C肝職業暴露後之處置

衛福部 疾病管制署
中區傳染病防治醫療網
王任賢 指揮官

HCV：Structure and Classification

- Unclassified virus, Member of the flavivirus family (other members yellow fever and dengue)
- Enveloped single stranded RNA virus
- Humans and chimpanzees only known reservoirs (virus-specific protein in blood)
- 6 serotypes (genotypes) and multiple subtypes based on high variability of envelope glycoproteins

HCV: Pathogenesis

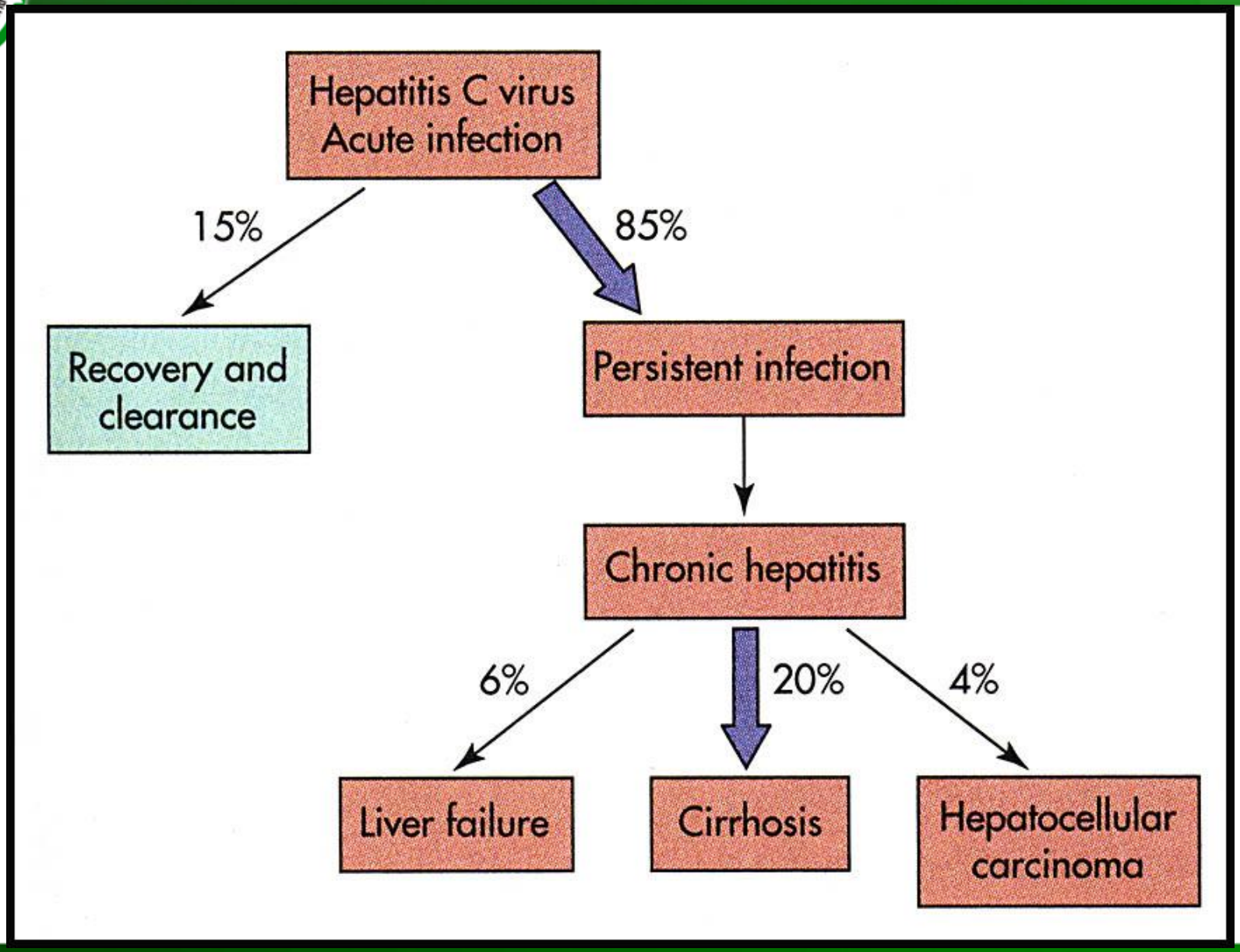
- Blood-borne pathogen that infects hepatocytes
- Much like Hep A and B, liver damage and clinical illness
- Likely cytotoxic T cells that mediate most of the damage
- Like other chronic liver diseases (Hep B and chronic alcoholism), can cause hepatocellular ca (HCC)

