



Hepatitis C Screening and Linkage to Care at a Comprehensive Health System



Kassem Bourgi MD¹, Indira Brar MD², Kimberly Baker-Genaw MD¹

¹Department of Internal Medicine, ²Division of Infectious Diseases Henry Ford Hospital / Wayne State University, Detroit, MI

Abstract

Background:

The Centers for Disease Control and Prevention (CDC) and the United States Preventive Services Task Force (USPTF) recommend screening for Hepatitis C (HCV) among patients born between 1945 and 1965. With the advent of novel highly effective therapies, we evaluated the current HCV screening rates along with linkage to care for patients with active disease.

Methods:

We used the Henry Ford Health System records to create a retrospective cohort of patients born between 1945 to 1965 and seen at any internal medicine clinic from July 2014 to June 2015. Patients screened for HCV prior to their office visits and those with established disease were excluded. We studied patients' socio-demographic and medical conditions along with provider-specific factors associated with likelihood of screening. Patients who tested positive were reviewed to assess appropriate linkage to care and treatment.

Results:

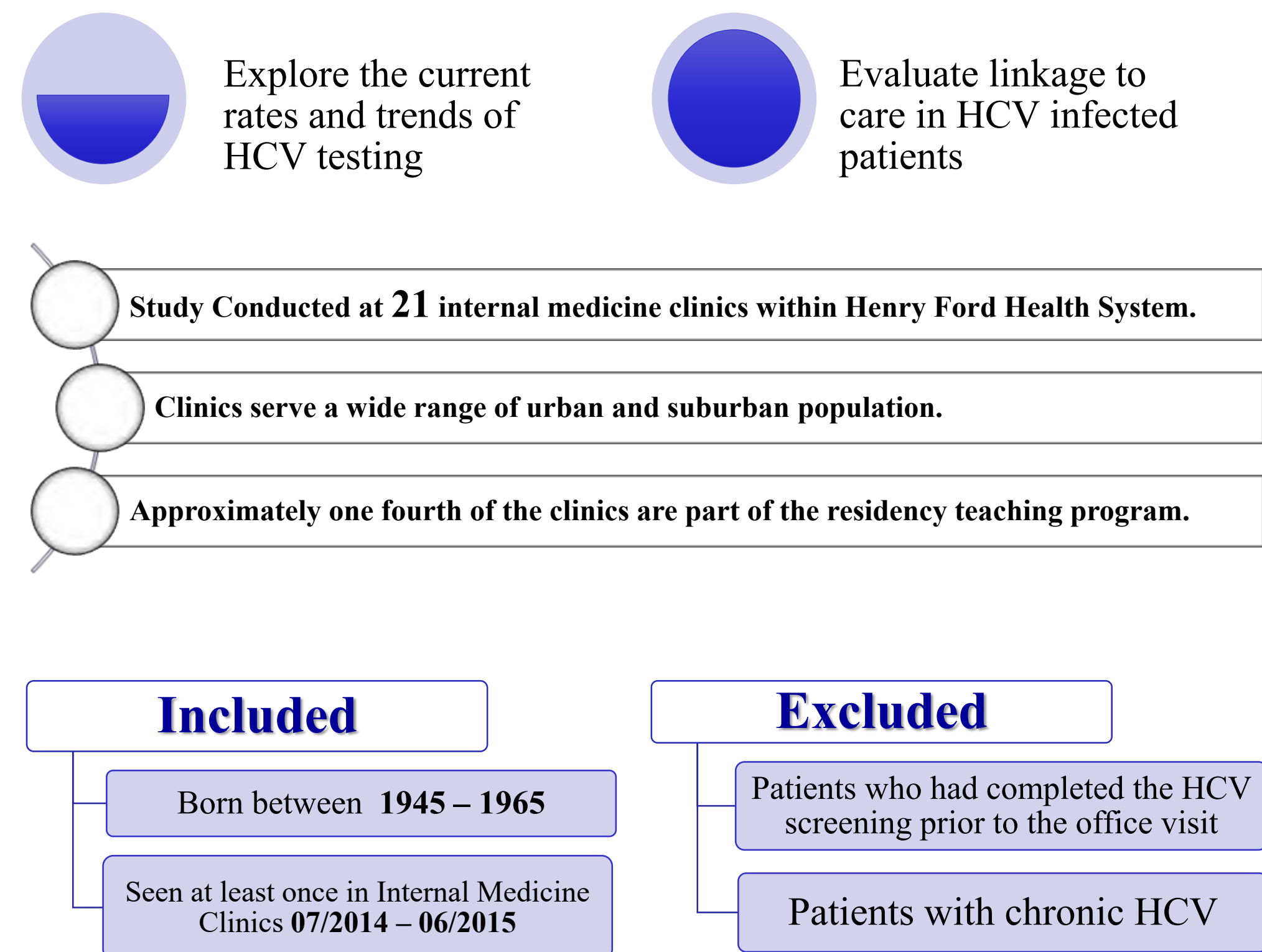
47,304 patients were included in our study cohort and 40,561 patients met inclusion criteria. A total of 8,657 (21.3%) were screened and 109 (1.3 %) patients tested positive. On univariate and multivariate analysis, the screening rates were **higher** among **men, African Americans, patients engaged in electronic health** and those seen in **residency teaching clinics**. However, screening rates were **lower** in patients with **multiple comorbidities** and **fewer clinic visits**.

