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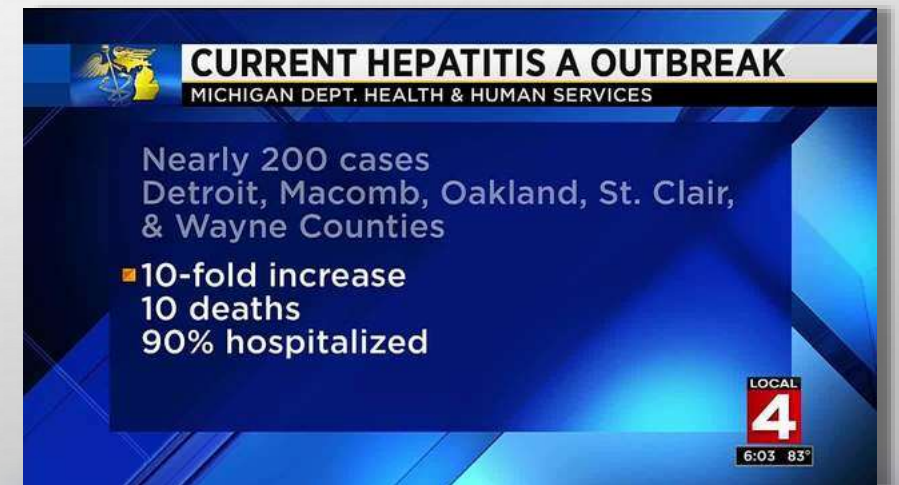
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INVESTIGATING DETROIT WATER SHUTOFFS AND HEPATITIS A

TAMMY HSIA – MARCUS ZERVOS, MD

INTRODUCTION

- Hepatitis A (HAV) is a self-limiting viral liver disease that can manifest as abdominal pain, anorexia, nausea, fatigue, and jaundice
- Transmitted person-to-person through the fecal-oral route or consumption of contaminated food or water



INTRODUCTION: HEPATITIS A OUTBREAK

- The CDC: majority of recent infections in California, Kentucky, Michigan, and Utah were “among persons reporting injection or noninjection drug use or homelessness”
- “Those with history of injection and non-injection drug use, homelessness or transient housing, and incarceration are thought to be at greater risk in this outbreak setting”
- Over 6500 HAV infections have been reported from January 2017 to October 2018
 - Homeless people comprised over 10% of cases in Michigan



INTRODUCTION: DETROIT WATER SHUTOFFS

- In 2014, the Detroit Water and Sewage Department began water service cessation to thousands of residents with delinquent accounts, and this momentum has continued
- Three months into their campaign, over 30,000 households were sans water
- The United Nations: condemnation and concerns for a public health crisis
- Officials discredited such concerns, citing “public health paranoia,” elevated because of the recent Flint water crisis
- Hypothesis: Without water, however, people cannot maintain adequate cooking conditions or hand-washing hygiene or drink from the tap , resulting in a potential risk for HAV



METHODS

- Patients were identified by retrospective review of the records of the clinical laboratory
- Patients with positive HAV diagnoses who presented to Henry Ford Hospital between August 2016 to December 2017 were selected for study
- Electronic medical records were reviewed for several demographics: sex, comorbidities, food exposure, homelessness, IV drug use, and hospitalization
- Patients were contacted via phone and asked for voluntary participation in this study via script
- The study was approved by the Henry Ford Hospital Institutional Review Board

