

Hepatitis C

2015 Regional Training
Local Health Departments
Regional Epidemiologists

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Hepatitis C Virus (HCV) Infection

- Most common chronic blood-borne infection in the U.S.
- 3.2 million people are chronically infected in the U.S.
- Leading cause of chronic liver disease, liver cancer and liver transplants
- Infection is most prevalent among those born during 1945-1965
- 70% to 80% of persons are either asymptomatic or have only a mild clinical illness

<http://www.cdc.gov/hepatitis/hcv/index.htm>

Hepatitis C Virus (HCV) Infection (Continued)

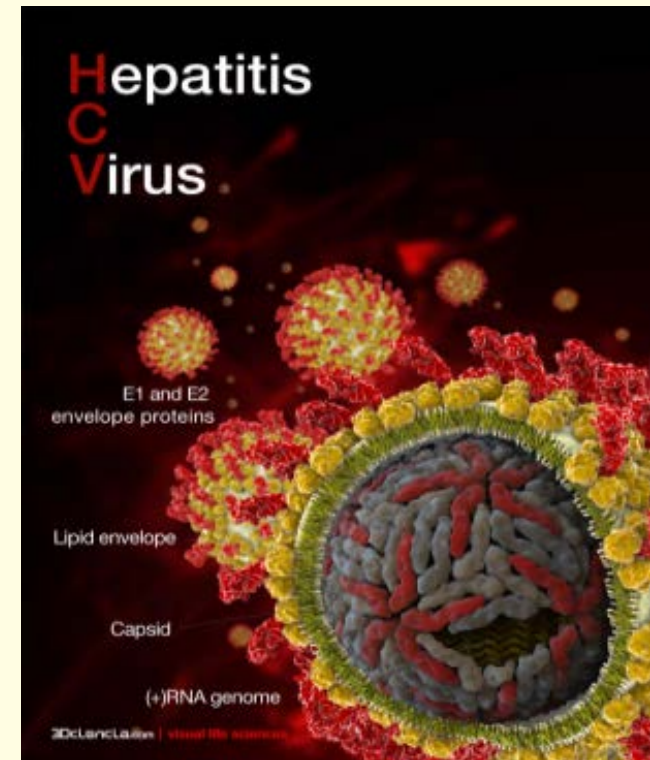
- Acute Hepatitis C virus infection
- Chronic Hepatitis C virus infection (past/present infection)

Etiologic Agent

- RNA virus - genus (Hepacivirus) in the Flaviviridae family
- 6 different genotypes – Genotype 1 (subtype 1a and 1b) is the most common (60% to 70%) of the HCV infections in U.S.
- Genotype 1a is most common in West Virginia

Reservoir

- Only in humans



Mode of Transmission - transmitted by the parenteral route

- Injection drug use is the most common risk factor for the transmission
- Other modes of transmission
 - Transfusion or organ transplantation, prior to 1992
 - Hemodialysis
 - High-risk sexual activity
 - Tattoo and body piercing if instruments not sterilized
 - Sharing personal items
 - Perinatal exposure
 - Occupational exposure

