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Suboptimal Immunity To Hepatitis A Among NYC MSM Initiating PrEP or PEP, 2016-2019

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BACKGROUND

- Recent outbreaks of Hepatitis A virus (HAV) infection among men who have sex with men (MSM) have occurred globally, nationally, and in New York City (NYC).[1,2,3]
- An estimated critical immunity threshold against HAV is ≥ 70% to prevent outbreaks in MSM populations.[4]
- National HIV pre-exposure prophylaxis (PrEP) and post exposure prophylaxis (PEP) guidelines do not recommend HAV serology testing among MSM for PrEP and PEP initiation.[5,6]
- At NYC Sexual Health Clinics (SHC), nearly all (>99%) patients initiating PrEP or PEP receive HAV serological testing.

OBJECTIVE

- Determine the prevalence of HAV immunity among MSM initiating PrEP or PEP at NYC SHC
- Determine subsequent HAV vaccine uptake among those not immune to HAV within a year of PrEP/PEP initiation

METHODS

- **Data source**
  - ❑ NYC SHC electronic medical records
- **Observation period**:
  - ❑ September 2016- March 2019 for hepatitis A serology testing
  - ❑ September 2016-July 2019 for subsequent HAV vaccination
- **Population of interest**
  - ❑ HIV negative cis-gender MSM **AND**
  - ❑ Had PrEP or PEP medications dispensed or prescribed within 30 days of hepatitis A serology
- **Outcomes**
  - ❑ Hepatitis A Immunity
    - ❑ Hepatitis A immune
      - ❖ Reactive HAV IgG and/or reactive HAV IgM
    - ❑ Hepatitis A non-immune
      - ❖ Non-reactive HAV IgG and IgM
    - ❑ Hepatitis A unknown immune status
      - ❖ Borderline HAV IgG and non-reactive HAV IgM
  - ❑ Subsequent Hepatitis A Vaccination
    - ❑ Received ≥1 dose of Hepatitis A vaccine (Havrix) or Hepatitis A/B combination vaccine (Twinrix)
- **Analysis**:
  - ❑ If a patient had multiple HAV serologies within the observation period, data was de-duplicated to the first visit the HAV serology panel was done
  - ❑ Chi-square test was used to compare categorical variables among patients who were immune and not immune/unknown immunity to HAV
  - ❑ A *p* value of 0.05 or less was considered statistically significant

RESULTS

Table 1: PrEP/PEP Patients Characteristics, by Hepatitis A Immunity Status at NYC SHC, September 2016- March 2019

Variable	Total N(%)	Hepatitis A Serology		
		Immune N (%)	Not immune /Unknown Status[1] N (%)	*P value*
Total	**4233**	**2733 (100.0)**	**1500 (100.0)**	
PrEP/PEP[2]				0.58
PrEP	2273 (53.7)	1459 (53.4)	814 (54.3)	
PEP	1960 (46.3)	1274 (46.7)	686 (45.7)	
Age (years)				**<0.01**
< 20	142 (3.4)	104 (3.8)	38 (2.5)	
20-29	2321 (54.8)	1461 (53.4)	860 (57.4)	
30-39	1318 (31.1)	833 (30.5)	485 (32.3)	
≥ 40	452 (10.7)	335 (12.3)	117 (7.8)	
Race/Ethnicity				**<0.01**
Hispanic/ Latino	1342 (31.7)	938 (34.3)	404 (26.9)	
Non- Hispanic Asian	346 (8.2)	230 (8.4)	116 (7.7)	
Non-Hispanic Black	903 (21.3)	542 (19.8)	361 (24.1)	
Non-Hispanic White	1317 (31.1)	802 (29.3)	515 (34.3)	
Non-Hispanic Other	325 (7.7)	221 (8.1)	104 (6.9)	
Country of Birth				**< 0.01**
US/ Puerto Rico	2659 (62.8)	1603 (58.7)	1056 (70.4)	
Foreign Born	1574 (37.2)	1130 (41.3)	444 (29.6)	
Incident STI[3]				0.20
Yes	1110 (26.2)	699 (25.6)	411 (27.4)	
No	3123 (73.8)	2034 (74.4)	1089 (72.6)	
Hepatitis A Vaccine Status				**<0.01**
Vaccinated at NYC SHC[4]	753 (18.0)	706 (25.8)	47 (3.1)	
Vaccinated at non NYC-SHC clinics[5]	2437 (57.6)	1540 (56.4)	897 (59.8)	
Unvaccinated/ Unknown vaccine status	1043 (24.6)	487 (17.8)	556 (37.0)	

