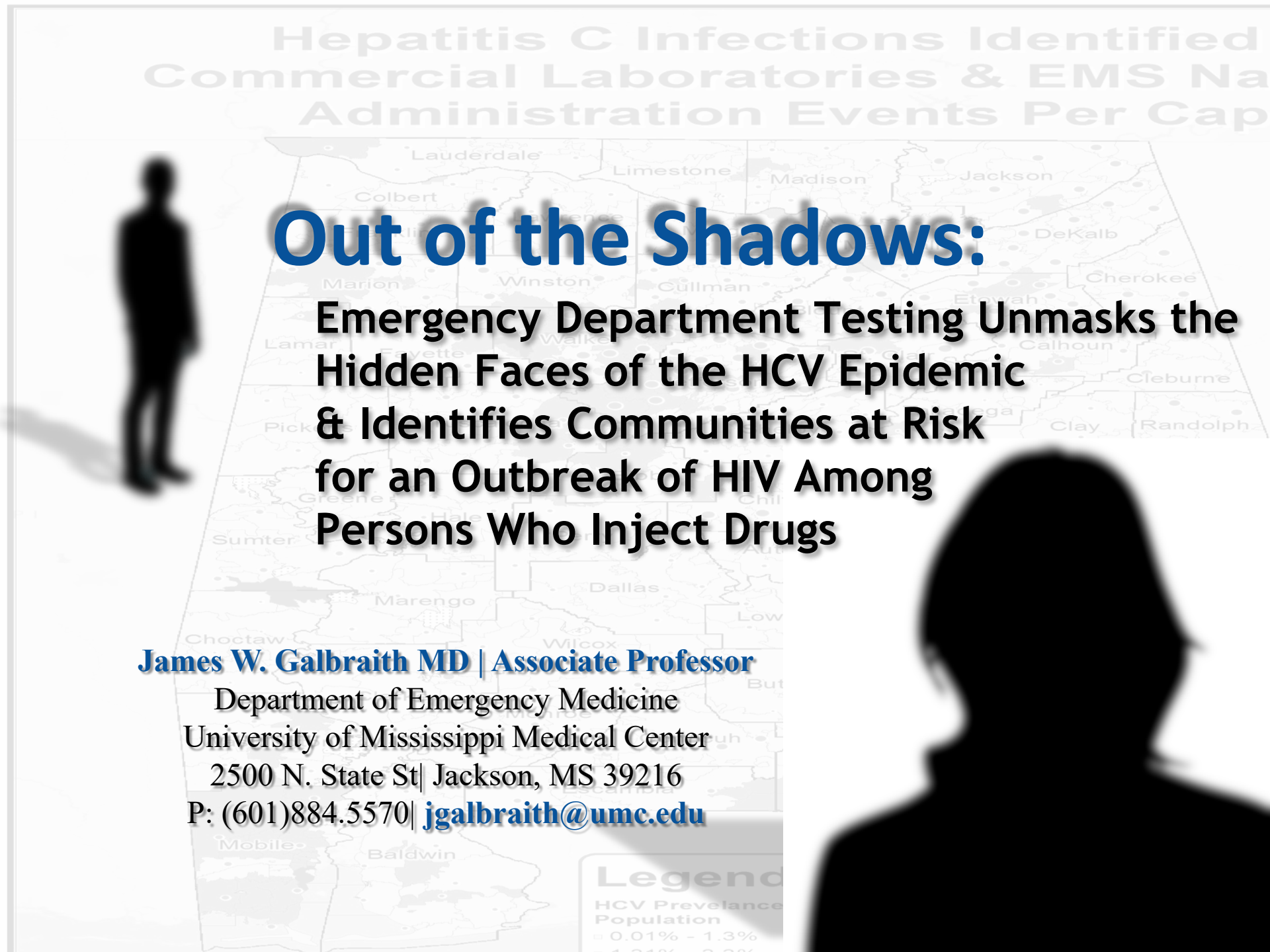

Out of the Shadows:

Emergency Department Testing Unmasks the Hidden Faces of the HCV Epidemic & Identifies Communities at Risk for an Outbreak of HIV Among Persons Who Inject Drugs

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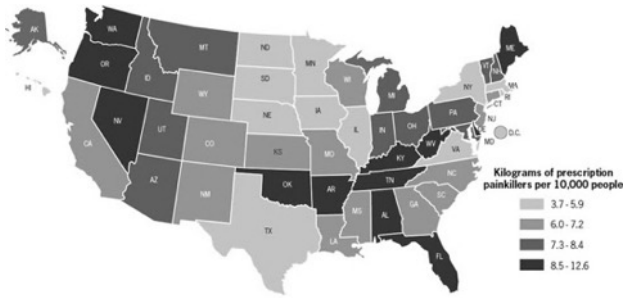
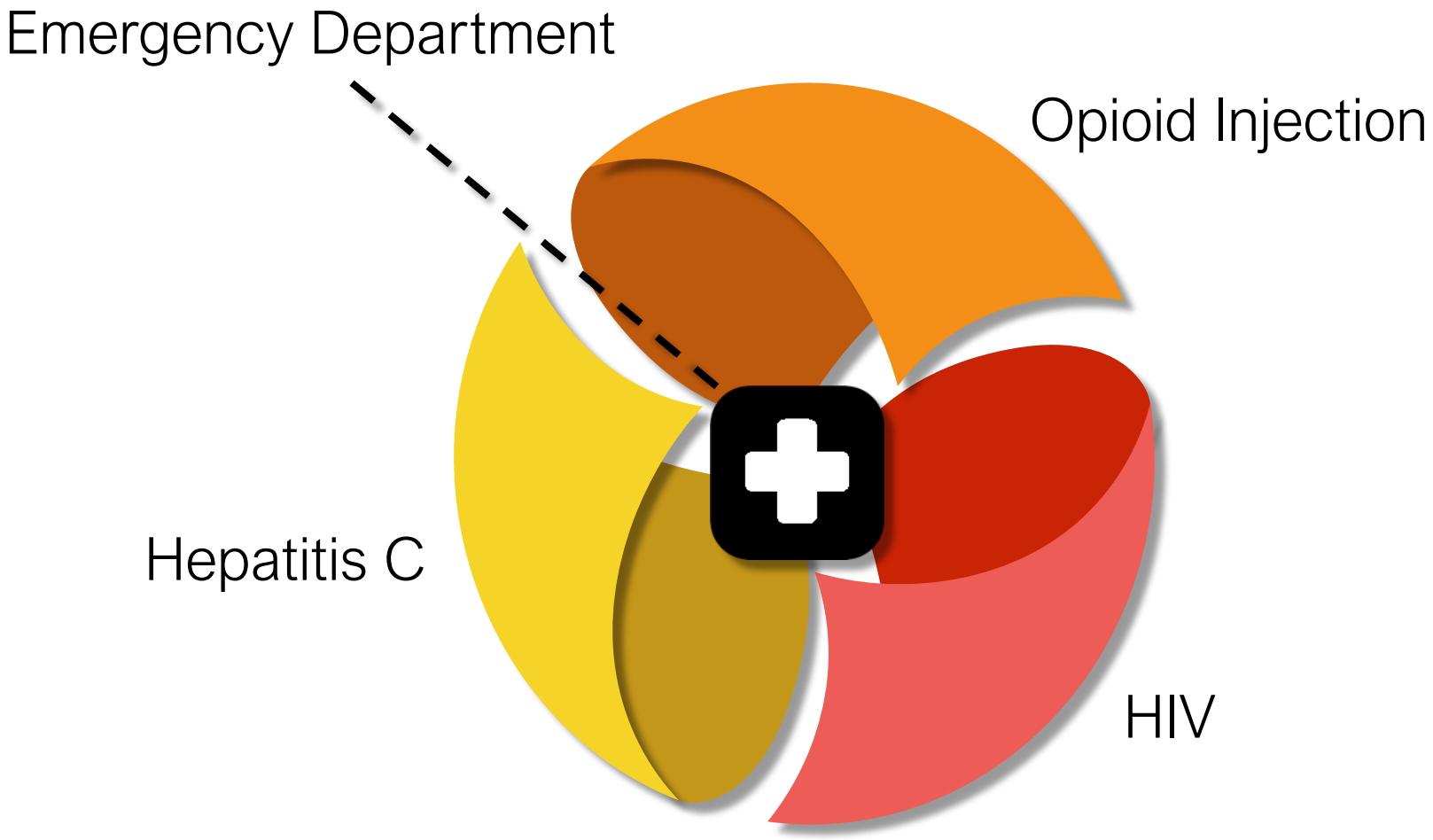


Alabama led the nation in painkiller prescriptions per capita (2014)

1 out of every 7 white individuals born after 1965 tests positive for hepatitis C virus infection in the UAB Emergency Department (2017)

Central Alabama communities are at the highest national risk for an outbreak of HIV infection among persons who inject drugs (2015)

SYNDEMIC OF OPIOIDS & BLOOD BORNE VIRUS INFECTIONS



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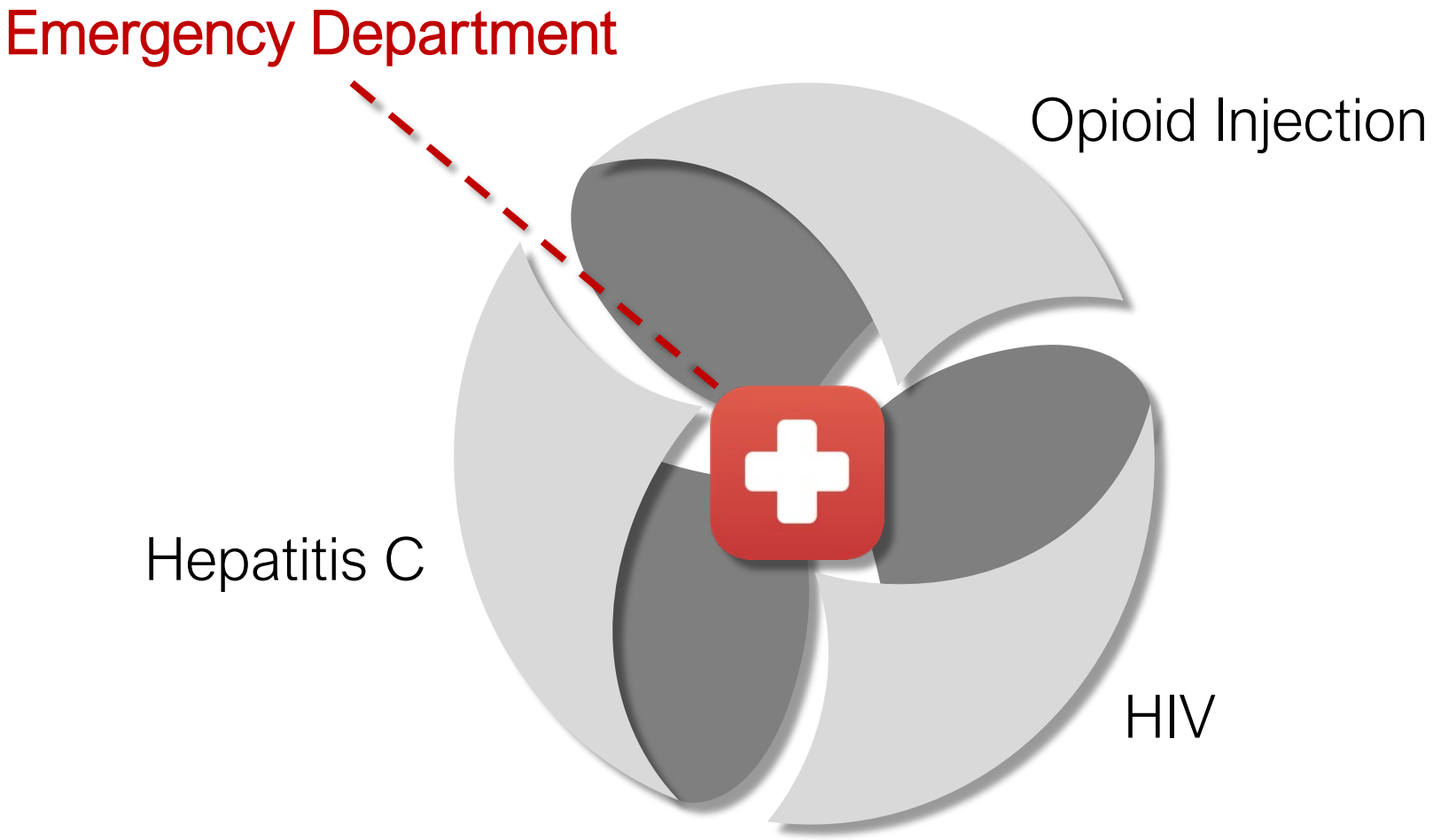
EMERGENCY DEPARTMENTS AS FRONT LINES TO MANY PUBLIC HEALTH EPIDEMICS



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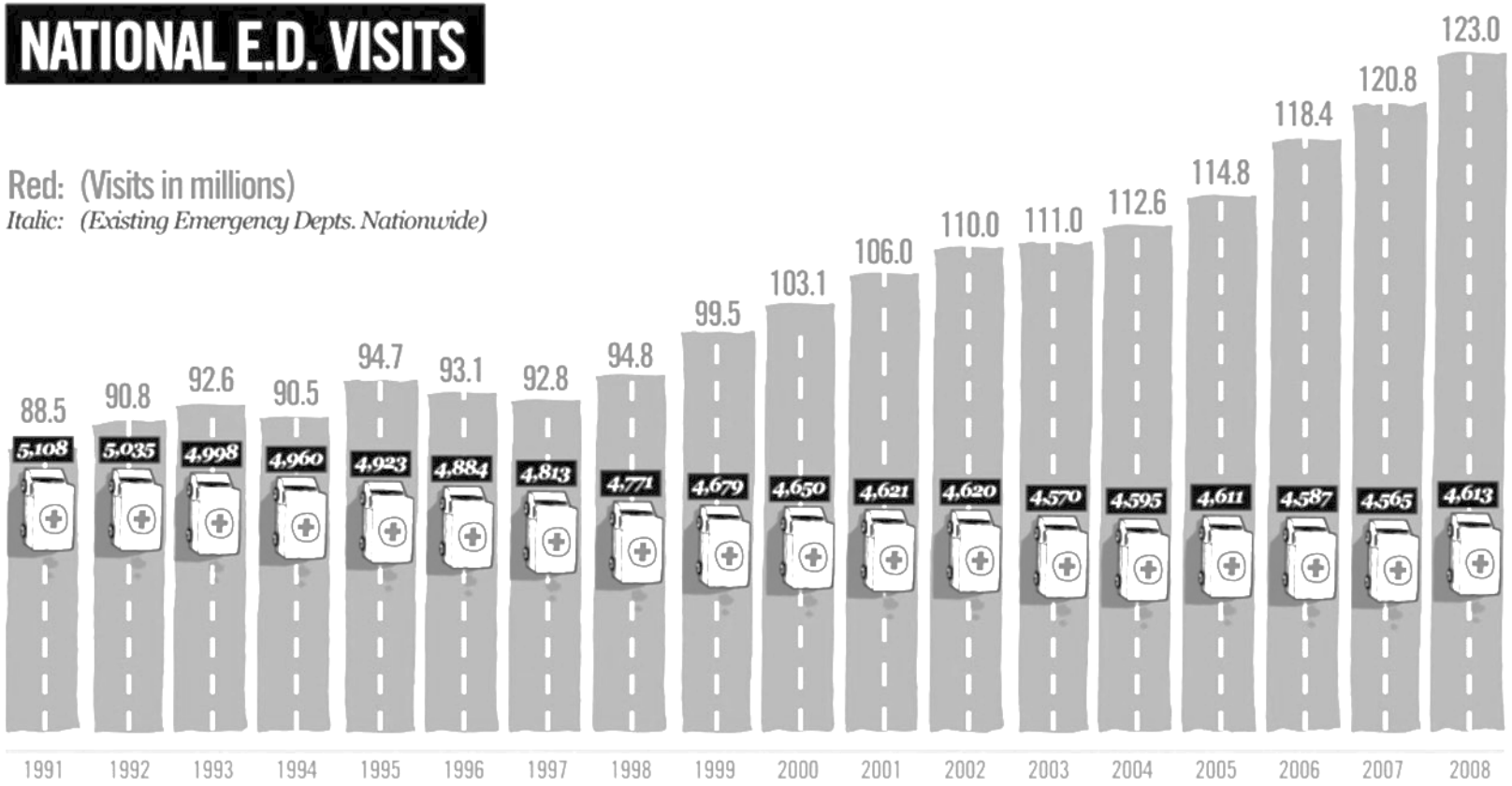
Annual US ED Visits Rising



Source: Emergency Department Visits, Emergency Department Visits per 1,000, and Number of Emergency Departments, 1991–2008. Rep. American Hospital Association, June 2010. Web. 13 July 2010.

