

# Automated Screening of Hepatitis B & C in the ED with Linkage-to-Care

Su Wang, MD, MPH  
Medical Director, Center for Asian Health  
Principal Investigator, SBMC FOCUS Program

Hepatitis B United  
July 23-24, 2019

**Saint Barnabas** | **RWJ Barnabas**  
**Medical Center** | **HEALTH**

World Hepatitis  
**Alliance**



# Scaling Up Screening

## Aims

Partner with SBMC ED to increase screening of at-risk individuals, as seamlessly as possible.

Provide linkage-to-care of infected patients via a navigator & an integrated practice setting, Barnabas Health Medical Group (BHMG)

A woman with dark curly hair, wearing a yellow top, stands in a crowd of people. The background is a blurred crowd of people, suggesting a large gathering or event. The overall tone is blue and teal.

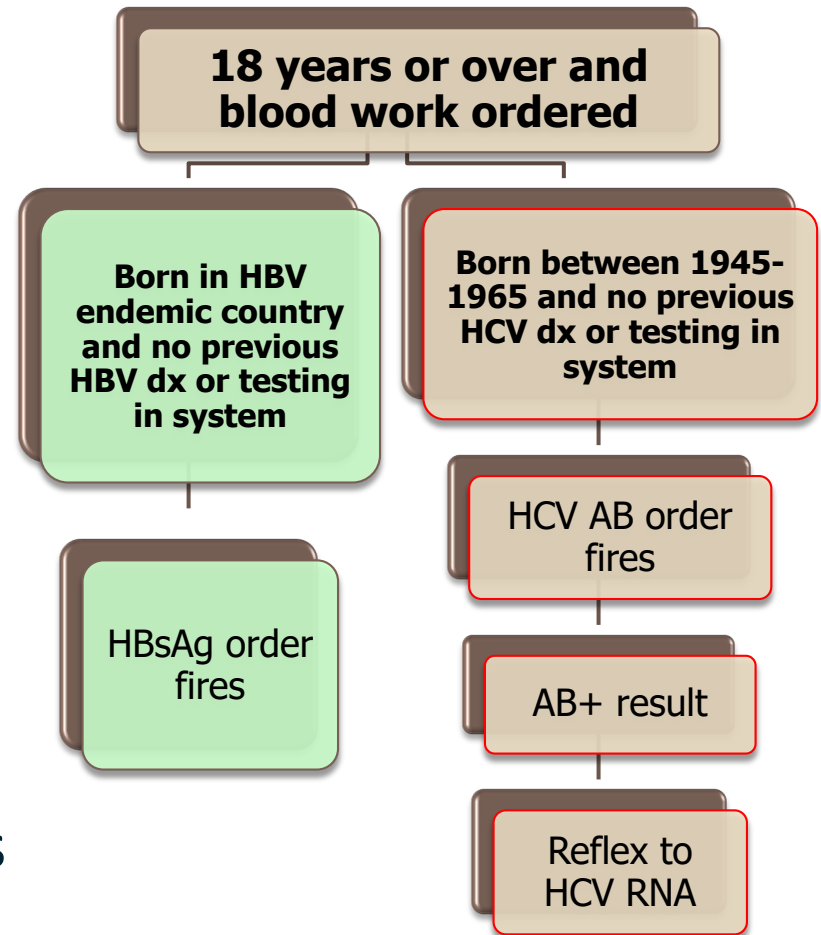
Find the  
missing  
millions

# Process

- **Engagement of SBMC Leadership & Stakeholders**
- **Multidisciplinary team**
  - **Screening-** Informatics, Emergency Department, Operations, Pathology, Data Management, Financial Services,
  - **Care-** Patient Navigators , Providers, Pharmacist, Clinical staff
  - **Coordination** by Hepatitis Program Team
- **Program modifications to automate screening**
  - Siemens (registration system)
  - Cerner EMR (electronic medical record)
  - FirstNet (ED tracking shell)
- **Implement linkage-to-care & care workflow**

# Eligibility Algorithm

- **HCV- Date of birth (DOB)** to identify HCV at-risk (born 1945-1965, “baby boomer” cohort)
- **HBV- Country of birth (COB)** to identify HBV at-risk, added as drop-down menu & auto-fill function in registration, programmed HBV-endemic countries
- If eligible based on age, blood work ordered and no previous testing done, blood test automatically added to orders





# Collecting Country of Birth at Registration

ED (~100,000 visits/year)

```
Quick ER                               Patient Information    02/13/18  0734
                                     F                               Pt #:
Attn Dr: EMA PHYSICIANS              EMERG
Adm Dt:                               Isol:                Mr #:
-----
Last Name: GILEAD                    First: QUICKREG
Mid Name: _____                Name Sfx: _____
Registrar Init: GW_                 Birth Date: 01 / 01 / 1990
Sex: F                               Financial Cls: _
Marital Sts: S                      SSN#: _ _ _ - _ _ _
Clinic Code: EMERG                   Hosp Svc: _ _ _
Country of Birth: AW ARUBA
Attn Dr No: 00002                    Attn Dr Name: EMA PHYSICIANS
Diagnosis: screen prints country birth
Mode of Transport: wa _____    Arrival Date/Time: 02 / 13 / 18  07 : 34
Reg Date/Time: _ / _ / _ : _
Med Rec No: _____              Leave fields blank for
Pt No: _____                    automatic number generation
-----
! PF13 Master Menu
! PF14 Submenu
                                     &Comments:  Y/N          & Enter
```

Field is a drop down menu & searchable

# March 2018 Launch

Program introduced to ED staff via daily huddles (nursing, registration) & provider meetings, public signage placed

## Saint Barnabas Medical Center Provides Hepatitis B & C Testing



This facility performs **HBV and HCV testing** as part of our routine health care, as recommended by the U.S Centers for Disease Control and Prevention (CDC). Chronic hepatitis is the leading cause of liver cancer.

