

THE HIT-B
PROJECT:
REDUCING
HEPATITIS B
DISPARITIES
THROUGH
HEALTH
INFORMATION
TECHNOLOGY



International Community Health Services (ICHS)

- Started in 1973 as a storefront health clinic serving the Asian community in Seattle
- It has since grown to consist of 4 clinics offering clinical services including medical, dental, acupuncture, vision, laboratory, and pharmacy services



ICHS is a Federally-Qualified Health Center (FQHC)



7 in 10 low income
4 in 5 persons of color
1 in 5 age 65 and over
1 in 10 homeless

32,811 total patients

 **24,658** medical

 **15,828** dental

 **2,278** behavioral health

 **1,434** vision



Patients by insurance status

52% Medicaid
14% Medicare
27% Private
7% Uninsured

52%
need interpretation services



50+ languages. Most frequently spoken other than English:

- | | | |
|---------------|--------------|-------------|
| 1. Cantonese | 6. Toisanese | 11. Amharic |
| 2. Vietnamese | 7. Khmer | 12. Russian |
| 3. Mandarin | 8. Farsi | 13. Somali |
| 4. Korean | 9. Tagalog | 14. Arabic |
| 5. Spanish | 10. Tigrinya | 15. Mien |

Prevalence of hep B by ethnic group

Chronic Hepatitis B among significant ethnic groups served at ICHS* <i>(HBsAg(+) and/or CHBV diagnosis in EHR)</i>	CHBV	%	Calculation
Chinese n=7864	545	6.93%	545/7864
Vietnamese n=4620	345	7.47%	345/4620
Filipino n= 15	15	1.94%	15/774
Korean n= 18	18	2.82%	18/638
Cambodian n=212	15	7.08%	15/212
Somali n=138	11	7.97%	11/138
Mien n=109	9	8.26%	9/109

*Among ICHS adult (18+) patients with at least one medical encounter from 11/25/2013-11/25/2015

Barriers to hepatitis B immunization

- Multiple shot series
- Competing priorities
- Lack of followup

Not issues

Lack of awareness

Cost

Assessing the Impact of Electronic Health Record Interventions on Hepatitis B Screening and Vaccination

(by Rosy Chang Weir PhD, Mariko Toyoji MPH, Michael McKee MD, Vivian Li MS, and Chia C Wang MD, MS)

Journal of Health Care for the Poor and Underserved 29 (2018): 1587–1606.

-GOAL: To determine the effectiveness of Electronic Health Record tools in a community health center environment in improving HBV screening and vaccination

-APPROACH: A community-engaged research framework to guide intervention design, implementation, evaluation, and dissemination

-SETTING: 4 Primary Care clinics that are part of the ICHS network

What is the Electronic Health Record?

--a digital version of a patient's paper chart

--Positives:

- readily available notes, lab results, and diagnostics
- easy for providers to communicate with each other
- data can be easily shared across providers
- potential to streamline provider workflow

--Negatives:

- much more documentation is now required
- documentation errors – 'cut and paste'
- usability issues 'too many clicks'
- pop-up fatigue



Death by a Thousand Clicks: Where Electronic Health Records Went Wrong

The U.S. government claimed that turning American medical charts into electronic records would make health care better, safer, and cheaper. Ten years and \$36 billion later, the system is an unholy mess: Inside a digital revolution gone wrong. A joint investigation by Fortune and Kaiser Health News.



Study goals and methods

-GOAL: To determine the effectiveness of Electronic Health Record tools in a community health center environment in improving HBV screening and vaccination