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Emergency Department Visits Account for Half of Hospital-Associated Health Care Visits in the

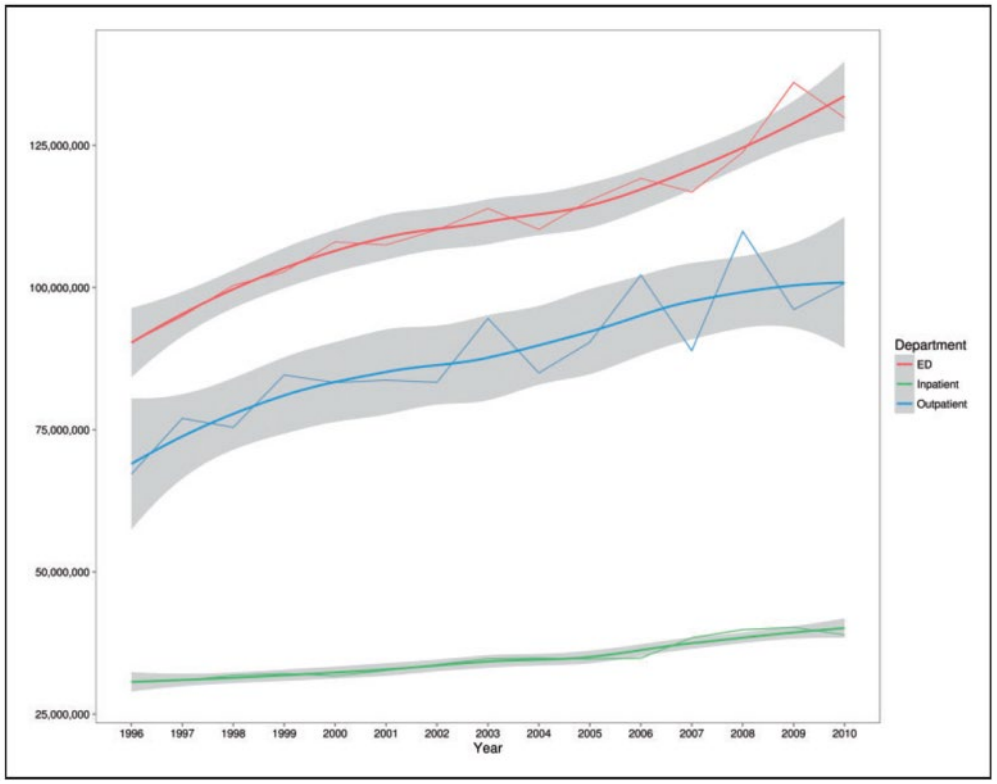

Figure 1. The number of health care contacts as ED visits, use of outpatient resources, and hospitalizations over a 14-year period. ED, emergency department.

Marcozzi D, Carr B, Liferidge A, Baehr N, Browne B. Trends in the Contribution of Emergency Departments to the Provision of Hospital-Associated Health Care in the USA. *Int J Health Serv*. 2017;13(3).

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US ED's currently function as a "Safety Net"

Disproportionately High and Increasing Visit Rates by:

- Persons living below poverty
- Medicaid recipients
- Non-Hispanic, black individuals
- Uninsured persons

Tang N et al. Trends and characteristics of US emergency department visits, 1997-2007. *JAMA*. 2010;304:664–670.

EDs as a "Public Health Safety Net"?

<u>Underserved populations</u>
Uninsured, Medicaid Recipients, Non-Whites, Persons Living Below U.S. Poverty Level

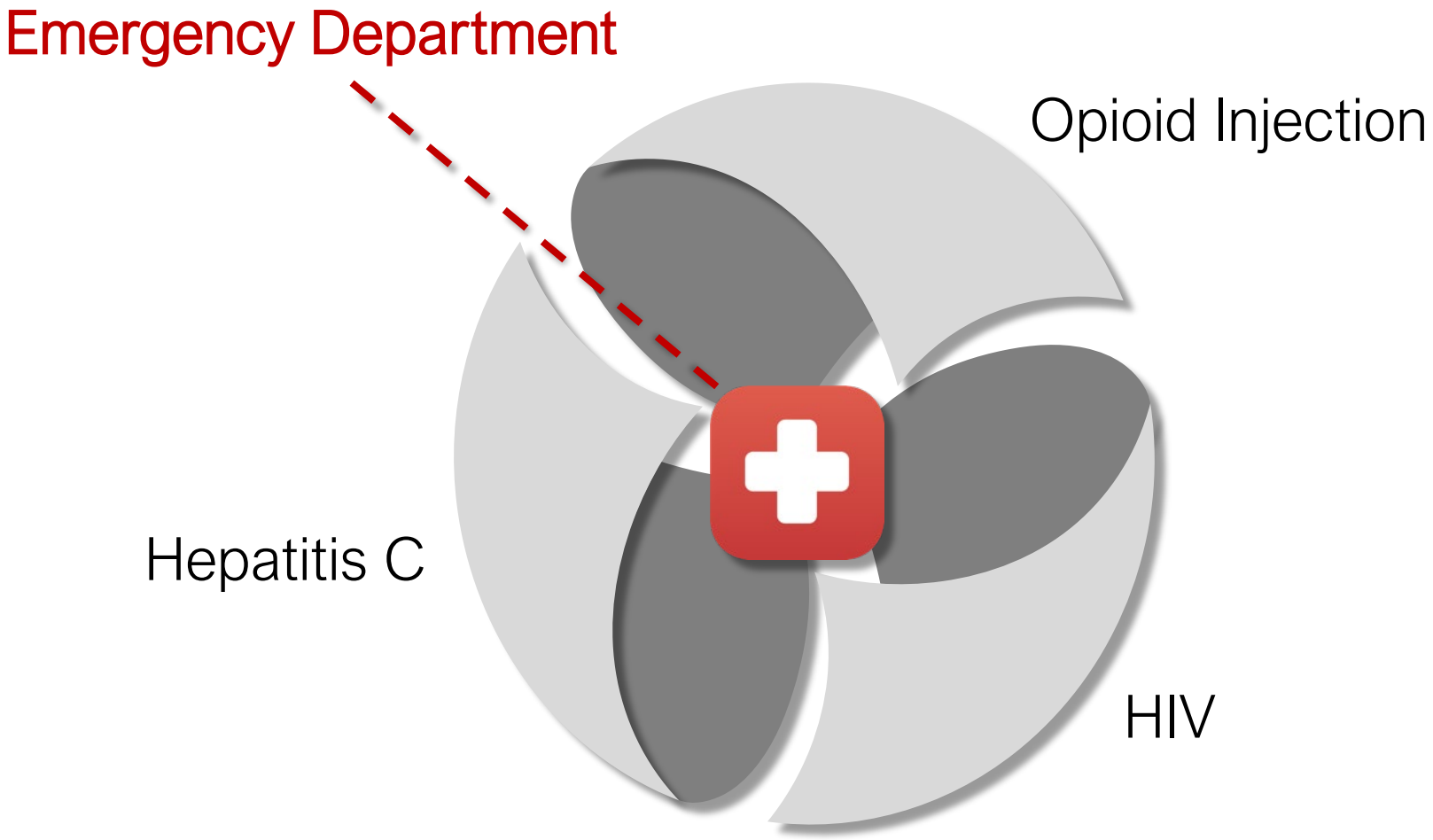
- Often less likely to have regular access to primary care preventative services
- Known to be disproportionately affected by public health priorities (i.e., HIV / HCV / Opioid Use Disorders)

ED Setting Challenges

Competing Priorities of the ED

- Time Constraints
- ED Crowding
- Privacy
- Medical / Surgical Emergencies

EMERGENCY DEPARTMENTS AS FRONT LINES TO MANY PUBLIC HEALTH EPIDEMICS



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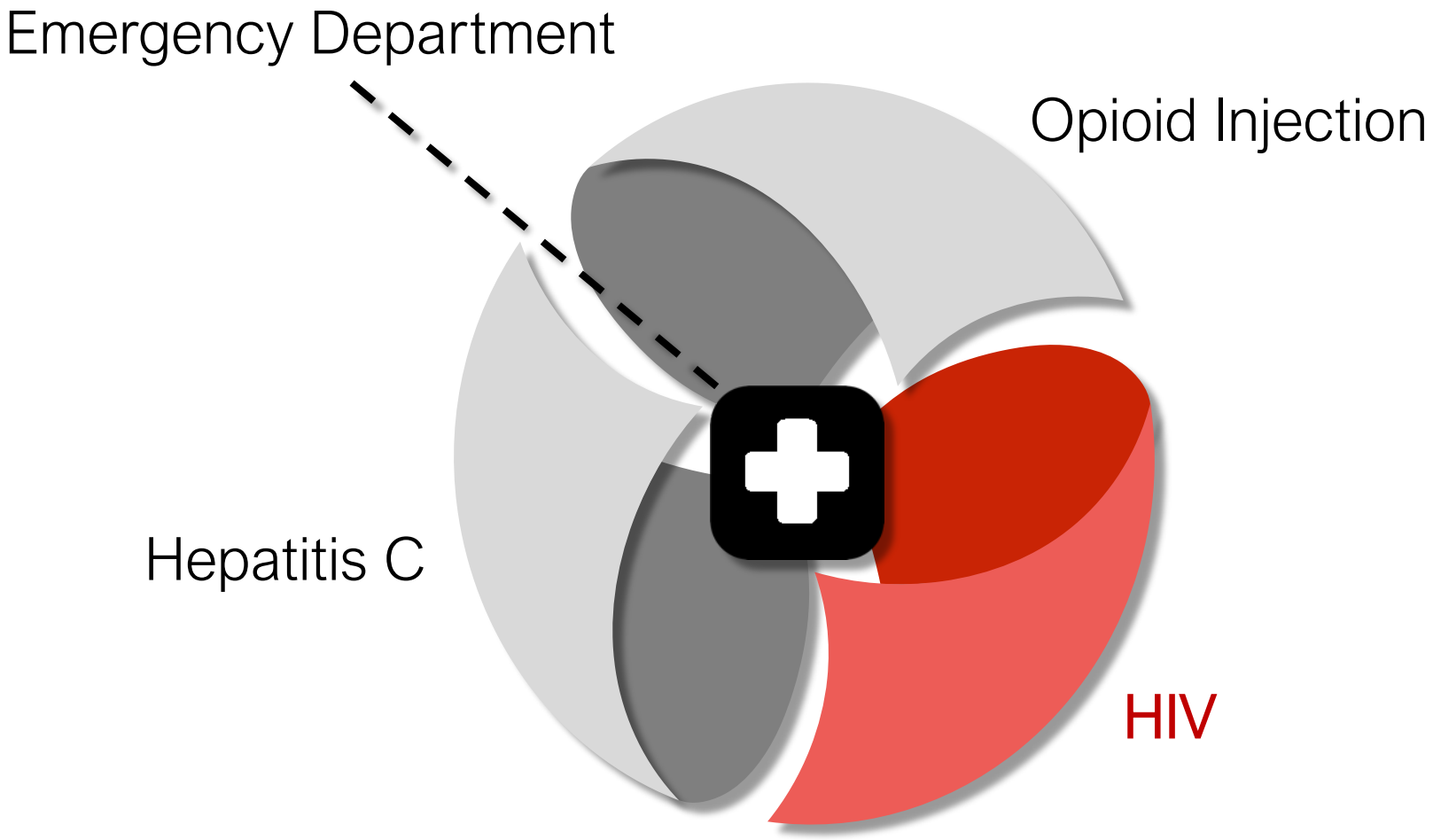
THE HIV EPIDEMIC



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HIV in Alabama (2015)

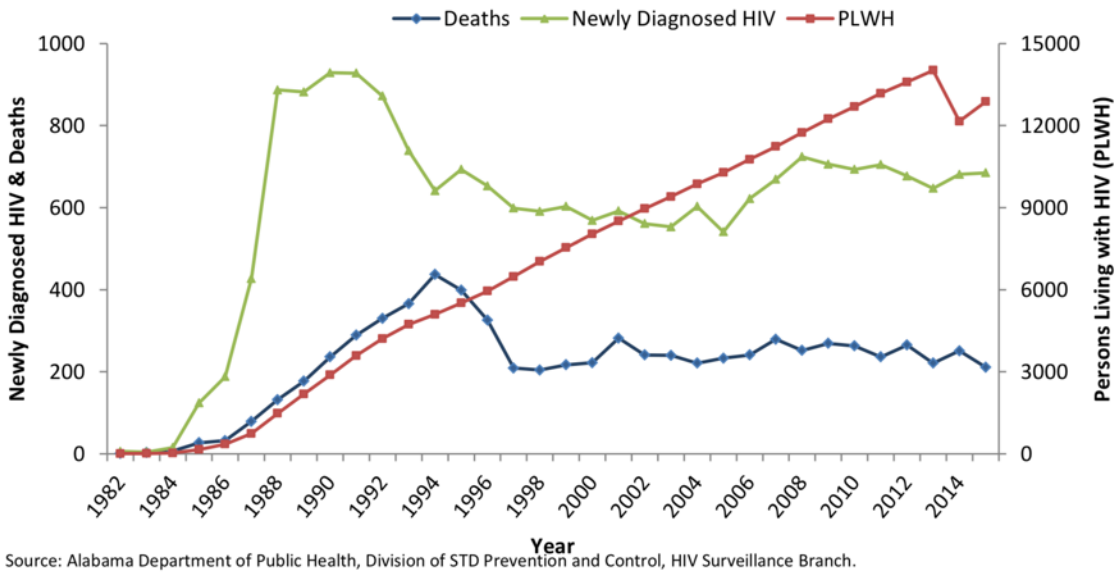
14,589 estimated infected

- 1/333 (0.3%) of Alabama population

12,874 known infected

- 5,814 (45%) AIDS

1/6 living with HIV unaware



Source: Alabama Department of Public Health, Division of STD Prevention and Control, HIV Surveillance Branch.
Note: PLWH include persons living with HIV infection (non-AIDS) and Stage 3 (AIDS) as of December 31st for the year reported.

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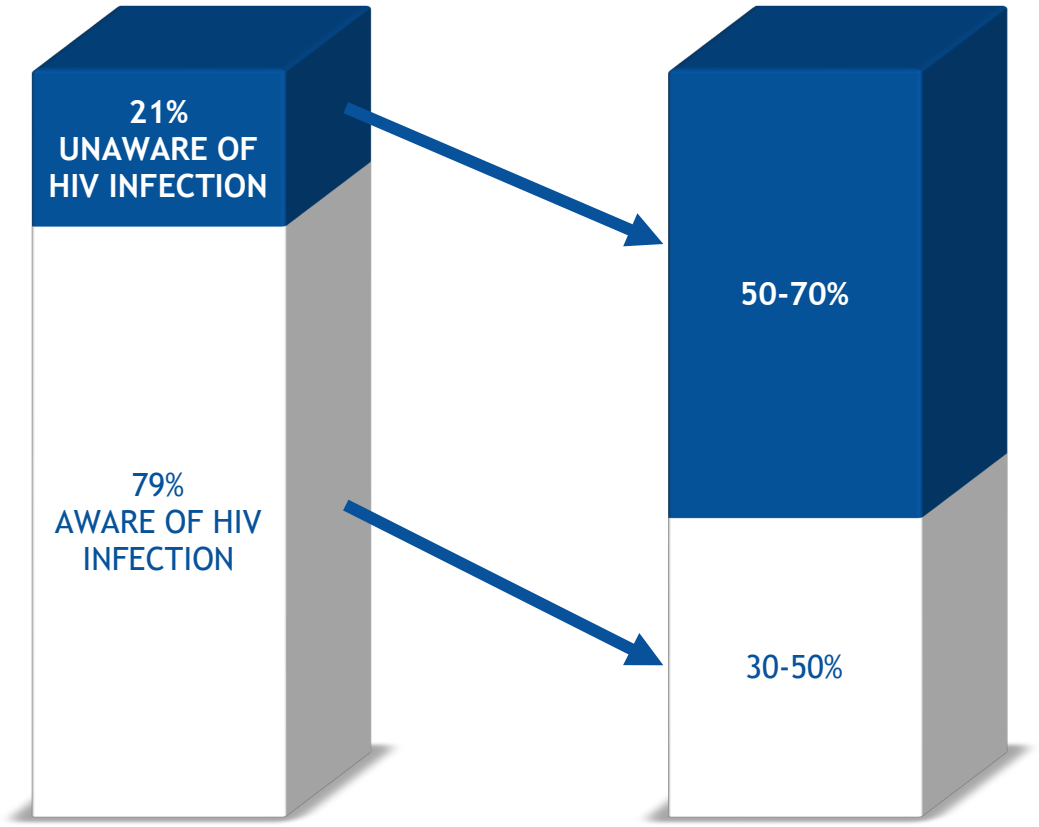
MAJORITY OF NEWLY IDENTIFIED HIV INFECTIONS ACQUIRED FROM A PERSON LIVING WITH HIV INFECTION UNAWARE OF THEIR INFECTION



Persons Living With HIV - 1.1 Million

New HIV Infections Per Year - ~56,000

AMA Jour of Ethics, Dec 2009, Vol 11, Num 12: 974-979

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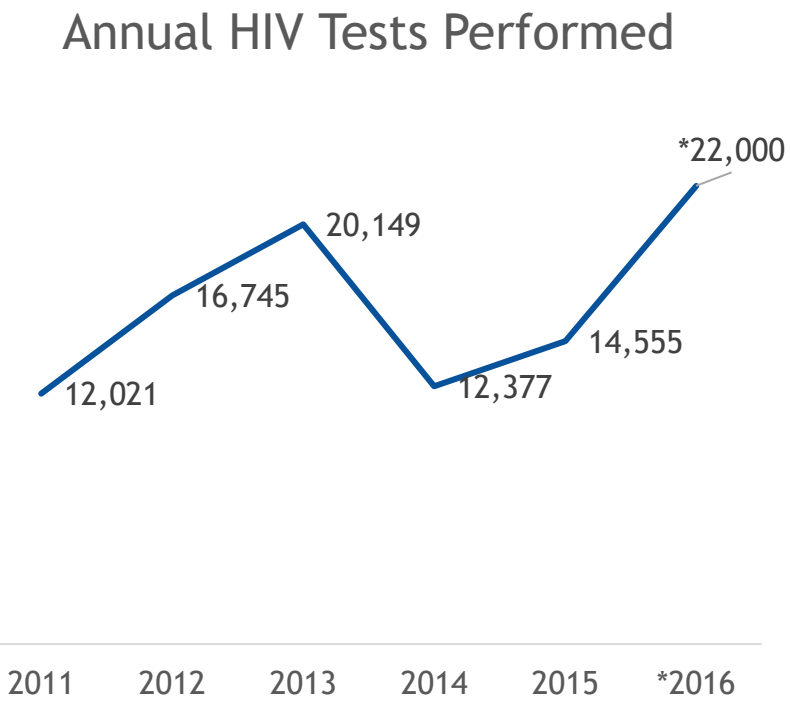
Before August 2011

>150,000 tests to date



Diagnostic HIV Testing Only
~480 HIV tests / year

Non-targeted, Opt-out HIV Testing
>20,000 HIV tests / year

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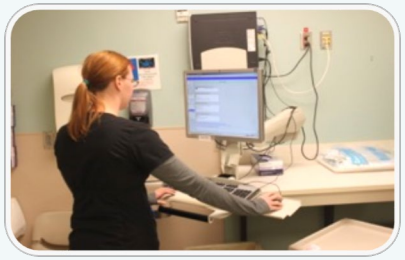
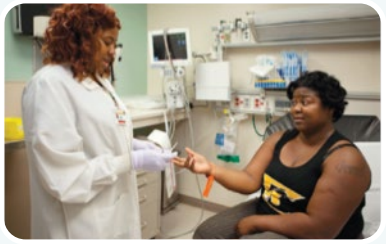
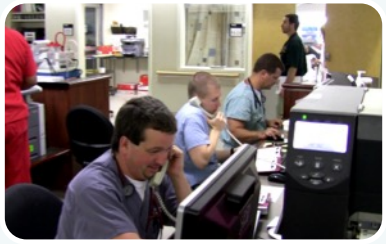
Integrated ED HIV Testing Process







Engagement

- Nursing
- EMR Required HIV Questionnaire
- Automated HIV orders

Testing

- Oraquick
- Abbott ARCHITECT Instrument

Counselling

- ED providers during ED visit

Referral

- Linkage coordinator

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Is the patient between the ages of 18 - 64?

