Implementation of an EHR Prompt
Reveals Low Adherence to HCV Birth Cohort Testing Recommendations

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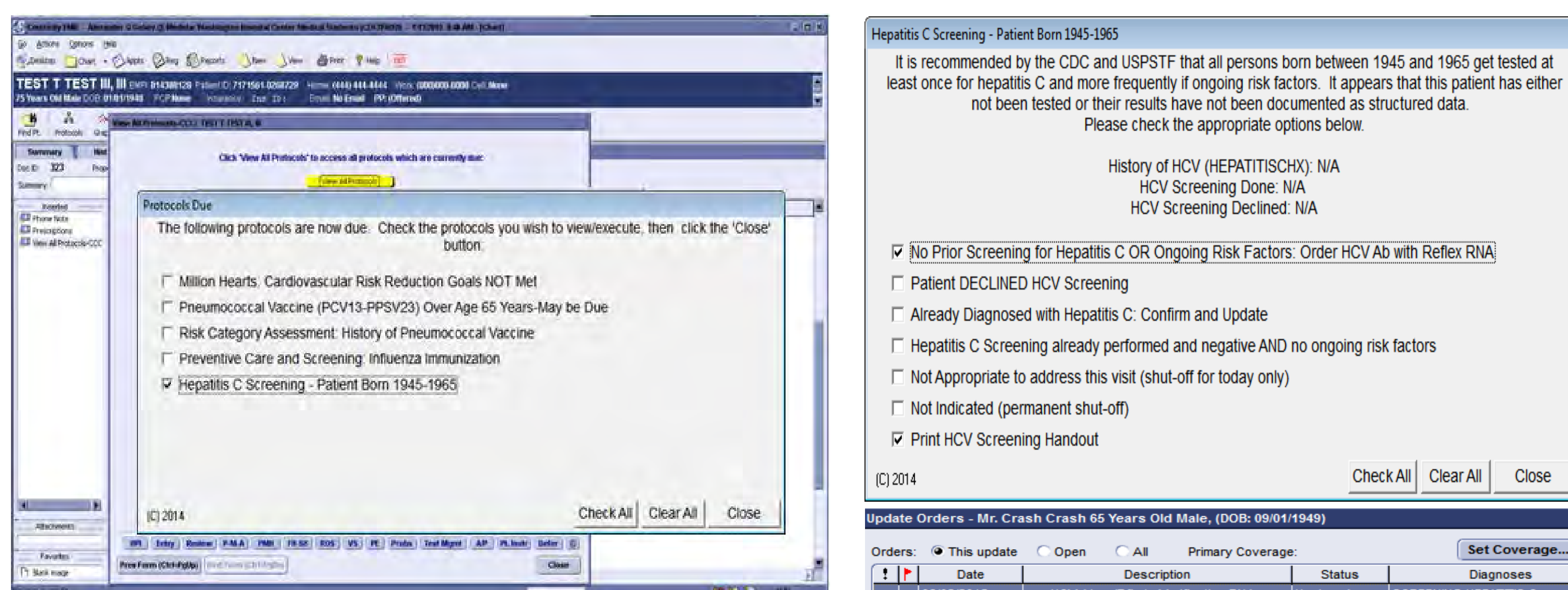Alexander.g.geboy@medstar.net
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BACKGROUND

- It is estimated that at least 50% of people infected with the hepatitis C virus (HCV) are unaware of their condition despite expanded Birth Cohort (BC) testing recommendations from the CDC and the USPSTF.
- The prevalence of HCV among the BC born during 1945-1965 is five times higher than adults born in other years. However, health care systems are failing to adequately screen eligible patients.
- In fact, data collected from large primary care settings after release of the 2012 testing recommendations reveal suboptimal screening rates below a quarter of eligible patients.
- Given the importance of identification, the decision by CMS to reimburse the cost of an HCV antibody (HCV Ab) test for the BC, and high DAA efficacy rates, providers should be testing at high rates.
- Identifying system-wide gaps in adherence to federal screening recommendations is paramount to uncovering the full burden of disease and planning a course toward HCV Elimination.
- MedStar Health (MSH) is the largest health care provider in Maryland and the Washington, D.C. region, with 10 hospitals, and approximately 145 outpatient care facilities.
- The objectives of this study were to leverage the electronic health record (EHR) and build an Institution-wide HCV cascade of care (HCoC) to identify HCV screening rates and linkage to care proficiency within a large, integrated health care system.

