Strategies for Utilizing Electronic Health Record to Improve Birth Cohort Testing In the Hospital Setting

Lorlette Moir[1], Shuchin Shukla[1,2] Uriel Felsen[1,2] Jeffrey Weiss[1,2] Kim Cartmill[1,2] Jonathan Schwartz[1,2] Paul Meissner[1,2]
Kimberly Yu[1], Yuming Ning[1,2] Alain H. Litwin[1,2]
[1]Montefiore Medical Center, [2]Albert Einstein College of Medicine, Bronx, NY

Background

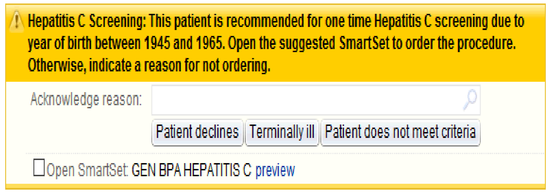
- Hepatitis C (HCV) is the leading cause of liver disease in the United States with a 2% prevalence
- The overall prevalence of HCV in the Bronx, NY is estimated to be 7.7%
- In 2012, the Centers for Disease Control and Prevention (CDC) updated HCV screening recommendations targeting the 1945-1965 birth cohort
- In 2014, New York State mandated HCV screening for all birth cohort patients
- Montefiore Medical Center implemented a birth cohort screening prompt into inpatient Electronic Health Record (EHR) in 2015

Objective

- To examine the impact of implementation of a HCV birth cohort prompt within the inpatient EHR. We hypothesized that, compared to a pre-implementation period, implementation of the EHR prompt would be associated with an increase in:
  1. The proportion of hospitalized birth cohort patients newly tested for HCV
  2. The monthly average of newly identified HCV Antibody (Ab) positive hospitalized patients

Methods

- **SETTING:** The largest healthcare system in the Bronx, NY
- **EHR INTERVENTION:** Birth cohort prompt initiated across three hospital sites in March 2015
  - Providers prompted to test patients with no previously recorded HCV Ab result in the affiliated healthcare system EHR



- **PATIENTS:** Unique patients born between 1945-1965 who were admitted to one of three inpatient sites within the study period
- Patients were classified according to whether they were:
  1. Previously tested for HCV prior to hospital admission
  2. Newly tested for HCV during hospital admission
  3. Never tested for HCV
- **DATA SOURCE:** EHR (Centricity→ EPIC in January 2016)
- **ANALYSIS:** Percent of birth cohort patients who were newly tested for HCV before and after the March 2015 implementation of the EHR prompt (January 2014 to February 2015) vs. (April 2015 to December 2016) was compared using Chi-squared test
- The monthly average of newly tested patients who were Ab positive before and after the implementation of the EHR prompt was compared using T-test

Results

Table 1. Characteristics of Birth Cohort Patients Eligible for HCV Testing

	Pre Implementation		Post Implementation		P value
	N=(16807)	%	N= (14344)	%	
Sex					
Male	7908	47.1	6896	48.1	0.07
Age (mean, SD)	62.0 (6.0)		61.9 (6.0)		0.56
Race					<.0001
Hispanic	1994	11.9	2668	18.6	
Black	5679	33.8	4548	31.7	
White	2989	17.8	2507	17.5	
Asian	39	0.2	131	0.9	
Other	4604	27.4	3220	22.5	
Unknown/Missing	1502	8.9	1270	8.9	
Preferred Language					<.0001
English	13555	80.7	11404	79.5	
Spanish	2691	16.0	2317	16.2	
Other	426	2.5	447	3.1	
Declined/Missing	135	0.8	176	1.2	

Figure 1. Proportion of Unique Birth Cohort Patients with HCV Testing January 2014 – December 2016