- (●) Yes
- ( ) No (if no, then ineligible)

Have you ever been tested for HIV?

- (●) No
- ( ) Yes
- ( ) Unknown
- ( ) Unable to obtain (if unable, then ineligible)

When were you last tested?

- ( ) Less than 3 months (if yes, then ineligible)
- ( ) 3 months to 1 year
- ( ) 1 - 5 years
- ( ) Greater than 5 years

What was the result of the test?

- ( ) Negative
- ( ) Positive (if positive, then ineligible)
- ( ) Don't know/remember

If the patient is eligible for an HIV screening test inform the patient:

"We provide a free and confidential rapid HIV test for all emergency department patients. *Please let me know if you have any questions or concerns."*

Testing option

- (●) Acknowledged and eligible (Fires icon and CDC HIV Order)
- ( ) Ineligible at UED*
- ( ) Ineligible at Highlands ED**
- ( ) Declined (Patient must sign refusal document)

ED Nursing HIV/HCV Screening Questionnaire

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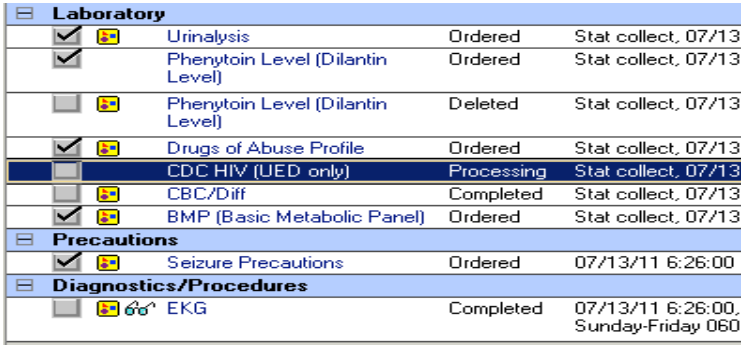
Cerner EMR Automation of HIV / HCV Testing Orders

- ☑ Acknowledged and eligible
- ☐ Declined
- ☐ Unable to obtain



Bed	Reg	Ac	Age	Sex	Chief Complaint	V	LOS	Tria	MD	Lab	L	Rad	RN	RN Reassess	BC	InPT	MD	RN	Res	Comment
POD4,22		III	40 y	F	EMS reports that famil		5:59							Request		R	MNH54	Ina	Obie	w814 -->hospitalist-
POD4,23		II	34 y	F	CP, abd pain since mid		1:13			9/0		1/0/0		Request					D-MO	need EKG
POD4,24		II	92 y	F	CP to right side that ra		5:30							Request	I		MNH54		Obie	-->GI surg
POD4,25		III	45 y	F	EMS called for sz per t		3:47						H	Request			MNH54		Obie	d/c after keppra
POD4,26																				
POD4,27		III	39 y	M	(amb) pt family said he		1:53			5/1			H	Request			MNH54	Tol	Obie	
POD4,28																				
POD4,29																				
POD4,30																				
POD4,31		II	64 y	M	Initial call to 911 for SC		2:44			9/7			H	Request	B		MNH54	Hilary	Obie	-->TH
POD4,32		III	48 y	M	pt states he was stand	S	10:11					7/7/6	H	Request			MNH54	Hilary	Obie	MR-->nsgy dispo
Checkout																				

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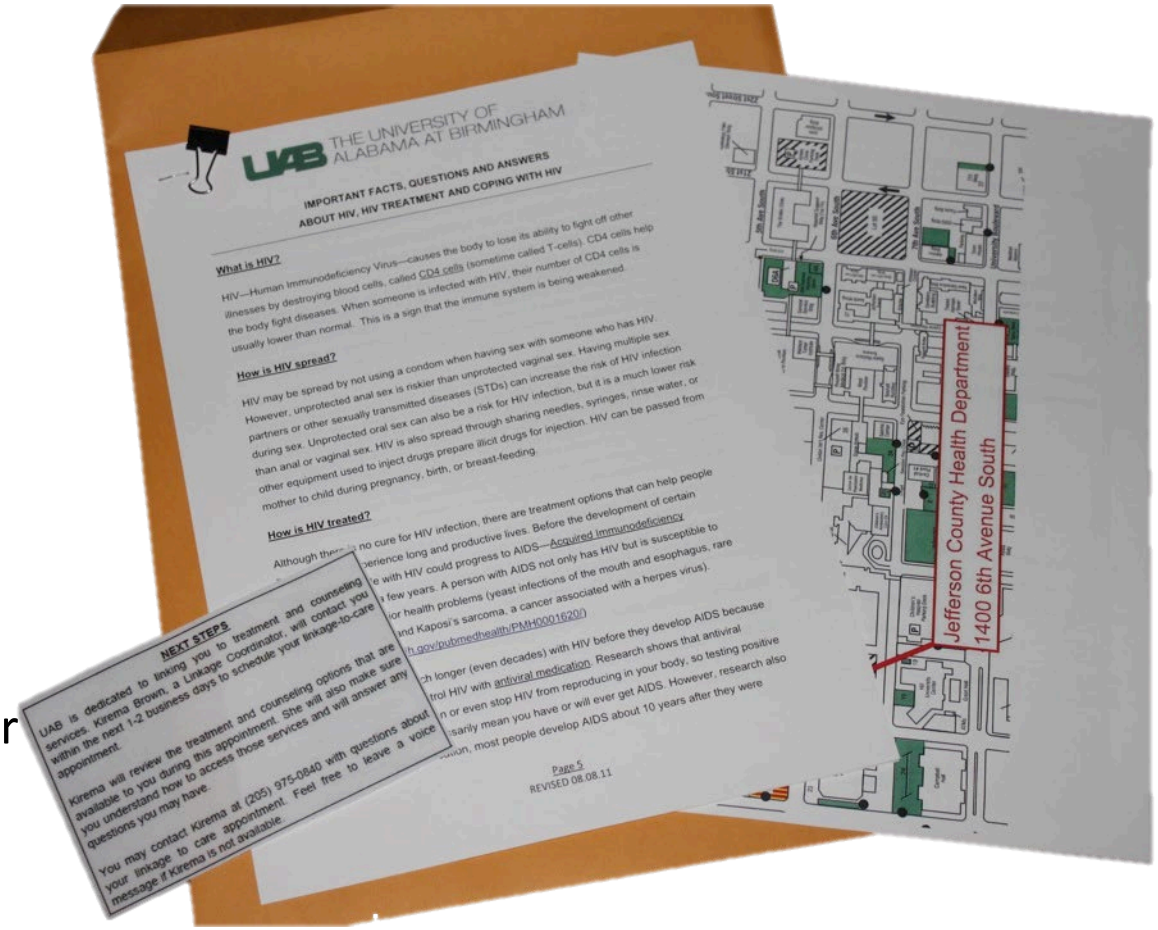
HIV / HCV Post-test Counselling

"Positive Packet"

- Checklist for Physicians
- Counseling pointers
- Handouts for patient
- Linkage to Care Coordination
  - Contact Information for Linkage to Care Coordinator



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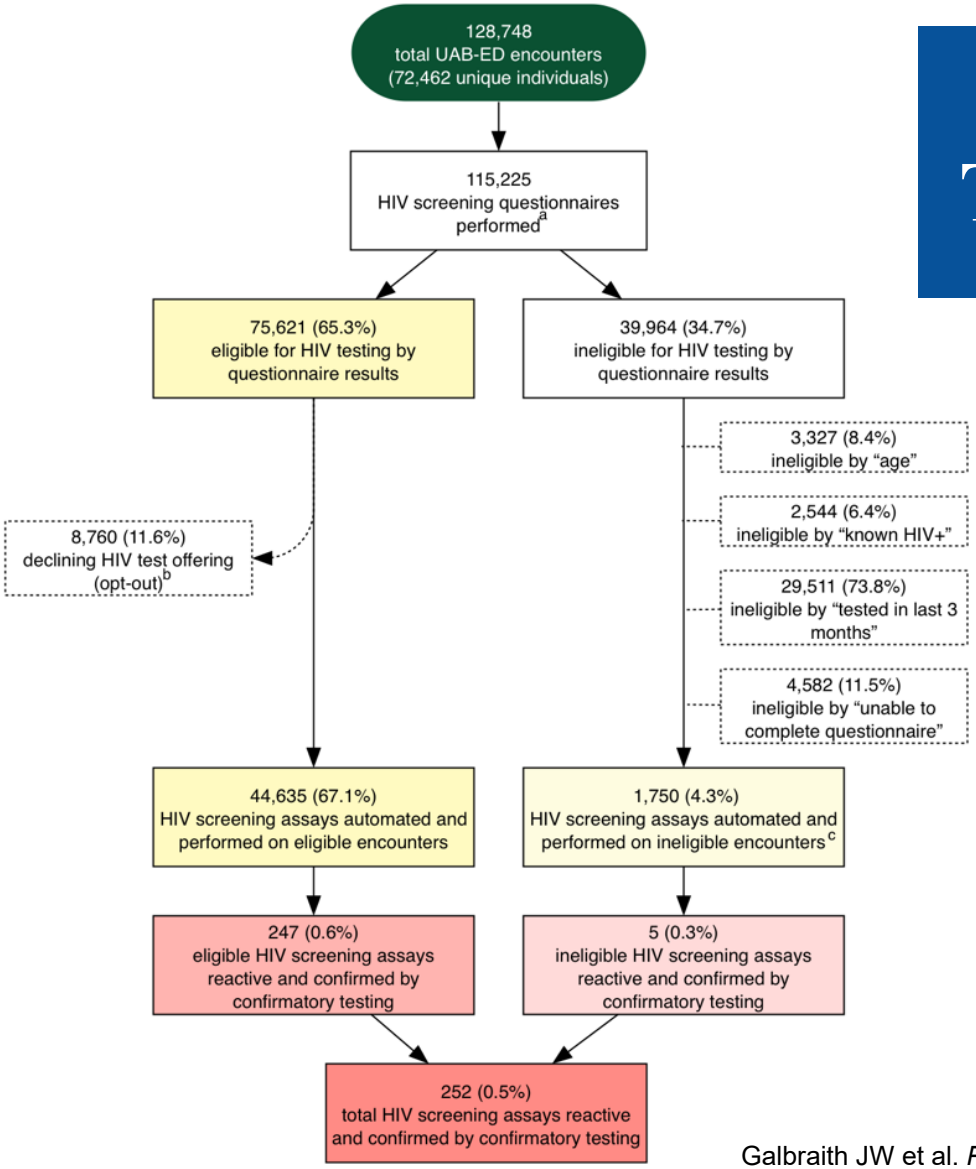
UAB-ED HIV Testing Results

9/21/11 – 12/31/13



Galbraith JW et al. *Public Health Rep*. 2016;131 Suppl 1:96-106.

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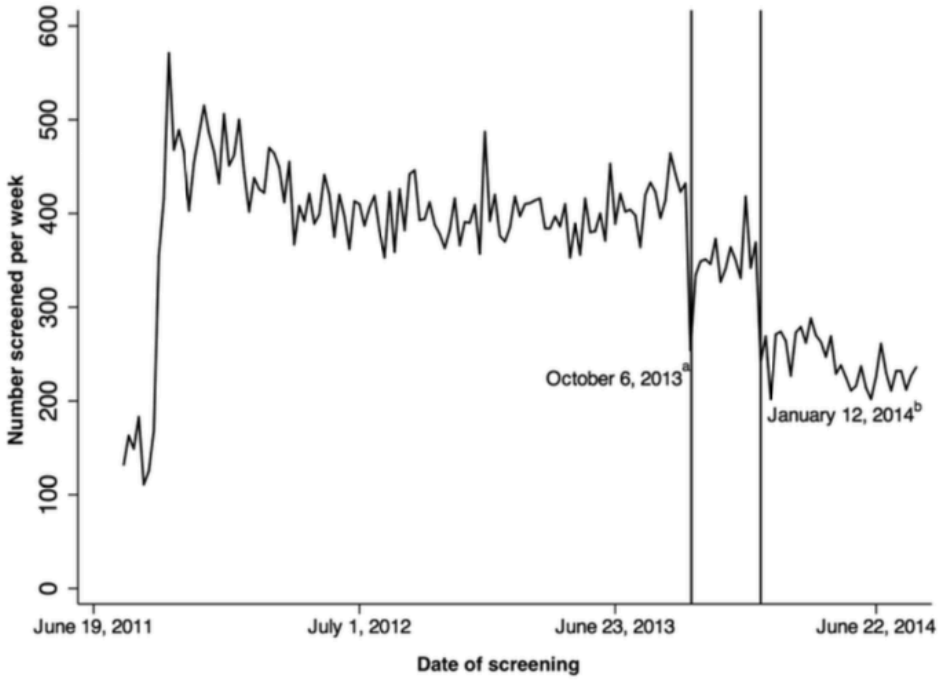
UAB-ED HIV Testing (8/9/2011 - 1/23/2018)

Total Tests
116,674

Total HIV+ Confirmed
583 (0.5%)

*76% Linked to Care & Attend 1st HIV Provider Appt.

Figure 5. Impact of HIV screening programmatic changes implementing fourth-generation instrument-based testing and displacement of HIV test offering from nursing triage on weekly volume of HIV tests performed, University of Alabama at Birmingham Emergency Department, September 9, 2011, through June 30, 2014



1. Galbraith JW, Willig JH, Rodgers JB, et al. Evolution and Escalation of an Emergency Department Routine, Opt-out HIV Screening and Linkage-to-Care Program. *Public Health Rep*. 2016;131 Suppl 1:96-106.