Incubation Period

2 weeks to 6 months; average 45 days

Infectious Period

2 weeks after exposure for an indefinite period of time

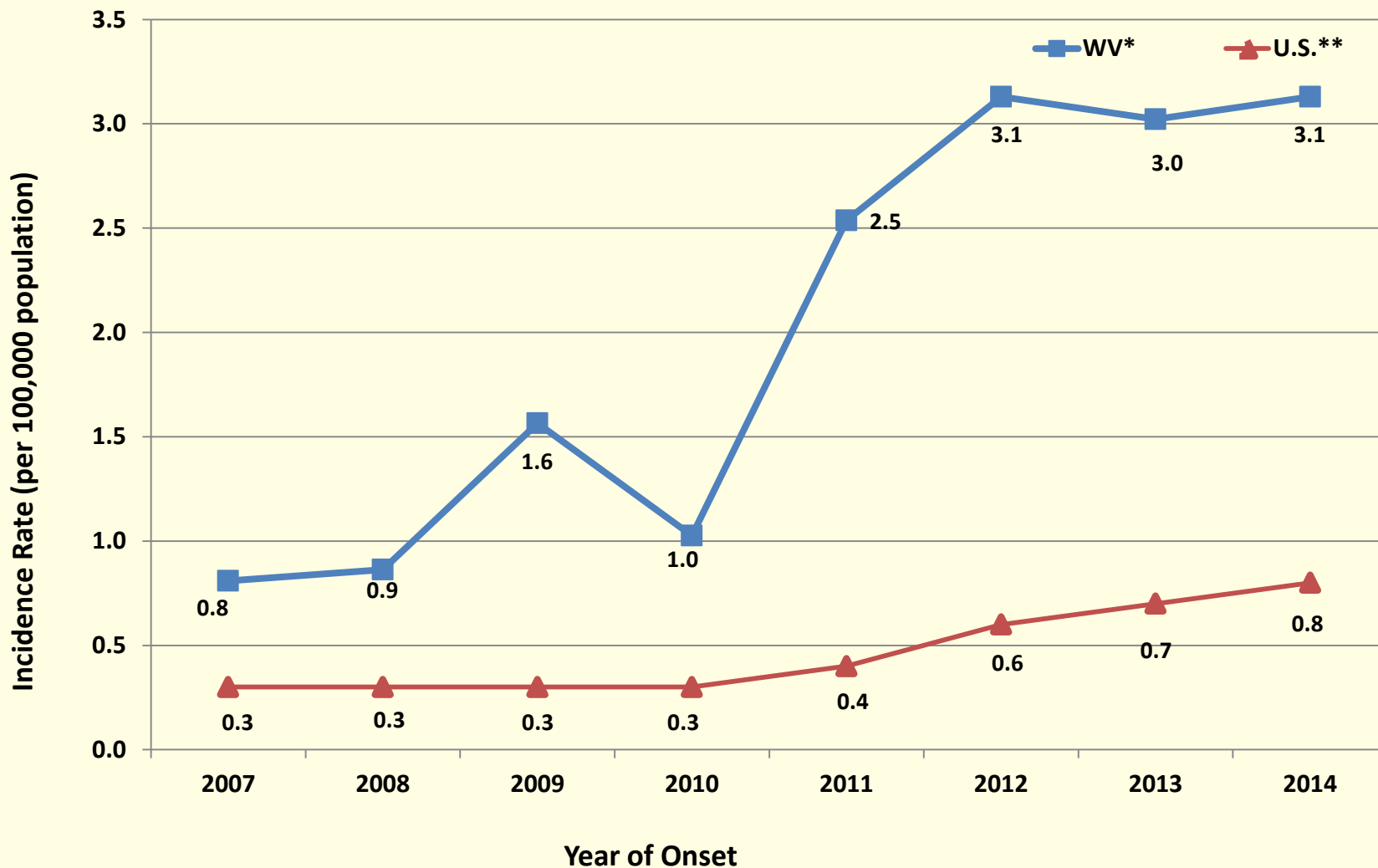
Acute Hepatitis C

- 25%-30% of persons will experience the classic symptoms of hepatitis
- Indistinguishable from acute hepatitis due to other viruses

Chronic Hepatitis C

- Most of the persons are asymptomatic
- 5%-20% HCV infected persons will go on to develop cirrhosis
- Hepatocellular carcinoma is estimated to occur in about 1%-4% of persons with cirrhosis every year

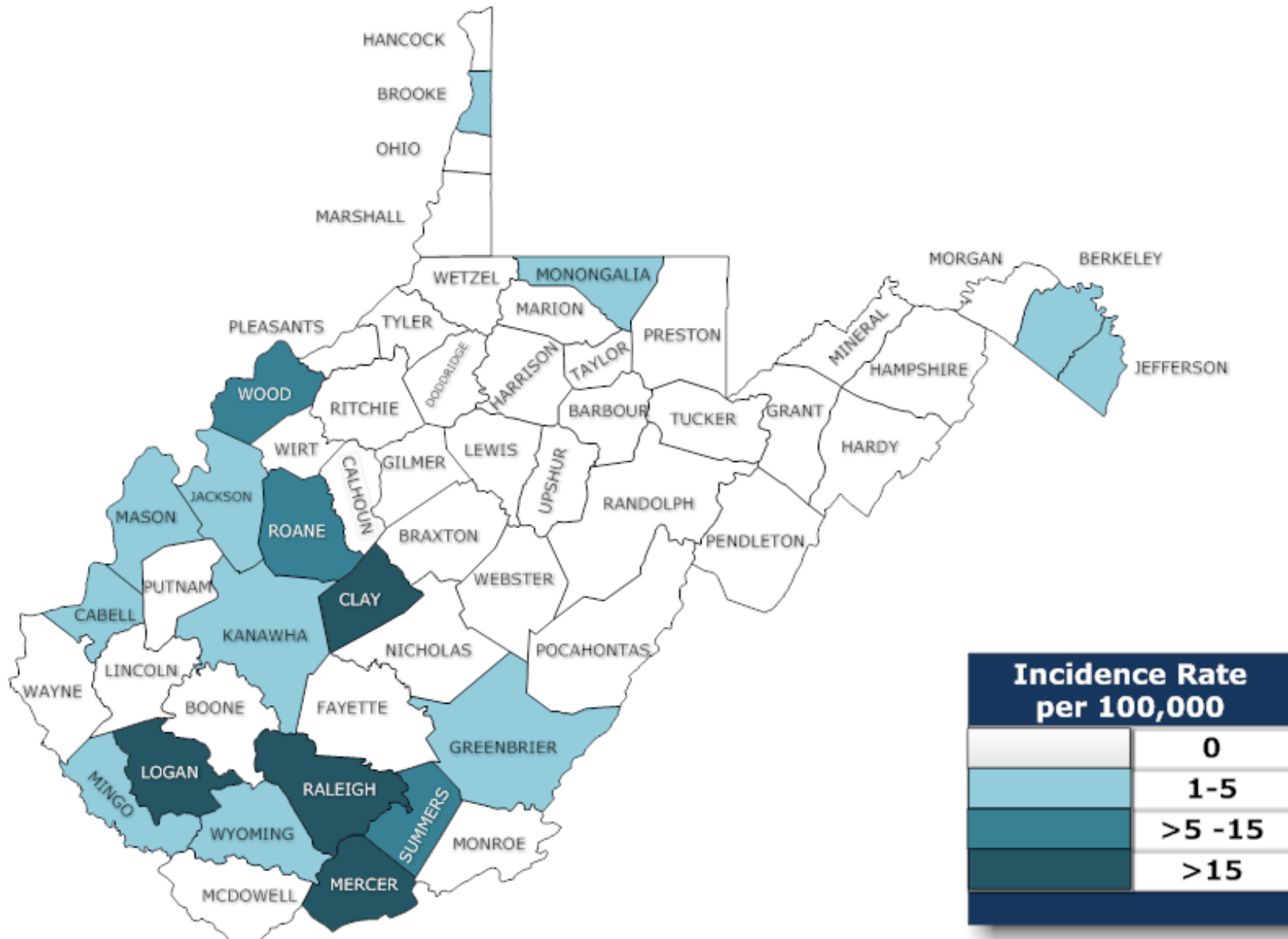
Incidence of Acute Hepatitis C in WV and US