Your healthcare provider may order these tests if you have not been tested within the past year in our network and you are considered at-risk:

- **Hepatitis C** -- If you were born between 1945-1965
- **Hepatitis B** -- If you were born in a country where HBV is endemic

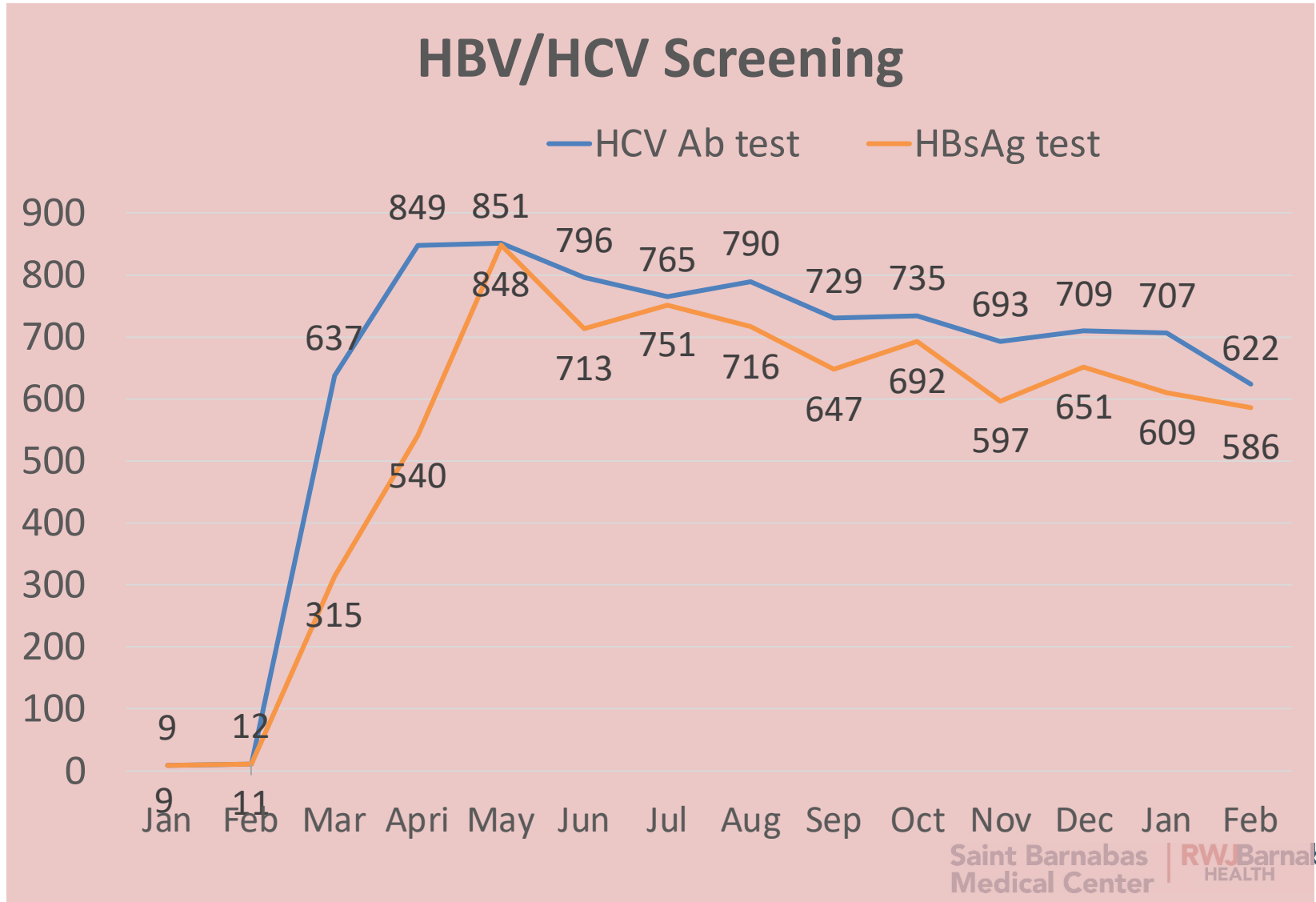
Incorporating hepatitis testing into routine care helps to diagnose patients and offer them care and treatment before the disease progresses.

If you test positive, you will be contacted for further follow-up.

\*I understand that notification is contingent on providing accurate contact information.



# Results: Uptick in screening



# Demographics

		HBV Screened	HBV Infection	HCV Screened	HCV Infection
Gender	Female	4601 (64%)	45 (0.9%)	4740 (56%)	38 (0.8%)
	Male	2606 (36%)	44 (1.6%)	3756 (44%)	57 (1.5%)
Age	Median (Years)	51	57	63	63
	Range	18 - 103	25 - 89	53 - 74	53 - 73
Race	Asian	574 (8%)	16 (18%)	267 (3.1%)	0 (0%)
	Black	3048 (42%)	54 (61%)	3472 (41%)	69 (73%)
	White	1085 (6.7%)	6 (7%)	3657 (43%)	19 (20%)
	Other	2500 (15%)	13 (14%)	1100 (13%)	7 (7%)
<b>Total</b>		<b>7207</b>	<b>89</b>	<b>8496</b>	<b>95</b>

# HBV/HCV Evaluation & Care in a Primary Care Setting\*

- **Center for Asian Health, Florham Park Multispecialty**
  - 4 internal medicine physicians
  - HBV prevalent in patients which are ~2/3 Asian, so physicians have been doing HBV management & treatment
  - HCV treatment started 2018 w new direct-acting antivirals & simplified regimen
- **Navigators** develop relationships w patients, help with any challenges, key to linkage-to-care
- **Ambulatory Pharmacist**
  - Meets with all Hep C treatment patients & counsels throughout treatment
  - Works w physicians to choose appropriate regimen
  - Works w pharmacy on pre-authorizations (HCV/HBV)

