children received influenza vaccines in more than one year. The analysis was intention to treat with each medical group’s subjects analyzed as a group. A pre-/post-ratio of ratios (ROR) approach was used to estimate the LAIV guideline impact using a generalized linear model with a Poisson distribution, account-
ing for multiple records per subject and adjusting for age and asthma classification. Analyses were for the overall population, and stratified by age group: 2–4 and 5–18 years. ROR. A total of 7,959 observations from 4,824 unique asthmatic children were analyzed. ROR: 0.896 from 8,061 to the LAIV guideline med-
cal groups. Postimplementation, 67% received LAIV. Age and asthma classification adjusted ROR showed no increase in LREs using the LAIV guideline: overall ROR (95% CI): 0.79 (0.46–1.37) for LRE 21 days and 0.82 (0.56–1.20) for 42 days; age 2–4: 1.07 (0.40–2.83) for 21 days and 1.0 (0.53–1.90) for 42 days; age 5–18: 0.72 (0.37–1.41) for 21 days and 0.75 (0.46–1.21) for 42 days.

Conclusion. A guideline recommending LAIV rather than IIV for asthmatic children did not result in more LREs following vaccination in children age 2–18. Guidelines for influenza vaccination in asthmatic children should be based on effect-
iveness studies.

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986. Evaluation of Moderate-to-Severe Influenza Disease in Children 6 Months to 8 Years of Age in Colorado Suchita Rao, MBBS1; Nollyn Lamb, PhD2; Angela Moss, MS1; Emad Yanni, MD, MSC; Ranke Bekkar-Jerkani, MD; Anne Shueid, MD; Bruce Innes, FIDS3; Jillian Cotter, MD; Rakesh Mistry, MD and Edwin J. Asturias, MD3; 1Pediatric Infectious Diseases, Hospital Medicine and Epidemiology, University of Colorado School of Medicine and Children's Hospital Colorado, Aurora, Colorado, 2Department of Epidemiology, Colorado School of Public Health, Aurora, Colorado, 3Department of Pediatrics, University of Colorado School of Medicine, Aurora, Colorado, 4GSK, Rockville, Maryland, 5GSK, Philadelphia, PA, 6GlaxoSmithKline Biologics, King of Prussia, Pennsylvania, 7University of Colorado Denver, Denver, Colorado, 8Department of Pediatrics, Children’s Hospital Colorado/University of Colorado School of Medicine, Aurora, Colorado

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