# Evaluation of CDC Recommendations for HCV Testing in an Urban Emergency Department

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## BACKGROUND

- Seroprevalence studies during 1988 – 1996 demonstrated high prevalence (13~18%) of anti-HCV antibody positivity in emergency department (ED) patients.
- It was estimated that annually 73,000 emergency department (ED) visits have an ED diagnosis related to HCV infection.
- In 2012, Centers for Disease Control and Prevention (CDC) augmented its recommendations for HCV testing to recommend one-time testing for HCV for all individuals born during 1945 - 1965 (baby boomer cohort), in addition to risk-based screening approach.
- EDs are considered a key venue for HCV testing because of their history of success in HIV screening given the populations they serve.
- In 2013, one urban academic ED in Alabama conducted a large-scale opt-out HCV antibody screening of 1529 “baby boomer” patients after the announcement of 2012 CDC recommendations. The study found that 11% had unrecognized HCV antibody positivity and 7% had chronic infection.
- Few EDs have evaluated the underlining burden of known and unknown HCV infections in their populations before implementing an HCV testing program.

## OBJECTIVES

- To determine the overall burden of undocumented HCV infection in an urban ED
- To evaluate CDC recommendations for one-time HCV testing in “baby boomers” in an urban ED

## METHODS

***STUDY SETTING***

- A U.S. urban adult ED with 66,000 annual census.
- The ED serves a diverse and socioeconomic disadvantaged population.
- Seroprevalence of anti-HCV antibody in this ED was 18% in 1988; 51% among black men aged 35–44 years

***DESIGN***

Identity-unlinked methodology was used to determine the prevalence of HCV infection in ED patients.

- Identity-unlinked methodology involves the collection of excess sera collected as part of clinical procedures, the assigning of a unique study code, and the removal of all identifiers and protected health information from samples following collection of basic data (e.g. age; gender; race; risk factors).
- The study was approved by The Johns Hopkins University School of Medicine Institutional Review Board.

***STUDY PERIOD***

- 8 weeks (24h/d), 06/2013–08/2013.

***DATA COLLECTION***

- Socio-demographic information (e.g. age, gender, race, injection drug use) was abstracted from the administrative database or electronic medical record system.
- Diagnosis of HCV, laboratory testing of HCV, and co-morbidity of HCV infection were also abstracted from the electronic medical record system.

***HIV/HCV SEROLOGIC ANALYSIS***

- Blood samples were tested for HIV by EIA and all positives were confirmed by Western blot; HCV infection was determined by an anti-HCV EIA (GENEDIA HCV ELISA 3.0).

## STATISTICAL METHODS

- “Undocumented HCV infection” was operationally defined as presence of anti-HCV antibody in the absence of evidence of HCV infection in patient’s medical chart.
- Chi-squared tests were performed to determine differences in prevalence of anti-HCV antibody or undocumented HCV infection by socio-demographic status

## RESULTS

**Table 1: Characteristics of 4,713 ED Patients**

| Characteristics | Categories | Number* (%) |
|---|---|---|
| Age (years) | Mean (± SD) | 46.5±17.5 |
| | Median (IQR) | 46 (31, 58) |
| | 18-24 | 532 (11) |
| | 25-34 | 915 (19) |
| | 35-44 | 722 (15) |
| | 45-54 | 1019 (22) |
| | 55-64 | 767 (16) |
| | 65-74 | 416 ( 9) |
| | 75-84 | 248 ( 5) |
| | ≥ 85 | 91 ( 2) |
| Baby Boomer Cohort | Yes | 1793 (38) |
| | No | 2917 (62) |
| Gender | Male | 2121 (45) |
| | Female | 2592 (55) |
| Race | Black | 2972 (63) |
| | White | 1385 (29) |
| | Other | 356 ( 8) |
| Injection Drug User | Yes | 316 ( 7) |
| | No | 4397 (93) |