\*Outside the scope of FOCUS program

# HCV Screening and Linkage-to-Care

	# Tested	# HCV Ab Positive (%)	# HCV RNA Detected (Current Infxn) (%)	# New Diagnosis (%)	# Linkage to care (%)	# Linked to Liver Center	% Adjusted LTC
<b>HCV</b>	10182	283 (3.3%)	95 (1.1%)	53 (55.8%)	62 (65.3%)	29	89.0%

- **19** patients initiated HCV cure therapy in the liver center
- **11** cured, sustained virologic response(SVR) confirmed at 12 weeks
- **5** with undetectable HCV RNA at week 4 (preliminary cure), now awaiting 12 week labs (final cure results)
- **3** currently in treatment.

# HBV: Diagnosis and Linkage to Care

	# Tested	# HBsAg Positive (%)	# Newly Diagnosed (%)	# Linkage to care (%)	# Linkage to Liver Center	% Adjusted LTC
<b>8096</b>	7207 (89.0%)	89 (1.2%)	39 (43.8%)	50 (56.2%)	24	86.9%

- 89 diagnosed, 24 seen at our outpatient site
- 1 started on treatment, 1 HIV/HBV co-infected



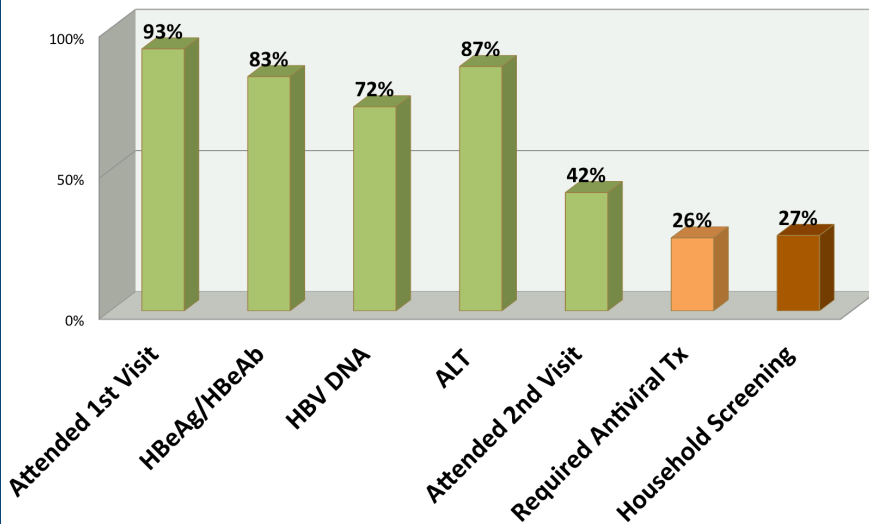
# HBV Community Screening 2014-17

## CDC Grant: CDC-RFA-PS14-1414

### Screening sources

- Primary care setting 41%
- Community screening 54%
- Coupon 5%

HBsAg + Patient's Linkage-To-Care



HBV Infection Status	Frequency	%
HBV infected (HBsAg +)	78	4.7%
Susceptible (HBsAb -)	659	39.3%
Immune from vax (HBsAb+, HBcAb-, HBsAg-)	493	29.4%
Previous infection (HBsAb+, HBcAb+, HbsAg-)	387	23.1%
Isolated (HBcAb + only)	59	3.5%
Total	1,676	100.0%





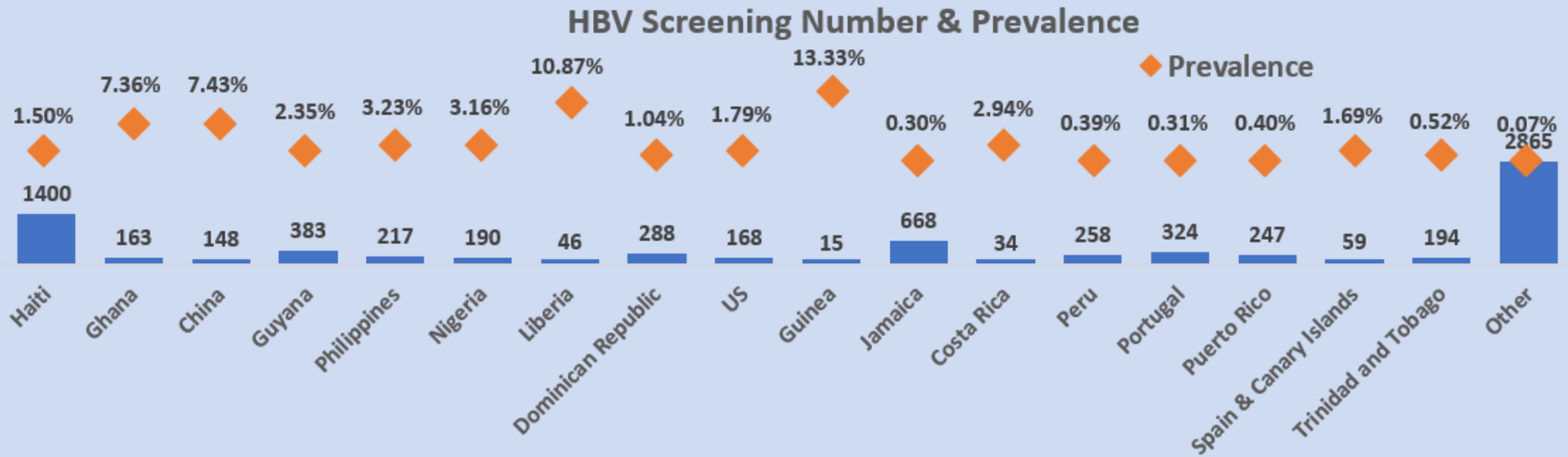
## CDC Community Screening

	Country of Birth	# Screen
1	China	736
2	US	460
3	Philippines	40
4	India	36
5	Nigeria	30
6	Haiti	21
7	Colombia	20
8	Korea	18
9	Jamaica	12
10	Malaysia	12
11	Ghana	10
12	Vietnam	10
13	Ecuador	9
14	Peru	9
15	Trinidad	8
16	Dominican Rep.	7
17	Guatemala	6
18	Guyana	6
19	Puerto Rico	6
20	Canada	5