[1] 1460 not immune and 40 unknown immune status
[2] 4151 patients (98.1%) had their hepatitis panel at the same day of PrEP/PEP initiation
[3] Positive Gonorrhea/Chlamydia nucleic acid amplification test at NYC SHC clinics within 10 days of PrEP/PEP initiation
[4] Vaccinated at NYC SHC: EMR verified receiving at least one dose Havrix or two doses Twinrix ≥ 30 days prior to HAV serology at NYC SHC
[5] Vaccinated at non NYC-SHC: patient self-reported receiving at least one dose Havrix or two doses Twinrix at non-NYC SHC

Table 2: HAV Vaccination Administered at NYC SHC at PrEP/PEP Initiation and Follow Up Visits Among Non-immune Patients to HAV

Variable	N	%
Total not immune	**1500**	**100**
Vaccinated at PrEP/PEP initiation visit [1]	242	16.1
Returned within a year of HAV serology [2]	801	53.4
Vaccinated within a year at NYC SHC [3]	503	33.5
Median number visits to first vaccine (min,max)	1 (1,11)	

[1] Received first dose of Havrix or Twinrix at PrEP/PEP initiation visit (N=218) or within 30 days prior (N= 24)
[2] Returned within a year to NYC SHC and had a clinician visit
[3] Received at least one dose of Havrix or Twinrix within a year of HAV serology

Results

- ❑ At time of PrEP/PEP initiation, 65% of MSM were immune to HAV (n=2733)
- ❑ On bivariate analysis, immunity to HAV varied by age, race/ethnicity, country of birth, and HAV vaccination status
- ❑ Of 1500 MSM patients not immune to HAV, 49.6% (745/1500) received ≥1 dose of Havrix (n= 455) or Twinrix (n=290) within a year after HAV serology
- ❑ At time of PrEP/PEP initiation, a total of 2437 (57.6%) patients self-reported receiving hepatitis A vaccination at non-NYC SHC settings; 36.8% (897/2437) were not immune.

DISCUSSION

- **Limitations**
  - ❑ Subsequent HAV vaccine uptake is likely to be an underestimate as data was only available from vaccines administered at NYC SHC and not from other clinics
  - ❑ Observation period for patients July 2018- March 2019 was less than a year and thus subsequent HAV vaccination for this cohort is likely to be higher
- **Conclusion**
  - ❑ At time of PrEP/PEP initiation, HAV immunity among this NYC MSM cohort was below the critical immunity threshold of 70% against HAV
  - ❑ Subsequent HAV vaccination of half of the non-immune cohort likely increased MSM cohort immunity to ≥ 70% as one dose of Havrix is 95% immunogenic to HAV
  - ❑ Patient self report of vaccination to HAV was not reliable method to assess patient's immunity to HAV
- **Implications**
  - ❑ HAV serological testing identified a significant number of HAV non-immune patients, despite their self-reported hepatitis A vaccination
  - ❑ HAV serological testing for MSM initiating PrEP/PEP and subsequent hepatitis A vaccination of non-immune patients is an effective intervention to prevent future HAV outbreaks
  - ❑ National guidelines for PrEP and PEP should consider adding Hepatitis A serology testing among MSM initiating PrEP and PEP and vaccinating the non-immune to HAV

References

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