

Factors Associated with Screening Baby Boomers for Hepatitis C Virus Infection Among Primary Care Providers: a Retrospective Analysis



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INTRODUCTION

Hepatitis C virus (HCV) infection is a leading cause of hepatocellular carcinoma (HCC), a cancer that is increasing in incidence.¹ Approximately 2.4 million Americans are chronically infected with HCV, but most are unaware of their infection.² Multiple public health organizations recommend a one-time test of all patients born 1945–1965 (i.e., baby boomers), in addition to risk-based testing, and a recent addition of a one-time test for all adults ages 18–79.³ Despite screening recommendations and effective treatments, HCV screening remains low.⁴ Understanding factors associated with screening asymptomatic baby boomers is essential to developing interventions to achieve universal screening.

Primary care providers (PCPs) provide routine, preventive health care, and are most likely to screen asymptomatic patients for HCV. This study assessed (1) the frequency of baby boomer HCV screening orders, and (2) provider characteristics associated with ordering HCV screening over a three-year period.

METHODS

We conducted a retrospective study examining electronic health records (EHR) for patient visits to a PCP from 8/1/2015 to 7/31/2018, described elsewhere.⁴ EHR data included providers' primary care specialty (i.e., Family Medicine, Internal Medicine, Internal Medicine/Pediatrics, Obstetrics/Gynecology), National Provider Identifier (NPI), and HCV screening orders. Provider demographic characteristics (e.g., age, gender) were ascertained using the NPI. Patients were included if they were baby boomers, without evidence of prior HCV screening, and had a visit with a PCP.

All visits with an HCV-screening eligible baby boomer patient were identified. Screening opportunities were defined as EHR recorded visits to a PCP by unscreened baby boomers.

HCV antibody screening tests ordered during these encounters were identified and coded as binary (yes/no). The percentage of opportunities where a screen was actually ordered was compared between provider specialty using ANOVA. We then stratified by provider specialty and assessed screening rates by provider age, sex, country in which they attended medical school, and years practicing medicine. Chi-square and Pearson's correlations assessed whether provider characteristics were associated with screening orders.

RESULTS

The sample included 68 PCPs who engaged in 20,698 (median = 186) opportunities to order an HCV screen with eligible baby boomer patients. The majority ($n = 47$; 69.2%) were Internal Medicine or Internal Medicine/Pediatrics. Approximately half of providers were female ($n = 33$; 48.5%), had an average age of 40.7 years, and an average of 12.6 years practicing medicine (Table 1).

HCV Screening by Provider Type

Overall, providers ordered HCV screening during an average of 9.4% (SD = 15.6) of their opportunities with eligible baby boomer patients. On average, Family Medicine providers ordered HCV screening during 29.4% of their opportunities compared to OB/GYNs who ordered screening less than 1% of their opportunities ($p = 0.0064$; Fig. 1).

Almost no provider characteristics were significantly associated with HCV test orders (Table 1). Among Internal Medicine/Pediatrics providers, years practicing medicine was positively associated with HCV screening tests ordered ($p = 0.03$). Comparable correlations were observed in the Family Medicine group, but the sample size was not sufficient for this correlation to be statistically significant. There were no observed associations with HCV screening by provider sex ($ps = 0.07$ – 0.98), medical school country ($ps = 0.42$ – 0.59), or age ($ps = 0.06$ – 0.94).

DISCUSSION

PCPs were the focus of this study as they provide routine, preventive health care, and are the most likely to order HCV screening for asymptomatic patients. Overall, HCV screening

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Table 1 Provider Characteristics and Average Rate of HCV Screening by Provider Specialty (N = 68)

Provider sample description	n (%) / mean (SD)	Percentage of eligible baby boomer patient visits where HCV screen was ordered							
		Family medicine n = 11 providers		Internal medicine n = 10 providers		Internal medicine/ peds n = 25 providers		OB/GYN n = 22 providers	
		Mean (SD)	p value	Mean (SD)	p value	Mean (SD)	p value	Mean (SD)	p value
Sex			0.55		0.98		0.10		0.07
Female	33 (48.5)	36.5 (39.2)		14.9 (8.9)		2.8 (3.6)		1.3 (1.0)	
Male	35 (51.5)	25.4 (28.3)		14.7 (10.1)		8.0 (9.0)		0.5 (0.7)	
U.S. grad			-		0.43		0.42		0.59
No	10 (14.7)	-		11.1 (14.1)		3.0 (5.1)		0.7 (1.2)	
Yes	58 (85.3)	29.4 (27.5)		16.3 (6.8)		6.4 (8.0)		1.0 (1.0)	
		Provider factors associated with baby boomer HCV screening order rate							
		Correlation coefficient	p value	Correlation coefficient	p value	Correlation coefficient	p value	Correlation coefficient	p value
Age	40.7 (11.1)	0.48	0.13	- 0.03	0.94	0.38	0.06	- 0.08	0.71
Years practicing medicine	12.6 (10.8)	0.50	0.14	- 0.06	0.91	0.44	0.03	- 0.03	0.91