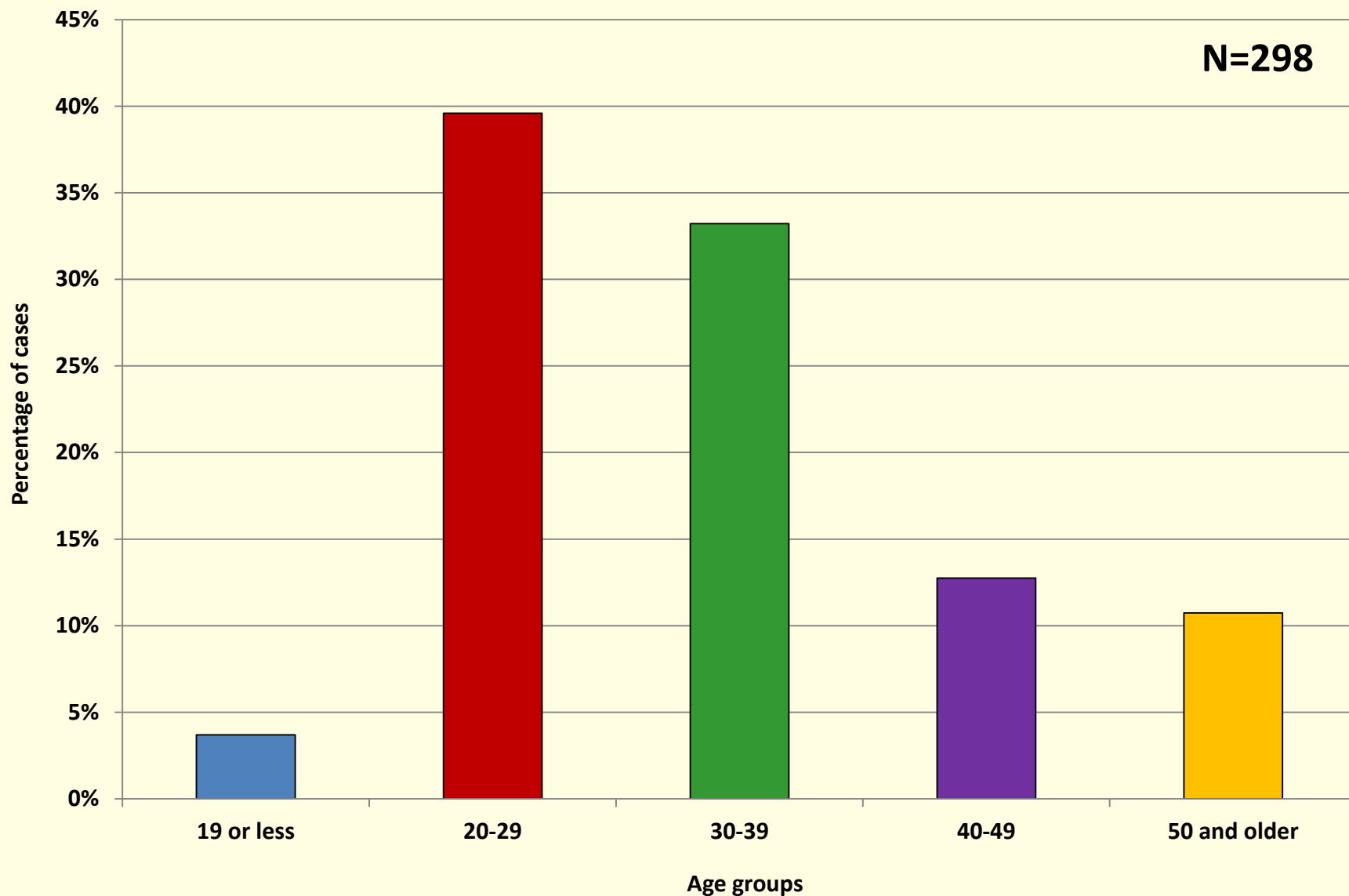
* WV rate: Number of cases reported by year of onset of disease, based on 2010 population estimate.