RESULTS

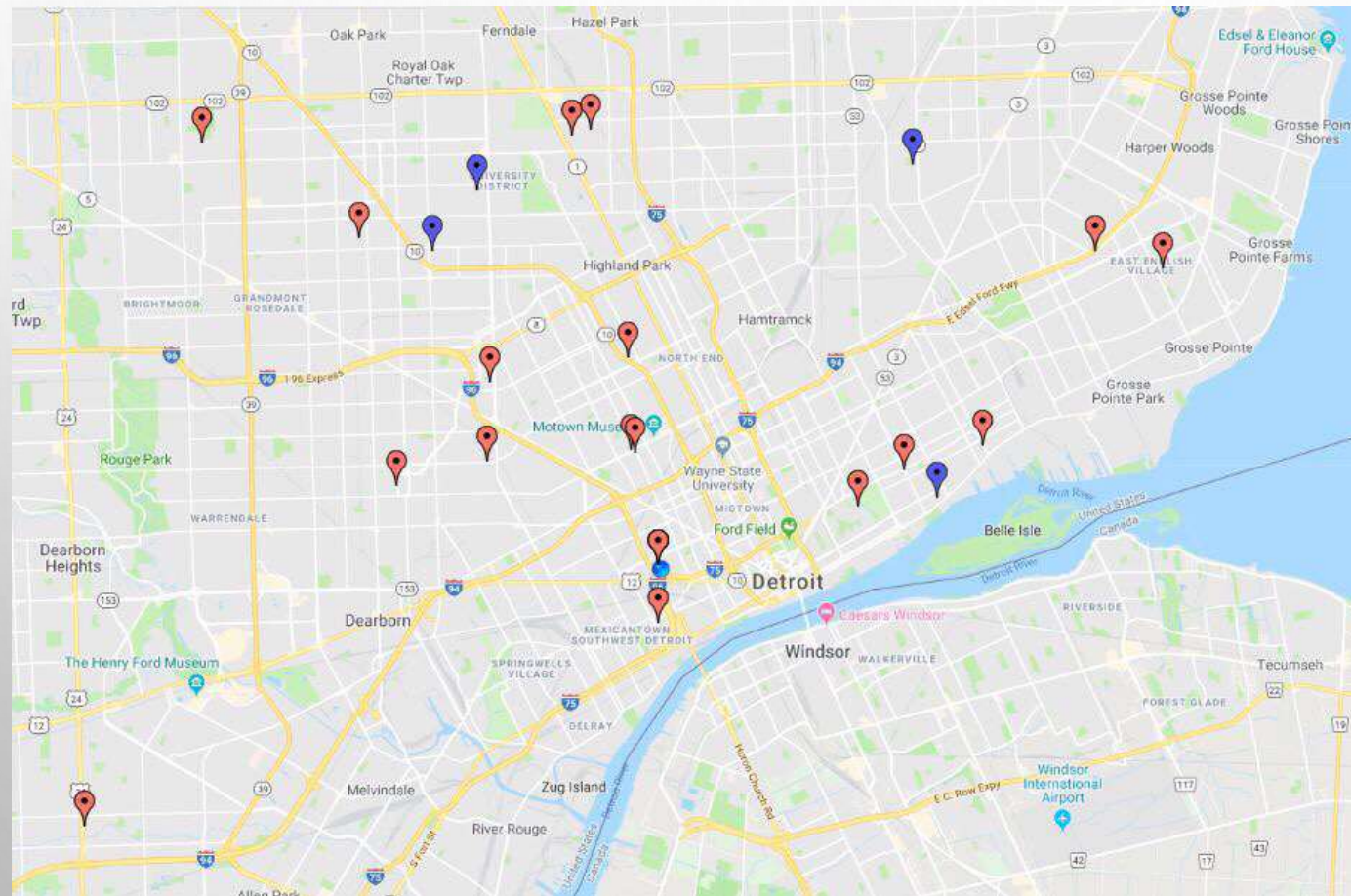


Figure 1. Geographic Distribution of Hepatitis A Respondents.
Note: Blue on the Map indicates water shutoffs

QUESTIONS ASKED

1. Do you work as a food handler? (Cafeteria, restaurant, production, processing, etc)
2. Around the time of your illness/10 days before your illness, what restaurants/foods did you eat?
3. What is your type of residence? Single family house, apartment, shelter, homeless, etc.
4. How many people live in your household?
5. Anyone else in your family ill around the time of illness?
6. Was your water shut off/when?
 1. How long was it shut off?
 2. What was your source of drinking water/cooking water/cleaning water?
 3. How long after the shutoff did you experience symptoms?





RESULTS

- Total sample: 166 patients presented to HFHS
66 indicated residence within Detroit city limits
 - 66 contacted, 22 acquiesced phone interview
- 13/22 male
- Mean age: 49
- Range: 21 to 81 years of age
- Food handler: 2
- Water shutoff : 4 (14.2%)
- Homeless: 4 (14.2%)

RESULTS

Variable	N=22
Age (mean)	49
Male	13 (59.1)
Medical History	
IV Drug Use	3 (13.6)
Alcohol Abuse	5 (22.7)
Diabetes	4 (14.2)
Liver Disease	2 (9.1)
Renal Disease	5 (22.7)
Malignancy	0 (0.0)
Food Handler	2 (9.1)
HIV	0 (0.0)
Travel	0 (0.0)
Homeless	4 (14.2)
Symptoms	
Abdominal Pain	12 (54.5)
Nausea	11 (50.0)
Jaundice	12 (54.5)
Vomiting	9 (40.9)
Loss of Appetite	6 (27.2)
Fever	4 (14.2)
Water Shut Off	4 (14.2)
Mean Duration of Symptoms (days)	4.6
Mean Length of Hospitalization (days)	7.36
Intensive Care Unit Admission	4 (14.2)
Death	3 (13.6)





CONCLUSION

- Patient EMR showed discrepancies in several notable categories
 - homelessness status (all patients had indicated a stable residence in the EMR but upon phone interviewing, 4 revealed unstable living conditions around the time of HAV diagnosis)
 - Food handler status: 2 revealed occupation around time of diagnosis
- Limitations: descriptive statistical analysis
 - Number of respondents
 - Invalid/inaccurate telephone numbers
- 4/22 had water shutoff during Hepatitis A diagnosis. We did not find an association between water shutoffs and HAV
- Hepatitis A vaccine: readily available and efficacious, remains the primary intervention for reduction of HAV