



Identification of Active HCV Infection Among Hospitalized Patients Using an Electronic Medical Record Alert

P. Pryal, W. El-Nahal, K. Gebo, T. Grader-Beck, O. Falade-Nwulia, S. Huang, S. Berry

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Johns Hopkins University School of Medicine, Baltimore, Maryland, USA



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BACKGROUND

- Despite highly effective treatment, over 2 million Americans are living with chronic Hepatitis C virus (HCV) infection
- Hospitalizations may be an opportunity to identify untreated patients and link them with treatment
- Prevalence of HCV among hospitalized patients unknown and may be lower than overall US prevalence

STUDY OBJECTIVE

- Determine the test characteristics of a novel alert and estimate the overall prevalence of active HCV

METHODS

- Study Design
 - Two EMR alerts run silently on all inpatient and emergency department encounters from 6/29/22-8/9/22
 - Ever Alert triggers for active, cleared, or cured infection
 - Active Alert triggers only for active infection
- Setting
 - The Johns Hopkins Hospital and Bayview Medical Center
- Population
 - Patients over 18 years of age hospitalized for any reason or present in the emergency department
- Data Collection
 - Consecutive chart review of inpatient and ED encounters to evaluate sensitivity of each alert
 - Chart review of all alerted encounters to determine the positive predictive value (PPV) and estimate overall prevalence of HCV among hospitalized patients

RESULTS

Table 1. Inclusion and Exclusion Criteria for Alert System

Inclusion Criteria	Exclusion Criteria
A previously positive hepatitis C Ab test	A negative Hepatitis C Quantitative RNA PCR after an initial positive
A previously positive hepatitis C Quantitative RNA PCR	Any history of oral direct acting antiviral Hepatitis C medications
Any hepatitis C diagnosis codes in their problem lists or orders	

Table 2. Sensitivity of the Alert System

	Cases	Alerts		Sensitivity (TP / Cases)	95% CI
		True Pos	False Neg		
Ever (Active or Prior)	37	31	6	31/37 (83.7%)	68.9%-92.3%
Active (Active)	13	10	3	10/13 (76.9%)	49.7%-91.8%

*Identified by consecutive chart review of 289 hospitalizations

*Ever alert and Active alert have equivalent sensitivity for active infection

Table 3. Positive Predictive Value (PPV) of Alert System

Alert Type	Total Alerts	Active Cases	Prior Cases	Never Infected	PPV – Active Infection (Active/Total)	PPV – Ever Infected ((Active+Prior)/Total)
Ever	569	202	361	6	202/569 (35.5%) [31.7% - 39.5%]	563/569 (98.9%) [97.7% - 99.5%]
Active	267	188	77	2	188/267 (70.4%) [64.7% - 75.6%]	-

Table 4. Prevalence Estimates

Alert Type	Active Cases	Prevalence (Active/Total Patient Encounters)	95% CI
Ever	202	202/7519 (2.7%)	2.3%-3.1%
Active	188	188/7519 (2.5%)	2.2%-2.9%

*7519 inpatient and ED encounters from 6/29/22-8/9/22

*Confidence intervals calculated using Wilson score

CONCLUSIONS

- Estimated prevalence from the alert system is 2.5%-2.7, greater than 1% US prevalence
- Active Alert is far more efficient (PPV 70.4% v. 35.5%) with the same sensitivity for active infection

LIMITATIONS

- Both the estimated prevalence and PPV may vary depending on location
- Effectiveness of a linkage to care program is unknown in the context of HCV

IMPLICATIONS

- High estimated prevalence and the efficiency of the active alert support its utility in a linkage to care program
- Potential for deployment of the active alert in an inpatient setting to study its effectiveness in linkage to care programs

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