** U.S. rate from www.cdc.gov/hepatitis/statistics/2011Surveillance/Commentary.htm#hepC.

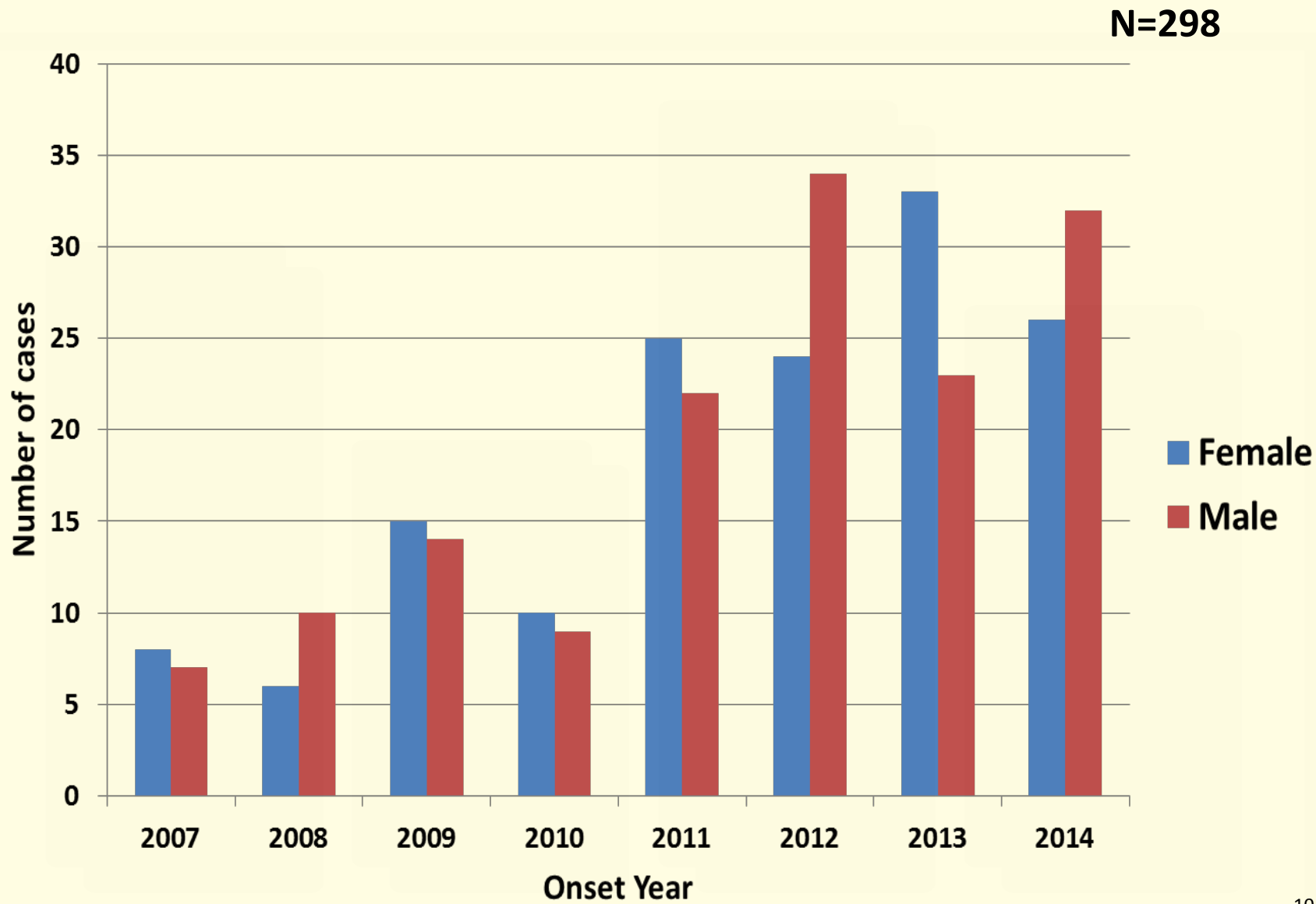
Incidence of Acute Hepatitis C in 2014



Acute Hepatitis C Distribution by Age Group, WV (2007-2014)

