Adherence to Multidose Hepatitis A and Hepatitis B Vaccine Schedules in the US

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BACKGROUND

- Recent national vaccination coverage rates for adults are well below Healthy People 2020 goals, leaving a substantial proportion of adults at risk
- Although vaccination coverage rates are intended to provide a snapshot of community-level protection, this measure does not take into account whether doses of multidose vaccines (ie, Hepatitis A [HepA], Hepatitis B [HepB]) were administered within the recommended schedules
- Timely administration of each dose in a multidose vaccination schedule optimizes the overall vaccine effectiveness

OBJECTIVE

- Estimate HepA and HepB dose completion and adherence with the HepA and HepB multidose schedules in an adult insured population in the US

METHODS

- We conducted a retrospective database study of administrative claims (medical and pharmacy) from the 2008–2015 MarketScan Commercial Claims and Encounters, Medicare Supplemental, and Multi-State Medicaid databases
- Completion of second and third doses of HepA and HepB, respectively, and adherence with the 2-dose recommended schedule for HepA were measured (**Table 1**). Adherence for HepB was not estimated, as there is no upper limit on timing of the second and third dose of HepB
- Individuals age 19 and older at first dose were included if they had 18 months of continuous health plan enrollment prior to the first HepA dose and/or 6 months prior to the first HepB dose
- Individuals with altered HepB dose or schedule due to hemodialysis were excluded
- Median time to completion, the proportion of patients who completed second and third doses, and adherence to the recommended schedule within specific time periods of the first dose were estimated using Kaplan-Meier survival curves
- Sensitivity of all results to continuous enrollment requirements prior to and after vaccination was examined

Table 1. Hepatitis A and Hepatitis B Vaccine Products and Recommended Schedules

Product (Manufacturer, Approval Year)	Vaccine Type	Dose 1	Dose 2	Dose 3	Completion Points Assessed
Havrix (GSK, 1995)	A	0	6–12 months	—	30 months and 42 months after the first dose
Vaqta® (Merck, 1996)	A	0	6–18 months	—	
Recombivax® HB (Merck, 1986)	B	0	At least 1 month after first dose	At least 2 months after the second dose and 4 months after the first dose	Dose 2: 1 month after first dose, 13 months after first dose, and 25 months after first dose
Engerix-B (GSK, 1989)	B	0	At least 1 month after first dose	At least 2 months after the second dose and 4 months after the first dose	Dose 3: 4 months after first dose, 16 months after first dose, and 28 months after first dose

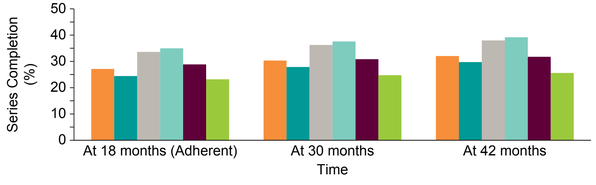
RESULTS

- Average age at initiation was 39.4 years for HepA and 40.9 for HepB. Females comprised 55% and 58% of HepA and HepB initiators, respectively (**Table 2**)

Table 2. Patient Characteristics of Hepatitis A and Hepatitis B Vaccine Initiators

	HepA	HepB
Total initiators	367,814	534,759
Male	45.0%	42.0%
Mean (SD) age, years	39.4 (15.9)	40.9 (14.0)
Payer		
CCAE	91.7%	88.3%
Medicare	4.0%	3.0%
Medicaid	4.4%	8.7%
Months of follow-up after initiation		
0–11	38.4%	41.2%
12–23	24.8%	24.9%
24+	36.7%	34.0%

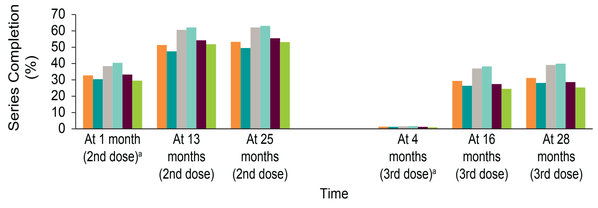
Figure 1. Hepatitis A Vaccine Adherence and Series Completion Rates



