Inc.: Employee, Salary. **S. Li**, Merck & Co, Inc.: Employee, Salary. **B. Kuter**, Merck: Employee and Shareholder, Salary. **Z. Liu**, Merck & Co., Inc: Employee, Salary.

2468. Impact of a Herd Immunity Educational Intervention on Parental Concern About Measles

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Background. Maintaining high coverage of measles, mumps, and rubella (MMR) vaccination is important for preventing outbreaks and maintaining herd immunity (HI), which benefits both individuals and communities. We aimed to determine whether information about the benefits of HI and local MMR vaccination rates could change a parent's concern about their child's risk of contracting measles.

Methods. We conducted a survey at the 2016 Minnesota State Fair among Minnesota residents ≥18 years who had at least one child aged 6–18 years. Participants were asked to choose the correct definition of HI, to estimate the MMR vaccination coverage in their county, and guess the minimum MMR vaccination coverage needed to prevent measles outbreaks. We delivered an educational intervention through the interactive survey informing participants about the benefits of herd immunity, the actual MMR coverage in their county, and that ≥95% coverage is needed to prevent outbreaks. Before and after the educational intervention, participants were asked to report their level of concern about their child contracting measles. We calculated adjusted predicted percentages from logistic regression models to evaluate changes in concern about risk pre- and post-intervention and to assess factors associated with concern about measles.

Results. Among the 493 participants, 92.7% reported vaccinating their child with MMR, though one third were not familiar with HI. Prior to receiving information, those knowledgeable about HI were significantly more likely to be concerned about their child getting measles (predicted percentage 80.2% [95% CI: 75.7–84.6]) than those who were unfamiliar with HI (predicted percentage 69.8% [95% CI: 62.1–77.5]), *P*-value for the difference = 0.027. Participants believed that MMR vaccination was, on average, 9.0% [95% CI: 6.9–11.0] lower than the actual coverage in their local area.

Conclusion. Information about HI and local vaccination coverage rates did not impact parental concern about their child being at risk for getting measles. Overall, parents learned that local MMR vaccination rates were higher than they had expected.

Disclosures. **All authors:** No reported disclosures.

2469. Knowledge, Attitudes, Confidence, and Hesitancy Toward Vaccines Among Residents in Pediatric and Family Practice Programs

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Background. Healthcare provider immunization education is vital to accurately address concerns regarding vaccines, but such training is not standardized across residency programs. To assess educational needs and develop a vaccine curriculum for pediatric (Peds) and family medicine (FM) residents, the Collaboration for Vaccination Education and Research (CoVER) was established. There is a need to identify knowledge, attitudes, and hesitancy regarding vaccines among residents.

Methods. In July 2017, an anonymous 30-item survey was sent to residents from 26 US institutions participating in CoVER. Items included (1) vaccine knowledge, (2) attitudes toward vaccines, (3) resident vaccine hesitancy, and (4) demographics. Differences in proportions were calculated using Fisher's Exact test while the Kruskal–Wallis test was used to compare continuous outcomes.

Results. Of 1,447 residents invited, 746 completed the survey (52% response rate). Among participants, 12 were excluded due to inability to determine residency type and or year. The final cohort consisted of 734 residents (Table 1). Knowledge (Figure 1): Percent correct increased with residency year from PGY1 to PGY4 (49%, [95% CI 47–51]; 64% [95% CI 58–70]; test for trend $P < 0.001$). Compared with FM residents, Peds residents were more likely to answer knowledge questions correctly (56%; 49%; $P < 0.001$). Attitudes (Table 2): Confidence in communicating with parents increased with training ($P < 0.001$) but confidence in vaccination did not. Hesitancy (Figure 2): Three percent of residents ($n = 21$) self-reported as vaccine hesitant. They were more likely to be FM (75%, $P < 0.001$). Residents were more likely to delay a vaccine in someone without a medical contraindication with increased year of training ($P < 0.001$).

Conclusion. This initial assessment of the residents' knowledge, attitudes and hesitancy shows that despite increasing knowledge with training, vaccine confidence was unaffected. It was surprising to find hesitancy among residents, highlighting the need for further vaccine education. Future steps include evaluation of a vaccine education curriculum in residency training to increase confidence in the benefits of vaccination.

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2470. The Effect of Information–Motivation–Behavioral Skills Model-Based Continuing Medical Education on Pediatric Influenza Immunization Uptake: A Randomized, Controlled Trial

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Background. Seasonal vaccination against influenza is the most important public health strategy to prevent influenza morbidity and mortality in children 6–23 months of age. However, influenza immunization uptake in this population remains sub-optimal. While parents look to healthcare professionals (HCPs) for guidance, HCPs may be neither aware of the burden of influenza disease in infants nor familiar with ways to address parental influenza vaccine hesitancy. The objective of this research was to describe the impact of an Information—Motivation—Behavioral Skills model (IMB)-based, accredited, online Continuing Medical Education (CME) program on seasonal influenza vaccination in children 6–23 months of age in Ontario, Canada during the 2016/2017 influenza season.