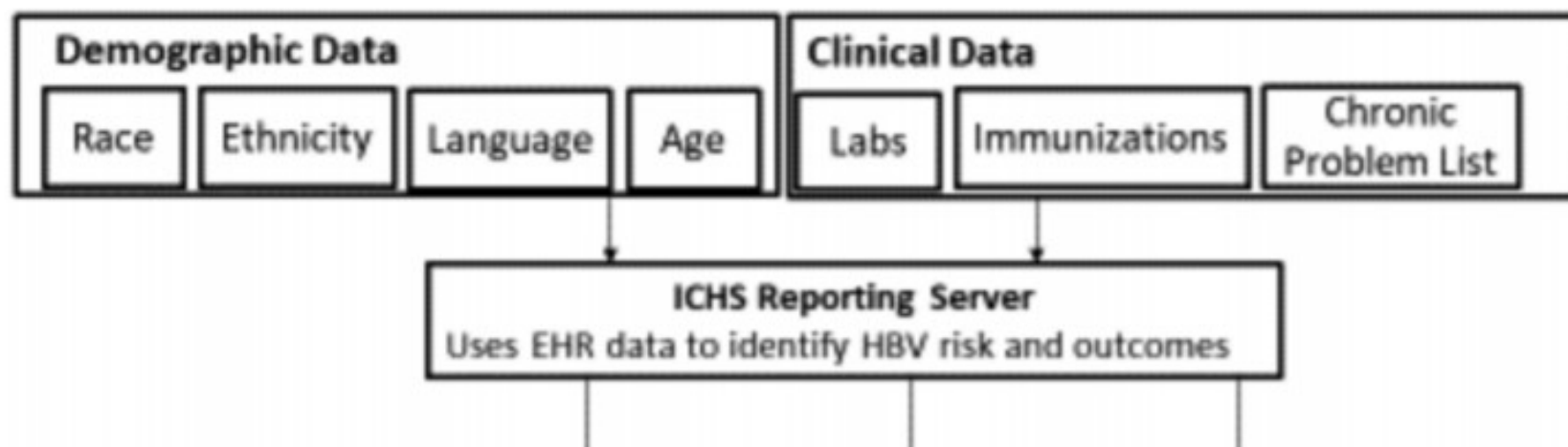
-APPROACH: A community-engaged research framework to guide intervention design, implementation, evaluation, and dissemination



Community-engaged research framework—clinic staff survey

- team-based approach
- integration of the intervention into clinic workflow
- avoid EHR alerts