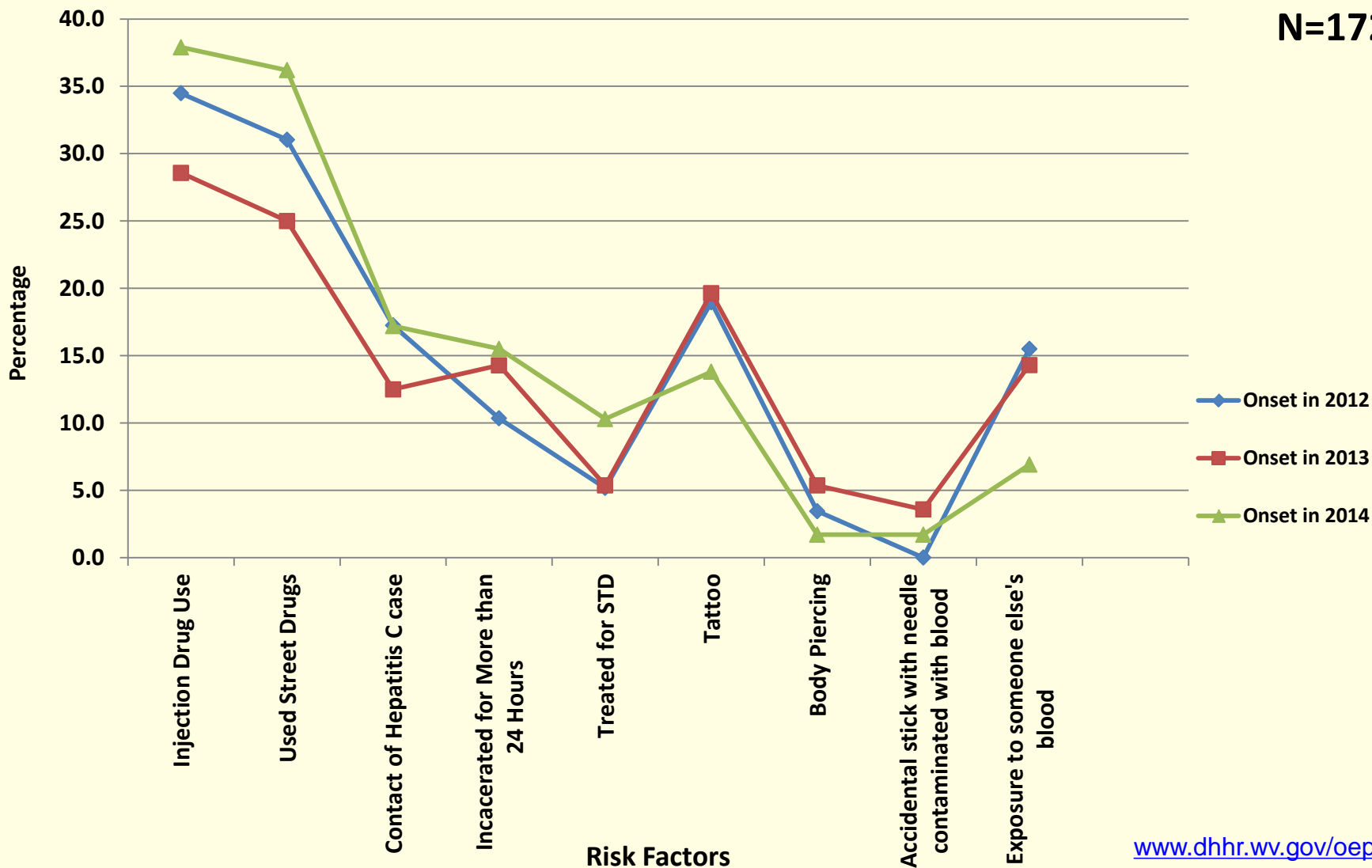


Acute Hepatitis C Distribution by Gender, WV (2007-2014)



Acute Hepatitis C Risk Factors Reported in WV (2012-2014)

