

## Hepatitis A and the Hepatitis A Outbreak in Kentucky: 2017-2018 → 2019?

Kentucky Rural Health Association  
Annual Conference  
November 15, 2018

Doug Thoroughman, PhD, MS  
Kentucky Acting State Epidemiologist  
CDC Career Epidemiology Field Officer



---

---

---

---

---

---

---

---

## Acknowledgements

Katie Myatt, MPH  
Amanda Hunt, RN  
Jennifer Khoury, MPH  
Kelly Giesbrecht, DVM, MPH  
Rob Brawley, MD, MPH, FSHEA  
Lindsey Blair, Lincoln Trail District Health Dept.  
Matt Rhodes, Louisville Metro Health Dept.

---

---

---

---

---

---

---

---

## Hepatitis A

- Communicable disease of the liver
- Caused by hepatitis A virus (HAV)
- Fecal-oral transmission
- No chronic infection
- Usually resolves within 2 months of infection
- Vaccine preventable



A transmission electron micrograph of a small cluster of hepatitis A virus ribonucleic acid (RNA).

Adapted from CDC/Betty Partin, 1976, retrieved from <https://phil.cdc.gov>

---

---

---

---

---

---

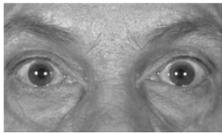
---

---

### Signs and Symptoms

Discrete onset of:

- Fatigue/Malaise
- Decreased appetite
- Nausea/Vomiting
- Abdominal Pain
- Jaundice
- Dark urine
- Pale stools
- Fever



- May have several symptoms or very few
- Diagnosis based on symptoms and lab results

---

---

---

---

---

---

---

---

### Treatment of Hepatitis A

- No specific treatment for hepatitis A
- Rest, adequate nutrition, fluids
- Avoid alcohol and medications or supplements that may damage the liver
- Some people may require hospitalization
- Antibodies are developed and offer life-long protection against the disease
- Most people recover completely
  - Usually worse for adults, mild in children
  - Those with liver issues at higher risk of bad outcomes

---

---

---

---

---

---

---

---

### Infectious Period

- Average incubation is 28 days (range:15-50 days)  
Time from exposure to symptom onset
- Infected individuals can transmit the virus to others for up to two weeks before their own symptoms appear
- Cases remain contagious until 7 days after illness onset
- Rare cases excrete virus for months
- Yikes!



---

---

---

---

---

---

---

---

### How is HAV Transmitted?



7

---

---

---

---

---

---

---

---

### Person-to-person transmission through the fecal-oral route

- Primary means of transmission in the US
- Usually from close contact with an infected household member or sex partner
- Lack of thorough handwashing after using the bathroom or changing a diaper
- Accidental ingestion of fecal bacteria

4

---

---

---

---

---

---

---

---

### Contaminated food or water

- More likely to occur in countries where HAV is endemic
- Due to poor sanitary conditions or poor personal hygiene
- Fruits, vegetables, shellfish, water, ice
- Cooked foods can also transmit HAV if not heated to >185 degrees for one minute
- Waterborne outbreaks are infrequent in countries with well-maintained sanitation and water supplies



9

---

---

---

---

---

---

---

---

### Transmission Through Blood Exposure

- Very rare but can occur
  - Injection drug use
  - Blood transfusion



10

---

---

---

---

---

---

---

---

### Who Is Usually at Risk for HAV?

- Foodborne/Waterborne Outbreak
- International travel/endemic countries
- Contact with child/employee in a daycare
- Household/sexual contact with HAV case
- Persons who use illicit drugs
- Men who have sex with men (MSM)
- Persons with close contact with an international adoptee during first 60 days of arrival to US
- Additional groups recommended for vaccination:
  - People with chronic (lifelong) liver diseases, such as hepatitis B or hepatitis C
  - People who are treated with clotting-factor concentrates
  - People who work with hepatitis A infected animals or in a hepatitis A research laboratory



11

---

---

---

---

---

---

---

---

### Nationwide Hepatitis A Outbreaks

- Michigan – August, 2016
- California – November, 2016
- Utah – January, 2017
- Kentucky – August, 2017
- Missouri – September, 2017
- Indiana – November, 2017
- Tennessee – December, 2017
- Ohio – January, 2018
- Arkansas – February, 2018
- West Virginia – March, 2018