The EHR allows ready compilation of patient data



Identifying patients at risk for hepatitis B by ethnicity

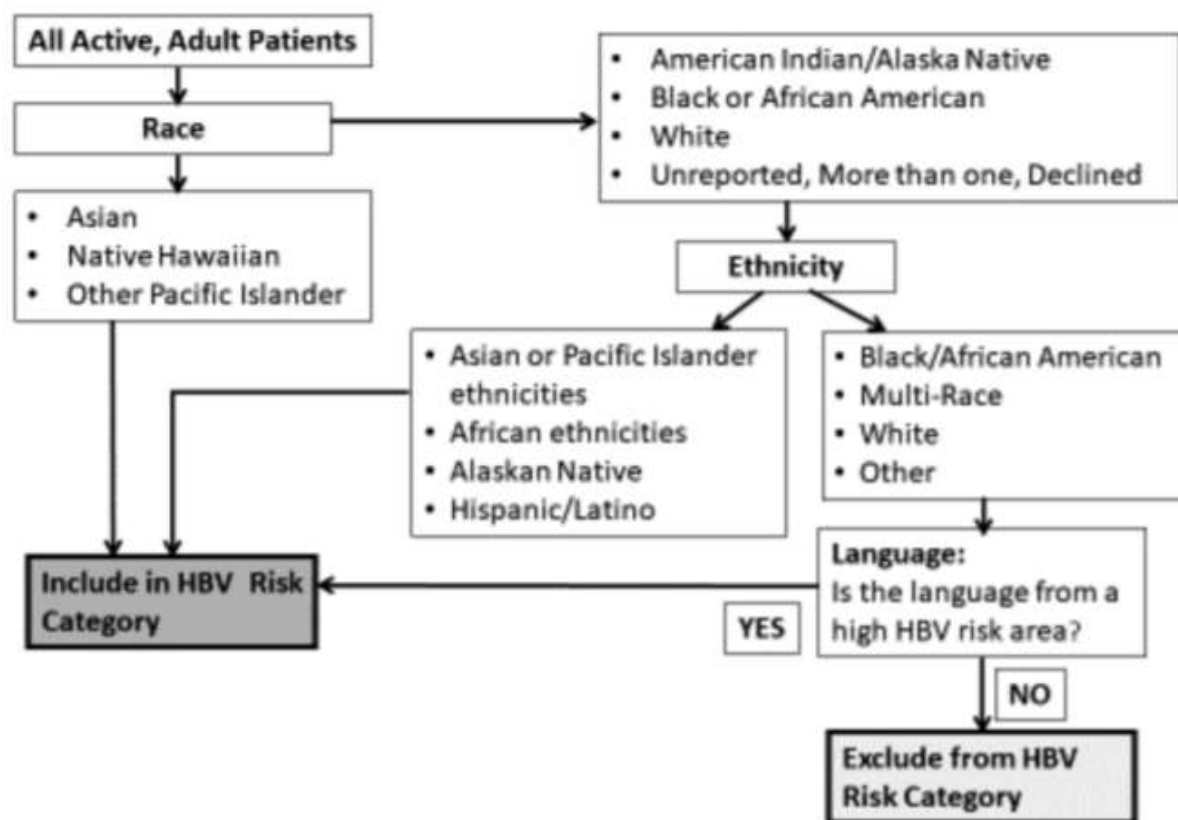