## FOCUS ED-based Screening

	Country of Birth	# Screen
1	Haiti	967
2	Jamaica	441
3	Ecuador	327
4	Guyana	263
5	Dominican Republic	204
6	Portugal	203
7	Brazil	190
8	India	176
9	Peru	175
10	Puerto Rico	174
11	Philippines	152
12	Trinidad & Tobago	149
13	El Salvador	128
14	Nigeria	123
15	US	111
16	Colombia	110
17	Ghana	106
18	China	93
19	Guatemala	81
20	Ukraine	77

# HBV Screening Numbers & Prevalence by Different Countries



# Prevalence by Country

## CDC Community Screening

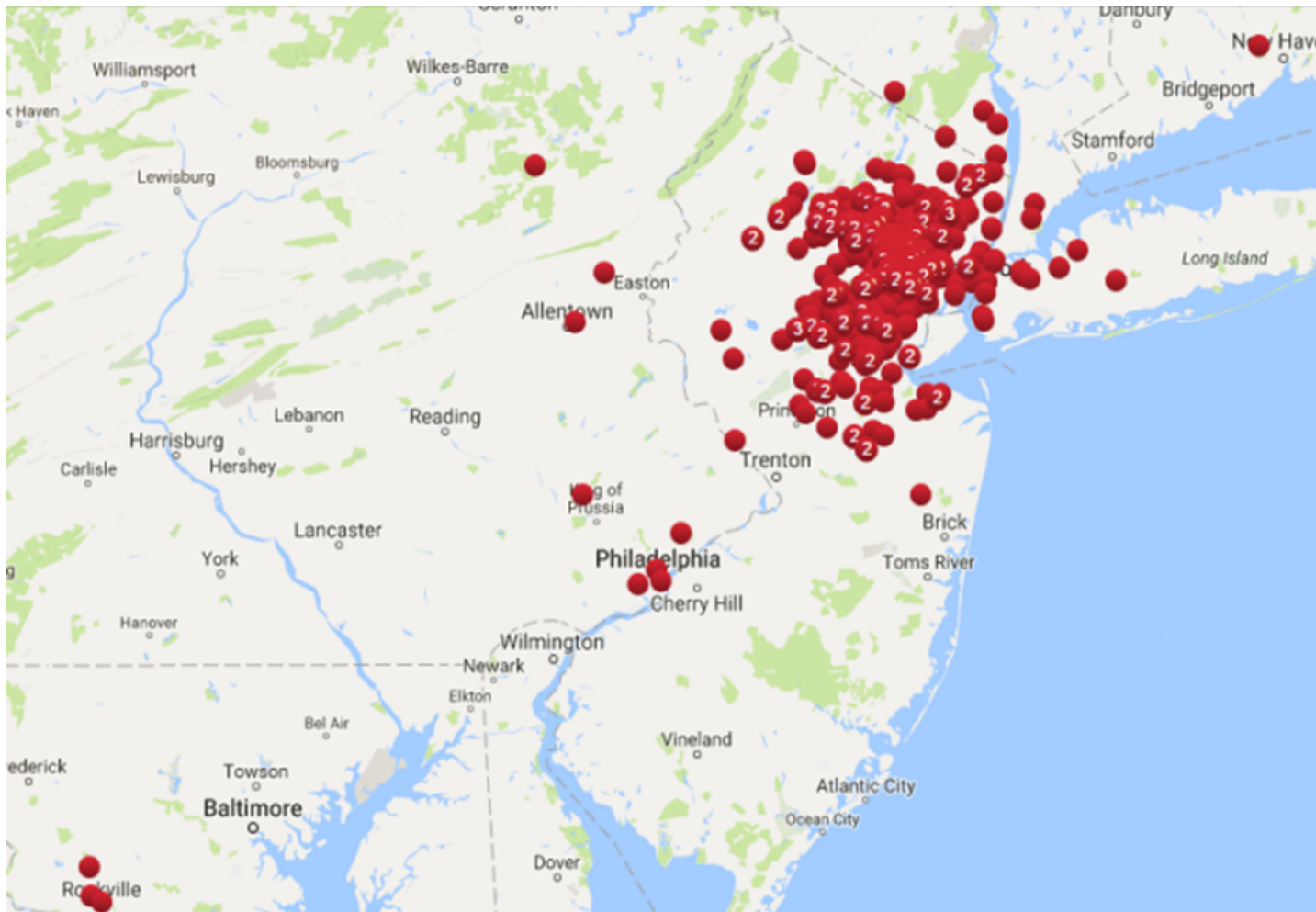
Country	HBV (+)	Screened	Percent HBV+
China	35	414	8.5%
Taiwan	27	267	10.1%
US	2	460	0.4%
Other*	8	73	11.0%
Unknown	5	265	1.9%

\*Other: Vietnam (2), Korea (2), Ghana (1), Haiti (1), Malaysia (1), Turkey (1)