* age information was unavailable for 3 patients

**Figure 1: Prevalence of Anti-HCV Antibody in 4,713 ED Patients by Known Status**

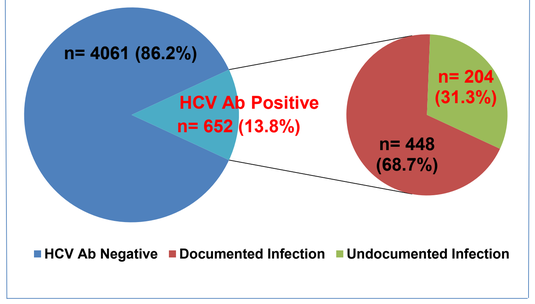



**Figure 2: Prevalence of Anti-HCV Antibody by Selected Groups for HCV Testing under CDC Recommendations**

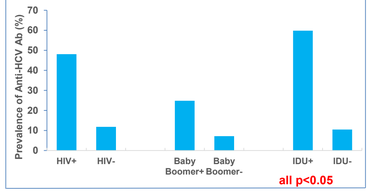



**Figure 3: Prevalence of Anti-HCV Antibody by Age, Gender, and Race in 4,713 ED Patients, 2013**

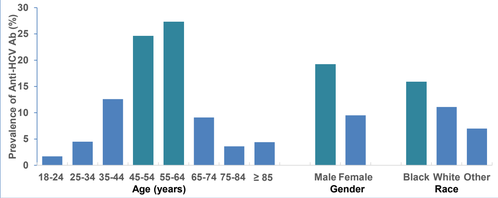



**Figure 4: Proportion of Undocumented HCV Infection by Baby Boomer Birth Cohort**

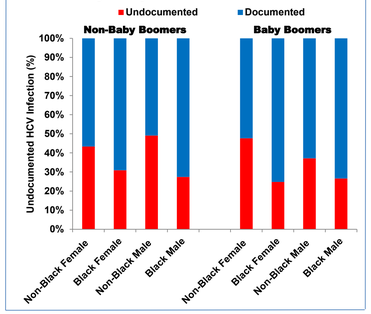



**Figure 5: Prevalence of Undocumented HCV Infection by Age, Race and Gender in 4,713 ED Patients, 2013**

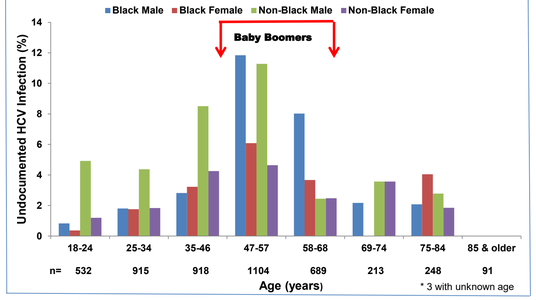
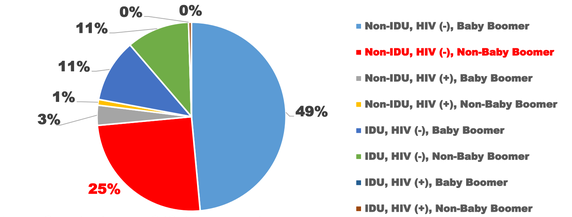



**Figure 6: Distribution of 204 Undocumented HCV Infection by Baby Boomer, HIV, and Injection Drug Use Status**




Missed Opportunity using CDC Recommendations

## LIMITATIONS

- Study population was restricted to ED patients who had blood drawn as part of clinical procedures.
- Patients might be aware of their HCV infection but their infection status was not documented in the medical charts

## CONCLUSIONS

- High seroprevalence of both known and undocumented HCV infection were observed, indicating that urban EDs could be a valuable venue for HCV testing.
- “Baby boomer” birth cohort based testing recommended by CDC would augment identification of undocumented HCV infections in this ED two fold, relative to risk-based testing alone. However, one quarter of infections would still remain undiagnosed applying current CDC recommendations. This suggests the need to consider modification of the CDC recommendations for HCV testing in ED settings.

## FUTURE DIRECTIONS

- A cost-effectiveness analysis will provide additional information to model best HCV screening strategy in this high HCV prevalence urban ED, as well as EDs similar to ours.

## FUNDING SOURCES

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