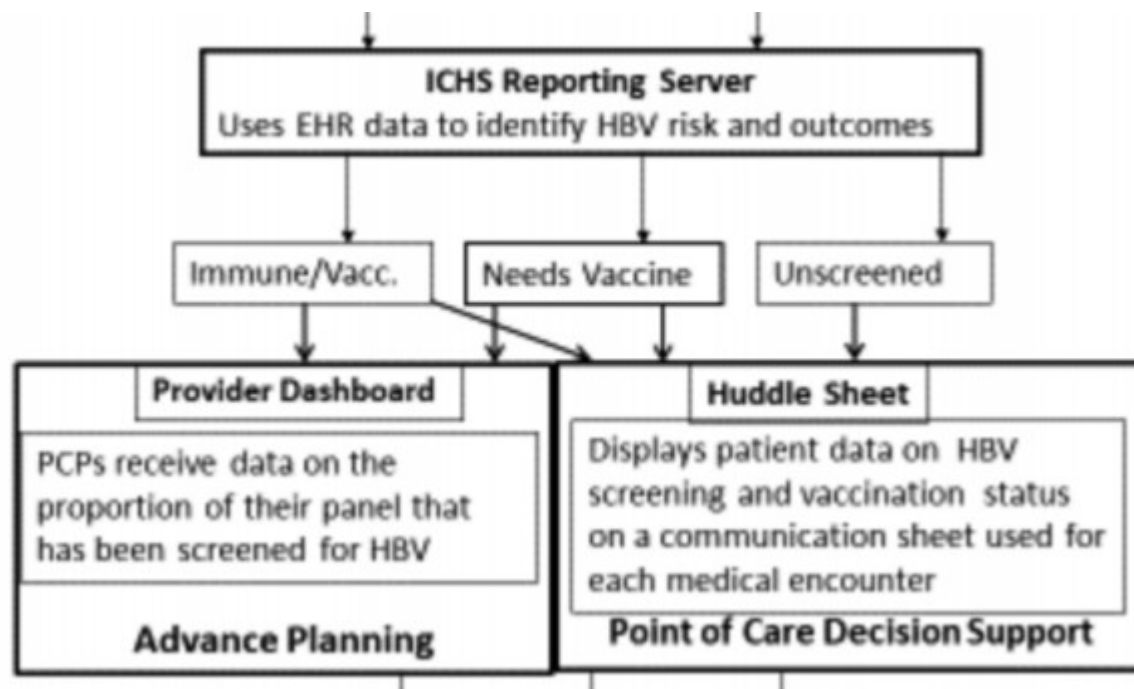
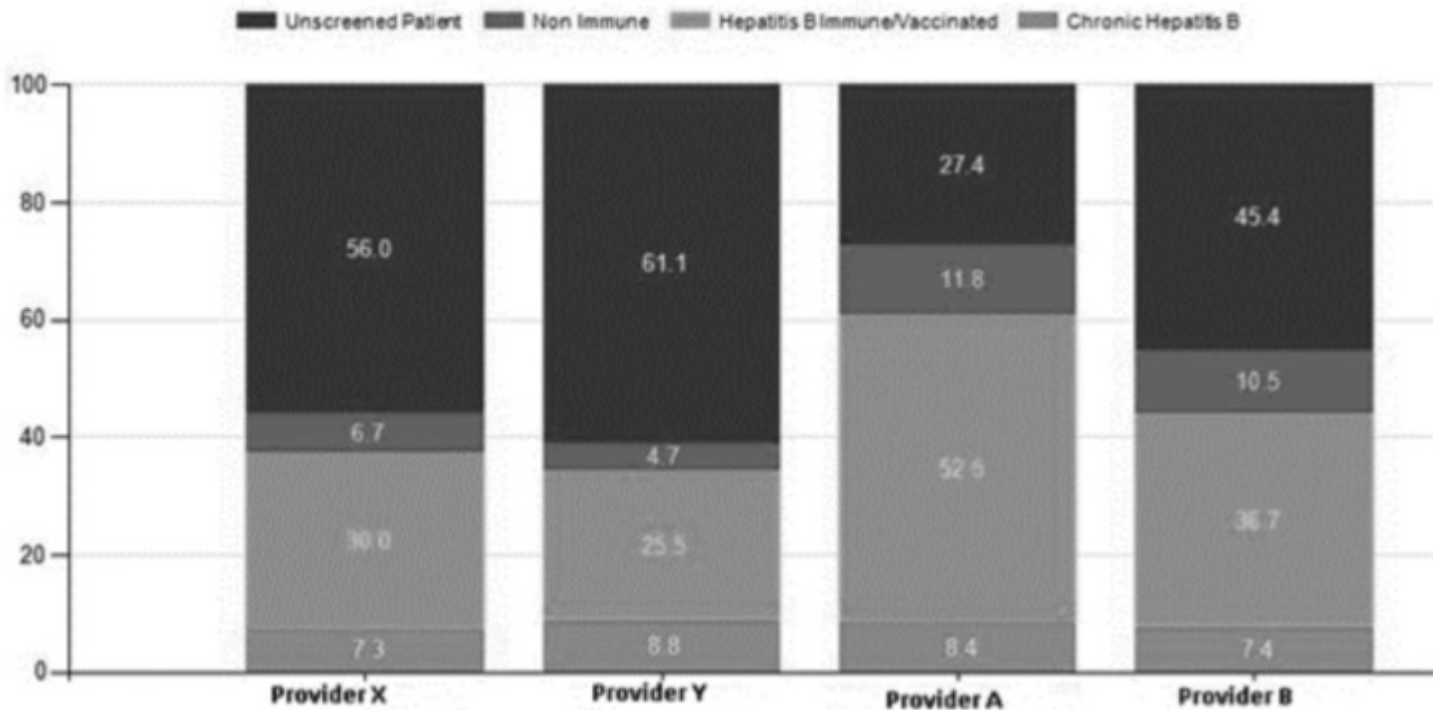
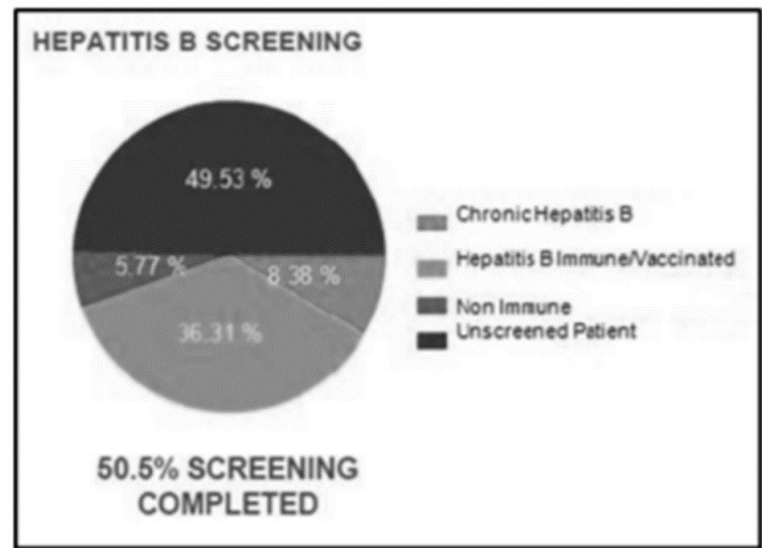