METHODS

- In November 2014, a clinical decision-support (CDS) EHR-based (Centricity) HCV testing protocol targeting BC patients was approved by the MedStar Health Ambulatory Best Practices Committee. It went live on July 1, 2015. Data is presented from July 1, 2015 – December 31, 2016.
- BC patients were eligible to receive the CDS EHR HCV prompt if they were active patients at a MSH primary care outpatient facility. Patients were filtered out if they were previously HCV screened or HCV positive in the EHR. Testing was also recommended in those with risk factors.
- The prompt was triggered when a provider clicked the "View All Protocols" (VAP) button, checked the "Hepatitis C Screening" protocol option, and closed the VAP window (Figures 1a & 1b). An educational handout on HCV screening was printed as the default.
- The prompt's default test order was a HCV Ab with reflex to verification RNA.
- Monthly testing reports were generated via SQL and data was compiled and analyzed in SAS v.9.4 and Excel.
- IRB approval was granted by MedStar Health Research Institute.

Figures 1a & 1b. HCV Centricity CDS Protocols and Prompt

For a list of references, please contact Alexander Geboy: alexander.g.geboy@medstar.net
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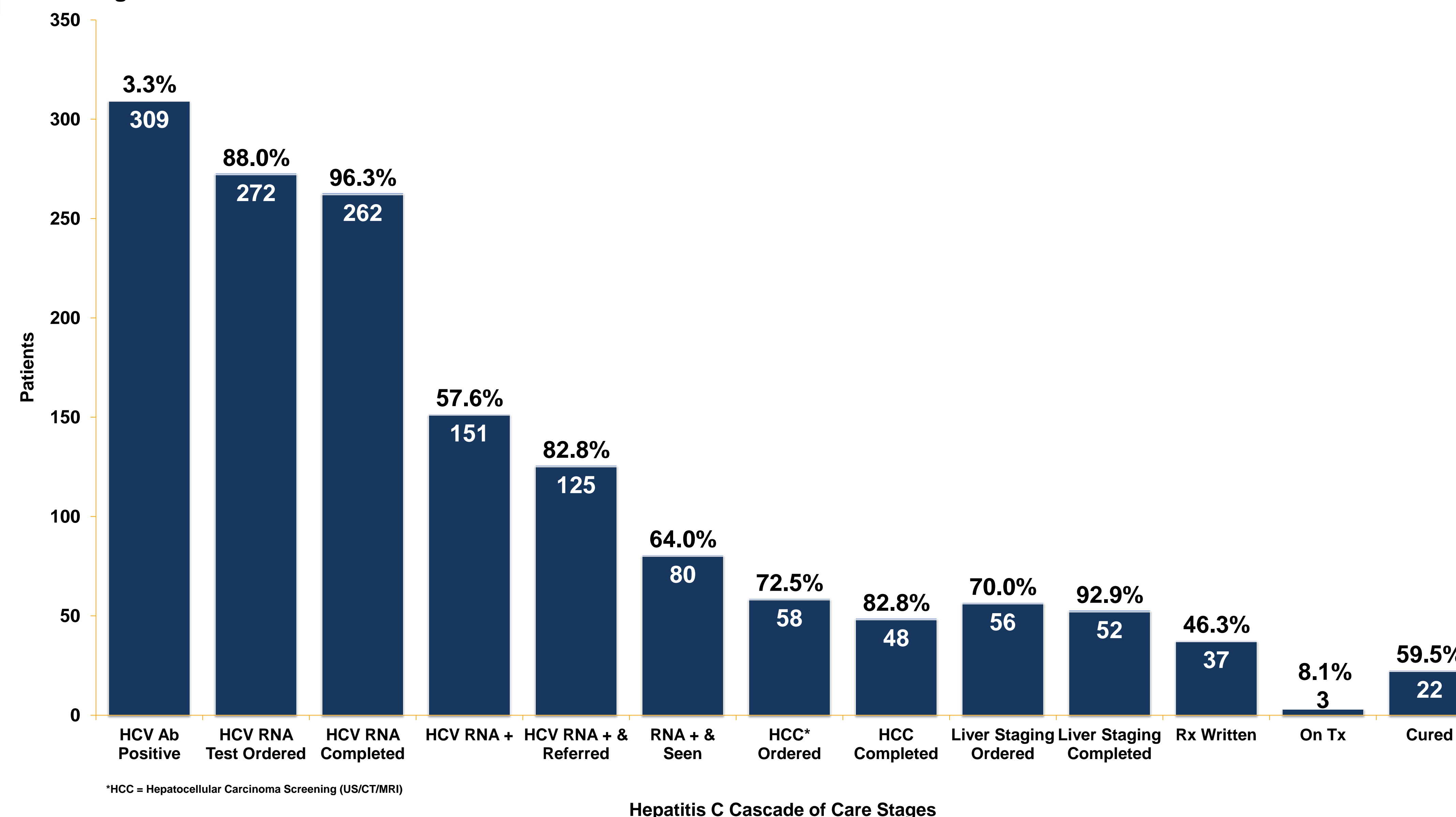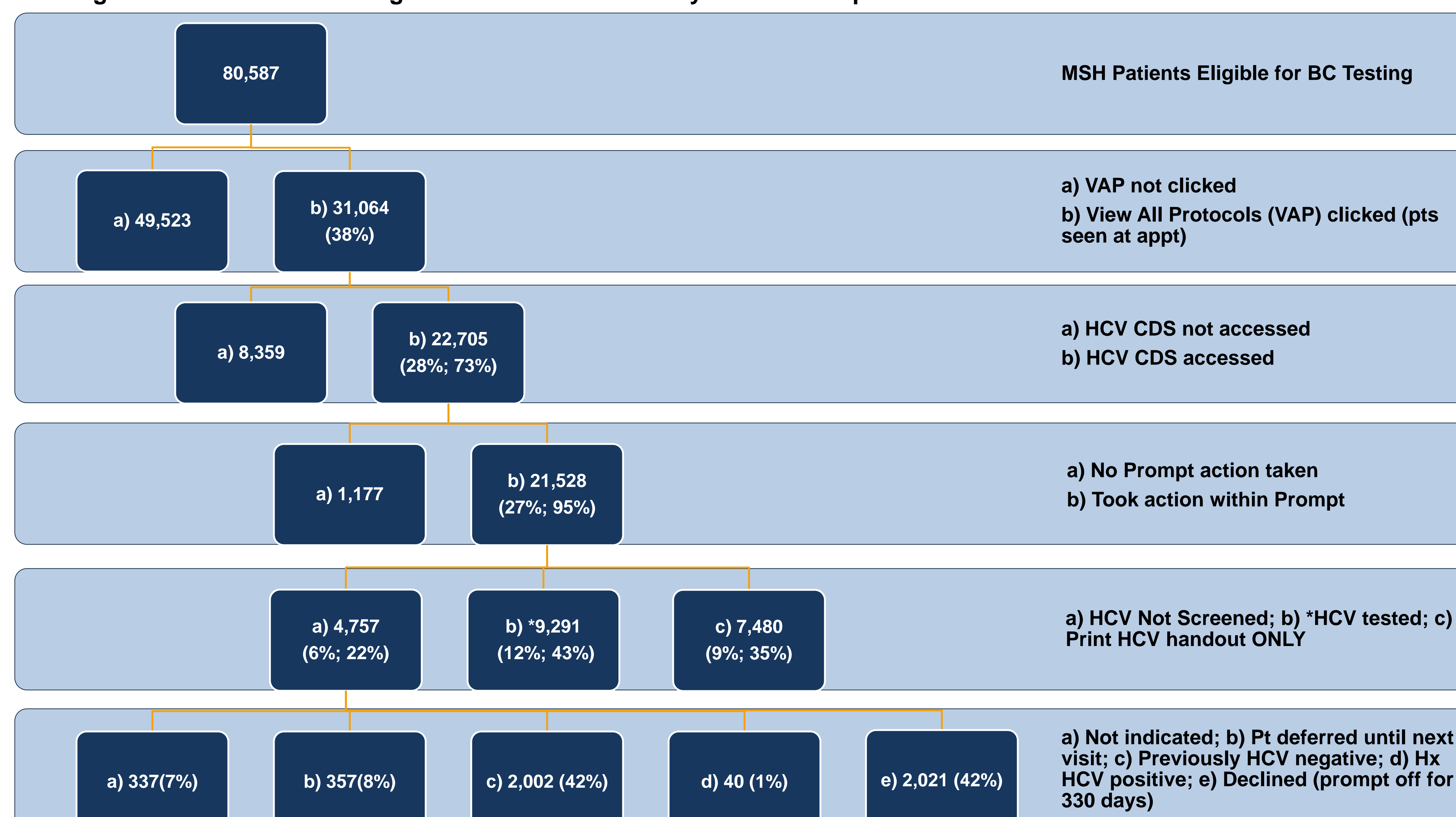Figure 2. MedStar Health Birth Cohort HCV Cascade of Care

*HCC = Hepatocellular Carcinoma Screening (US/CT/MRI)

Hepatitis C Cascade of Care Stages

Figure 3. MedStar Health Eligible Patient Breakdown by EHR & Prompt Actions

*Note: Not all completed tests were ordered through the prompt. See limitations.