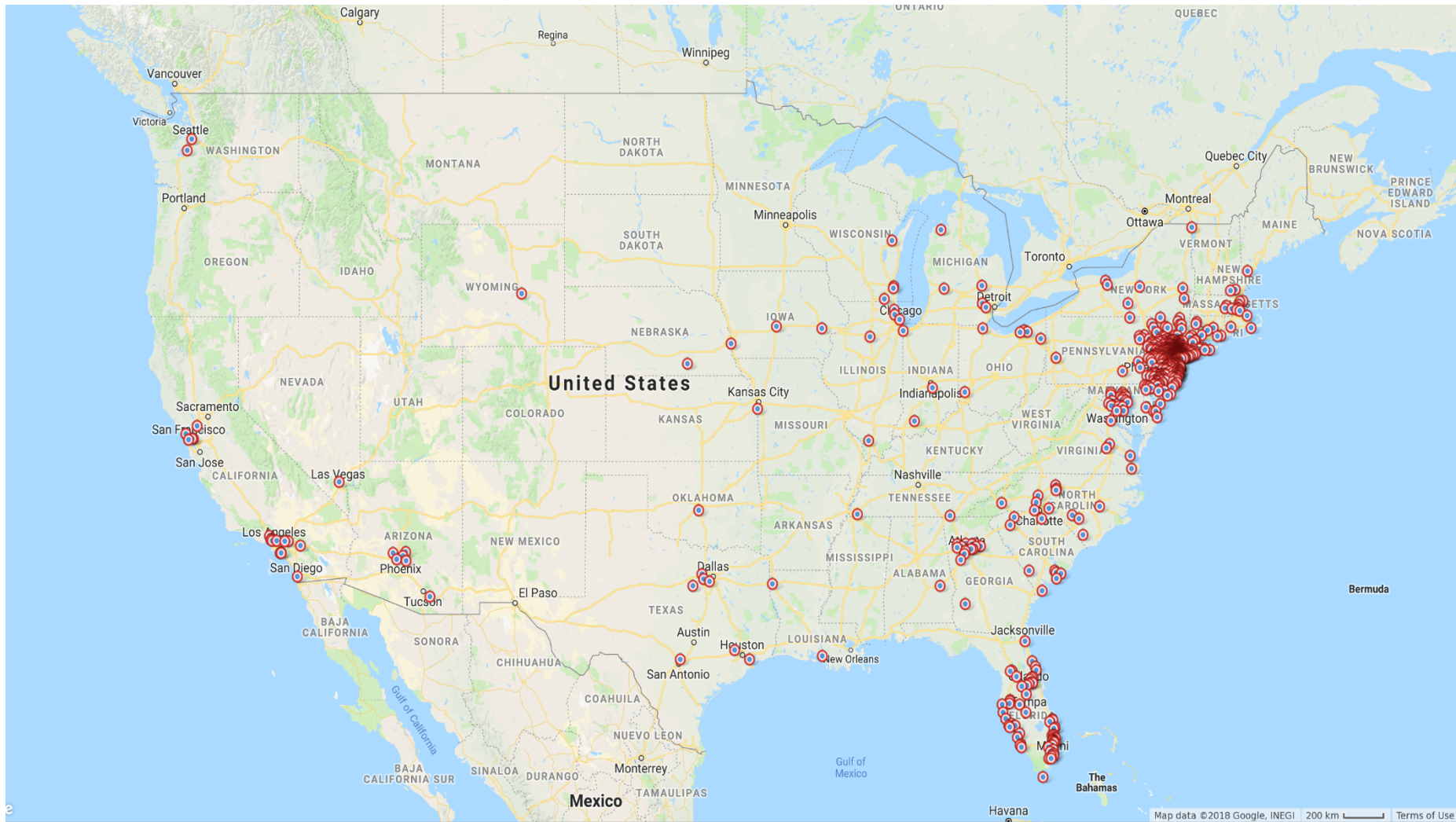
## FOCUS ED-based Screening

Country	HBV(+)	Screened	Percent HBV+
Haiti	14	967	1.4%
China	8	116	6.9%
Ghana	7	106	6.6%
Guyana	6	263	2.3%
Liberia	4	29	13.8%
Philippines	4	152	2.6%
Nigeria	3	123	2.4%
Dominican Republic	2	204	1.0%
Guinea	2	12	16.7%
Jamaica	2	441	0.5%