Figure 1. Study algorithm to identify patients from countries with a high prevalence of hepatitis B.

Two-pronged intervention with information presented on the Provider Dashboard and a Huddle Sheet



Provider Dashboard



Huddle Sheet

Patient	NG	Age	Sex	DOB	Appt Date	Time
Test, Patient	000001	35	M	1/1/19XX	1/1/2016	12:00
PCP	Language	Interpreter	Web Enroll	Next Appt date	Next Appt Reason	
	English	N				
Reason for Visit	Preventive					
Last Preventive	Med Wellness	PHQ2	Adv Direct	Dexa	Gestational Age	
BP / Weight in lbs	Last Pap	HPV ,Result	Mammogram	Colonoscopy	FOBT / FIT	
Hep B						
HbsAg date	HBsAg Result	Anti HBs date	Anti HBs Result	ALT date, Result	Abdomen Scan	
1/1/1900	Negative	1/1/1900	Negative			
			Hepb Vaccine	Last	2nd_Last	3rd_Last
			Complete Date	1/7/1900		
Chronic						
HbA1c	Micro/Creat	LDL	Foot Check	Eye Exam	Self Management	
Weight _____	Height _____	Temp _____	Bp _____	Pulse _____	O2 _____	HC _____

Results: Rate of hepatitis B screening increased after the intervention

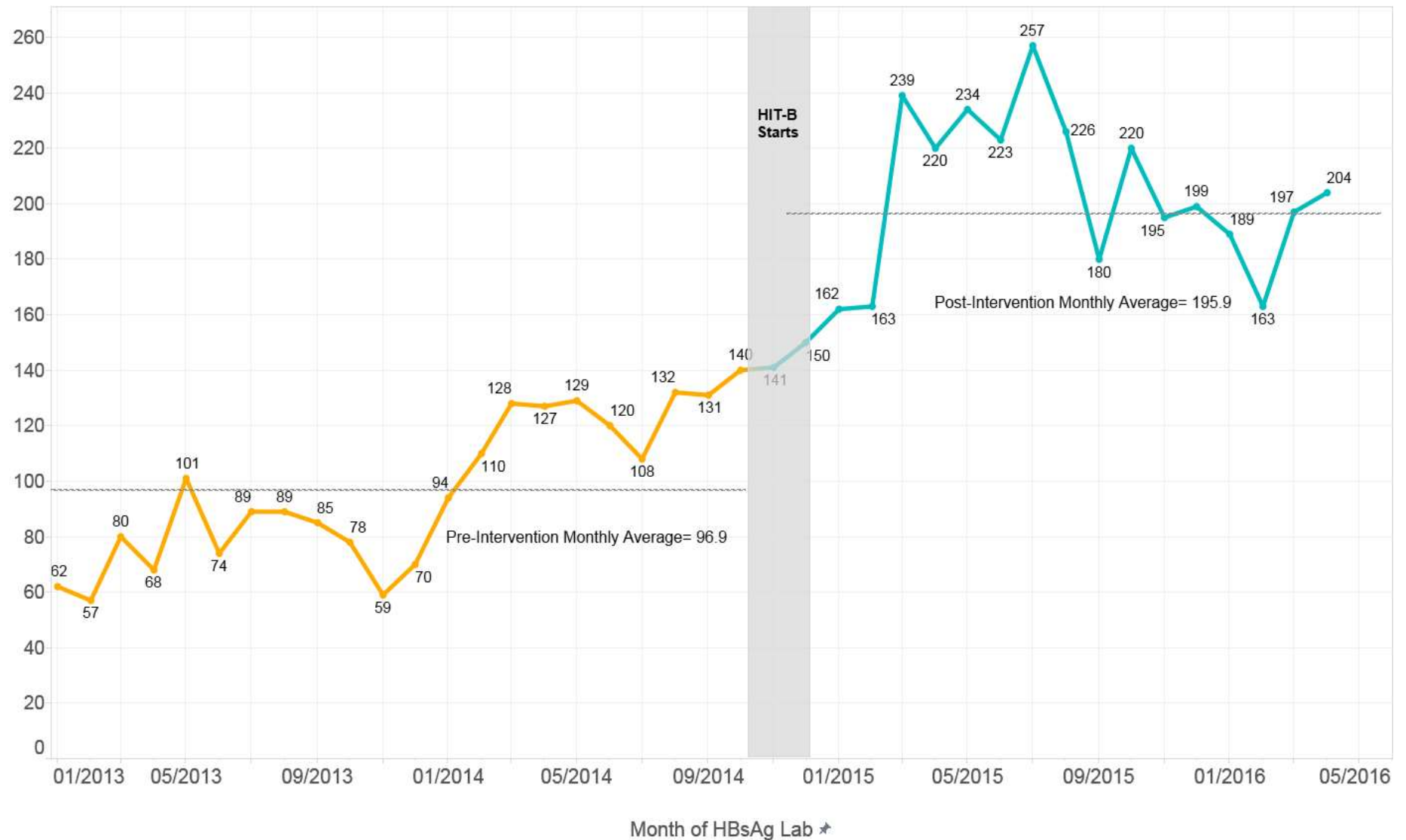
Hepatitis B Screening Multivariable Model (N = 5,914)	Odds Ratio	p-value
Time Period Reference: Baseline time period	—	—
Intervention time period	1.82	<.001 *
Age Reference: Age 18–26	—	—
Age 27–64	2.53	<.001 *
Age 65–70	1.13	.38
Gender Reference: Female	—	—
Male	1.21	<.001 *
Ethnicity Reference: Chinese	—	—
Filipino	0.55	.03
Korean	0.55	.05
Laotian	0.70	.44
Vietnamese	2.21	<.001 *
Insurance Status Reference: Uninsured/Missing Insurance	—	—
Publicly Insured	3.01	<.001 *
Privately Insured	2.71	<.001
Language Barrier Reference: Yes	—	—
No Barrier	1.13	.14
ICHS Clinic Reference: Site A	—	—
Site B	1.98	<.001 *
Site C	1.14	.10