12

---

---

---

---

---

---

---

---

### Nationwide Statistics 10/2018

State	Cases	Hospitalizations	Deaths
Arkansas	157	80 (51%)	1
Florida	253	204 (79%)	0
Indiana	518	231 (45%)	1
Kentucky	1943	1069 (55%)	14
Louisiana	18	15 (83%)	0
Massachusetts	90	80 (89%)	1
Michigan	897	721 (80%)	27
Missouri	203	80 (39%)	0
North Carolina	27	21 (78%)	0
Ohio	585	362 (62%)	0
Tennessee	308	174 (56%)	1
Utah	278	151 (56%)	2
West Virginia	1466	757 (52%)	5

---

---

---

---

---

---

---

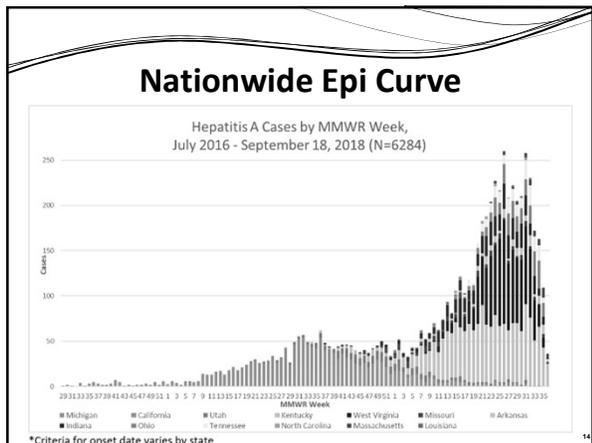
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

---

---

### KY17-089

- Noticed uptick in cases beginning August 1, 2017
- Statewide outbreak declared November 2017
- Cases primarily among drug users or homeless
- 571 cases linked to CA/UT and MI
  - 1B CA cluster A
  - 1B MI cluster 2

---

---

---

---

---

---

---

---

---

---

---

---

### Basic KY Outbreak Statistics

As of November 3, 2018:

- Total number of outbreak associated cases: 2,545
- Hospitalizations: 1,342 (53%)
- Deaths: 17
- Counties with at least one case: 94 (78%)
- Counties with >5 cases: 57 (48%)
  - Jefferson: 637 (25%)
  - Boyd: 163 (6%)
  - Carter: 126 (5%)
  - Whitley 126 (5%)
  - Floyd: 77 (3%)
  - Montgomery: 72 (3%)
  - Kenton: 65 (3%)
  - Bullitt: 64 (3%)
  - Laurel 64 (3%)
  - Greenup: 57 (2%)



16

---

---

---

---

---

---

---

---

### Highest Incidence Rates

Case counts aren't everything

- Carter County – 464/100,000 (126)
- Whitley County – 347/100,000 (126)
- Boyd County – 340/100,000 (163)
- Elliot County – 306/100,000 (23)
- Martin County – 288/100,000 (33)
- Menifee Co. – 263/100,000 (17)

Smaller health departments struggle!

17

---

---

---

---

---

---

---

---

### Risk Factor Profile for Outbreak

2545 cases as of November 3:

- Missing Risk Factor Data: 461 (18%)
  - n = 2,084 with risk factor data
- MSM only: 9 (<0.4%)
- Cases who report homelessness only: 44 (2%)
- Cases who report drug use only: 1381 (66%)
- Cases who report homelessness and drug use: 226 (11%)
  - Homelessness total: 270 (13%)
  - Drug use total: 1607 (77%)
- Cases who report no risk factor: 433 (21%)

