Results. Ten full-text publications related to VE of M-M-R® II were all identified from outbreak investigations and mainly in the US (n=8, sample size=318 - 20,496).

For measles outbreaks (n=4), VE ranged from 71% to 96% in different age groups. Among high school students, VE of ≥1-dose of M-M-R® II was 94-96%. Among young adolescents, the incremental VE of ≥2-dose vs. 1-dose was 94.1%. When M-M-R® II was used as post-exposure prophylaxis within 72 hours of exposure during an outbreak, the VE was 83.4% among children 6 months to 19 years old. In another study among infants 6-14 months old, VE was 71% against laboratory-confirmed measles.

Among mumps outbreaks, the VE of 1-dose, 2-dose, and ≥1-dose M-M-R® II compared to unvaccinated was 83-84%, 80-89%, 83-86% respectively. Three studies evaluating the effectiveness of a third dose of M-M-R® II showed an incremental mumps VE of 60-88% for 3-dose vs. ≤ 2-dose. One study found that individuals who had received a 2nd dose of M-M-R® II ≥13 years (vs. < 13 years) before the outbreak had higher risk for contracting mumps.

No study reported VE of M-M-R® II in a rubella outbreak.

Conclusion. M-M-R® II was found to be effective against measles and mumps during outbreaks. More effectiveness studies are warranted to further address questions on the relationship of VE and time since vaccination as well as the effectiveness of a third dose of M-M-R® II for measles or mumps outbreak control.

Disclosures. Se Li, PhD, Merck & Co., Inc. (Employee, Shareholder) Barbara J. Kuter, PhD, MPH, Merck (Other Financial or Material Support, Former employee) Elvira Schmidt, MSc, Certara (Employee of Certara, paid contractor to Merck) (Employee, Other Financial or Material Support) Elizabeth Richardson, BS, Merck Sharp & Dohme Corp. (Employee) Louise P. Saldutti, PhD, Mercfk & Co., Inc (Employee) Neumann Monika, Information Specialist, Certara (Employee, Employee of Certara, who was paid contractor to Merck.) Linnea Koller, n/a, Merck (Employee, Other Financial or Material Support, Employee of Certara who was paid contractor to Merck) Manica Agrawal, n/a, Certara (Employee)Merck (Grant/Research Support) Manjiri D. Pawaskar, PhD, Merck & Co., Inc (Employee, Shareholder)

1391. Enhanced Education and Administration of Influenza Vaccine in a Pediatric Subspecialty Practice

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Session: P-63. Pediatric Vaccines

Background. Strategies to increase influenza (flu) immunization rates are desirable. Some children who are at increased risk for severe disease may only be seen in a subspecialty office during the months when flu vaccine is offered. Subspecialists may also provide education for families that are uncertain about benefits of vaccines.

Methods. During the 2019- 2020 season, our multispecialty pediatric practice, which includes divisions of Endocrinology, Gastroenterology, Infectious Disease, Nephrology, Pulmonary, and Surgery, initiated a quality project to increase delivery of flu vaccine during visits. Beginning 10/1/19, providers were encouraged to use tools in the electronic medical record (EMR) to ask about flu vaccine status and administer if indicated and accepted. Flu immunizations given for all divisions, as well as individual divisions, were compared with the previous 2018–2019 season.

Results. From 9/1/19 -3/31/20, 615 doses of flu vaccine were administered for 5667 patients for a rate of 10.9 %. This was an increase from 9/1/18- 3/31/19 when 256 doses were given for 5760 patients (4.4%, p< .0001). All divisions had a significant increase in flu vaccine rates except for infectious disease. Review of certain high risk disorders showed significant increased rates for diabetes and asthma but not for inflammatory bowel disease, HIV infection, chronic renal disease, or cystic fibrosis. During this project an EMR flu tool was not used for 1788 patients (32%). Of the remaining 3879 patients, 1982 (51%) reported prior receipt of flu vaccine and 579 (15%) were not eligible for state supplied vaccine. For 1318 eligible patients, flu vaccine was accepted by 631 (48%) and given to 615 patients. Flu vaccine was declined by 687 (52%) patients.

Conclusion. There is opportunity to provide education and flu vaccine during pediatric subspecialty visits. All specialties increased the number of flu vaccine given except for infectious disease. This is likely because this division has routinely offered flu vaccine and visits for travel declined in 2020. Although the practice overall gave more flu vaccine from the prior year, there appear to be missed opportunities. Further quality improvement work will strengthen the EMR flu screening tools to increase participation and learn more about why flu vaccine is declined.