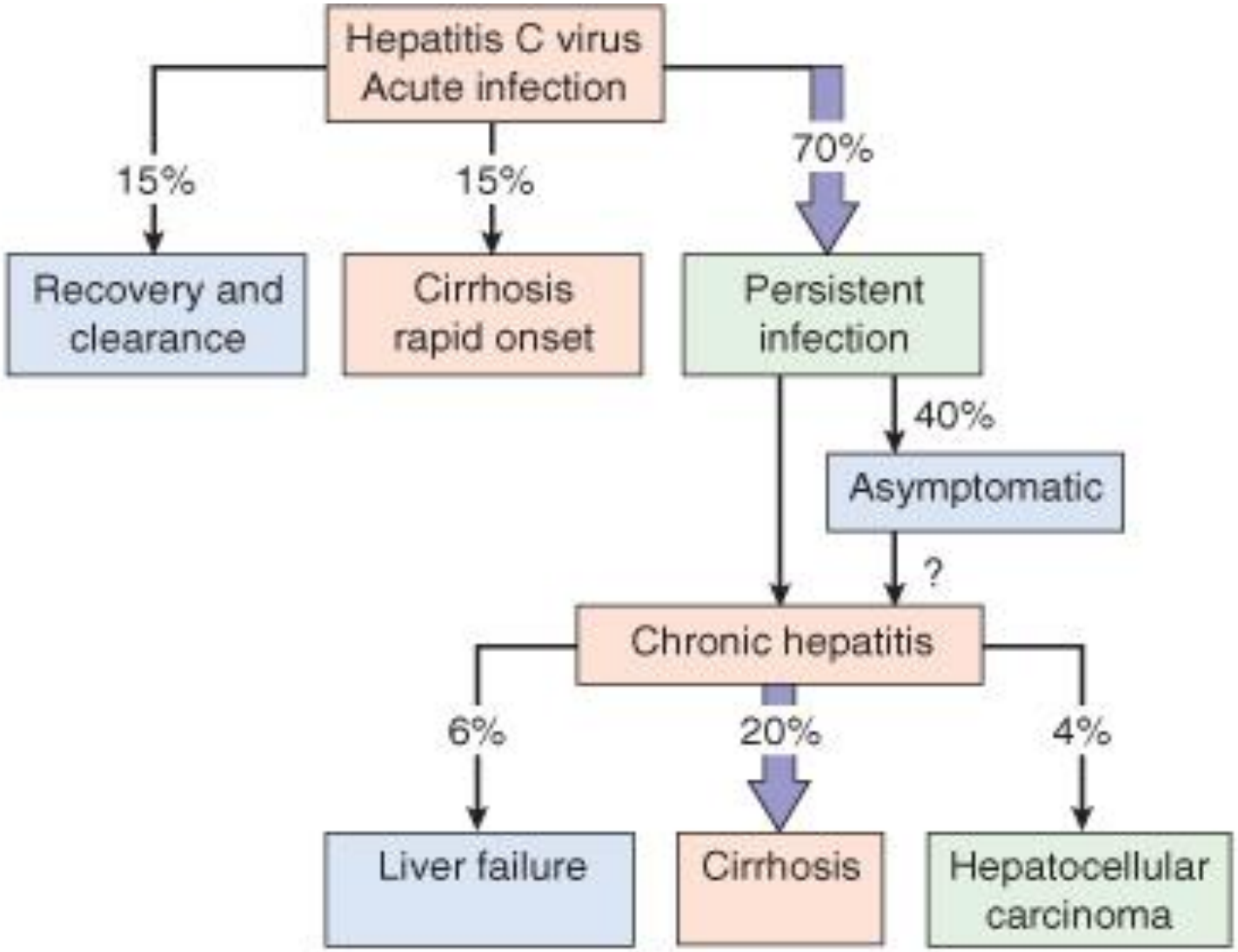
Features of Hepatitis C Virus Infection

Incubation period		Average 6-7 weeks Range 2-26 weeks
Acute illness (jaundice)		Mild (≤20%)
Case fatality rate		Low
Chronic infection		60%-85%
Chronic hepatitis	Age-related	10%-70%
Cirrhosis	Age-related	<5%-20%
Mortality	Age-related	1%-5%

Hepatitis C: Clinical Features

- Acute infection asymptomatic in over 80% of patients, when present, acute illness usually mild
  - Acute symptoms include jaundice, nausea, abdominal pain, loss of appetite, dark urine