18

---

---

---

---

---

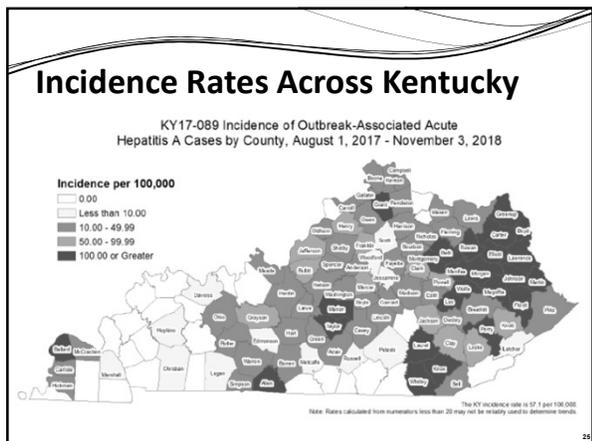
---

---

---







---

---

---

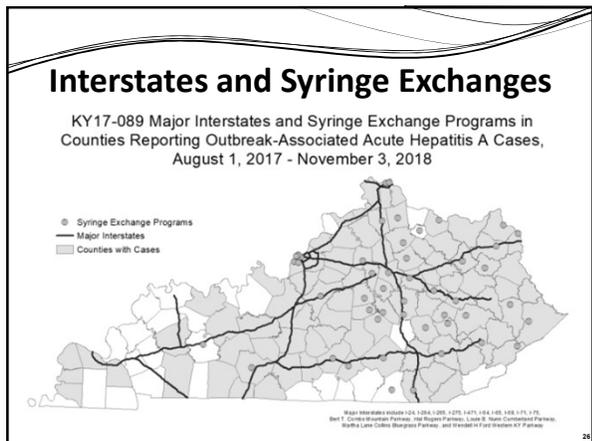
---

---

---

---

---



---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

**Primary Prevention of Hepatitis A**

- Vaccination
  - Vaccine is safe and effective
    - 95% immune with first dose (>10 year protection)
    - 99.9% immune with two doses (long-term protection)
  - Few side effects
  - Takes 2-4 weeks for full effectiveness
- Hand hygiene
  - Proper and frequent handwashing
  - After toileting, touching surfaces that could be contaminated
  - Before handling foods

---

---

---

---

---

---

---

---

**Persons Recommended for Hep A Vaccine**

- Children 12 months – 18 years old
- Traveling to an HAV-endemic country
- MSM – men who have sex with men
- Those using illicit drugs (injection and non-inj.)
- People with:
  - Occupational risk
  - Clotting disorder
  - Chronic liver disease
  - Contact with people newly-arrived from endemic countries
  - Direct contact with people with hepatitis A
- Anyone desiring immunity from hepatitis A

---

---

---

---

---

---

---

---

**Prevention After Exposure  
“Post-exposure Prophylaxis”**

- Vaccination of close contacts
  - Preferred for those 12 months – 40 years
  - Must be within 2 weeks of exposure
- Immune globulin
  - Preferred for people >40
  - Used also for those <12 months, immunocompromised
  - Must also be given within two weeks of exposure
- CDC recommending changing focus away from this – “get vaccines into arms!”

---

---

---

---

---

---

---

---

### Hand Hygiene

“Wet, Lather, Scrub, Rinse, Dry”

- Warm water
- Soap
- At least 20 seconds of scrubbing
- All parts of hands and fingers and under fingernails
- Clean paper towel or air dryer to dry
- Alcohol-based hand sanitizer not recommended for hepatitis A prevention
  - Must be at least 60% alcohol
  - Must be rubbed on profusely on all hand/finger surfaces
  - Doesn't often happen effectively

31

---

---

---

---

---

---

---

---

### Hand Hygiene in Healthcare

- Wash hands “religiously”
- Avoid touching surfaces that could be contaminated – wash hands after each exposure
  - Face
  - Door handles
  - Light switches
  - Phones
  - Anywhere others could have touched, coughed or sneezed on
- Use latex gloves with patients and to prepare food
  - Change any time they are possibly contaminated
- Put a garbage can near bathroom door so people can toss paper towels after opening the door
- ***It's not only you you need to be worried about!***

32

---

---

---

---

---

---

---

---

### State Response Activities

- Produce and disseminate guidance, data
  - Call for testing and cases
  - Weekly report
- State Health Operations Center (SHOC) activated
- Surveillance and case investigation coordination
- Response coordination meetings
- Coordination with Louisville, other counties
  - Allocation and acquisition of vaccines
  - Personnel assistance
  - Monetary resources
- Epi-Aid

33

---

---

---

---

---

---

---

---

## New Focus

- Comprehensive “knock-out” strategy
  - Hospital ED’s
  - Jails/prisons
  - Syringe exchange
  - Substance abuse treatment programs
    - Halfway houses
    - Treatment facilities
    - Suboxone providers
- Need simultaneous and persistent attack on all fronts
- Regional meetings being established

---

---

---

---

---

---

---

---

---

---

---

---

## State Response Activities

---

---

---

---

---

---

---

---

---

---

---

---

## State Response Activities

---

---

---

---

---

---

---

---

---

---

---

---

**Special Populations for Response**

- Illicit drug users
- Homeless
- Food Service Workers
  - Corrections
  - Community
- Healthcare Workers
- Congregate settings
  - Hospitals, LTC facilities
  - Jails, prisons
  - Drug treatment centers
  - Day cares, schools

37

---

---

---

---

---

---

---

---

**Targeting At-Risk Populations I**

- Illicit Drug Users
  - Syringe exchange programs
  - Jails/prisons
    - At intake most efficient approach
    - Corrections staff trained to administer
  - Hospital ED's
    - Need a champion for each facility
  - Halfway houses
  - Substance abuse treatment centers
  - Homeless shelters
  - Others avenues?