Results: Rate of hepatitis B vaccination increased after the intervention

Hepatitis B Vaccine Multivariable Model (N=1,619)	Odds Ratio	p-value
Time Period Reference: Baseline time period	—	—
Intervention time period	2.83	<.001 *
Age Reference: Age 18–23	—	—
Age 24–64	1.04	.95
Age 65–70	0.56	.39
Gender Reference: Female	—	—
Male	1.55	<.001 *
Ethnicity Reference: Chinese	—	—
Vietnamese	1.21	.20
Insurance Status Reference: Uninsured/Missing Insurance	—	—
Publicly Insured	2.29	.03 *
Privately Insured	2.01	.08
Language Barrier Reference: Yes	—	—
No Barrier	1.01	.97
ICHS Clinic Reference: Site A	—	—
Site B	2.40	<.001 *
Site C	0.90	.52

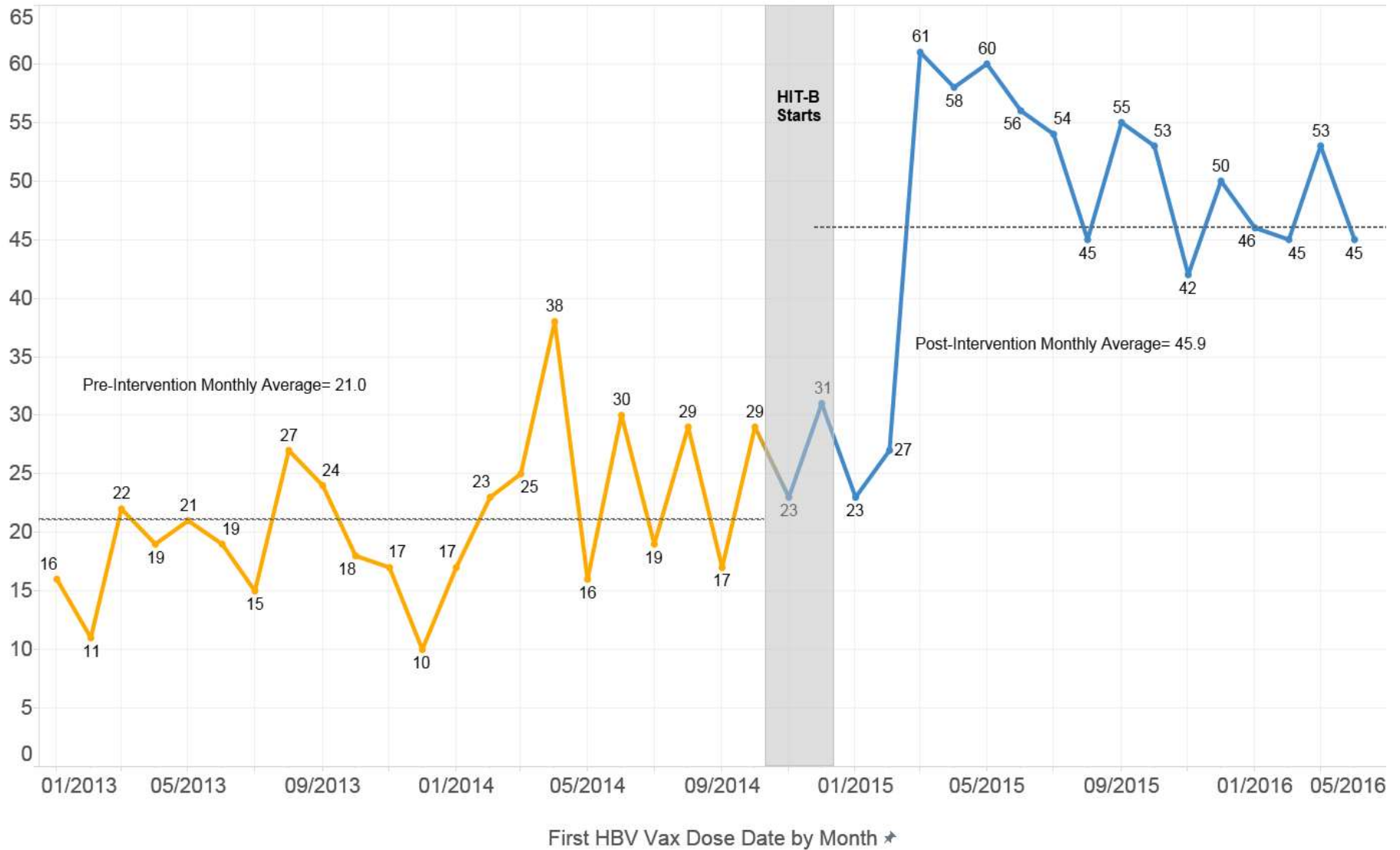
HBsAg labs per month (1/2013-4/2016)