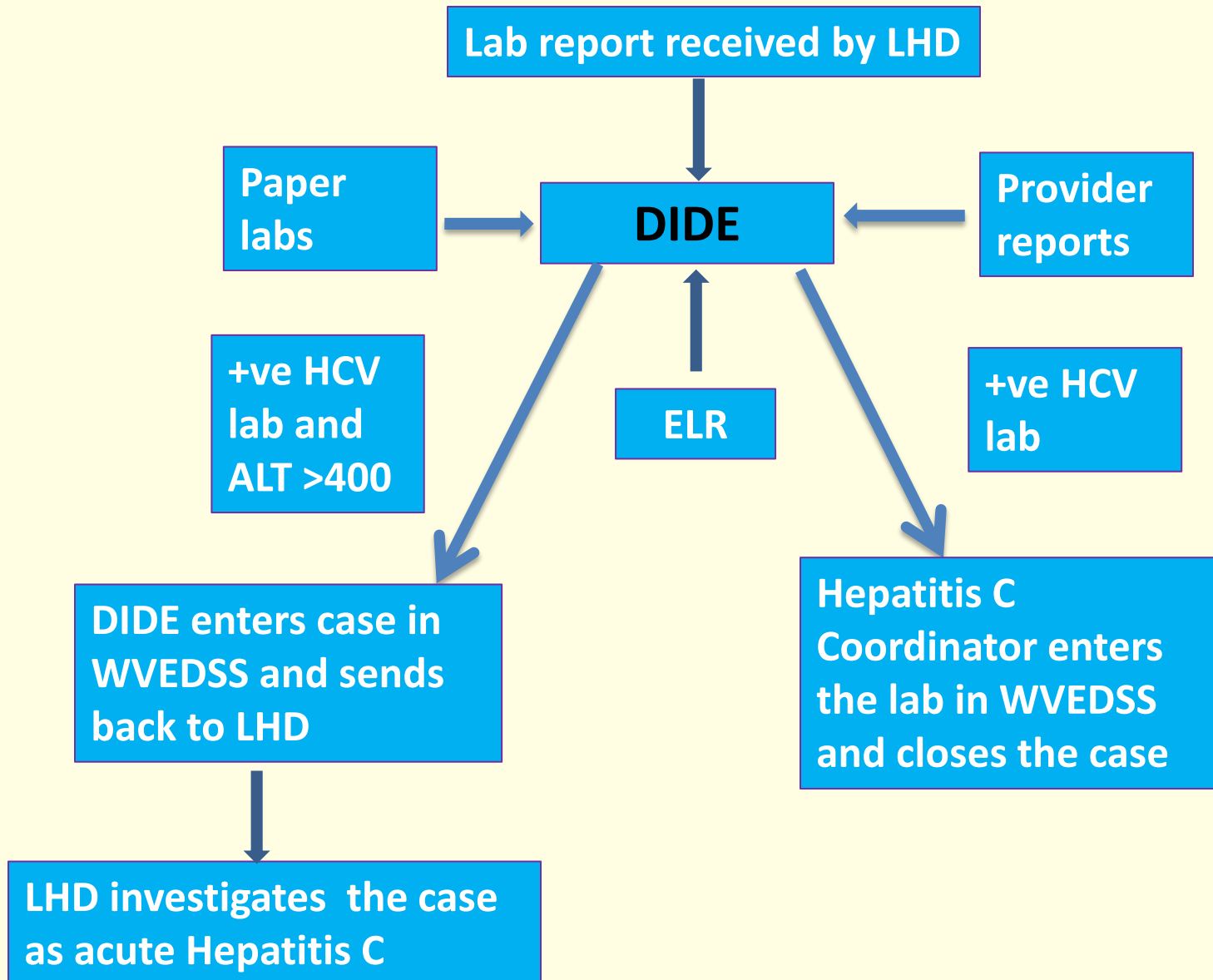
N=172



www.dhhr.wv.gov/oeps

Patient can report more than one risk factor

Hepatitis C Case Investigation



Common Laboratory Tests

Hepatitis C virus (HCV), antibody

Hepatitis C virus (HCV) quantitative by PCR

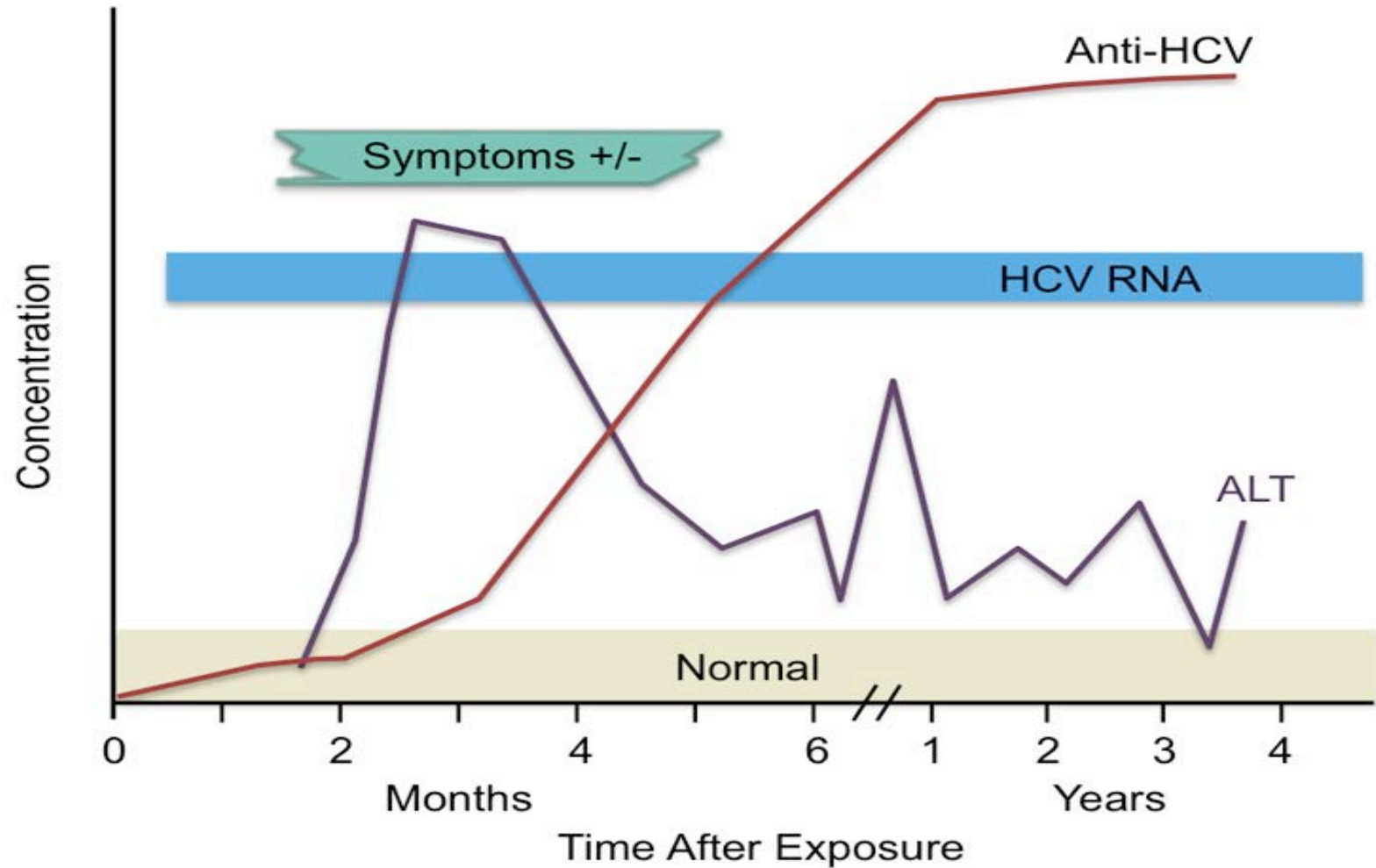
Hepatitis C virus (HCV) qualitative by PCR