Overall	27.14%	30.33%	32.05%
19–49	24.43%	27.87%	29.73%
50–59	33.62%	36.25%	37.98%
60–64	34.97%	37.58%	39.19%
65–69	28.87%	30.83%	31.77%
70+	23.18%	24.75%	25.60%

- Overall, 27.1% of individuals received a second dose of HepA within the recommended 18 months; 32.1% of individuals received a second HepA dose within 42 months (**Figure 1**)

Figure 2. Hepatitis B Vaccine Series Completion Rates



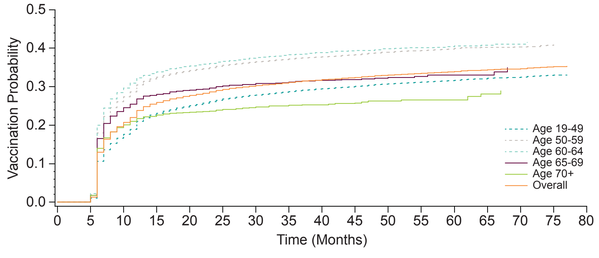
	At 1 month (2nd dose)[a]	At 13 months (2nd dose)	At 25 months (2nd dose)	At 4 months (3rd dose)[a]	At 16 months (3rd dose)	At 28 months (3rd dose)
Overall	32.8%	51.3%	53.3%	1.4%	29.4%	31.2%
19–49	30.4%	47.5%	49.5%	1.3%	26.4%	28.1%
50–59	38.5%	60.6%	62.1%	1.5%	37.0%	39.1%
60–64	40.4%	62.1%	63.1%	1.7%	38.2%	39.9%
65–69	33.2%	54.2%	55.5%	1.3%	27.5%	28.7%
70+	29.5%	51.8%	53.1%	1.0%	24.5%	25.4%

[a]At 1 month (2nd dose) and at 4 months (3rd dose) represent the minimum recommended spacing intervals.

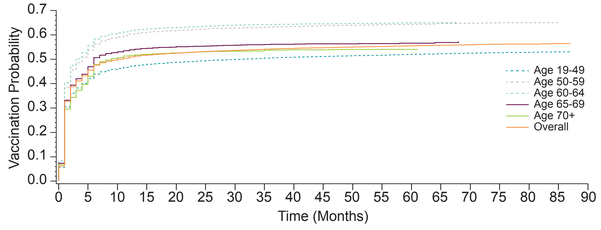
- For HepB, 51.3% of individuals received a second dose within 13 months of the first dose and 29.4% received a third dose within 16 months of the first dose (**Figure 2**). Among those who received a second dose, 52.5% received a third dose within 14 months of the second dose
- For both vaccines, individuals aged 50–64 at initiation had the highest rates of completion and adherence
- Requiring longer periods of continuous enrollment prior to vaccination or after initiating the vaccine series resulted in slightly higher completion and adherence, but results were within 2–3 percentage points
- Time to second dose following first dose of HepA and time to third dose following first dose of HepB are shown in **Figure 3**

Figure 3. Time to Completion of Hepatitis A and Hepatitis B Vaccination Series

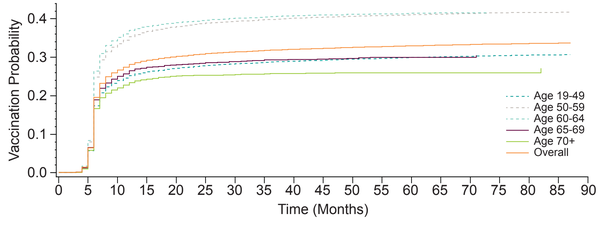
A. Time to Second Dose Following Initiation of HepA Vaccination



B. Time to Second Dose Following Initiation of HepB Vaccination



C. Time to Third Dose Following Initiation of HepB Vaccination



CONCLUSIONS

Adherence to multidose adult vaccines in the US is suboptimal. For both Hepatitis A and Hepatitis B vaccines, less than one-third of individuals completed the series, suggesting that there may be significant barriers to be addressed to optimize completion of multidose vaccines in real-world settings. Furthermore, the vast majority of adults initiating vaccination may not be receiving the full protective benefit of these multidose vaccines due to receipt outside the optimal time frame or failure to complete the series.

http://bit.ly/2eH6stA

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