

A Resident Initiative Improves Hepatitis C Screening Rates in Primary Care Clinics

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ABSTRACT

Background Electronic reminders for clinical patient counseling have proven to be an effective response to national recommendations to increase risk factor and birth cohort hepatitis C virus (HCV) screening. It is not known whether a resident-led educational intervention alone could increase screening rates where support for electronic intervention may be limited.

Objective We determined whether a resident-designed and resident-implemented educational intervention would significantly improve HCV screening rates in primary care clinics.

Methods The baseline HCV screening rate was determined retrospectively in our resident community-based primary care clinics. We then implemented an educational intervention that included presenting during resident conference, posting signs in resident work areas, and providing educational pamphlets to patients. We collected screening rate data at 3 and 6 months postintervention. The screening rate was defined as patients screened in clinic divided by the number of patients eligible for screening.

Results The screening rate increased significantly from preintervention (6%, 64 of 1023) to 3 months (35%, 363 of 1026) and 6 months (41%, 443 of 1070) and between 3 and 6 months ($P < .001$). The percentage of screened patients who pursued testing increased significantly between preintervention (62%, 16 of 26) and 6 months (81%, 105 of 130), and between 3 months (67%, 95 of 141) and 6 months ($P = .019$).

Conclusions An educational intervention designed and implemented by residents significantly increased the screening and testing rates for HCV in community-based resident clinics.

Introduction

In June 2013, the United States Preventative Services Task Force (USPSTF) and the Centers for Disease Control and Prevention (CDC) recommended birth cohort–based screening for individuals born between 1945 and 1965 with 1-time serum hepatitis C virus (HCV) antibody test.¹ The recent development of highly effective new treatments with low risk of side effects strengthened the argument for improved HCV screening. With these strong incentives, it is imperative to determine effective methods to increase HCV screening rates.

Automated reminders in the electronic health record (EHR) have been shown to be effective in increasing HCV screening rates,^{2–4} yet support for such interventions may be lacking in some areas of clinical care. Automated reminders may be used in combination with a strong educational component.² It is not known whether a low-tech educational component alone would significantly increase birth cohort HCV screening and testing.

We implemented a resident-designed and resident-managed educational intervention to increase HCV

screening and testing rates in resident-run clinics at our multicenter community teaching program. We hypothesized that HCV screening rates would improve significantly with this intervention at 3 and 6 months postintervention.

Methods

We established our baseline HCV screening rates by retrospective review of the EHRs of patients who qualified for screening and were seen in our 3 clinics from February 1, 2015, through April 30, 2015. The inclusion criterion for screening was birth date between 1945 and 1965. Exclusion criteria were established HCV infection, risk factors for contracting HCV (intravenous drug use, human immunodeficiency virus infection, hemodialysis), screening before June 2013 (when USPSTF first recommended birth-based screening), and screening ordered from outside our clinic. We excluded patients with HCV risk factors because high-risk patients were likely to be screened in current practice.

The lead investigator (K.W.) performed half of the data abstracting, provided exclusion guidelines for 4 resident physicians (A.A., M.F., S.S., Z.A.) for abstraction from the remainder of the records, and

DOI: <http://dx.doi.org/10.4300/JGME-D-17-00199.1>

personally reviewed the process with each resident for 2 to 3 hours. Resident abstractors were not blinded to the study question. The abstraction spreadsheet included patient name, date of service, date of birth, sex, notation of HCV antibody (Ab) order in the intervention period (yes/no, with date of order if outside the intervention period), notation of HCV Ab test findings (+ or -), exclusion criteria (if yes, list exclusion criteria met), and remarks by the lead investigator, if applicable. The lead investigator spot-checked approximately 20% of the abstracting for accuracy. In the event of a disagreement the lead investigator and resident discussed the patient and came to a consensus. Data for the 3 clinics were combined for analysis.

On February 1, 2016, the start of the study period, the authors provided residents with a 10-minute PowerPoint (Microsoft Corp, Redmond, CA) presentation weekly for 6 weeks. The talk summarized current USPSTF/CDC recommendations and the costs of undiagnosed hepatitis C. Owing to the 6-week resident rotation schedule, we repeated the lecture to ensure that all residents heard the talk at least once. We displayed CDC posters in physician work areas, in patient rooms, and in waiting areas (FIGURE), and we distributed educational CDC patient handouts. We prospectively collected screening data on the birth cohort patients for 3 months (until April 30, 2016) by notation in the medical record. This period was chosen to avoid bias of clinical experience for residents because it was the same period used for collection of baseline data the previous year.

The lead investigator gave a 15-minute PowerPoint presentation to provide feedback to residents on overall 3-month clinic HCV screening rates. We then continued data collection from May 1, 2016, through July 31, 2016, and these data were retrospectively analyzed.

A chi-square test was used to compare the preintervention and postintervention groups. Fisher's exact test was used for comparisons when the number of patients was 10 or fewer. A *P* value of $< .05$ was considered significant.