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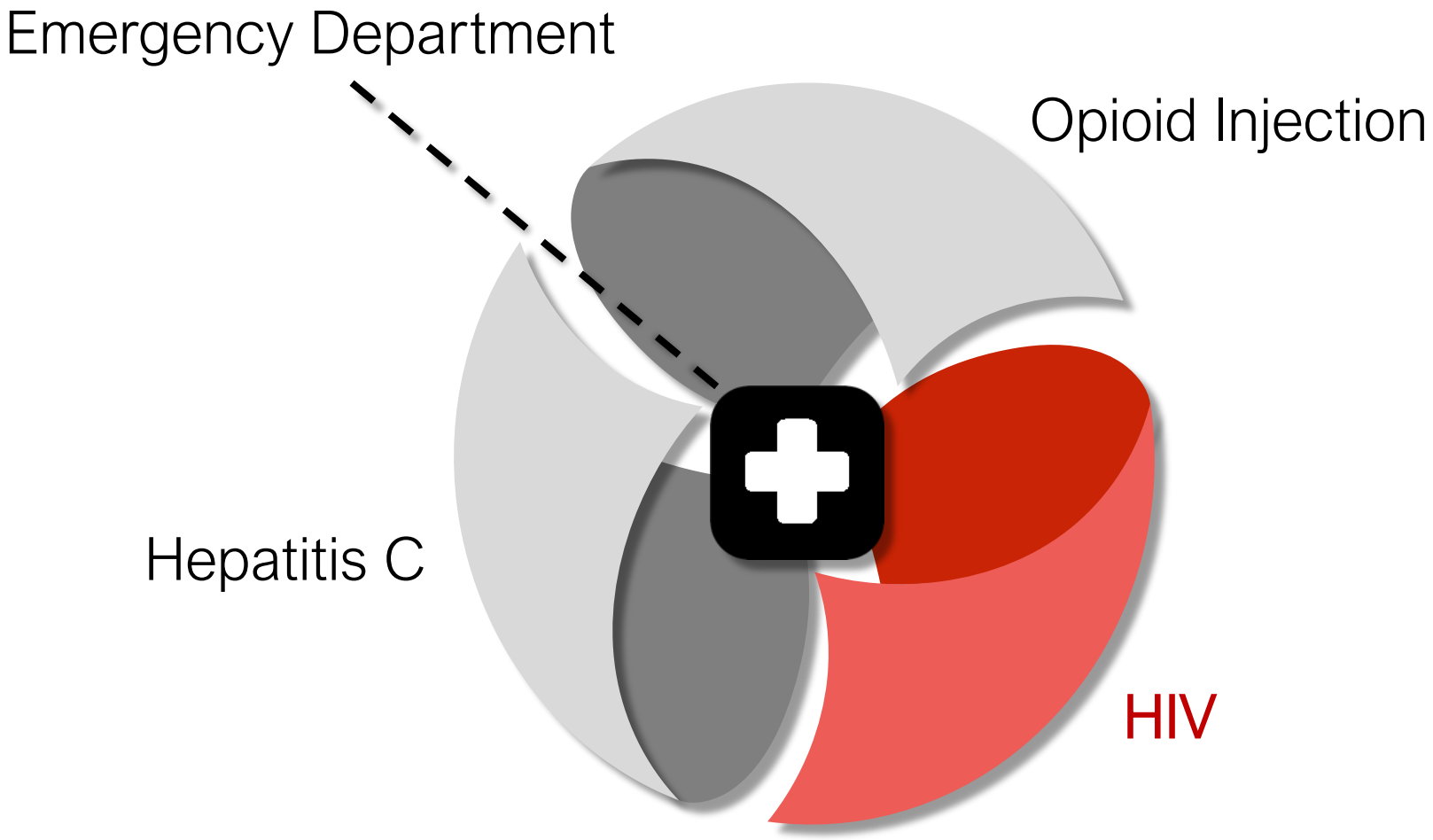
THE HIV EPIDEMIC



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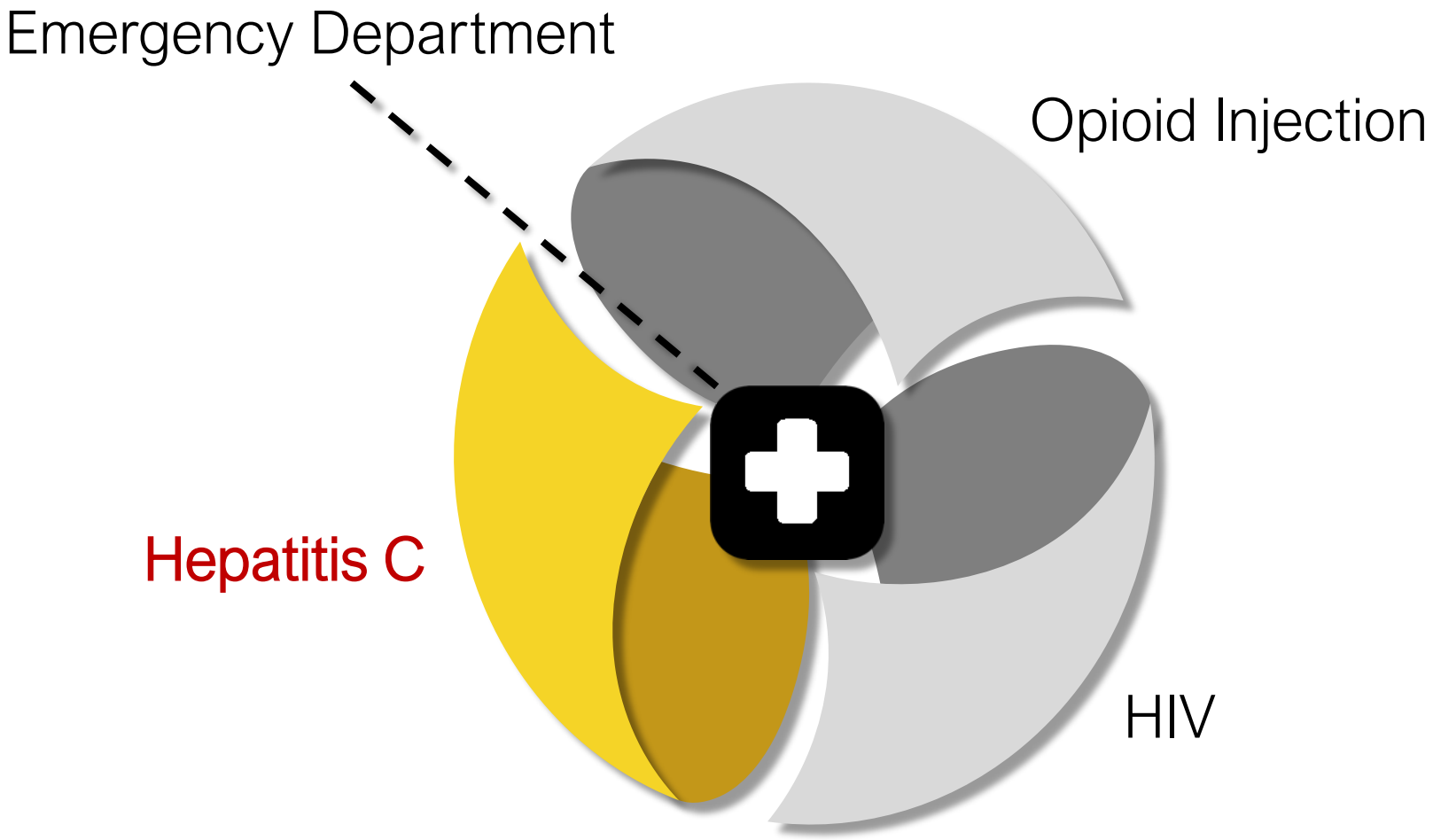
HEPATITIS C EPIDEMIC



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Hepatitis C Virus (HCV) Infection

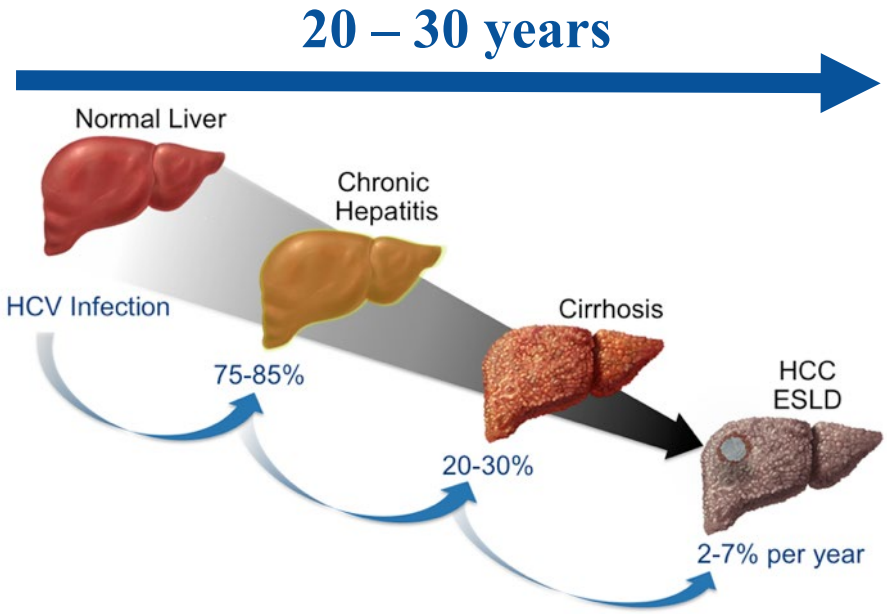
What it is?

- Contagious infectious disease caused by an RNA virus

How is it acquired/transmitted?

- **Most commonly** by direct contact with blood from an infected person
- Pre ~1990s: Primarily via **blood transfusions or organ transplantation**
- Currently: Primarily via **sharing needles/equipment** (intravenous drug users)
- Other routes (less common): Sexual contacts, Maternal-fetal, Sharing personal items (e.g. razor blades), Tattooing

HCV Morbidity



http://www.mobieg.co.za/articles/stds/hepatits
http://www.hepatitisc.uw.edu/go/evaluation-staging-monitoring/natural-history/core-concept/all

Acute Hepatitis C Virus infection:

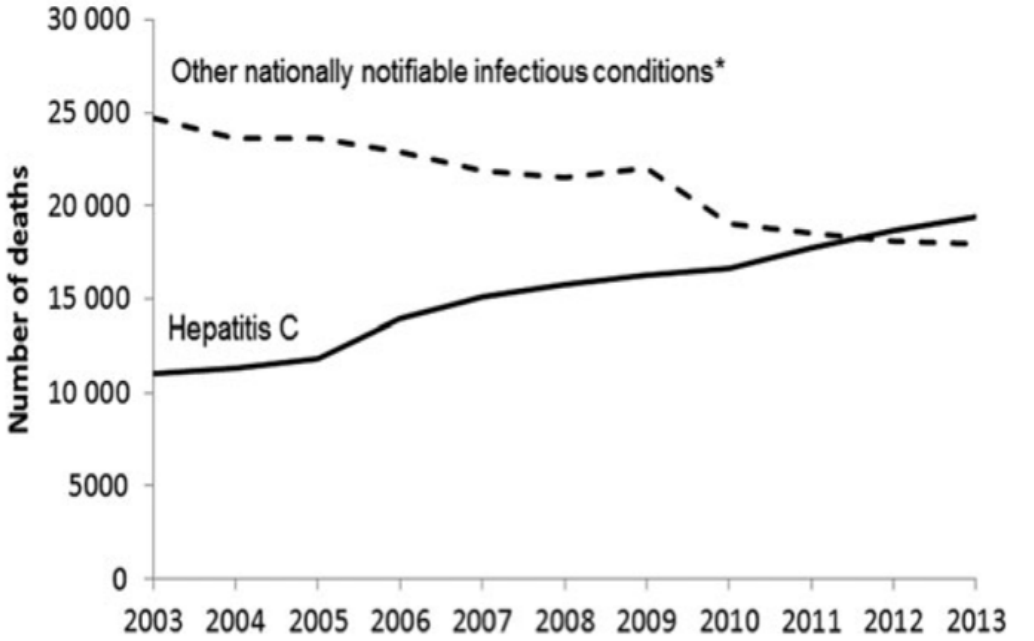
- Short-term illness ≤ 6 months of exposure
- Acute leads to chronic infection for most people (75%)

Chronic Hepatitis C Virus infection:

- Long-term illness which can last a lifetime
- Potential for serious liver problems, including cirrhosis (scarring of the liver) liver cancer and death

HCV Mortality

Deaths due to HCV exceeds those attributable to <u>60 other infectious diseases combined including HIV and tuberculosis</u>



Ly KN, et al. Rising Mortality Associated With Hepatitis C Virus in the United States, 2003-2013. Clinical Infectious Diseases. 2016;62(10):1287-1288.

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HCV Cure

The good news

- Antiviral medicines can CURE >90% of persons with hepatitis C reducing risk of death from liver cancer and cirrhosis

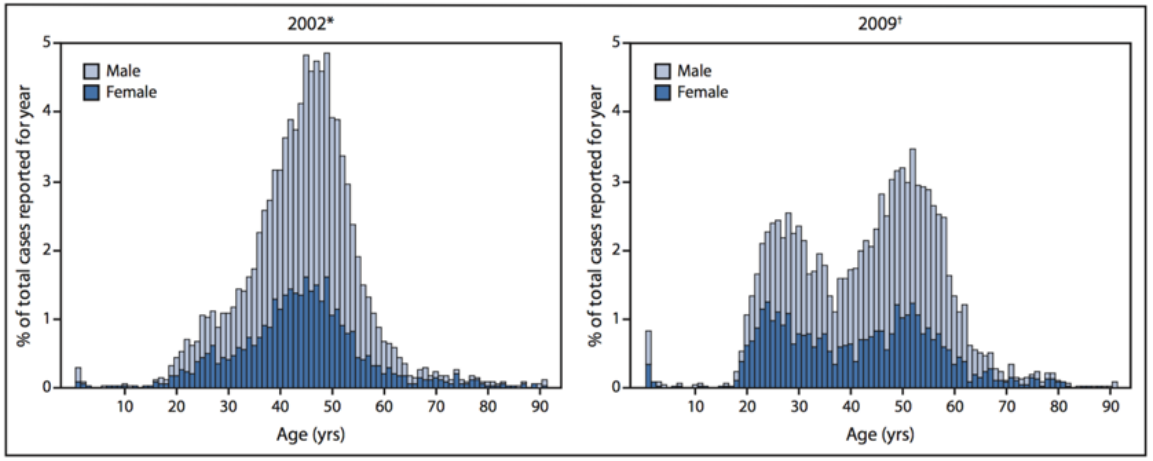
The challenge

- Typically indolent (clinically silent)
- Optimal systems for screening, linkage to care and treatment remain under-developed
- Resource constraints

Evolving Epidemiology of HCV Infection in the US

- 3.5 million with chronic HCV
- Persons born between 1945-1965 account for 75% of infections
- Rising incidence among young (age <30) white IDUs

FIGURE 2. Age distribution of newly reported confirmed cases of hepatitis C virus infection — Massachusetts, 2002 and 2009



* N = 6,281; excludes 35 cases with missing age or sex information.
† N = 3,904; excludes 346 cases with missing age or sex information.

Centers for Disease Control and Prevention (CDC). Hepatitis C virus infection among adolescents and young adults: Massachusetts, 2002-2009. *MMWR Morbidity and mortality weekly report*. 2011;60(17):537-541.

Photo source: Bob Sheppard, UAB Media Relations

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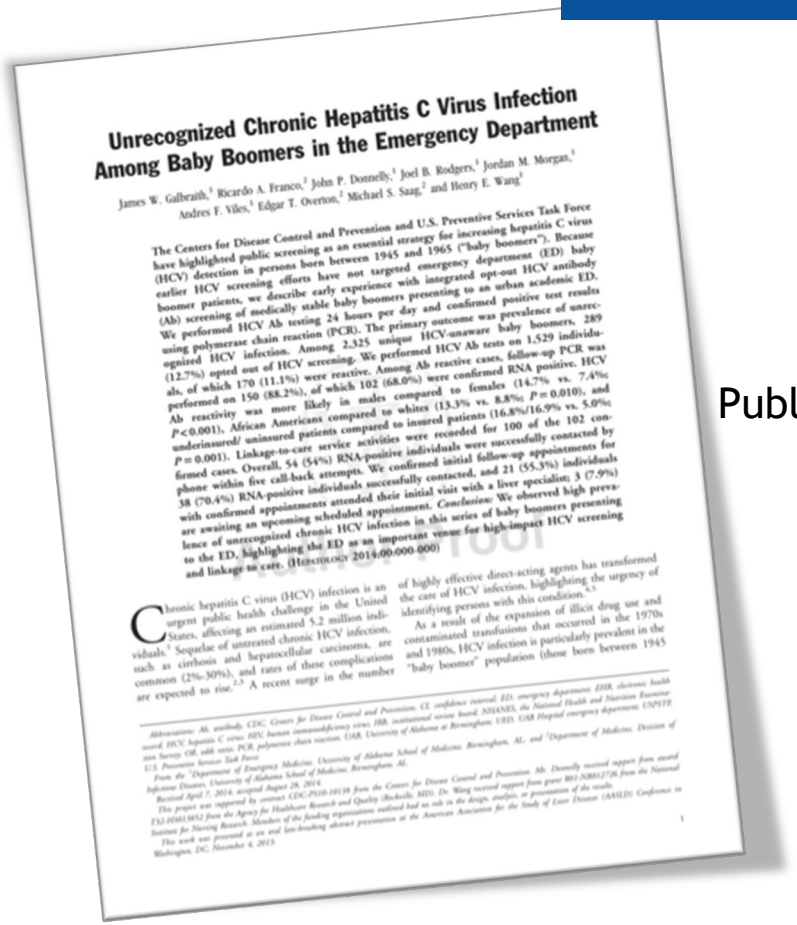
UAB-ED Targeted HCV Testing



Unrecognized Chronic Hepatitis C Virus Infection Among Baby Boomers in the Emergency Department

James W. Galbraith,[1] Ricardo A. Franco,[2] John P. Donnelly,[1] Joel B. Rodgers,[1] Jordan M. Morgan,[1] Andres F. Viles,[1] Edgar T. Overton,[2] Michael S. Saag,[2] and Henry E. Wang[1]