After excluding patients with undetectable HCV RNA and those with current alcohol or drug use, 30 of the 100 eligible patients were treated. **Medicaid patients were less likely to be treated** along with a trend towards a decrease in likelihood of treatment among patients with lower income. **Electronic health engagement was a significant factor that increased the odds of treatment**.

Conclusions:

Screening rates and linkage to care in Hepatitis C continue to be suboptimal with a significant impact of multiple socio-demographic factors. Electronic health engagement emerges as a tool in linking patients to the HCV care cascade.

Study Goal



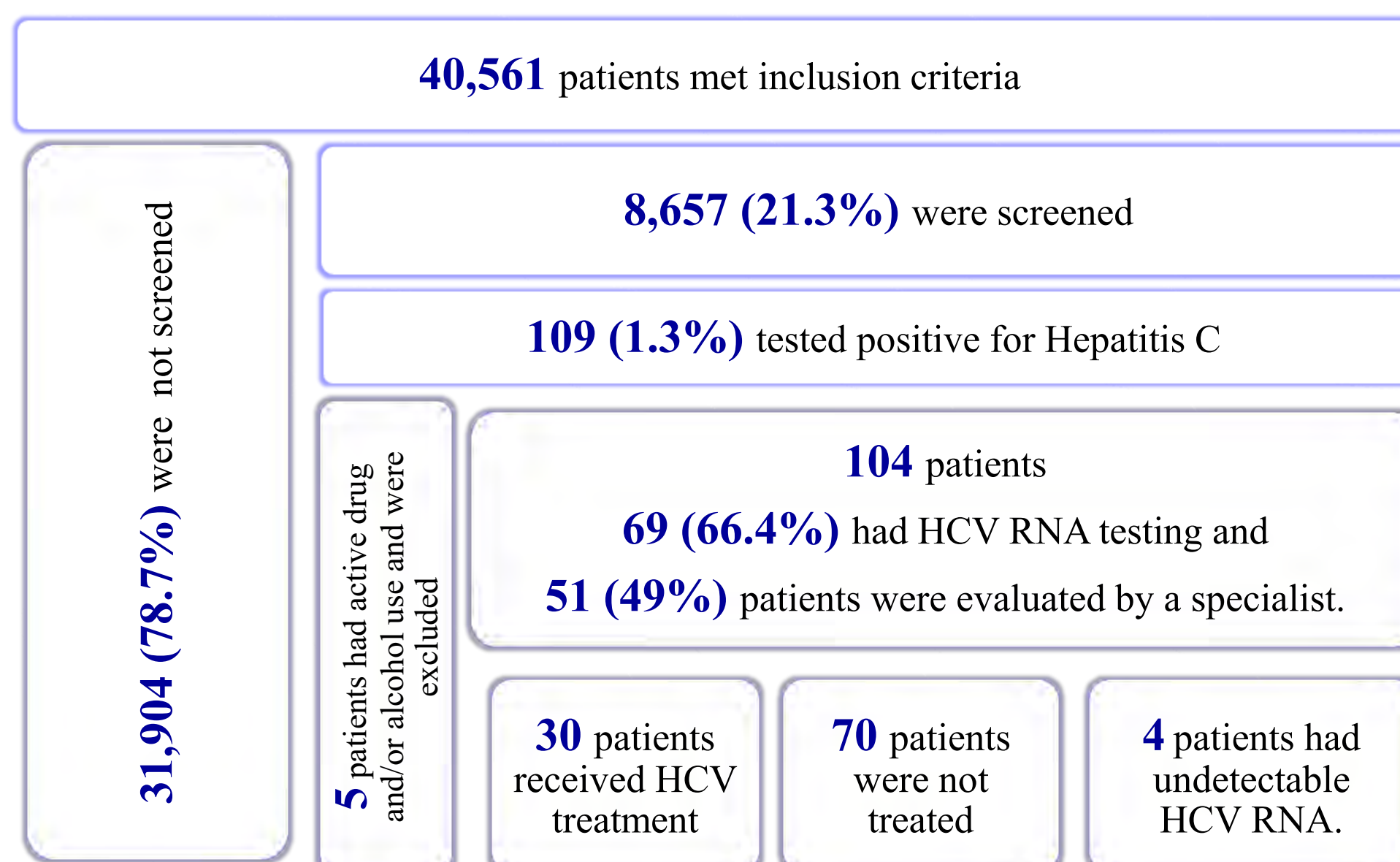
Disparities in Screening

Variable	Univariate Analysis		Multivariate Analysis		
	Screened N = 8,657 (21.3%) N (%)	Not Screened N = 31,904 (78.7%) N (%)	p-Value	Odds Ratio	p-Value
Age	59.5 ± 5.7	59.3 ± 5.9	<0.01		
Gender			<0.001		
Female	4,973 (20.7%)	19,003 (79.3%)		Ref.	
Male	3684 (22.2%)	12,901 (77.8%)		1.18	<0.001
Race					
Caucasian	3527 (19.8%)	14256 (80.2%)	<0.001	Ref.	
African American	3538 (23.3%)	11616 (76.7%)	<0.001	1.28	<0.001
Electronic Health Engagement ¹			<0.001		
Non-subscribers to pEMR ²	3,728 (19.8%)	15,135 (80.2%)		Ref.	
Subscribed to pEMR	4,929 (22.7%)	16,769 (77.3%)		1.24	<0.001
Clinic Setting			<0.001		
Non-Resident Clinics	6,980 (20.9%)	26,433 (79.1%)		Ref.	
Residency Teaching Clinic	1,677 (23.5%)	5,471 (76.5%)		1.20	<0.001
History of Drug Use	1,104 (78%)	311 (22%)	0.55	1.01	0.87
Total Number of Visits	2.36 ± 1.66	2.14 ± 1.55	<0.001	1.42 ³	<0.001
Charlson Comorbidity Index	0.86 ± 1.38	0.91 ± 1.51	0.88	0.87 ⁴	<0.001
Median Household Income (USD)	52146 ± 20766	52008 ± 20256	0.89		

Table 1. Univariate and Multivariate analysis comparing patients screened for HCV to those who were not screened

¹ Electronic Health Engagement was defined as subscription to the patient portal of Electronic Medical Records (pEMR)
² (pEMR), patient portal of Electronic Medical Records
³ Comparing patients with >1 office visit to patients only seen once during the study period.
⁴ Intervalized Charlson Comorbidity Index comparing (≥ 4) vs. (2 – 3) vs. (≤ 1)

Linkage to Care



Disparities in Linkage to Care and Treatment