38

---

---

---

---

---

---

---

---

**Targeting At-Risk Populations II**

- Homeless
  - Street outreach
  - Homeless camps
  - Homeless shelters
- Food service workers (FSW)
  - Preventive vaccination not recommended by CDC
  - Each positive case wreaks mayhem
  - SAMHSA study: 19% of FSW use illicit drugs\*
  - Target restaurants in high-risk areas

\*[https://www.samhsa.gov/data/sites/default/files/report\\_1959/ShortReport-1959.html](https://www.samhsa.gov/data/sites/default/files/report_1959/ShortReport-1959.html)

39

---

---

---

---

---

---

---

---

**Healthcare Settings**

- Exposure risk to staff, other patients
  - Very low
  - Covered by standard precautions
- Prevention
  - Early identification of potential cases
  - Assessment of risk factors
  - Post-exposure prophylaxis
  - Hand hygiene

40

---

---

---

---

---

---

---

---

**Other Congregate Settings**

- Individuals infectious 2 weeks prior to onset of symptoms and 7 days after onset of jaundice
- Contact investigations are labor-intensive and costly
  - Increased mobility in facility is a factor
- Close personal contacts and sexual contacts need post-exposure prophylaxis (PEP) within 2 weeks of last exposure
- Food handlers should be excluded from work for 7 days after jaundice onset or 2 weeks after symptom onset (if no jaundice)
- Daycare workers should be excluded from work for 7 days after jaundice onset

41

---

---

---

---

---

---

---

---

**Prevention in Congregate Settings**

- Vaccinate at-risk populations at intake!
  - Drug users (injection and non-injection)
  - Work with local health department to determine vaccine strategies
- Reduce movement in settings where at-risk populations are likely to be present (e.g. correctional facilities, substance abuse treatment facilities)
- Be ready to identify close personal contacts of cases
  - Anyone who had contact with the patient while infectious
  - Gather contact information for all exposed
  - Need to mobilize quickly to provide PEP within the 2 week PEP window
- Encourage staff be vaccinated using their in-network healthcare providers
- Informational packets (electronic) available for substance abuse treatment facilities and correctional facilities.

42

---

---

---

---

---

---

---

---

## Prison/Jail Prevention Strategies

- Jail is ultimately responsible for the cost of healthcare
- Arguments for vaccinating in correctional facilities on intake:
  - Vaccination on intake saves big bucks
    - Large contact investigations involve many staff hours
    - PEP events also require lots of staff time
  - 20% of KY HAV cases report recent incarceration or admission to a substance abuse treatment facility.
  - Waiting until the medical assessment to vaccinate leaves the facility vulnerable because of the infectious period
  - Individuals that are in for short stays could be incubating
  - Jails are full of the at-risk population – drug users
  - Constant revolving door of drug users through corrections, so this helps protect community
- Funding and logistics are prime issues to be dealt with

43

---

---

---

---

---

---

---

---

---

---

---

---

## Surveillance and Reporting

- Report cases promptly to local health dept.
  - In this outbreak, report suspect cases
  - Hepatitis A → 24 hr reporting requirement
    - By Law! (902 KAR 2:020)
- Complete supplemental questionnaire
  - “Risk Factor Questionnaire”
  - At earliest opportunity
  - May be lost to follow-up

44

---

---

---

---

---

---

---

---

---

---

---

---

## Risk Factor Questionnaire

If acute viral hepatitis is suspected as a diagnosis for a patient, please complete the following questions to the best ability possible and fax to your local health department. In accordance with 902 KAR 2:020, cases of hepatitis A are to be reported to the local or state health department within 24 hours.

Patient Information		Patient ID: _____		Age: _____	Sex: _____	
In the last 7 weeks: Number of male sexual partners: _____		Number of female sexual partners: _____				
Patient interviewed? Yes / No		Date of interview: / /		Previous hepatitis B vaccination? Yes / No		
Reporting Provider: _____		Facility: _____		Provider Phone Number: _____		
Household (Household)	Question (within the last 7 weeks)		Yes	No	Link	Comments
	1. Did you spend the night at any of the following places? (check all that apply)	A. Friend's family member's home B. Shelter C. Street D. Institution E. Other: _____				• Any contacts in home? • Last stay? • Shelter name and location. • Date of last stay. • Other: specify where traveled and travel dates. • Location and date of release. • How long did you stay?
Activity	2. Did you work for, or volunteer at a place that serves homeless persons?					• Name and location. • How long did you work?
	3. Did you or anyone you have close contact with travel outside of the United States?					• Name and location. • How long did you travel?
Food (Food)	4. Did you eat you food from:					• Name and location. • How long did you eat?
	A. Restaurant B. Shelter, soup kitchen, food bank, church, etc. C. Other: _____					• Shelter/Church/Agency/Church name and location. • Identify.
Contacts	5. Do you know anyone else with similar symptoms in the past five months who would contact other people who have become ill like you. Will we contact the people you've mentioned? If so:					• Name and location. • How long did you know them? • How long did you contact them? • How long did you know them? • How long did you contact them?
	6. Did you use any recreational drugs?					• Method of drug use (Please circle all that apply): Injected    smoked    inhaled    other: _____