RESULTS

Table 1. Demographics

Characteristic	HCV Ab Tested N	(%)	HCV Ab Positive N	(%)	p-value	HCV RNA Positive N	(%)	p-value
Total	9,291	(11.5)	309	(3.3)		151/262	(57.6)	
Mean Age ± SD	60.1 ± 5.7		59.7 ± 5.1		NS	59.7 ± 4.9		
Sex								
Female	5,334	(57.4)	120	(38.8)		53	(35.1)	
Male	3,957	(42.6)	189	(61.2)	<0.0001	98	(64.9)	NS
Race/Ethnicity								
White (non-Hispanic)	3,946	(42.5)	97	(31.4)		35	(23.1)	
Black/African American (b/AA)	3,927	(42.3)	173	(56.0)	<0.0001	97	(64.2)	<0.01
Latino/Hispanic	205	(2.2)	4	(1.3)		1	(0.7)	
Asian	170	(1.8)	1	(0.3)		1	(0.7)	
American Indian/Alaska Native	23	(0.2)	1	(0.3)		1	(0.7)	
Unspecified/Other	1,020	(11.0)	33	(10.7)		16	(10.6)	
Primary Insurance Type								
Private	5,683	(61.2)	126	(40.7)		54	(36.0)	
Public	3,313	(35.6)	180	(58.3)	<0.0001	96	(63.0)	NS
Medicare	1,880	(56.7)	62	(34.4)		30	(31.3)	
Medicaid	1,433	(43.3)	118	(65.6)	<0.0001	66	(68.7)	NS
Self Pay/Other	295	(3.2)	3	(1.0)		1	(0.7)	

- Between July 1, 2015 and December 31, 2016, there were 80,587 eligible patient appointments seen by approximately 617 providers across 126 provider locations.
- Median days between an RNA+ test and HCV treatment initiation was 155, with a minimum of 12 days and a maximum of 490 days.
- There were 4.0 median weeks between RNA+ diagnosis and 1st specialist appointment (GI, Hepatology or ID) with a maximum of 59.0 weeks.
- There were 5.7 median weeks between 1st specialist appointment and DAA prescription written, and 5.9 median weeks between prescription written and treatment initiation .
- HCV Ab+ and patients were more likely to be b/AA males than white males (OR 2.8 [CI 2.0-3.9]). For those HCV RNA+, b/AA males were slightly less likely to spontaneously clear than white males, though this did not achieve statistical significance (p=0.064).

CONCLUSION

- The 3.3% HCV Ab+ rate across the MSH network was congruent with the CDC BC prevalence rate of 3.25%. The overall CDS prompt testing rate of 12% of all eligible patients was suboptimal considering BC screening recommendations are well-established (since 2012), and Medicare reimburses a single HCV Ab test for this population in the primary care practices.
- The MSH HCV RNA test order rate of 88.0% was comparable with other recent studies and likely due to reflex RNA testing. The 64.0% linkage to care rate (n=80/125) was lower than one recently reported MSH hospital rate of 92.2%, but comparable with others ranging between 38.7% - 69.9%. Current efforts are underway to improve education and linkage.
- The overall treatment completion rate of 27.5% (n=22/80) was above estimated pre-DAA levels (5-6% successful treatment rates), but is inadequate considering the efficacy of available DAA treatments. These data are continually being updated and may reflect a lag in the Cascade of Care.
- One limitation was how labs were ordered and coded within the Centricity EHR. It was difficult to ascertain the origin of all 9,291 tests (i.e., not a 1-1 concordance between HCV Ab tests ordered in prompt vs. out-of-prompt). Given this, these data represent progress at each stage given the prompt was passive, and there was no additional, direct intervention. They also provide essential insights into provider knowledge and behavior as it pertains to HCV continuity of care, and the magnitude of HCV positivity within the MSH catchment area.
- Ultimately, however, results from this protocol support the argument that HCV testing should possibly be automated if progress is to be made toward HCV Disease Elimination.