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

1392. Evaluation of the Impact of a Single-dose Hepatitis A Vaccination in Brazil: a time-series analysis

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Session: P-63. Pediatric Vaccines

Background. Brazil has transitioned from an intermediate to low hepatitis A virus endemic country, increasing the risk of severe Hepatitis A (HepA) disease. To control transmission, the HepA vaccine, MSD, was introduced in the National Childhood Immunization Program (NIP) in 2014 for children aged 12-24 months and extended to children under 5 years old in 2017. We evaluated the impact of the vaccination on the HepA incidence, associated healthcare resource utilization (HCRU), and costs.

Methods. We conducted an observational, retrospective study using Brazilian National Public Health Data (DATASUS). An interrupted time-series analysis was conducted for incidence rates (IR) of laboratory- or clinically-confirmed Hep A cases. Using a negative binomial regression model, we assessed changes in annual HepA IR between pre- (2010-2013) and post- (2015-2018) HepA vaccination periods and compared to predicted counterfactual rates without HepA vaccination. We compared HCRU and cost of Hep A-associated hospitalizations and outpatient procedures between pre- and post- HepA vaccination periods.

Results. Between 2010 and 2018, 32,295 Hep A cases occurred across all ages. Among the NIP target children aged 1-4 years, HepA vaccination was associated with an immediate HepA IR decrease (-52,5% of level change) and with a decrease in slope (-7.7% vs -67.6% per year for pre- and post-periods, respectively, Figure 1). We observed a similar trend in non- HepA vaccination target children aged 5-14 years with -57.1% of level change and slope change from -3.4% (pre- HepA vaccination) to -53.7% (post- HepA vaccination) per year (Table 1). Across all age groups, 14,468 Hep A cases were averted when compared to predicted counterfactual rates (Table 2). Overall, HepA-related hospitalization rate dropped 64% after NIP introduction of vaccination resulting in a cost reduction of 55%. The total number of outpatient procedures claimed among HepA-diagnosed patients reduced 18% with 42% cost reduction.

Figure 1: time-series analyses of Hepatitis A incidence rate (IR) for NIP target population. Monthly number of hepatitis A cases observed over the study period (black line). Predicted trend based on the pre- HepA vaccination (red line) and post-HepA vaccination (blue line) monthly cases

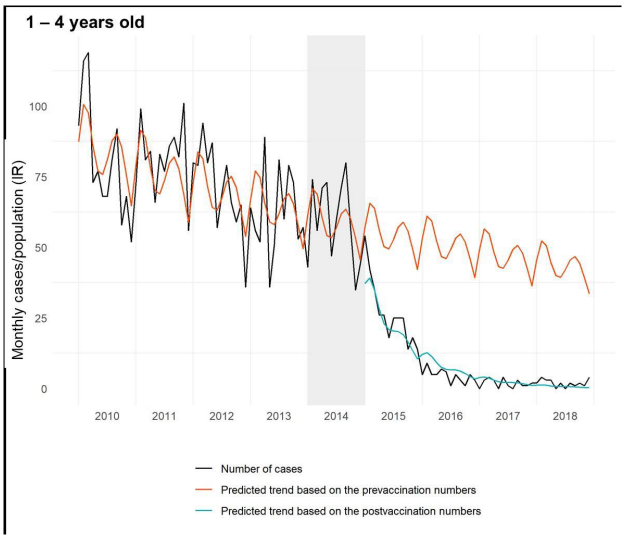

Table 1: Time-series analysis of the impact of the hepatitis A vaccination on the incidence rate level of change, according to age group

Age groups	Variation (%)	2.5%	97.5%	p-value
<12 months				
Immediate effect[a]	-54.0	-69.8	-30.0	<0.001
Trend without vaccination effect[b]	-0.4	-0.8	9.0	0.9465
Trend with vaccination effect[c]	-34.5	-46.2	25.3	<0.001
Comparison of pre-post HepA vaccination trends	-	-	-	<0.001
1-4 years old				
Immediate effect[a]	-52.5	-61.3	-41.7	<0.001
Trend without vaccination effect[b]	-7.7	-11.8	-3.4	<0.001
Trend with vaccination effect[c]	-67.6	-71.7	-62.8	<0.001
Comparison of pre-post HepA vaccination trends	-	-	-	<0.001
5-14 years old				
Immediate effect[a]	-57.1	-66.9	-44.3	<0.001
Trend without vaccination effect[b]	-3.4	-10.5	4.2	0.3651
Trend with vaccination effect[c]	-53.7	-58.0	-49.1	<0.001
Comparison of pre-post HepA vaccination trends	-	-	-	<0.001
15-39 years old				
Immediate effect[a]	-62.7	-75.1	-44.1	<0.001
Trend without vaccination effect[b]	-0.7	-12.2	12.2	0.914
Trend with vaccination effect[c]	17.4	3.7	32.9	0.0114
Comparison of pre-post HepA vaccination trends	-	-	-	0.057
≥40 years old				
Immediate effect[a]	-43.3	-56.1	-26.8	<0.001
Trend without vaccination effect[b]	-1.9	-9.2	5.8	0.6154
Trend with vaccination effect[c]	9.5	1.2	18.6	0.024
Comparison of pre-post HepA vaccination trends	-	-	-	0.045