The Centers for Disease Control and Prevention and U.S. Preventive Services Task Force have highlighted public screening as an essential strategy for increasing hepatitis C virus (HCV) detection in persons born between 1945 and 1965 ("baby boomers"). Because earlier HCV screening efforts have not targeted emergency department (ED) baby boomer patients, we describe early experience with integrated opt-out HCV antibody (Ab) screening of medically stable baby boomers presenting to an urban academic ED. We performed HCV Ab testing 24 hours per day and confirmed positive test results using polymerase chain reaction (PCR). The primary outcome was prevalence of unrecognized HCV infection. Among 2,325 unique HCV-unaware baby boomers, 289 (12.7%) opted out of HCV screening. We performed HCV Ab tests on 1,529 individuals, of which 170 (11.1%) were reactive. Among Ab reactive cases, follow-up PCR was performed on 150 (88.2%), of which 102 (68.0%) were confirmed RNA positive. HCV Ab reactivity was more likely in males compared to females (14.7% vs. 7.4%; $P < 0.001$), African Americans compared to whites (13.3% vs. 8.8%; $P = 0.010$), and underinsured/ uninsured patients compared to insured patients (16.8%/16.9% vs. 5.0%; $P = 0.001$). Linkage-to-care service activities were recorded for 100 of the 102 confirmed cases. Overall, 54 (54%) RNA-positive individuals were successfully contacted by phone within five call-back attempts. We confirmed initial follow-up appointments for 38 (70.4%) RNA-positive individuals successfully contacted, and 21 (55.3%) individuals with confirmed appointments attended their initial visit with a liver specialist; 3 (7.9%) are awaiting an upcoming scheduled appointment. *Conclusion:* We observed high prevalence of unrecognized chronic HCV infection in this series of baby boomers presenting to the ED, highlighting the ED as an important venue for high-impact HCV screening and linkage to care. (HEPATOLOGY 2014;00:000-000)

Chronic hepatitis C virus (HCV) infection is an urgent public health challenge in the United States, affecting an estimated 5.2 million individuals.[1] Sequelae of untreated chronic HCV infection, such as cirrhosis and hepatocellular carcinoma, are common (2%-30%), and rates of these complications are expected to rise.[2,3] A recent surge in the number of highly effective direct-acting agents has transformed the care of HCV infection, highlighting the urgency of identifying persons with this condition.[4,5]

As a result of the expansion of illicit drug use and contaminated transfusions that occurred in the 1970s and 1980s, HCV infection is particularly prevalent in the "baby boomer" population (those born between 1945

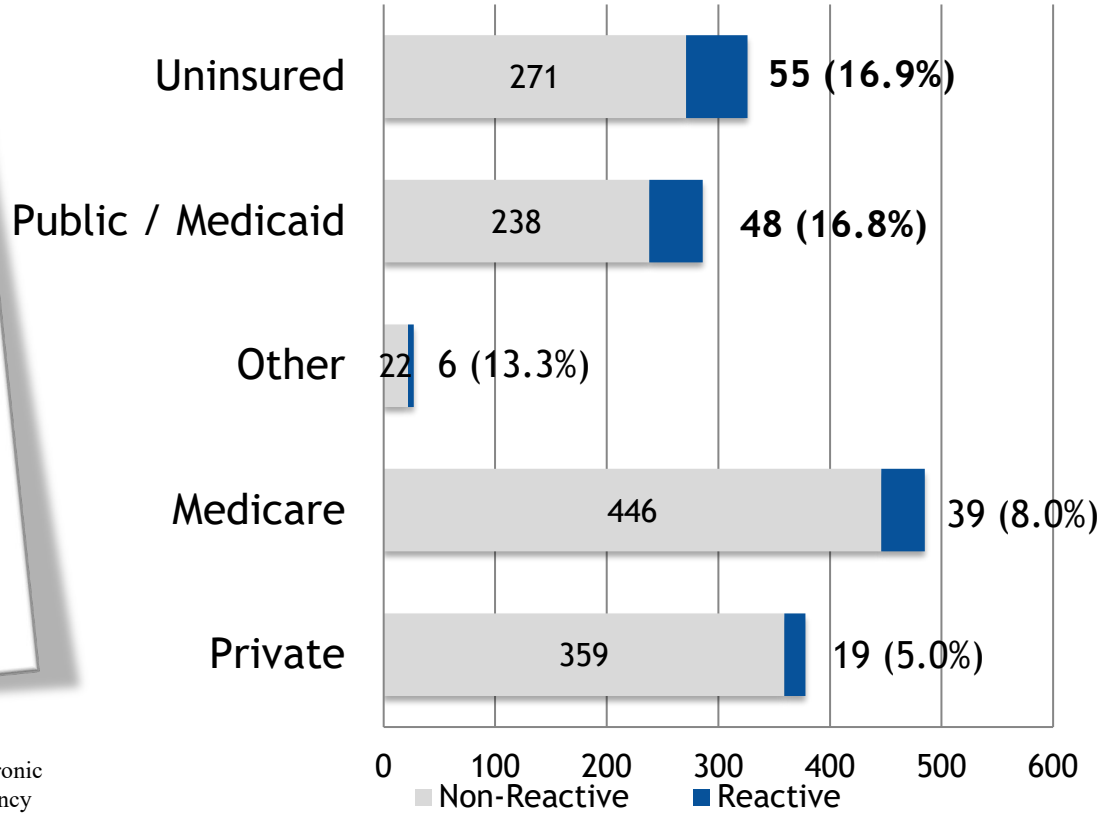
Abbreviations: Ab, antibody; CDC, Centers for Disease Control and Prevention; CI, confidence interval; ED, emergency department; EHR, electronic health record; HCV, hepatitis C virus; HIV, human immunodeficiency virus; IRB, institutional review board; NHANES, the National Health and Nutrition Examination Survey; OR, odds ratio; PCR, polymerase chain reaction; UAB, University of Alabama at Birmingham; USPSTF, U.S. Preventive Services Task Force.

From the [1]Department of Emergency Medicine, University of Alabama School of Medicine, Birmingham, AL; and [2]Department of Medicine, Division of Infectious Diseases, University of Alabama School of Medicine, Birmingham, AL.

Received April 7, 2014; accepted August 28, 2014.

This project was supported by contract CDC-PS10-1013S from the Centers for Disease Control and Prevention, Mr. Donnelly received support from award T32-HS013852 from the Agency for Healthcare Research and Quality (Rockville, MD). Dr. Wang received support from grant R01-NR012726 from the National Institute for Nursing Research. Members of the funding organizations outlined had no role in the design, analysis, or presentation of the results.

This work was presented as an oral late-breaking abstract presentation at the American Association for the Study of Liver Diseases (AASLD) Conference in Washington, DC, November 4, 2013.



Galbraith JW, Franco RA, Donnelly JP, et al. Unrecognized chronic hepatitis C virus infection among baby boomers in the emergency department. *Hepatology*. 2014: Sep 1. doi: 10.1002/hep.27410. [Epub ahead of print]

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Pragmatic Targeted Screening Missed the Mark

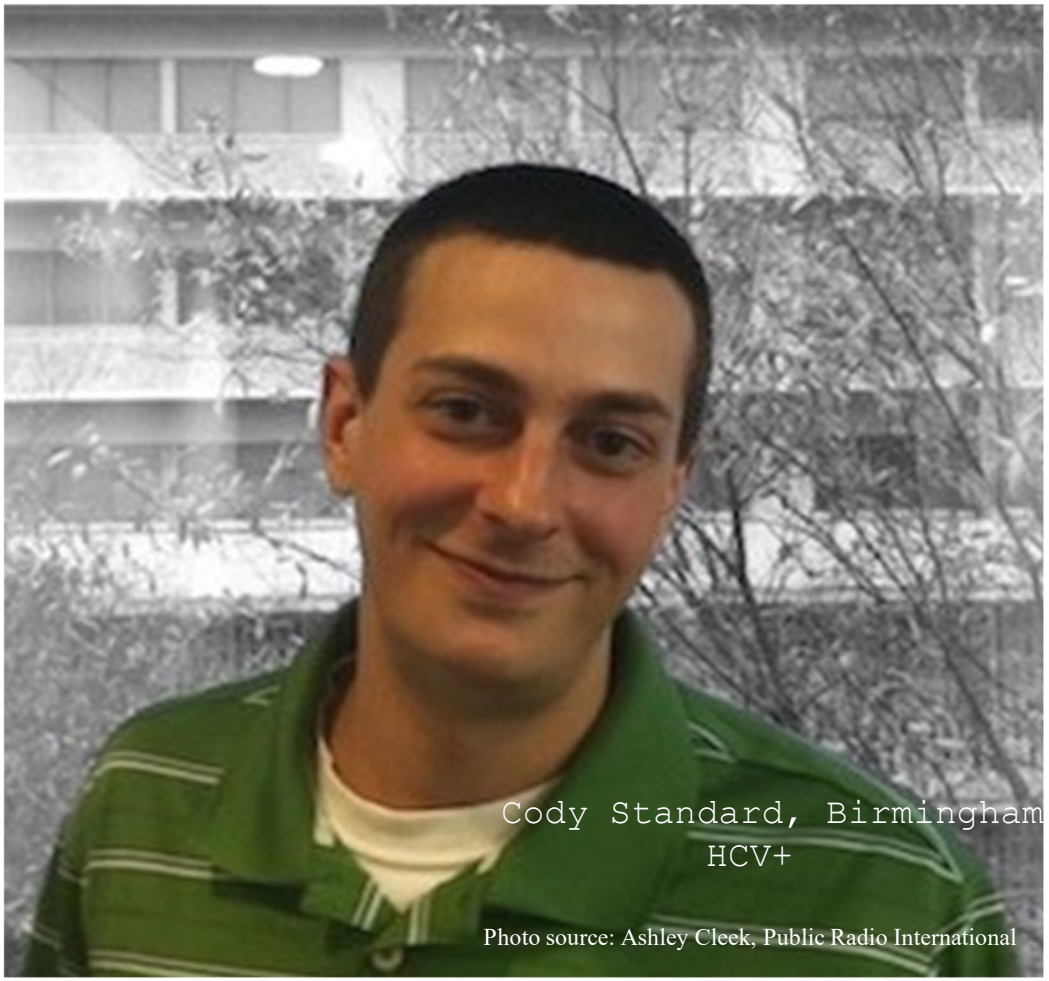
Identifying non-baby boomer
gets (PWID) is challenging

- 85% of persons tested were baby boomers or older at UAB
- UAB tests for IDU risk accounted for <5% of all test orders

gma barriers

- Provider - discomfort asking IDU questions, hard to operationalize asking, fear of affecting rapport with patient
- Patient – recall bias, privacy, concern of affecting rapport with provider

"I decide to walk down the street and find a needle laying on the ground, and of course I find them… I've sat on the side of the road, and pulled up some water out of my water bottle and shot the dope right there on the side of the road"



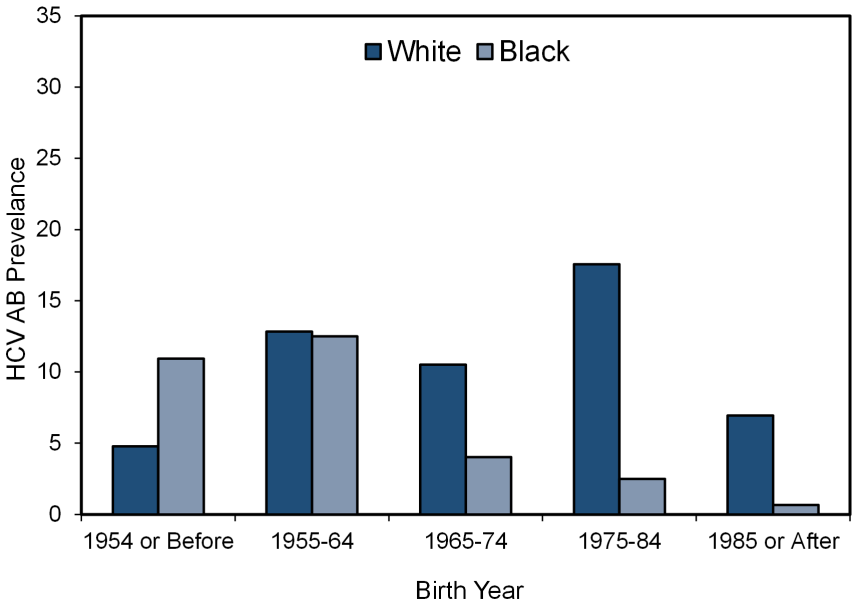
UAB Emergency Department Universal HCV Testing

Sept 15, 2015 to April 10, 2017 (*Unpublished data*)

	No. Tested, n	HCV-Ab +, n (%)
Born 1945-1965		
Total	9,665	1,102 **(10.5)**
Race		
White	4,704	448 **(9.5)**
Black	3,450	464 **(11.9)**

	No. Tested, n	HCV-Ab +, n (%)
Born After 1965		
Total	16,397	1,215 **(7.4)**
Race		
White	7,083	970 **(13.7)**
Black	2,063	207 **(2.7)**

Total tested: 27,063
HCV-Ab+: 2,275 (8.4%)



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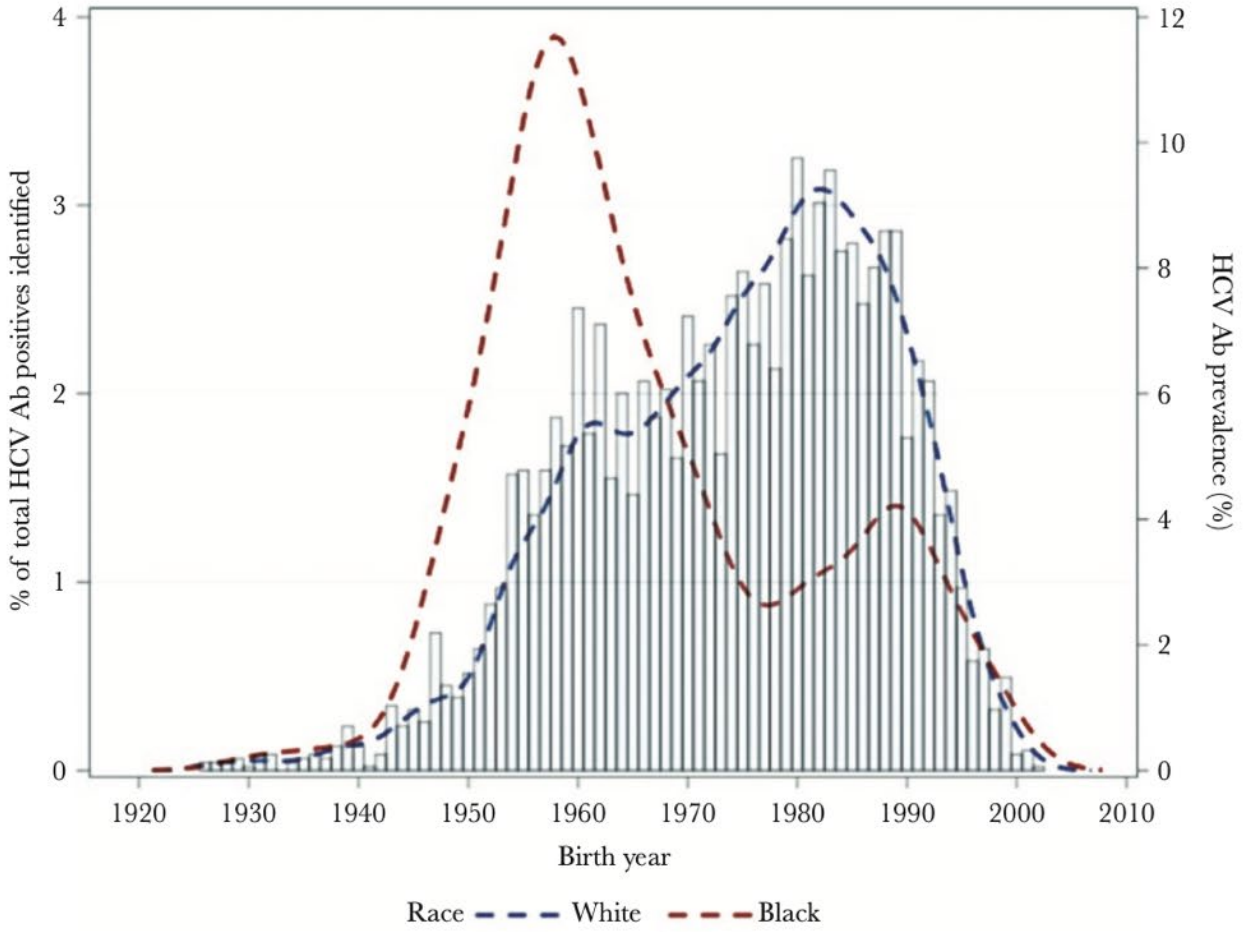


Figure 1. Chronic hepatitis C virus (HCV) birth year distribution and prevalence by birth year and race. Gray bars indicate % of total; dashed lines indicate kernel density curve of HCV antibody (Ab) prevalence by birth year and race (red = Black; blue = White).