Hepatitis C virus (HCV) genotyping

Aspartate aminotransferase (AST (SGOT))

Alanine aminotransferase (ALT (SGPT))

Laboratory Markers of Hepatitis C



Interpretation of Hepatitis C Tests

Test Outcome	Interpretation	Further Actions
HCV antibody non-reactive	No HCV antibody detected	No further action If recent exposure, test for HCV RNA by PCR
HCV antibody reactive	Presumptive HCV infection	Current, past infection that is resolved or false positive Perform RNA PCR test to identify current/past/resolved infection
HCV antibody reactive, HCV RNA detected	Current infection	Counsel and link to care
HCV antibody reactive, HCV RNA not detected	No current infection	No further action, except provide risk factor prevention information

2012 Case Definition - Acute Hepatitis C

Illness with discrete onset of symptoms of viral hepatitis and either jaundice or elevated ALT (>400 IU/L)

AND

Anti-HCV positive with a signal to cut off ratio predictive of true positive results

OR

NAT for HCV RNA (including qualitative, quantitative and genotyping)

OR

Positive Recombinant Immunoblot Assay (RIBA)

Confirmed: A case that meets the clinical case definition is laboratory confirmed and is not known to have chronic Hepatitis C. A documented -ve HCV laboratory test result followed within 6 months by a positive test.

2012 Case Definition - Hepatitis C Past/Present

Anti-HCV positive with a signal to cut off ratio predictive of true positive results

OR

NAT for HCV RNA (including qualitative, quantitative and genotyping)

OR

Positive RIBA

Confirmed: A case that is laboratory confirmed and does not meet the case definition for acute Hepatitis C.

Probable: A case that does not meet the case definition for acute Hepatitis C is anti-HCV positive (repeat reactive) and has ALT above the upper limit of normal, but the anti-HCV result has not been verified by an additional more specific assay or the signal to cut-off ratio is unknown.

2016 Case Definition – Key Changes

Criteria	Current case definition	Changes in 2016 case definition
Clinical	Illness with discrete onset of symptoms and either Jaundice or elevated ALT >400 IU/L	ALT level reduced to 200 IU/L
Laboratory	Antibody positive test requires signal cut off ratio	<ul style="list-style-type: none">• Antibody positive test does not require signal cut off ratio• Positive HCV antigen listed as one of the lab test• RIBA not included in the case definition• Sero conversion changed from 6 months to 12 months

**Illness with discrete onset of any signs or symptoms
consistent with acute viral hepatitis**

AND

Jaundice

OR

**Peak ALT > 200IU/L during
period of acute illness**

Positive test for antibodies to Hepatitis C

Hepatitis Virus detection by Nucleic Acid Testing (NAT)

Positive test for Hepatitis C Virus antigens

Acute, Confirmed

- Meets clinical criteria **AND** has a positive Hepatitis C virus detection test (RNA or Antigen) **OR**
- Documented negative HCV antibody, HCV antigen or NAT test result followed within 12 months by a positive result of any of these tests

Acute, Probable

- Meets clinical criteria but has no report of a positive Hepatitis C virus detection test **AND**
- Does not have test conversion within 12 months or has no report of test conversion

Chronic, Confirmed

- A case that does not meet the clinical criteria or has no report of clinical criteria **AND**
- Does not have test conversion within 12 months or has no report of test conversion **AND**
- Has a positive HCV NAT or HCV antigen test

Chronic, Probable

- A case that does not meet the clinical criteria or has no report of clinical criteria **AND**
- Does not have test conversion within 12 months or has no report of test conversion **AND**
- Has a positive anti-HCV antibody test, but no report of a positive HCV detection test

2016 New Case Surveillance Criteria

- A new case is an incident case that has not previously been reported as meeting case criteria for Hepatitis C
 - New acute infection (incidence)
 - Newly diagnosed chronic infection
- Cases may be reclassified
 - Probable acute case may become reclassified confirmed acute if subsequent HCV detection tests are reported in the same year
 - Acute probable or acute confirmed may become reclassified as a confirmed chronic case if subsequent HCV detection tests are reported one year or longer after acute onset
 - Confirmed acute cases do not become probable chronic cases