The MedStar Health Research Institute Institutional Review Board approved this study.

Results

A total of 99 (100%, 99 of 99) resident physicians (33 postgraduate year 1 [PGY-1], 34 PGY-2, 32 PGY-3) at 3 hospitals in our urban teaching hospital system were eligible to participate in the study as part of their standard rotation schedule. Patient records for all residents were reviewed. Approximately 7000 charts were reviewed by hand at about 5 minutes per chart.



FIGURE

Centers for Disease Control and Prevention (CDC) Patient Education Poster Used in the Study

Of these charts, approximately 3000 were excluded as related to specialty visits per our exclusion criteria.

At preintervention, 3 months, and 6 months, 207 of 1268 (16%), 217 of 1243 (17%), and 189 of 1259 (15%) patients, respectively, were excluded from the study. The screening rate increased significantly from preintervention (6%, 64 of 1023) to 3 months (35%, 363 of 1026) and 6 months (41%, 443 of 1070), and between 3 and 6 months ($P < .001$; TABLE). The percentage of screened patients who completed testing increased significantly between preintervention (62%, 16 of 26) and 6 months (81%, 105 of 130), and between 3 months (67%, 95 of 141) and 6 months ($P = .019$).

Positive HCV Ab and positive HCV ribonucleic acid (RNA) findings were similar across the time periods: at preintervention, 5 positive Ab test results and 2 RNA findings; at 3 months, 6 positive Ab test results and 2 RNA findings; and at 6 months, 3 positive Ab test results and 2 RNA findings. All patients who tested positive for HCV RNA were referred for further evaluation and treatment.

Discussion

In this study, the HCV screening rate increased significantly in the first 3 months of the intervention. The continued significant increase in screening rate in the second study period (when interns did not receive the training component) suggests that this intervention achieved a culture change in terms of HCV screening in our resident clinics. Our findings suggest that resident-designed and resident-implemented

TABLE

Study Findings

Criterion	No. of Patients (%)			P Value
	Preintervention	3-Month Post	6-Month Post	
Qualified for HCV screening (includes newly screened) ^a	1023/1268 (81)	1026/1243 (83)	1070/1259 (85)	.016
HCV screening rate ^b	64/1023 (6)	363/1026 (35)	443/1070 (41)	< .0001 ^c

Abbreviation: HCV, hepatitis C virus.

^a Numerator, number of patients who did not meet exclusion criteria; denominator, number of patients in birth cohort.

^b Denominator, number of patients qualified for screening (did not meet exclusion criteria).

^c Statistical difference between all test points (chi-square test).

educational interventions can achieve substantial improvements in patient care.

Although the utility of the EHR is clear, the increase in screening rate in our study was similar to that found with EHR methods. Through implementing a clinical reminder in an EHR, previous studies showed increases in HCV screening rates from the preintervention groups to the postintervention groups.²⁻⁴

Our study has limitations. It is possible that our screening rate in the second study period was affected by coinciding with the start of the academic year because these interns did not receive the training provided to those in the first phase. Therefore, our screening rate would likely have been higher if the same residents had continued in the second study phase.

Furthermore, chart abstraction was done manually by several resident physicians. The residents were directed by the lead investigator, and their work was spot-checked for accuracy, but it was not possible to confirm all data, and interrater reliability was not analyzed. We also cannot determine which of the many intervention components was most effective.

A possible future direction is to examine the contribution of EHR notification to our clinic HCV screening rate. This project also provides a framework for residents interested in pursuing screening initiatives.

Conclusion

In conclusion, an educational intervention designed and implemented by residents significantly increased the screening and testing rates for HCV in community-based resident clinics.

References

1. US Preventive Services Task Force. Hepatitis C: screening. June 2013. <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/hepatitis-c-screening>. Accessed September 28, 2017.

2. Gemelas J, Locker R, Rudd S, et al. Impact of screening implementing HCV screening of persons born 1945–1965: a primary care case study. *J Prim Care Commun Health*. 2016;7(1):30–32.

3. Litwin AH, Smith BD, Drainoni ML, et al. Primary care-based interventions are associated with increases in hepatitis C virus testing for patients at risk. *Dig Liver Dis*. 2012;44(6):497–503.

4. Sidlow R, Msaouel P. Improving hepatitis C virus screening rates in primary care: a targeted intervention using the electronic health record. *J Healthc Qual*. 2015;37(5):319–323.



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Funding: The authors report no external funding source for this study.

Conflict of interest: The authors declare they have no competing interests.

These 3-month data were presented as a poster at the Annual Meeting of the American College of Gastroenterology, Las Vegas, Nevada, October 18, 2016.

The authors would like to thank Eshetu Tefera, MS, Department of Biostatistics and Biomedical Informatics, MedStar Health Research Institute, for statistical analysis.

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Received March 15, 2017; revision received June 21, 2017; accepted August 9, 2017.