Mean percent of HCV screening for each provider was calculated by (number of eligible baby boomers screen orders)/(number of eligible baby boomer patient visits)

was ordered at a low rate, with Family Medicine providers and providers with more years in practice having the highest rates, although all fall far below national guidelines for universal HCV screening among baby boomers. OB/GYNs on average ordered screens during less than 1% of their opportunities. This is concerning because ~ 15% of women obtain primary care services from their reproductive health care provider, and

screening is now recommended during pregnancy.^{3,5} Thus, the opportunity to be screened for HCV is lost for a significant proportion of women.

The lack of association between physician characteristics and HCV ordering rates, coupled with overall low rates of screening, supports the need for a broad-based strategy for all PCPs to increase ordering HCV screening among baby

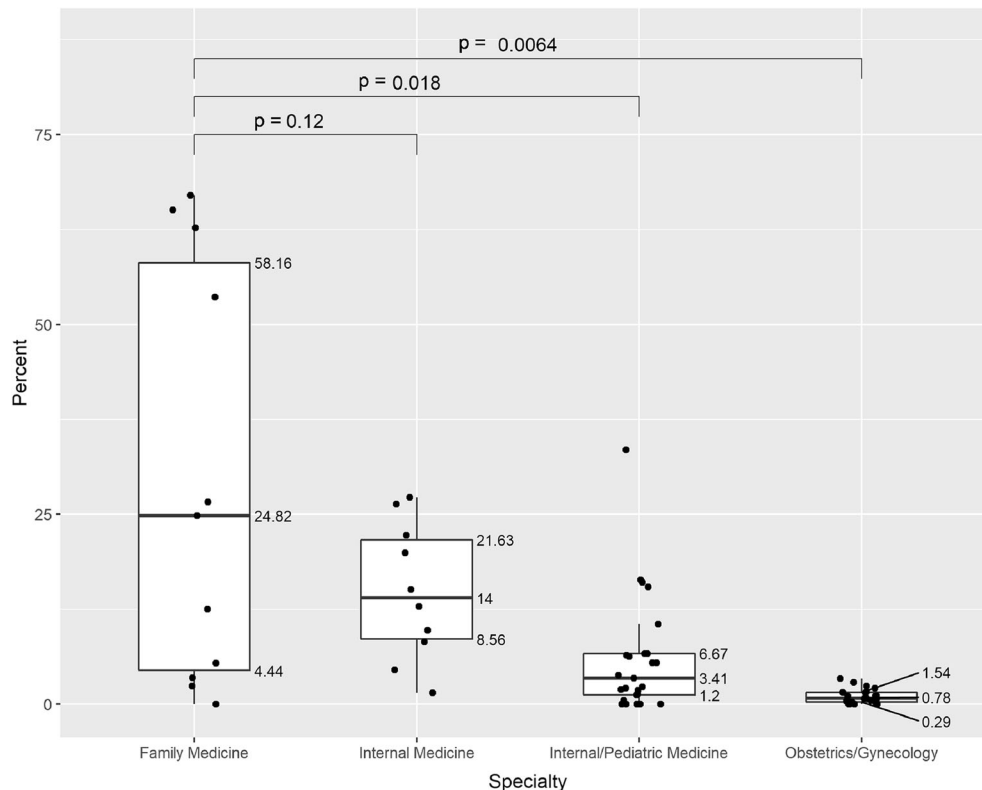


Figure 1 Percent of eligible baby boomer visits^a where HCV screening was ordered grouped by primary care specialty^b. ^aEligible visits were EHR recorded visits with a primary care physician. ^bFirst quartile, median, and third quartile reported.

boomers. Such strategies include best practice alerts in the EHR or other quality improvement initiatives, which have been demonstrated to significantly increase HCV screening.⁶ If successful, these approaches can reduce the burden of HCV-related diseases among baby boomers and other populations, including all adults 18–79 years old who are newly recommended for HCV screening.²

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Compliance with Ethical Standards:

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