Surveillance Objectives

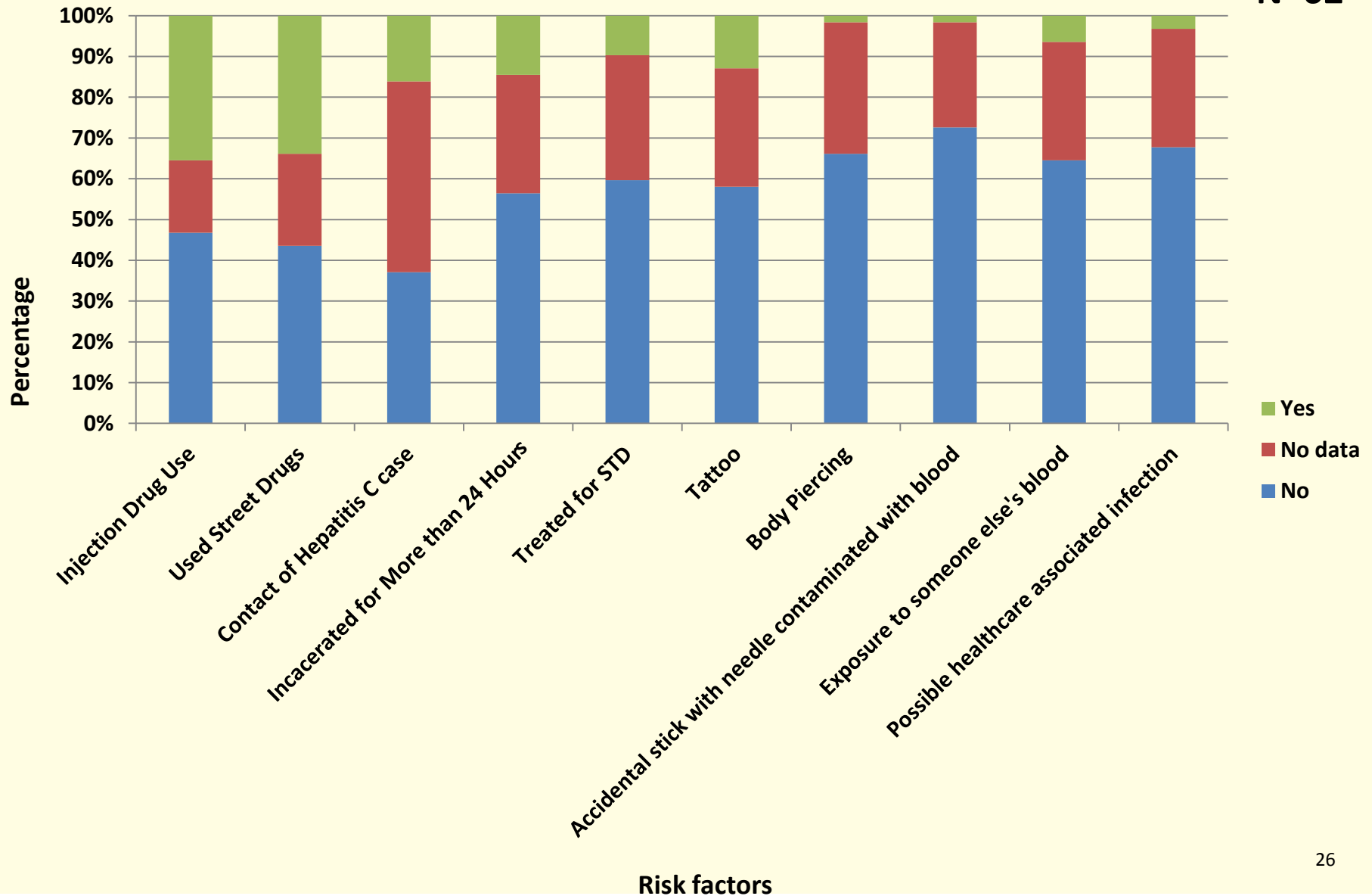
- Determine the incidence of acute Hepatitis C
- Annually estimate the number of newly diagnosed cases of chronic Hepatitis C
- Prospectively identify the risk factors associated with acute Hepatitis C
- Identify demographic characteristics of persons with Hepatitis C infection

Surveillance Objectives (Continued)

- Periodically assess access to care and quality of care for patients with Hepatitis C infection through special studies
- Periodically identify the lifetime risk factors associated with chronic Hepatitis C infection through special studies
- Detect outbreaks or clusters of Hepatitis C infection

Responses to Acute Hepatitis C Risk Factors, WV (2014)

N=62



- Proportion of acute cases of Hepatitis C with complete demographic information
- Proportion of acute cases of Hepatitis C with complete information on risk factors
- Proportion of acute cases of Hepatitis C who have been educated
- Proportion of chronic Hepatitis C cases with complete demographic and locating information

Important Public Health Actions

- Ensure the patient is educated about Hepatitis C transmission, prevention, and control
- A single case of possible healthcare associated Hepatitis C (case who had an invasive medical procedure during the 2 weeks to 6 months prior to onset and no other risk factors for Hepatitis C) is defined as an outbreak and should be investigated

Use CDC Healthcare Investigation Guide to investigate healthcare associated infection

(<http://www.cdc.gov/hepatitis/outbreaks/healthcareinvestigationguide.htm>)

Contact

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