Methods. A multi-center, randomized, controlled trial was conducted whereby HCPs were randomized to either an accredited IMB-based CME or to routine practice (no CME). The CME addressed influenza burden in young children and identified parental barriers (hesitancy) to influenza vaccination, designed to inform, motivate, and upskill HCPs. All vaccine options were reviewed, including the adjuvanted, trivalent, inactive, influenza vaccine (aTIV). Immunization rates were compared between groups using Pearson's chi-squared and a logistic regression model adjusting for socio-economic status at the clinic-level.

Results. A total of 68 HCPs were recruited: 33 randomized to the CME group and 35 to routine practice. HCP interactions with parents were evaluated during 628 visits: 292 visits by HCPs in the CME group and 336 by HCPs in the routine practice group. Parents seen by HCPs in the CME group were ~30% more likely to agree to immunize their child with seasonal influenza vaccination compared with parents seen by HCPs in the control group ($P = 0.007$). The adjusted odds of influenza immunization were 1.5 times higher in the CME group compared with the control group. Children in the CME group were ~20% more likely to receive aTIV compared with children in the control group ($P < 0.001$).

Conclusion. HCP education with a tailored health behavior uptake model based CME addressing the burden of influenza disease in young children and influenza vaccine hesitancy was associated with a significant increase in influenza immunization.

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2471. The State of Cost-Utility Analyses in Vaccines: A Systematic Review

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Background. Economic evaluations are a major consideration of public health decisions on vaccine programs. Given the growth in the number of published cost-utility analyses of vaccines, we sought to better understand global trends in these studies by describing trends in growth, quality, and study findings in the published literature over time.

Methods. We reviewed published economic evaluation of vaccines using the Tufts CEA Registry, a comprehensive database of 5,546 published healthcare related

cost-utility analyses. Descriptive data from eligible publications were screened and summarized by reviewers, who also perform an assessment of the quality of each study. We described studied vaccines, their geographic distribution, author affiliation, funding sources, quality and results.

Results. There were 379/5,546 articles examining the cost-effectiveness of vaccines published in the CEA registry between 1980 and 2017. The United States (n = 121), Canada (n = 36), the Netherlands (30), and the UK (n = 29) were the largest publishers, accounting for 57% of total publications. Overall, publications covered 12 therapeutic categories of vaccines, with HPV vaccine-related articles accounting for the largest proportion of articles (25%; n = 94). While the majority of study authors reported academic affiliations (n = 300), most studies were funded by industry (n = 120) and government (n = 94). Most studies reported favorable findings, and 16% of articles (n = 60) reported cost-savings against comparator interventions. The median ICER of all vaccine cost-effectiveness analyses was approximately $22,182 USD/quality-adjusted life year. The mean quality rating of all vaccine articles was 4.7/7, and was consistent across funding sources and vaccine type.

Conclusion. The publication of cost-utility analyses of vaccines has steadily increased over time. Given the impact of these studies on clinical practice and public health policy, more trained researchers and peer-review processes are needed to utilize this information, especially in jurisdictions that do not have a formal health technology assessment process for vaccines.

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2472. The Impact of State Medicaid Policies on Adult Vaccination Post Affordable Care Act Implementation

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Background. Medicaid rules permit each state to determine which adult vaccines will be covered, the cost-sharing policy for adult vaccination services, provider reimbursement policy, and the settings where vaccines may be administered. Aside from coverage and cost-sharing policy variability across the country, provider reimbursement remains a large challenge to adult immunization services. Evidence shows that pregnant women with Medicaid insurance have lower rates of Tdap vaccination than those women who are privately insured. This study investigates the differences in policies in both fee for service and managed care arrangements post ACA implementation.

Methods. (1) Statutory and regulatory codes of all 50 states and DC were collected and relevant laws were analyzed and coded based on characteristics of the provisions. (2) Attorney identified and reviewed all publicly available material relating to benefit coverage, cost-sharing, and payment for adult vaccination under Medicaid from all 50 states and DC. (3) PHLP attorney conducted interviews of state Medicaid Directors. Questions addressed coverage, cost-sharing, and reimbursement policies in FFS and MCO arrangements and examined what factors influence policy design in and how immunizations are promoted thru Medicaid.

Results. Due to ACA, 32 states and D.C. implemented an expansion and 19 haven't. Those adults who now receive insurance via expansion have access to all ACIP adult vaccinations with no cost-sharing. 14 of these states and one non expansion state cover all Medicaid enrollees. There are 35 states and DC that have traditionally enrolled Medicaid adults where coverage may not exist or cost-sharing does exist. Payment also varies and in many cases reimbursement falls below the private sector payment resulting in providers who are unwilling to take a financial loss on providing vaccinations and facilities not receiving payment for vaccination services.