[a] Level of change on hepatitis A incidence rate immediately after the vaccine introduction (2014)
[b] Predicted annual change (slope) on hepatitis A incidence rate during pre- HepA vaccination period (2010-2013)
[c] Predicted annual change (slope) on hepatitis A incidence rate during post- HepA vaccination period (2015-2018)

Table 2: Number of observed, predicted counterfactual, and averted hepatitis A cases in the post- HepA vaccination period (2015-2018), according to age group.

Age groups	Observed	Predicted counterfactual	Averted cases	
			Median	Percentiles (2.5 -97.5%)
<12 months	88	404	316	288; 336
1-4 years old	423	2,375	1,952	1,855; 2,023
5-14 years old	1,925	10,427	8,502	8,062; 8,857
15-39 years old	3,495	6,302	2,807	2,488; 3,025
≥40 years old	1,255	1,575	320	262; 371
Total	7,186	21.654	14,468	13,395; 15,138

Conclusion. In Brazil, the single-dose hepatitis A vaccine childhood program effectively reduced the Hepatitis A incidence, HCRU and associated-costs in vaccinated and in some non-vaccinated age groups.

Disclosures. Ana Luiza Bierrenbach, MD, MSc, PhD, MSD Brazil (Grant/Research Support, Scientific Research Study Investigator, Research Grant or Support) Yoonyoung Choi, PhD, MS, RPh, Merck (Employee) Paula M. Batista, BSc, MSD Brazil (Employee) Fernando Serra, MD, MSD Brazil (Employee) Cintia Parellada, MD, PhD, MSD Brazil (Employee) Guilherme Julian, BSc, MSc, IQVIA (Employee) MSD (Consultant, Research Grant or Support) Karina Nakajima, BSc, PhD, IQVIA (Employee)MSD (Consultant, Research Grant or Support) Thais Moreira, MD, MSc, MSD Brazil (Employee)

1393. Factors Associated with Co-administration of Pentavalent DTaP-IPV/Hib and Monovalent Hepatitis B Vaccine in the United States (US)

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Session: P-63. Pediatric Vaccines

Background. The US vaccination schedule includes DTaP, IPV, Hib and HepB doses in the first 6 months of life. A previous analysis found variability in the timing of HepB doses in infants receiving DTaP-IPV/Hib. We explored factors associated with co-administration of DTaP-IPV/Hib and HepB on the same day.

Methods. This was a retrospective study using the MarketScan® commercial claims and encounters database. Infants born from 1 July 2010 - 30 June 2016, continuously enrolled in an insurance plan for ≥ 13 months and receiving ≥ 3 DTaP-IPV/Hib doses were included.

Infants were assessed for HepB claims relative to the first and third DTaP-IPV/Hib doses. Because a HepB birth dose was assumed, the first HepB claim from 29 - 169 days following birth was counted as Dose 2, and the second claim from 170 days - 12 months as Dose 3. Associations between demographic, provider, and insurance characteristics, receipt of other pediatric vaccines, and co-administration of DTaP-IPV/Hib and HepB were analyzed using multivariate logistic regression.

Results. Among 165,553 infants who received a first DTaP-IPV/Hib dose, 60.7% received HepB Dose 2 on the same day. Among 162,217 infants who received a third DTaP-IPV/Hib dose, 45.1% received HepB Dose 3 on the same day.

Infants in the Northeast were less likely (OR=0.38, 95%CI=0.36-0.39), while those in the West were more likely (OR=1.41, 95%CI=1.36-1.46) than infants in the South to receive the first dose of DTaP-IPV/Hib and HepB Dose 2 on the same day. Infants vaccinated by pediatricians (OR=0.54, 95%CI=0.53-0.55) were less likely to receive the first dose of DTaP-IPV/Hib and HepB Dose 2 on the same day compared to infants vaccinated by family physicians. Infants who received PCV on the same day as the first dose of DTaP-IPV/Hib were more likely to receive HepB Dose 2 (OR=6.96, 95%CI=6.30-7.70) that day. These factors were also associated with co-administration of the third dose of DTaP-IPV/Hib and HepB Dose 3.

Conclusion. Differences in co-administration of DTaP-IPV/Hib and HepB were associated with region of residence, provider type and co-administration of PCV. The reasons underlying these differences merit exploration. A hexavalent vaccine containing DTaP, IPV, Hib, and HepB could improve timeliness of HepB vaccination, while reducing the number of injections during infancy.