HBsAg labs conducted for adult ICHS patients 1/1/2013-4/30/2016



First Dose of HBV Vaccine Administered Per Month (1/2013-4/2016)

Vaccine administration among adult ICHS patients 1/1/2013-4/30/2016



Eliminating the Public Health Problem of Hepatitis B and C in the United States

Phase One Report

TABLE 2-2 The Feasibility of Eliminating Hepatitis B as a Public Health Problem in the United States with Critical Factors for Success and Crosscutting Problems

Goal		Feasibility	Critical Factors	Crosscutting Barriers
Ending transmission	Perinatal	Highly feasible	<ul style="list-style-type: none"> Identifying HBV-infected mothers Consistent birth dosing with HBV vaccine 	<ul style="list-style-type: none"> Surveillance is sporadic and underfunded. Vaccine tracking across jurisdictions is poor. Stigma keeps people from screening and care. Foreign-born adults can be difficult to reach with screening and treatment programs. *Much of the burden for managing chronic hepatitis B falls on overworked primary care providers. There is a need to better understand the virus and the management of chronic hepatitis B.
	Children	Highly feasible	<ul style="list-style-type: none"> Consistent vaccination and attention to catch-up dosing 	
	Adults	Feasible	<ul style="list-style-type: none"> No system for vaccinating adults Undiagnosed, asymptomatic chronic infections a reservoir for infection 	
Morbidity and mortality attributable to ongoing infection	Slowing progression to cirrhosis	Feasible	<ul style="list-style-type: none"> Need for physicians trained in the management of chronic HBV infection The threat of reactivation in chronic or resolved infection No available treatment eliminates cccDNA or cures the disease 	
	Reducing deaths			

Washington (DC): [National Academies Press \(US\)](#); 2016 Jun 1.

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Conclusions

-An intervention that mined electronic health record (EHR) data on HBV screening and vaccination history to provide point-of-care recommendations resulted in improvement in HBV screening and vaccination rates at a community health clinic primarily serving medically-underserved Asian American patients

Conclusions

- We found that the EHR provided its greatest value, not in presenting electronic reminders during clinic , but in allowing data-mining to identify patients who needed hepatitis B screening and vaccination
- We found that point-of-care recommendations presented to providers during huddles were easily incorporated into clinic workflows and were received positively, particularly since this approach involved multiple levels of the care team, relieving some of the responsibilities from the provider