# Geographic Reach of HBV Screenings CDC Grant: 2014-17

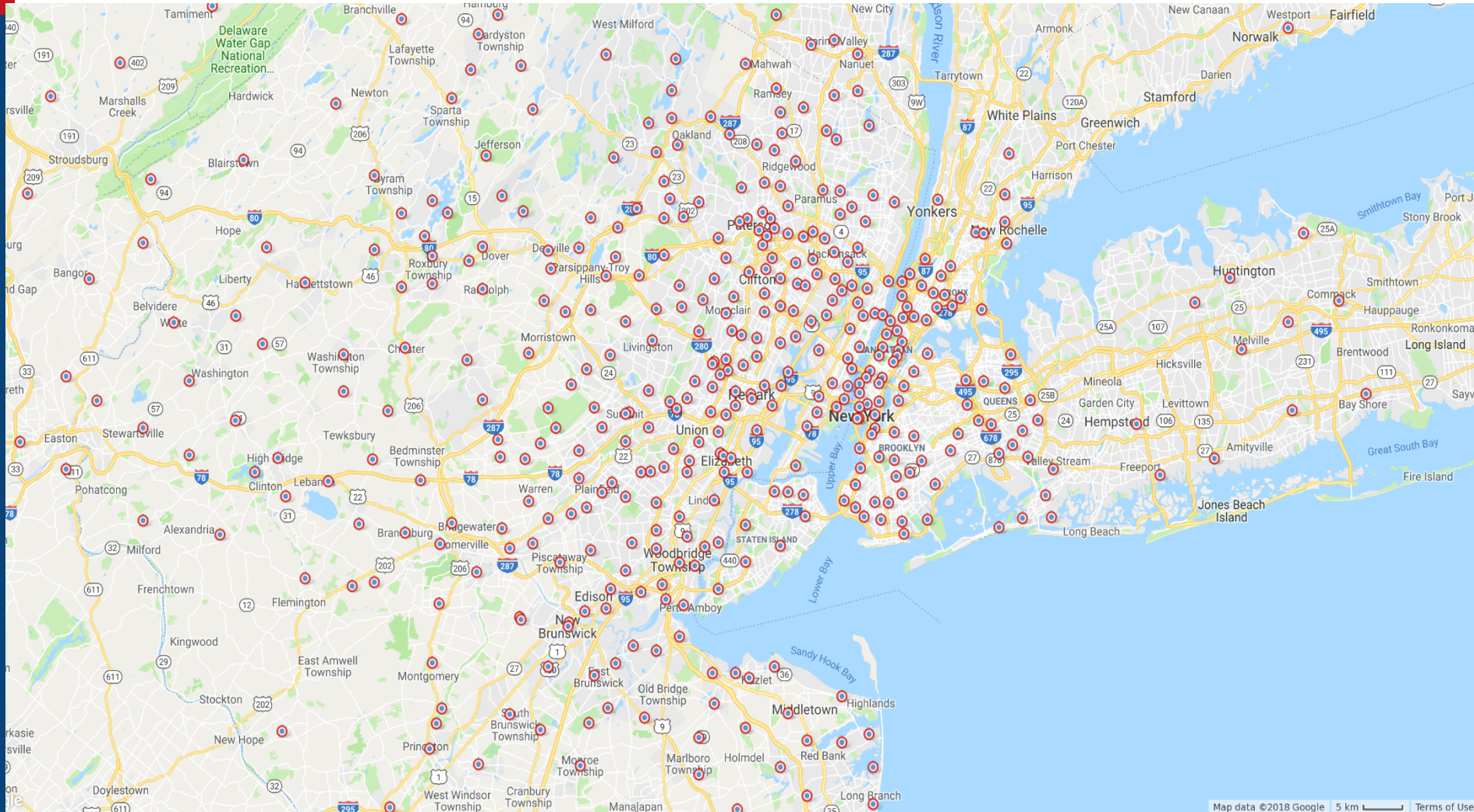


# Geographic Reach of SBMC's ED-Based HBV/HCV Screening

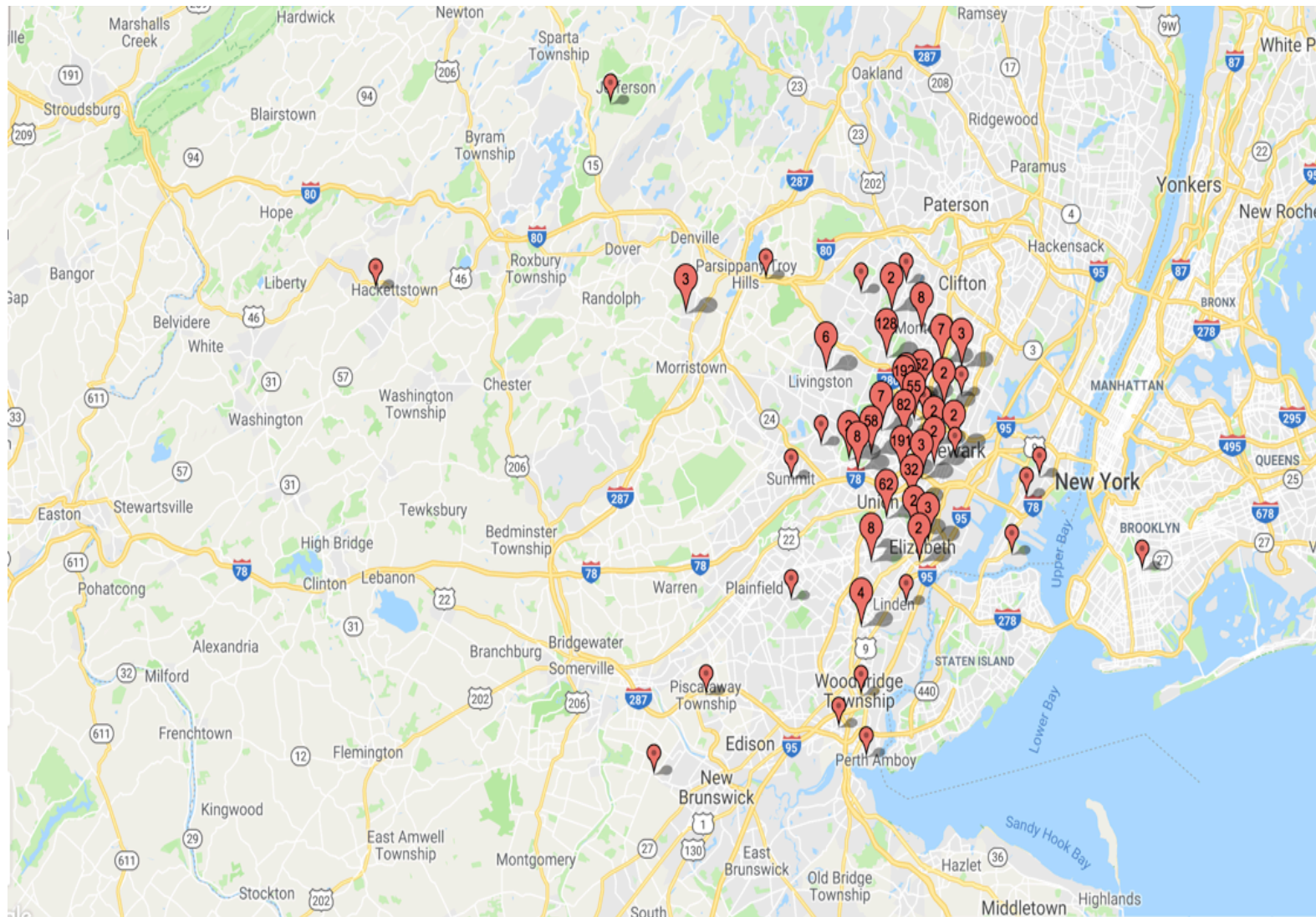




# Regional reach of ED Based HBV/HCV Screening



# Geographic Distribution of ED HBV-Screened Patients from Haiti

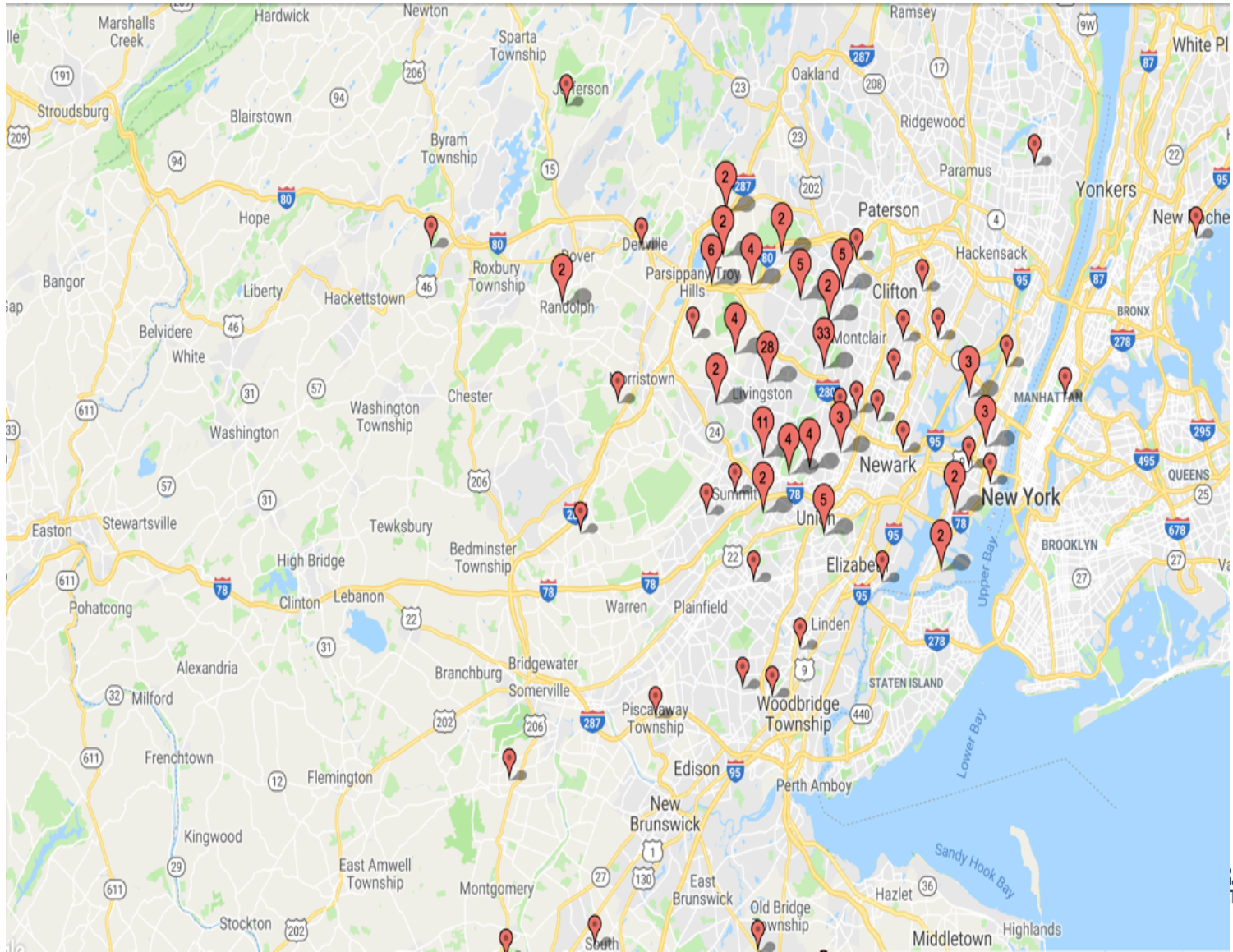






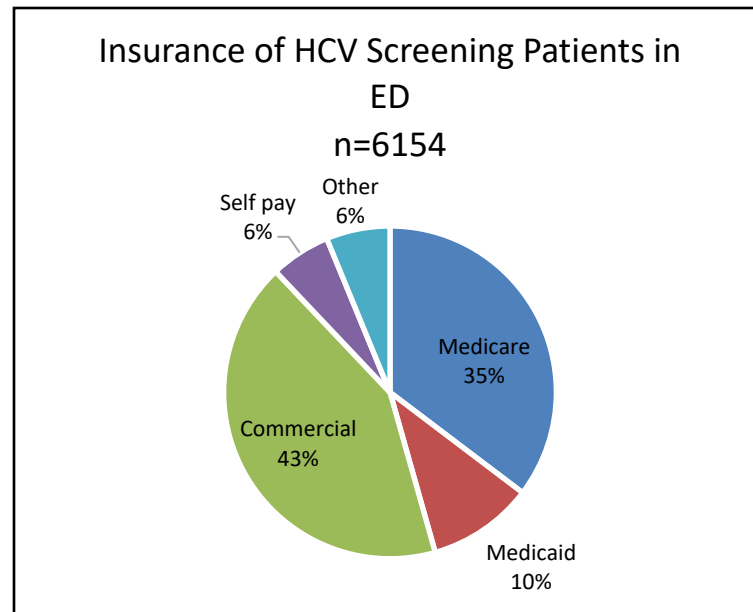
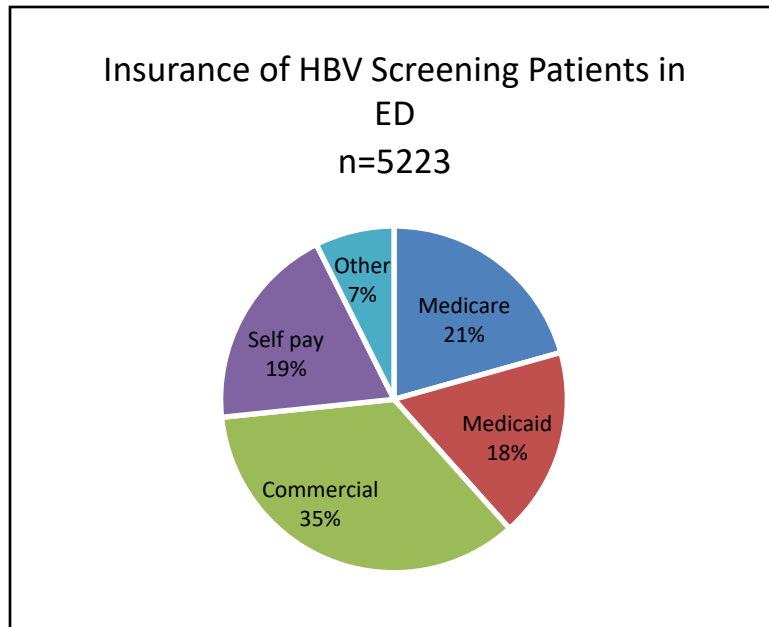
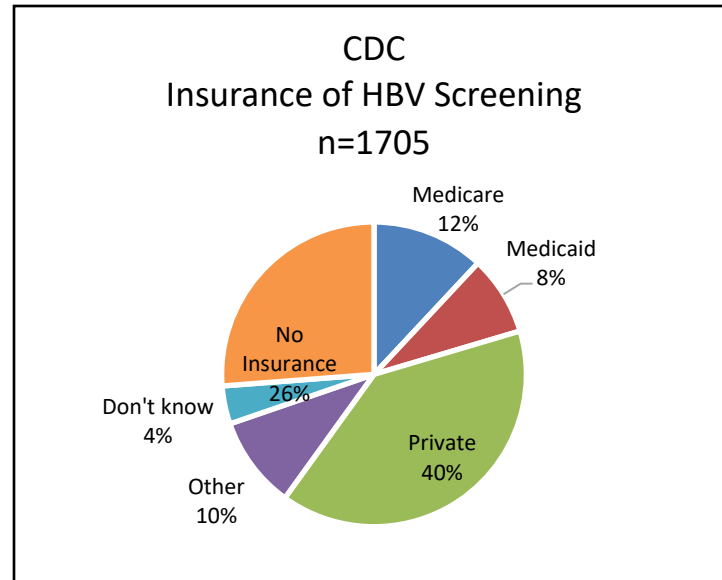


# Geographic Distribution of ED HBV-Screened Patients from India





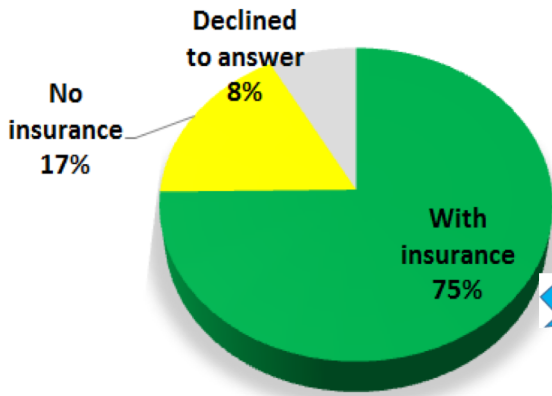