Disclosures. Tanaz Petigara, PhD, Merck & Co., Inc. (Employee, Shareholder) Ya-Ting Chen, PhD, Merck & Co., Inc. (Employee, Shareholder) Zhiwen Liu, PhD, Merck & Co., Inc., (Employee) Michelle Goveia, MD, Merck & Co., Inc (Employee, Shareholder) David Johnson, MD, MPH, Sanofi Pasteur (Employee, Shareholder) Gary S. Marshall, MD, GlaxoSmithKline (Consultant, Scientific Research Study Investigator)Merck (Consultant, Scientific Research Study Investigator)Pfizer (Consultant, Scientific Research Study Investigator)Sanofi Pasteur (Consultant, Grant/Research Support, Scientific Research Study Investigator, Honorarium for conference lecture)Seqirus (Consultant, Scientific Research Study Investigator)

1394. Impact of 7-Valent and 13-Valent Pneumococcal Conjugate Vaccines in the United States: A Systematic Literature Review

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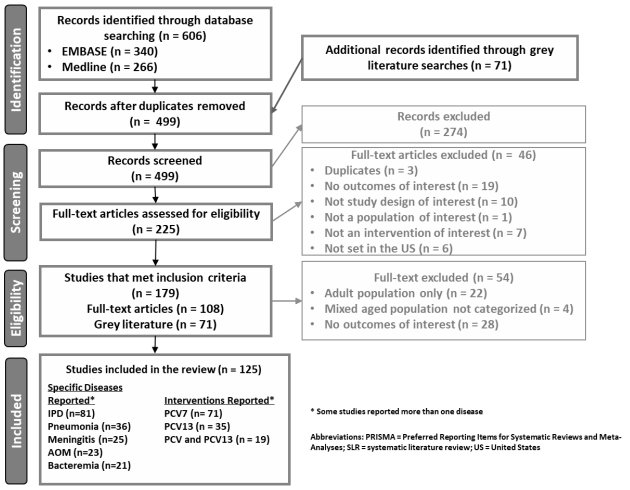
Session: P-63. Pediatric Vaccines

Background. The availability of 7-valent (PCV7) and 13-valent (PCV13) pneumococcal conjugate vaccines (PCVs) in the United States (US) since 2000 and 2010, respectively, has substantially reduced the occurrence, morbidity and mortality of pneumococcal disease. This systematic literature review aimed to assess the impact of the PCVs in reducing the pneumococcal disease burden since their introduction.

Methods. We searched Embase and Medline and disease-surveillance websites for observational studies of US participants < 19 years, published 1999–2019 and reporting incidence or prevalence of acute otitis media, invasive pneumococcal disease, meningitis, or pneumococcal disease-related morbidity, mortality, healthcare resource utilization (HCRU) or costs.

Figure. SLR Results - PRISMA Flow Chart

Results. Of 499 citations identified from the databases and other sources, 125 met inclusion criteria (Figure), all indicating clear reductions in multiple manifestations of pneumococcal disease with PCV7 and PCV13 use. However, variations across studies in outcomes reported, study years, and age strata, confounded assessment of vaccine impact on specific pneumococcal disease outcomes and key burden indicators, such as tympanostomy tube placement and antibiotic prescriptions.



Conclusion. PCVs have greatly decreased multiple manifestations of pneumococcal disease in the US. However, granular data on the frequency and morbidity associated with specific pneumococcal diseases and on associated HCRU are needed to quantify the public-health impact of these vaccines.

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1395. Influenza B-Associated Pediatric Mortality in the US Between 2010 and 2019

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Session: P-63. Pediatric Vaccines

Background. To assess the contribution of influenza B to mortality in the US pediatric population, we analyzed the proportion of influenza-associated pediatric mortality attributed to influenza A and B over nine influenza seasons using national surveillance data. The effectiveness of influenza vaccines against influenza B in the pediatric population was also assessed.

Methods. The study period was the 2010/11 to 2018/19 influenza seasons. Proportions of circulating strains in the general population and influenza-associated pediatric mortality for each season were obtained from annual Centers for Disease Control and Prevention Morbidity and Mortality Weekly Reports on influenza. A Chi-squared test with Yates' correction was used to assess the contribution of influenza B to pediatric mortality relative to its circulation among influenza viruses. Consolidated vaccine effectiveness (VE) against influenza B for inactivated influenza vaccine (IIV) in the 2010/11 to 2017/18 seasons and live attenuated influenza vaccine (LAIV) in the 2010/11 to 2015/16 seasons were obtained from a published meta-analysis and annual US Flu VE Network studies. There were no US data on LAIV VE for 2016/17 and 2017/18.