High Prevalence of Hepatitis C Infection Among Adult Patients at Four Urban Emergency Departments — Birmingham, Oakland, Baltimore, and Boston, 2015–2017

Centers for Disease Control and Prevention MMWR Weekly / Vol. 69 / No. 19

Weekly / May 15, 2020 / 69(19);569–574

James W. Galbraith, MD[1]; Erik S. Anderson, MD[2]; Yu-Hsiang Hsieh, PhD[3]; Ricardo A. Franco, MD[4]; John P. Donnelly, PhD[5,6]; Joel B. Rodgers, MA[7]; Elissa M. Schechter-Perkins, MD[8]; William W. Thompson, PhD[9]; Noele P. Nelson, MD, PhD[9]; Richard E. Rothman, MD, PhD[3]; Douglas A.E. White, MD[2] (View author affiliations)

	University of Alabama at Birmingham Birmingham, Alabama	Highland Hospital, Oakland, California	Johns Hopkins Baltimore, Maryland	Boston University Medical Center, Boston, Massachusetts	All sites
Unique ED visitors	18,916	18,272	13,069	26,870	77,127
Patients eligible for hepatitis C testing	13,999	9,585	7,639	12,284	43,507†
Anti-HCV tests performed	5,973	2,900	1,638	3,741	14,252§
Total anti-HCV positive tests (%)	**459 (7.7)**	**166 (5.7)**	**120 (7.3)**	**570 (15.2)**	**1,315 (9.2)**
Adults born 1945–1965, positive test results for anti-HCV/anti-HCV tests (%)	232/2,205 (10.5)	98/713 (13.7)	69/437 (15.8)	288/1,585 (18.2)	687/4,940 (13.9)
Born after 1965, positive test results for anti-HCV/anti-HCV tests (%)	227/3,768 (6.0)	68/2,187 (3.1)	51/1,201 (4.2%)	282/2,156 (13.1)	628/9,312 (6.7)
Total HCV RNA tests performed (%)	398 (86.9)	125 (75.3)	38 (31.6)	557 (97.7)	1,118 (85)
Total current HCV infections (positive test results for HCV RNA) (%)	252 (63.3)	79 (63.2)	27 (71.1)	335 (60.1)	693 (62.0)
Estimated prevalence of positive results for HCV RNA (%)	4.9	3.6	5.2	9.1	5.7
State and national estimated prevalence of positive results for HCV RNA, %	Alabama, 0.85	California, 1.25	Maryland, 1.00	Massachusetts, 0.85	National, 0.93

UAB-ED HCV Testing
(Sept 2013 – March 2018)

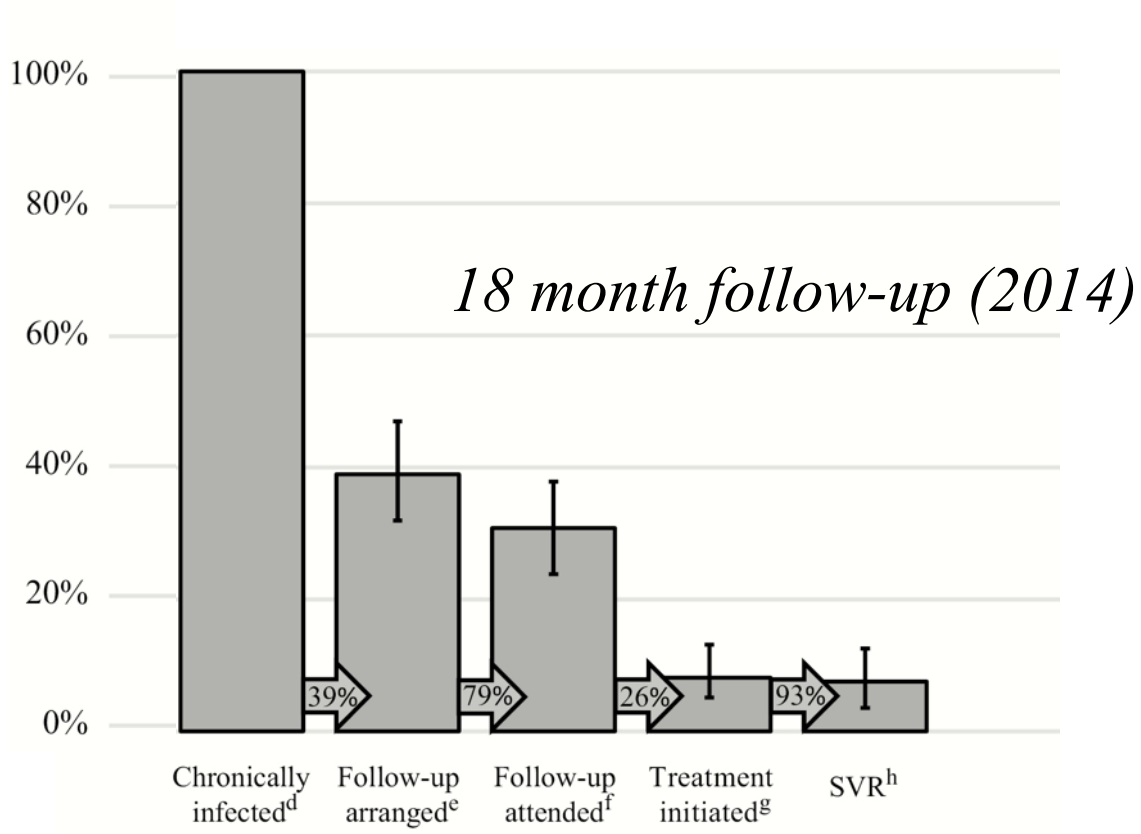
Unique Individuals Tested 67,400

HCV Ab+

6,461

HCV RNA+

4,070



Anderson ES, Galbraith JW, Deering LJ, et al. Continuum of Care for Hepatitis C Virus Among Patients Diagnosed in the Emergency Department Setting. *Clinical Infectious Diseases*. 2017;64(11):1540-1546.

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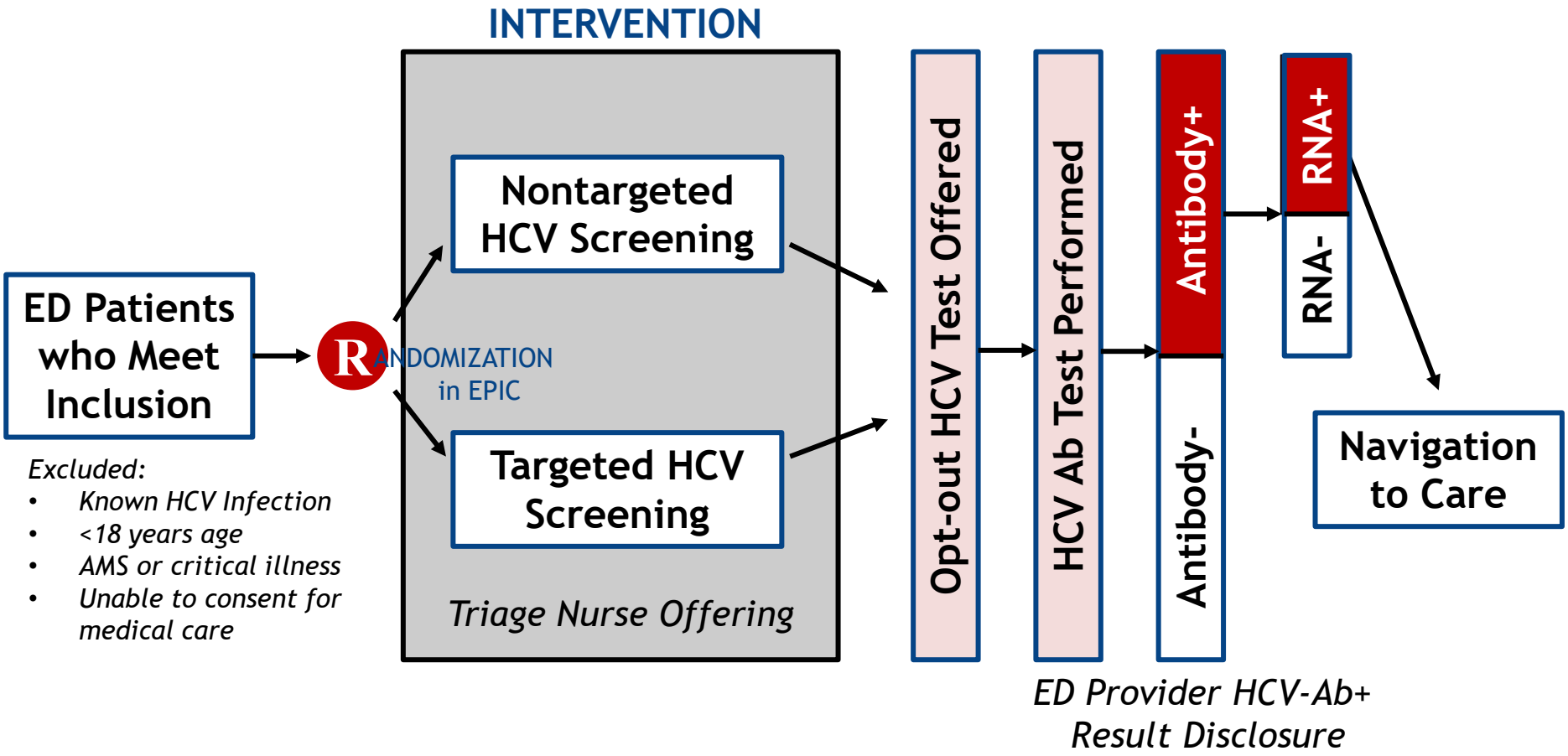
UAB LTC Manuscript

Table 2
Multivariate predictors of linkage-to-care failure among patients with chronic HCV infection (n = 1671).

Variable	p-value	OR	OR Confidence Interval (95%)
Age at screening	<0.001	0.96	0.95–0.97
White race	<0.001	1.65	1.23–2.22
Homelessness	0.005	1.91	1.19–3.08
Substance use	<0.001	1.77	1.34–2.34
Comorbid psychiatric disorder	<0.001	2.16	1.59–2.94
Competing comorbidities	<0.001	0.57	0.41–0.78
HIV co-infection	0.002	0.11	0.03–0.46

DETECT Trial Overview



Sites: UMMC, Johns Hopkins, Denver Health

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215 new HIV dx (as of 3/2017)

- related to the injection of the drug Opana

Scott County, Indiana (pop. 24,000)
1.2% HIV prevalence
Austin City, Indiana (pop 4,200)
5.5% HIV prevalence (80% of cases)

HIV Outbreak in Scott Co. (2015)

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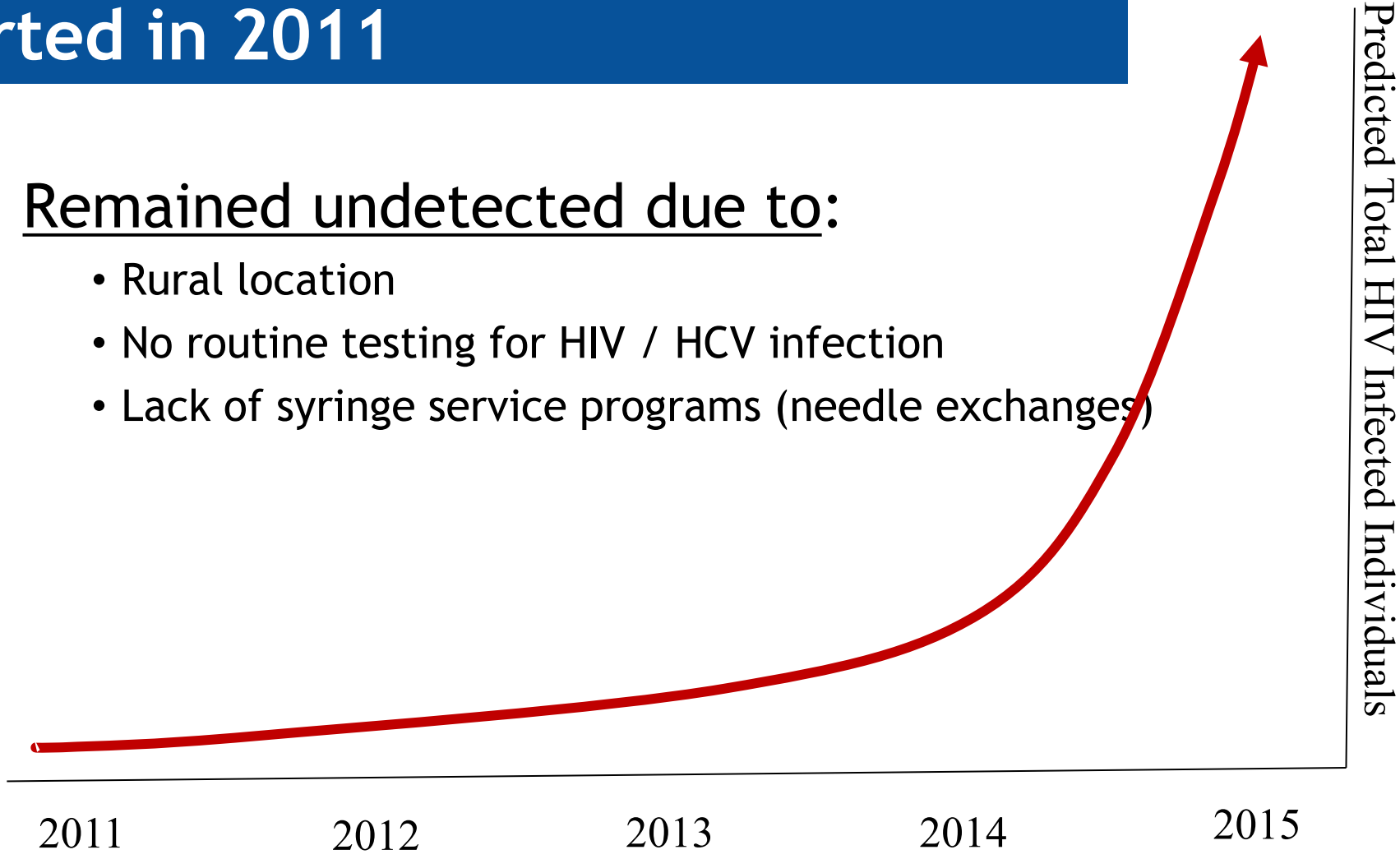
Scott Co. HIV Outbreak Likely Started in 2011

Remained undetected due to:

- Rural location
- No routine testing for HIV / HCV infection
- Lack of syringe service programs (needle exchanges)