Variable	30 Treated Patients N (%)	70 Untreated Patients N (%)	p-Value
Age	62.2 ± 4.7	61.1 ± 4.7	0.28
Gender			
Male	14 (22.6%)	48 (77.4%)	0.04
Female	16 (42.1%)	22 (57.9%)	
Race			
African American	21 (28.0%)	54 (72.0%)	0.38
Other	9 (36.0%)	16 (64.0%)	
Insurance			
Medicaid	2 (10.0%)	18 (90.0%)	0.03
Other	28 (35.0%)	52 (65.0%)	
Electronic Health Engagement ¹			
Subscribed to pEMR ²	14 (45.2%)	17 (54.8%)	0.03
Non-subscribers	16 (23.2%)	53 (76.8%)	
Income			
Lower than MI Mean Household Income	24 (27.0%)	65 (73.0%)	0.06
Higher than MI Mean Household Income	6 (54.5%)	5 (45.5%)	
Clinic Setting			
Residency Teaching Clinic	16 (29.6%)	38 (70.4%)	0.93
Other Clinics	14 (30.4%)	32 (69.9%)	
Medical State			
Fibrosis Score (FIB-4)	2.48 ± 2.15	2.37 ± 1.78	0.94
Charlson Comorbidity Index	1.77 ± 1.01	1.46 ± 1.71	0.04

Table 2. Univariate analysis comparing HCV positive patients who received treatment to untreated subjects

Variable	Odds Ratio	95 % CI	P-Value
Female gender	2.36	0.90-6.25	0.08
Electronic health engagement ¹	3.89	1.31-11.54	0.01
Medicaid insurance	0.16	0.16-0.97	< 0.05
Charlson Comorbidity Index	1.10	0.78-1.56	0.58

Table 3. Factors associated with treatment in HCV positive patients

¹ Electronic Health Engagement was defined as subscription to the patient portal of Electronic Medical Records (pEMR)
² (pEMR), patient portal of Electronic Medical Records

Conclusions

Despite recent guidelines only a small percentage of patients eligible for HCV testing are being screened with a significant influence of sociodemographic and provider-specific factors.

Patients who tested positive had inadequate linkage to care, particularly for Medicaid patients.

There is a trend towards a lower likelihood of treatment in patients with lower income levels.

• Noticeably, 89% of HCV positive patients had an average household income lower than \$50,000, the estimated mean household income in the state of Michigan.

Patient electronic health engagement, through subscribing to the patient portals of the EMR, emerges as a tool associated with increased rates of HCV screening and treatment.

• Continued efforts are needed to increase and improve patient's electronic health engagement.