45

---

---

---

---

---

---

---

---

---

---

---

---

### If You Have a Case in the Hospital

- Isolate patient from others until the end of their infectious period.
- Contact your local public health department to report the case of acute hepatitis A and receive assistance in preventing additional cases in your facility.
- Identify all patients and staff who had close contact with pt.
- Promptly provide Post-exposure prophylaxis (PEP) as recommended by the local or state health department.
  - PEP should be administered to susceptible contacts within 14 days of their exposure if those contacts are not able to provide dates of prior administration of hepatitis A (HepA) vaccine.

---

---

---

---

---

---

---

---

### Which Vaccine to Use?

- Single Antigen hep A vaccine
  - Much less expensive
  - Better coverage on first dose
  - Only two doses needed
- Twinrix
  - About double the cost
  - 2<sup>nd</sup> dose needed to assure fuller initial coverage
    - 3<sup>rd</sup> dose needed
  - Covers hepatitis B as well as A

---

---

---

---

---

---

---

---

### Lab Submission Guidance

- Collect proper specimens and submit for testing
  - Use usual lab for initial IgM (antibody) testing
  - Additional tube should be collected and frozen for genetic analysis should IgM come back +
  - Submit additional specimen to KDPH
  - Specific instructions on KDPH HAV webpage (<http://chfs.ky.gov/dph/hepatitis.htm>)
    - Complete CDC Submission Form 50.34
    - Complete DLS Form 213

---

---

---

---

---

---

---

---

**Environmental Measures**

Surfaces that are frequently touched should be cleaned and sanitized often

- 1:100 dilution of bleach to water –
- DPH sanitation guidelines available at <http://chfs.ky.gov/dph/hepatitis.htm>
  - Toilet Room Surfaces
  - Light Switch Plates
  - High Chairs
  - Kitchen Surfaces
  - Phones
  - Tables and Chairs
  - Doorknobs
  - Recreation Equipment
  - Computer Keyboards
  - Railings
  - Wheelchairs and Walkers
  - Remote Controls

49

---

---

---

---

---

---

---

---

**Special Considerations in this Outbreak**

- In counties with local transmission, KY is recommending all people consider vaccination
  - Private providers are best route
  - Public health vaccine stocks are subject to limitations – uninsured, with risk factors
- In areas with local transmission, KY is recommending food service workers get vaccinated
- Should be no co-pay with ACA-compliant providers
  - Preventive services are exempt from co-pay
- Getting into prisons – big job, lots of work

50

---

---

---

---

---

---

---

---

**Special Considerations II**

- Consider requiring staff vaccination
  - May need to fund if insurer doesn't cover
  - Private stock vaccine is available
  - Can negotiate price directly with manufacturer
- CDC vaccine is restricted:
  - 317 – uninsured/at risk adults
  - Vaccines for Children (VFC) – Any VFC-eligible child
- Coordinate with local health department to record vaccinations in KY Immunization Registry (KYIR)

51

---

---

---

---

---

---

---

---

**Special Considerations III**

May need additional personnel

- Nurses to vaccinate
  - PH nurses – may not be available or for duration
  - Contract nursing
  - Must fund either
- Staff to back-fill other positions during response
- Data entry, greeters, clerical, drivers
- Student volunteers
  - Liability coverage
  - Training

52

---

---

---

---

---

---

---

---

**Additional Prevention Measures**

- Employees who are sick should stay home!
- Workers exposed to persons with lab-confirmed hepatitis A are recommended for post-exposure prophylaxis if time frame applies
- Contact your local health department for guidance
- Cooperate with the investigators and encourage staff to as well

53

---

---

---

---

---

---

---

---

**Helpful Resources**

- <http://chfs.ky.gov/dph/hepatitis.htm>
- <https://www.cdc.gov/hepatitis/hav/index.htm>
- <https://healthalerts.ky.gov/Pages/default.aspx>

54

---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

*Thanks!*

Doug Thoroughman, PhD, MS  
Acting State Epidemiologist  
Kentucky Department for Public Health  
502-564-3418 x4315  
[Douglas.Thoroughman@ky.gov](mailto:Douglas.Thoroughman@ky.gov)

---

---

---

---

---

---

---

---