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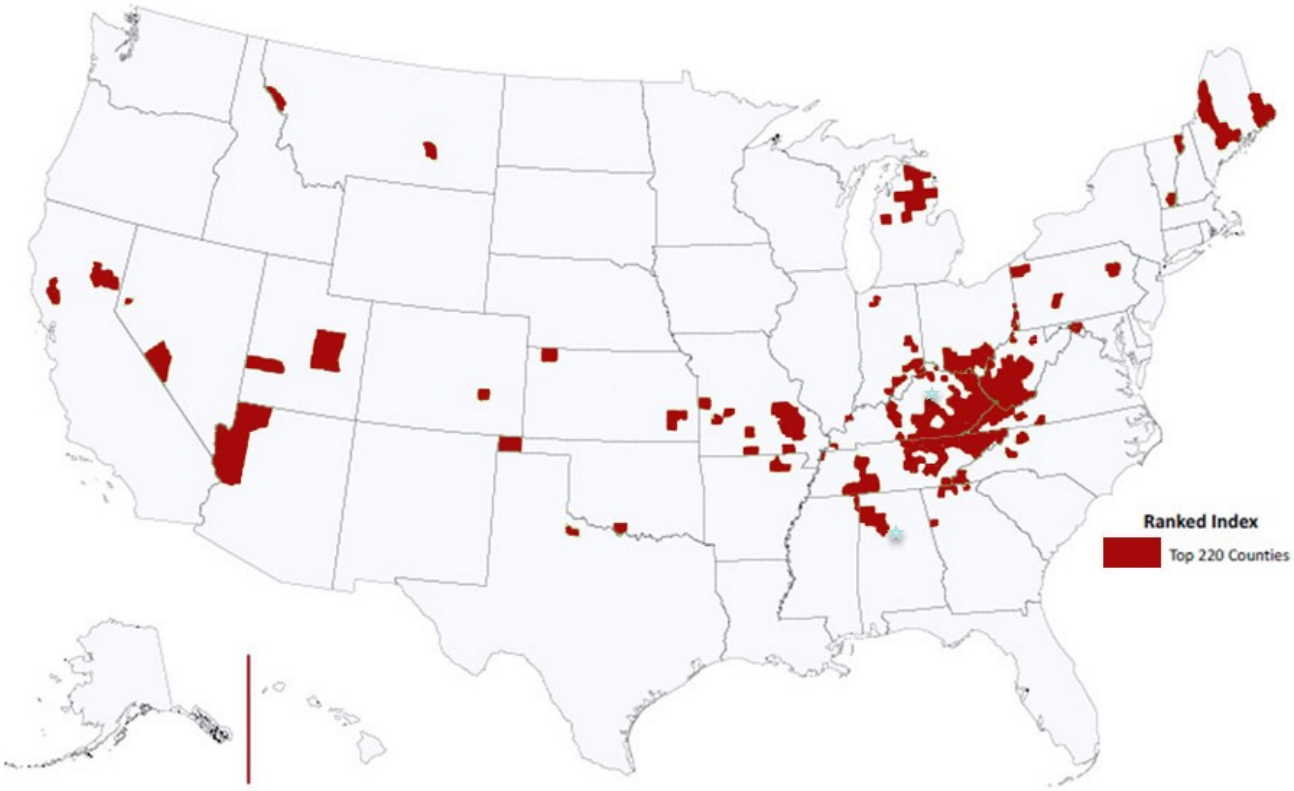
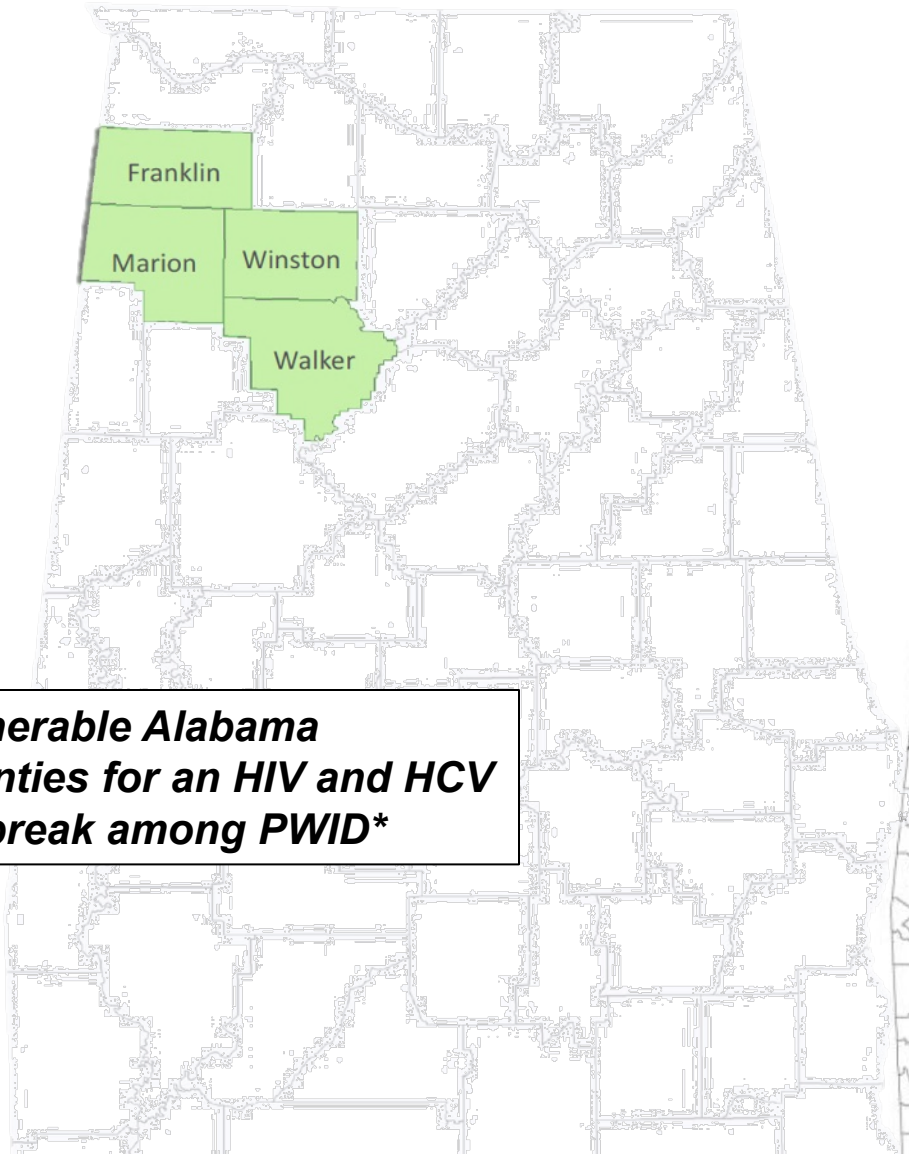
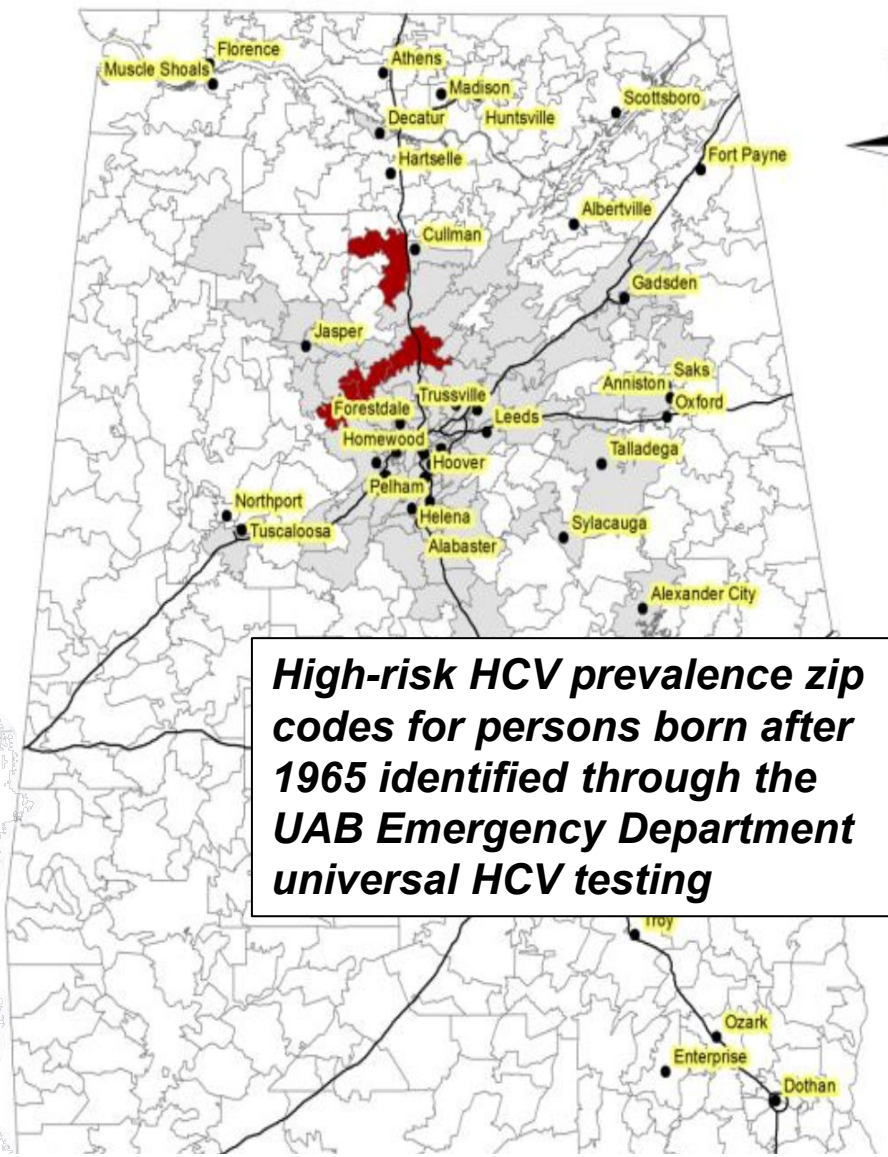
County-level Vulnerability to an Outbreak of HIV and HCV Infection among PWID (Top 5%)



Van Handel MM, Rose CE, Hallisey EJ, Kolling JL, Zibbell JE, Lewis B, Bohm MK, Jones CM, Flanagan BE, Siddiqi A-E-A, Iqbal K, Dent AL, Mermin JH, McCray E, Ward JW, Brooks JT: County-Level Vulnerability Assessment for Rapid Dissemination of HIV or HCV Infections Among Persons Who Inject Drugs, United States. *J Acquir Immune Defic Syndr* 2016;73(3):323–331.

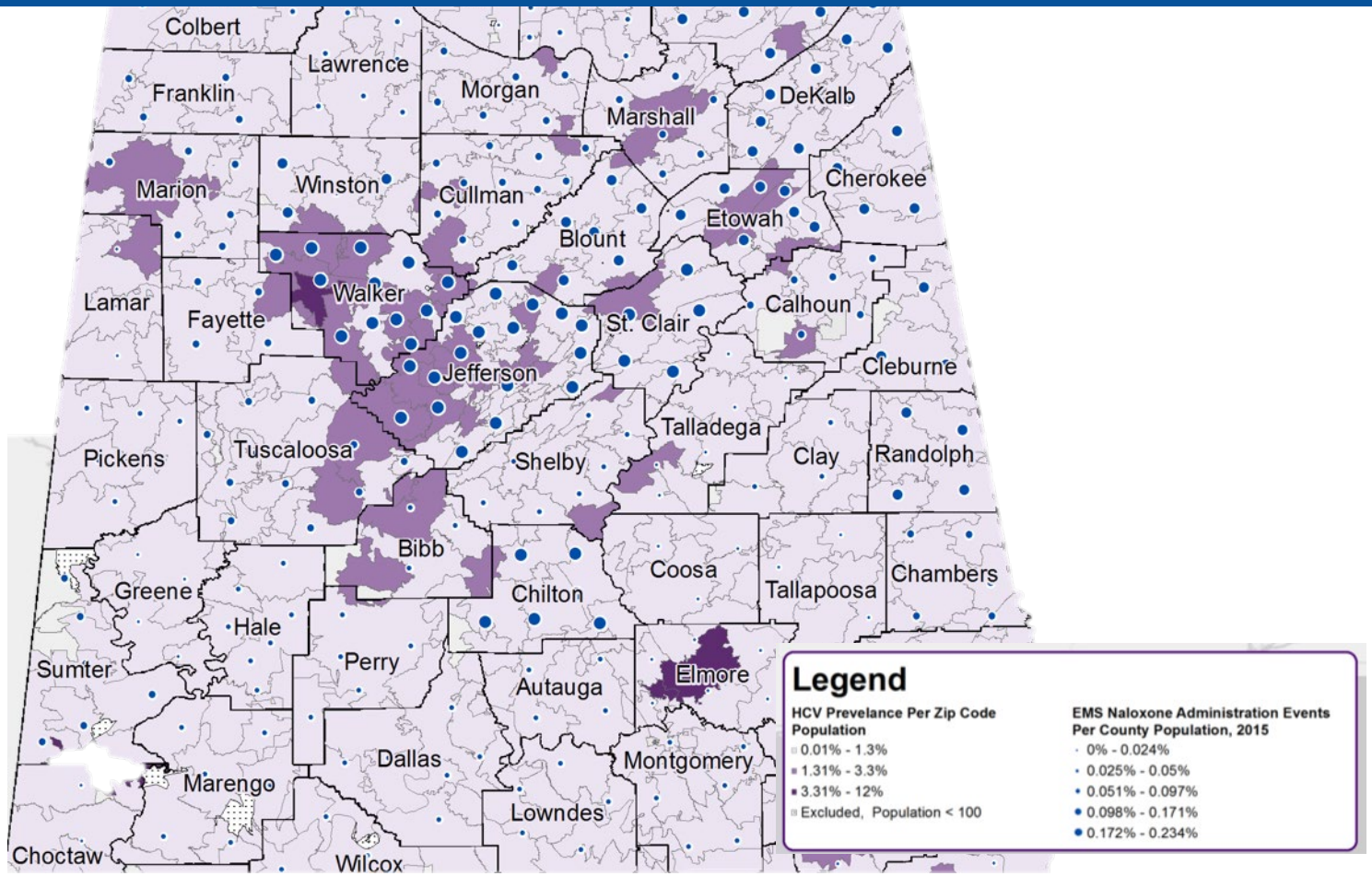


Vulnerable Alabama counties for an HIV and HCV outbreak among PWID*



High-risk HCV prevalence zip codes for persons born after 1965 identified through the UAB Emergency Department universal HCV testing

Alabama HCV Prevalence & EMS Naloxone Administration Events Per Capita



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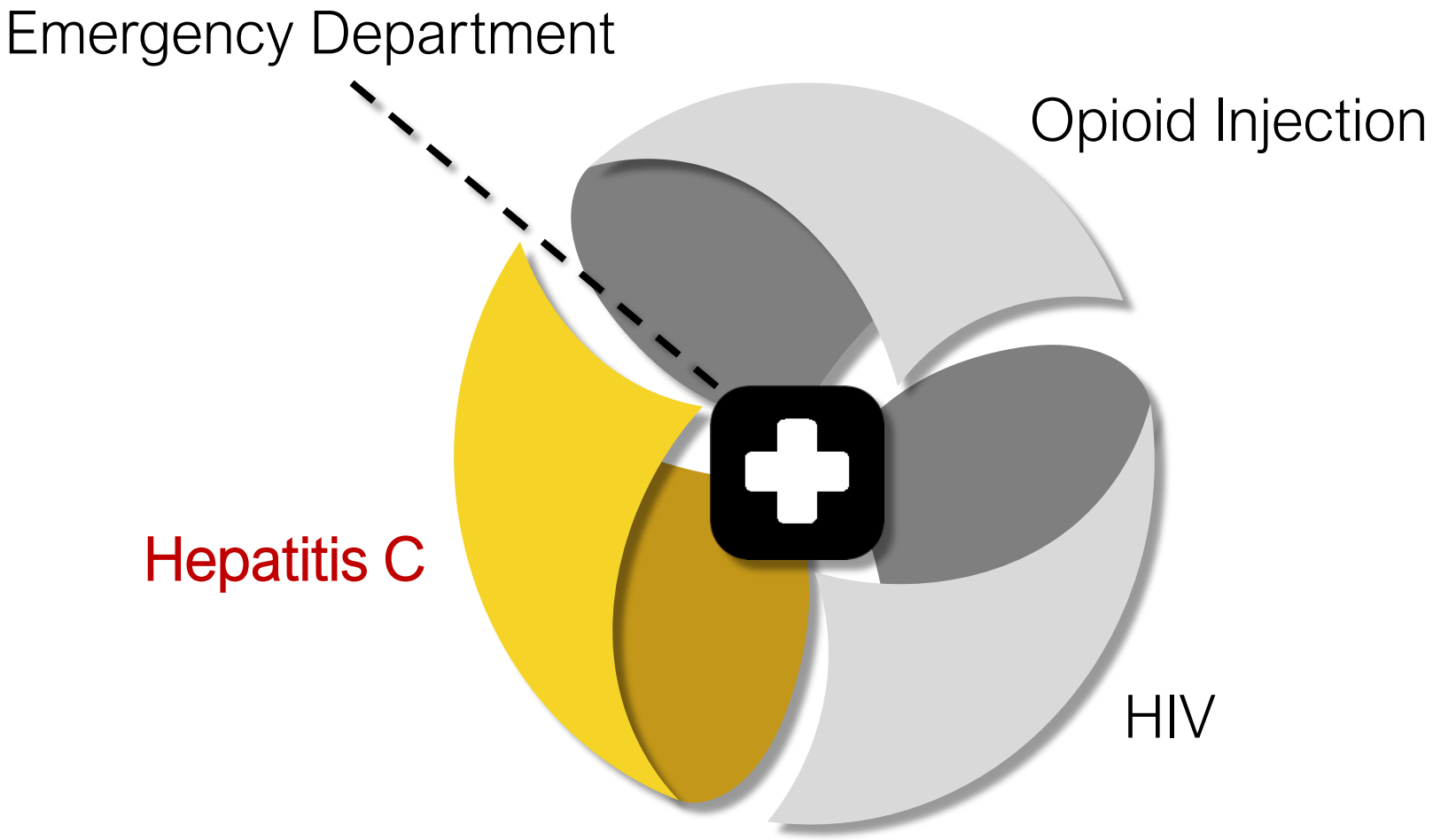
HEPATITIS C EPIDEMIC



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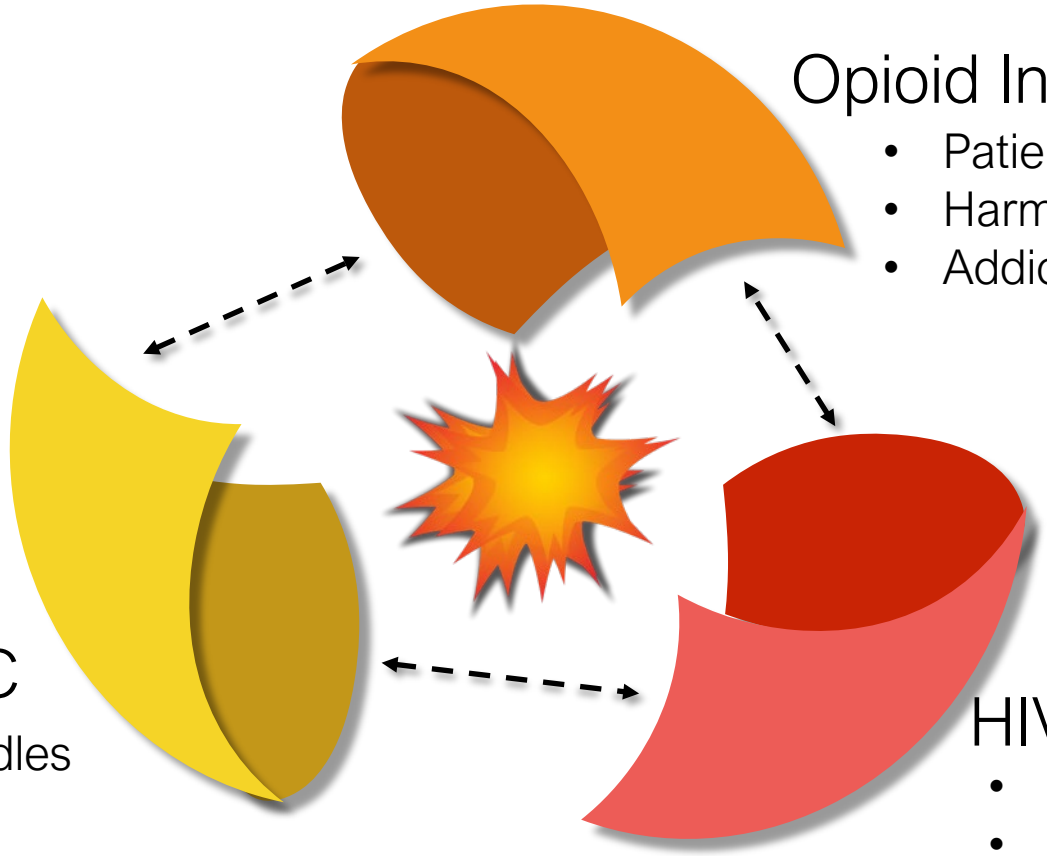
DISRUPTING THE GROWING SYNDEMIC IN LOCAL COMMUNITIES