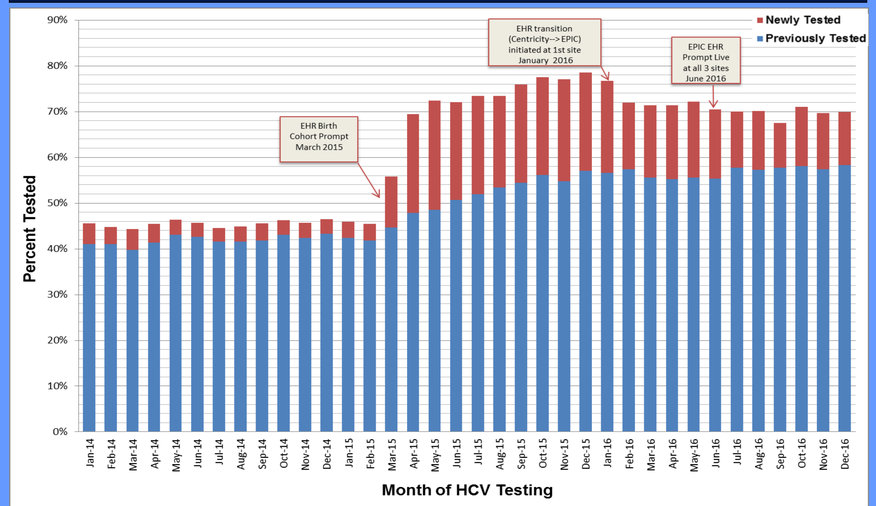
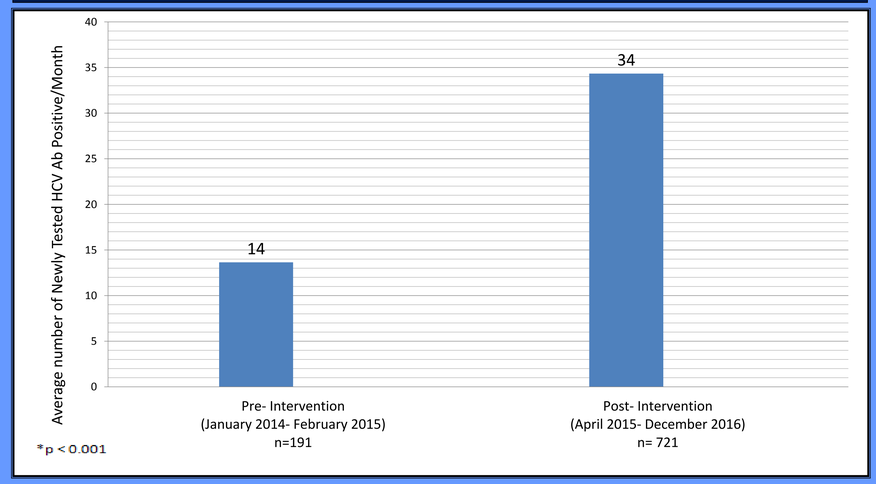


Figure 2. Newly Tested Patients Found to be HCV Ab Positive



Key Findings

- Among those not previously tested, the percent of hospitalized birth cohort patients newly tested for HCV rose from **6.2%** in the pre-implementation period to **38.6%** in the post implementation period (P<0.0001)
- The monthly average of newly tested patients found to be HCV Ab positive increased from **13.6** in the pre-implementation period to **34.3** in the post-implementation period (P<0.0001)
- By the end of the study period ~70% of all hospitalized birth cohort patients had been screened for HCV within the affiliated healthcare system

Limitations

- Between January and June of 2016, inpatient sites transitioned from one EHR system to another. This transition resulted in the temporary loss of the birth cohort prompt in one hospital
- Newly identified patients may have been previously tested in other health care systems
- Our findings may not be generalizable to lower prevalence settings
- Single institution intervention
- Observational design and not RCT

Implications

- The HCV screening prompt led to a significant increase in the proportion of patients within the birth cohort who were tested for HCV Ab and in the number of HCV Ab positive patients that were newly identified
- Despite a transition between two EHR systems, screening workflows were sustained with minimal disruption
- Further research is needed to evaluate the proportion of newly identified patients who are found to have a positive viral load and are subsequently linked to care and initiate treatment
- Further research is needed to determine optimal ways to link newly identified Antibody positive patients from the hospital setting to the community

Contact: Lohaught@montefiore.org

This study was supported by grants from Gilead Sciences, Inc. and NIDA R01 034086

Abstract Presentation Number: 544