Conclusion. Many factors may impact adult immunizations some occur before a patient has the opportunity to choose to vaccinate. Sometimes providers are taking financial losses by vaccinating. Coverage and cost-sharing barriers still exist for non-expansion adults. Results from this study can help inform Medicaid polices and provide Medicaid programs insight into other policies around the country.

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2473. How Does Acquiring a Vaccine-Preventable Disease Impact Parental and Physician Responses to Vaccine Hesitancy?

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Background. Vaccine hesitancy poses an urgent threat to public health. This study aims to determine the frequency of children diagnosed with vaccine-preventable diseases (VPDs) accompanied by parental vaccine hesitancy, how physicians counsel parents of these children, and parents' intentions to vaccinate thereafter.

Methods. A one-time survey was sent to pediatricians and pediatric subspecialists through the Canadian Paediatric Surveillance Program (CPSP).

Results. In total, 925 pediatricians responded to the survey. 196 (21%) reported having seen a patient in the preceding 12 months who was diagnosed with a VPD whereby the patient or a sibling was not vaccinated or vaccination was delayed by parental choice. The most commonly diagnosed VPDs were pertussis (31%), varicella (27%), and pneumococcal disease (10%). The vast majority (94%) of pediatricians indicated that the VPDs were not acquired outside of Canada. The child's vaccination status against the VPD prior to contracting the VPD was reported as follows: 81% (156/192) had no immunization and 19% had delayed immunization. When asked about intervention strategies, 23% (41/181) of respondents reported that they had used a formal strategy or structured approach to discuss vaccination with the vaccine-hesitant parent(s) prior to the patient contracting a VPD. 57% (101/178) reported that a formal strategy was used after the patient contracted the VPD. Respondents indicated that their impression was that 35% (64/183) of vaccine-hesitant parents would not vaccinate in the future; 33% (60/183) of respondents were unsure. 79% (147/186) of respondents reported that they were aware of existing tools to manage vaccine hesitancy (e.g., Canadian Paediatric Society Practice Point Working with vaccine-hesitant parents). Of those who were aware of existing tools, 69% (100/145) had used the tools.

Conclusion. Pediatricians frequently encounter children with VPDs whose parents are vaccine hesitant. A substantial number of Canadian pediatricians are either unaware of existing tools to address vaccine hesitancy or are not using them. It was the pediatricians' impression that a significant proportion of vaccine-hesitant parents would not vaccinate in the future despite their children having acquired a VPD.

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2474. Early Feedback From a Pilot of a Cognitive Computing System to Analyze Immunization Data

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Background. Immunization programs maintain and improve vaccination coverage to prevent diseases. Immunization program text data provide contextual information necessary to better understand vaccine coverage. However, text data analysis can be labor intensive. Cognitive computing systems address this challenge by systematically processing large volumes of text data.

Methods. Publicly available data were used. Formal data were gathered using scrapers and parsers to extract information from immunization-related websites, journals, and legislation. Informal data were collected via a social media search platform, Sysomos, from Twitter feeds. All data were preprocessed to remove irrelevant text. Existing algorithms analyzed data and retrieved the most closely related words or paragraphs and produced similarity scores for queries. Additionally, Word2vec and Glove algorithms were used to assess similarity and frequency of occurrence between queried and retrieved information.

Results. The system searches by query, date, and jurisdiction. A query can range from a single word to a whole document. The system understands similarities between words, sentences, paragraphs, and documents and retrieves text based on similarities to the query. Results are supplemented by similarity scores, dates, jurisdictions, weblinks, and usernames (where applicable). Similarity scores allow for quantitative analysis on text data.

Conclusion. The pilot cognitive computing system used algorithms to quickly search formal and informal immunization text data, creating a well-rounded system. The formal data can help identify program activities associated with changes in vaccination coverage. The informal data can help assess information being shared through social media during an outbreak or other emergency. The system will stay relevant as long as new data are continuously incorporated to update the algorithms.

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2475. Hepatitis B Vaccination Coverage Amongst Asian-American Adults: A Population-Based Study of the Role of Race and Gender

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Background. An estimated 257 million individuals are living with hepatitis B Virus (HBV) worldwide. While the aggregate rate of HBV infection has been firmly decreasing in the United States, Asian males continue to experience the highest risk of infection. This study aims to investigate the racial and gender disparities in HBV vaccination coverage among Asian American adults using the 2012–2015 National Health Interview Survey (NHIS).

Methods. The study sample included 125,399 adults aged 18 to 85 who participated in the 2012–2015 NHIS. The main outcome was HBV vaccination status. Race/ethnicity was categorized into White-non-Hispanics, Black-non-Hispanics, Hispanics, Other, Asian-Indian, Chinese, Filipino, and Other-Asian (Korean, Vietnamese, Japanese, and other Asian subgroups). Complex survey methods were applied to all models to provide statistical estimates that are representative of US adults. Multivariable logistic regression models adjusting for age, education, region of residence, survey year, health insurance access, chronic liver disease, influenza vaccination, marital, employment and health status were fit to examine the associations between gender, race/ethnicity and HBV vaccinations status.