Opioid Injection

- Patient engagement
- Harm reduction
- Addiction recovery

Hepatitis C

- Clean needles
- Testing
- Access to cure

HIV

- Clean needles
- Testing
- Treatment & Retention
- PrEP

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Interventions Preventing Transmission of Bloodborne Pathogens Among PWID

Intervention	Risk Reduction Potential
Addiction treatment (abstinence)	100%
Treatment of HIV infection	If durably suppressed, negligible risk[1,2]
Medication-assisted therapy (MAT)	64% risk reduction in meta-analysis [3]
Syringe service programs (SSP)	56% reduction in meta-analysis [4]

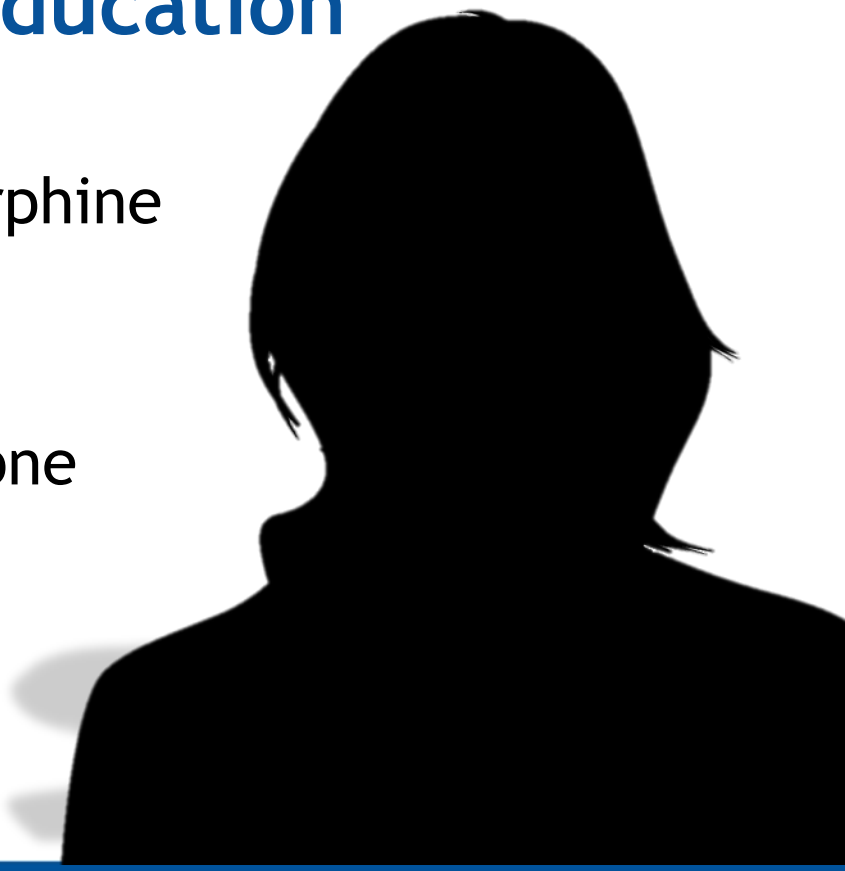
[1]Cohen et al. 2016, NEJM, 375(9):830-839
[2]Rodger et al. 2016, JAMA, 316(2):171-181
[3]MacArthur et al. 2012, BMJ, 345:e5945
[4]Aspinall et al. 2014. Int J Epidemiol, 43(10):235-248

Bringing Patients with Opioid Use Disorders Out of the Shadows in US EDs

Harm Reduction Engagement & Education

Utilize for community surveillance

- HIV/HCV Testing
- MAT Rx – Buprenorphine
- Referral resources (peer-navigation)
- Take Home Naloxone Distribution
- PrEP Referral



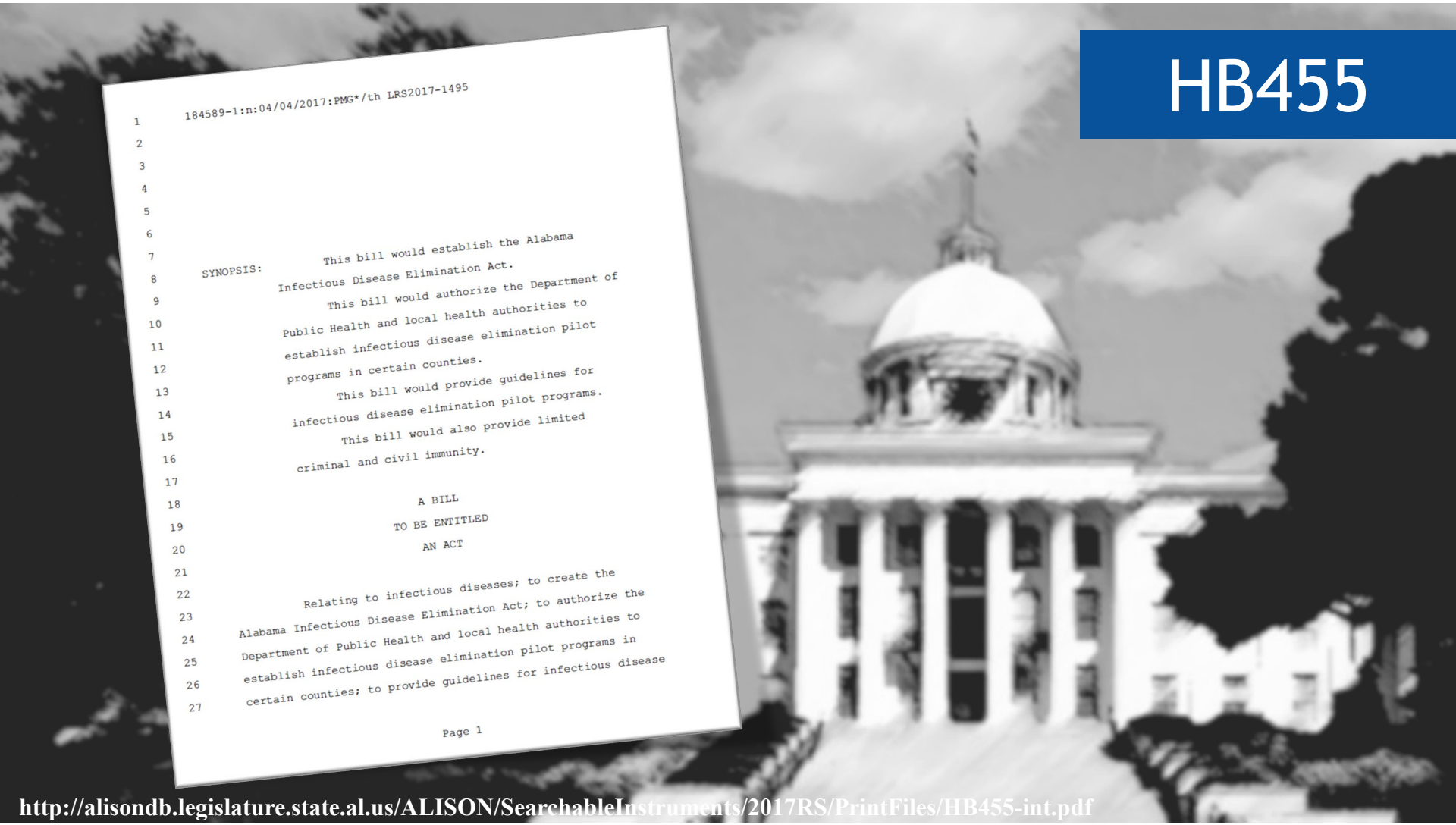
Alabama Laws Regarding Syringes (AL Statute 13-A-12-260)

(a) Definition of "drug paraphernalia." As used in this section, the term "Drug paraphernalia" means all equipment, products, and materials of any kind which are used, intended for use, or designed for use, in planting, propagating, cultivating, growing, harvesting, manufacturing, compounding, converting, producing, processing, preparing, testing, analyzing, packaging, repackaging storing, containing, concealing, injecting , ingesting, inhaling, or otherwise introducing into the human body a controlled substance in violation of the controlled substances laws of this state. It includes but is not limited to:

(11) Hypodermic syringes, needles and other objects used, intended for use, or designed for use in parenterally injecting controlled substances into the human body;

- No explicit authorization for syringe exchange by law
- No exceptions to the law that would allow for the distribution of syringes to prevent blood-borne diseases

HB455



184589-1:n:04/04/2017:PMG*/th LRS2017-1495

SYNOPSIS: This bill would establish the Alabama Infectious Disease Elimination Act.

This bill would authorize the Department of Public Health and local health authorities to establish infectious disease elimination pilot programs in certain counties.

This bill would provide guidelines for infectious disease elimination pilot programs.

This bill would also provide limited criminal and civil immunity.

A BILL

TO BE ENTITLED

AN ACT

Relating to infectious diseases; to create the Alabama Infectious Disease Elimination Act; to authorize the Department of Public Health and local health authorities to establish infectious disease elimination pilot programs in certain counties; to provide guidelines for infectious disease

Page 1

http://alisondb.legislature.state.al.us/ALISON/SearchableInstruments/2017RS/PrintFiles/HB455-int.pdf

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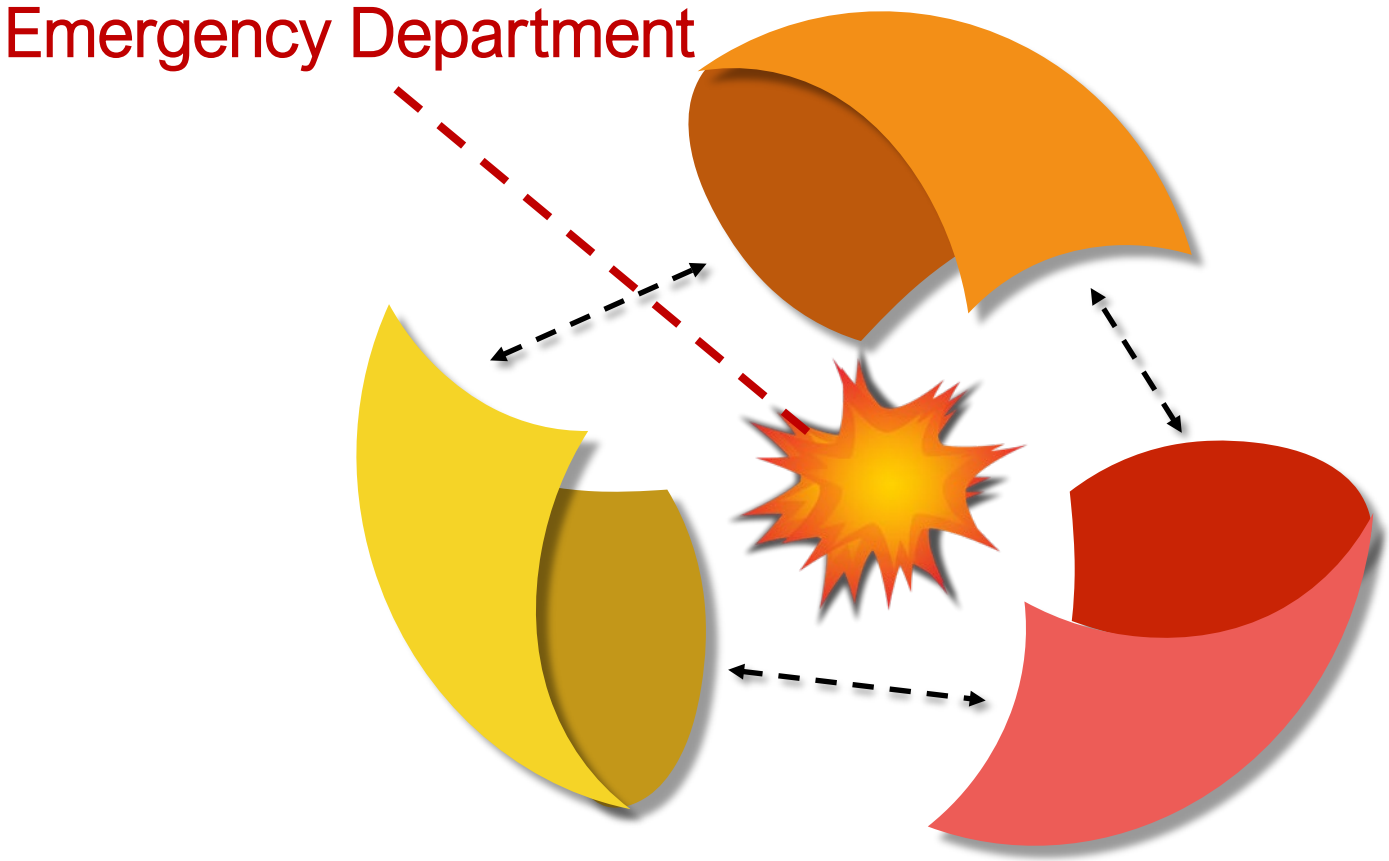
DISRUPTING THE GROWING SYNDEMIC IN US EMERGENCY DEPARTMENTS



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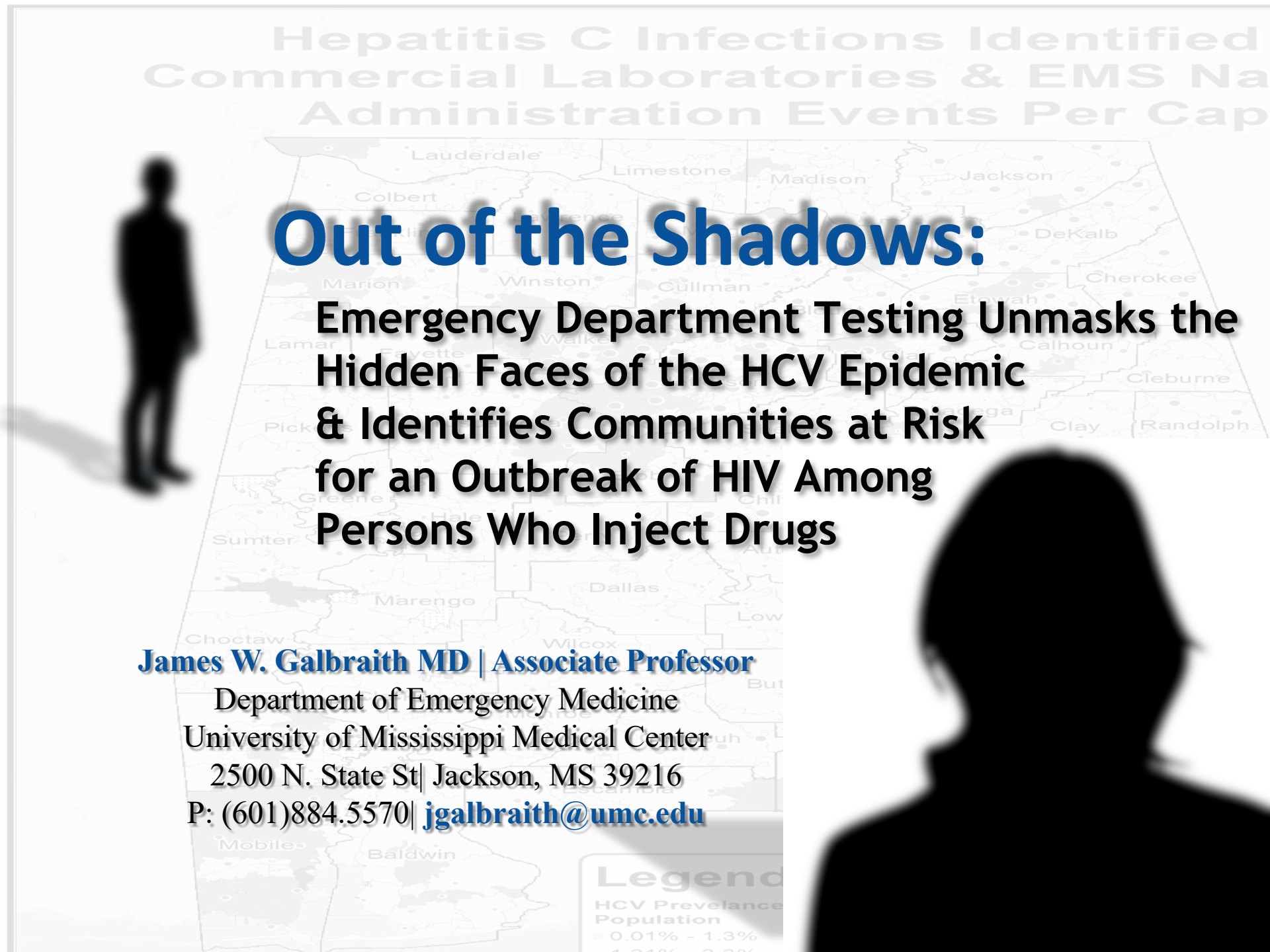

Out of the Shadows:

Emergency Department Testing Unmasks the Hidden Faces of the HCV Epidemic & Identifies Communities at Risk for an Outbreak of HIV Among Persons Who Inject Drugs

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