# Insurance Status: Community & ED



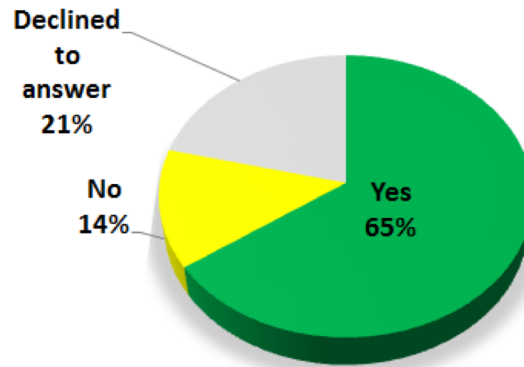


# Novel Screening Strategies Are Important to Catch the Many Falling through the Gaps

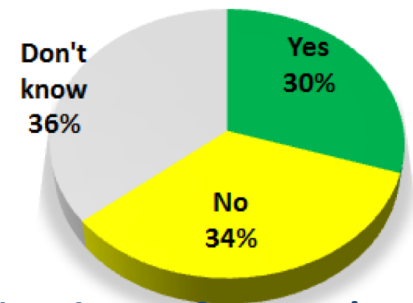
## Status of Health Insurance



## Insured Individuals: PCP or not



## HBV screening by PCP



“HBV Knowledge, Screening & Linkage to Care in a Diverse Suburban New Jersey Community: Novel Strategies in a Primary Care Setting” Wang, S, et al, AASLD Liver Meeting, Washington, DC October 23, 2017

# Lessons Learned

- Administrative buy-in is critical
- Integration without extra staff work was key to ED adoption
  - Automation allows it to happen in background
  - Notifications/navigator ensures patients informed & linked-to-care
- Patient navigation & integrated services effective at linkage-to-care and patient compliance
- ED screening led to significant scale-up of scaling
- ED screening reaching people from more countries, revealing previously unknown HBV trends in the community
- Community-based screening efforts more targeted in higher prevalence groups, but more effort for #s screened