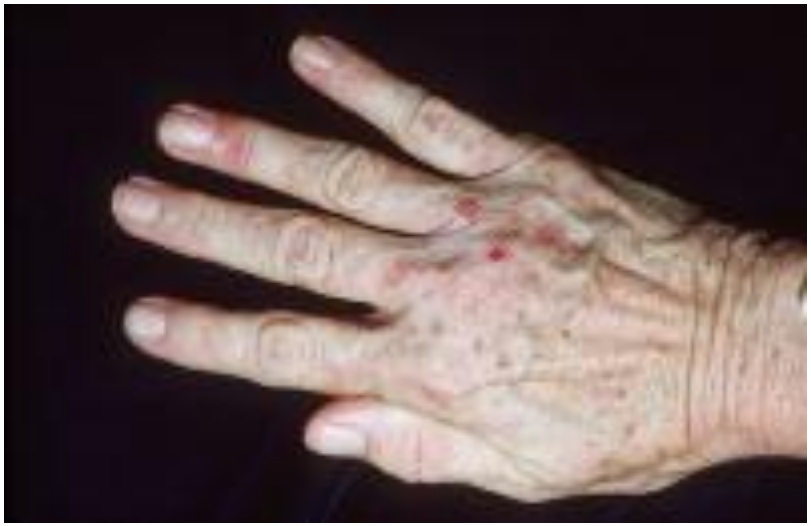

Hepatitis C virus
Acute infection
15%
85%
Recovery and clearance
Persistent infection
Chronic hepatitis
6%
20%
4%
Liver failure
Cirrhosis
Hepatocellular carcinoma

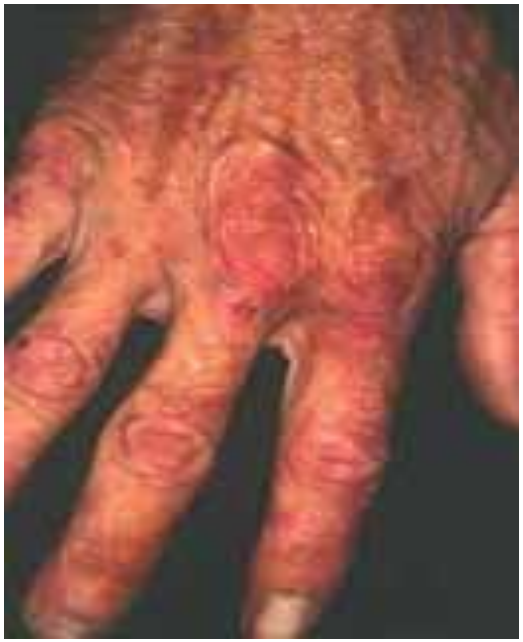


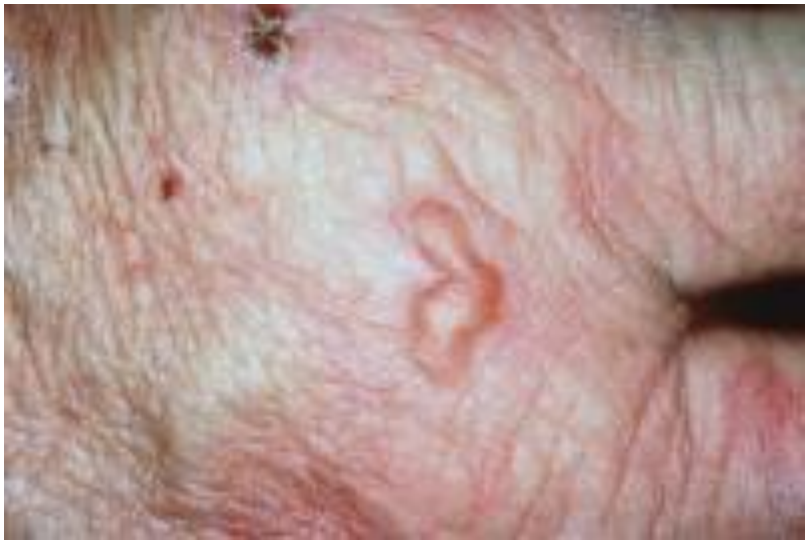
Hepatitis C: Extrahepatic Manifestations

- Seen with chronic infection
- ? Due to immune complexes
- Extrahepatic manifestations
  - Essential mixed cryoglobulinemia (vasculitis, skin rash, fatigue)
  - Porphyria cutanea tarda
  - Membranoproliferative glomerulonephritis
  - Other autoimmune disease

Porphyria cutanea tarda



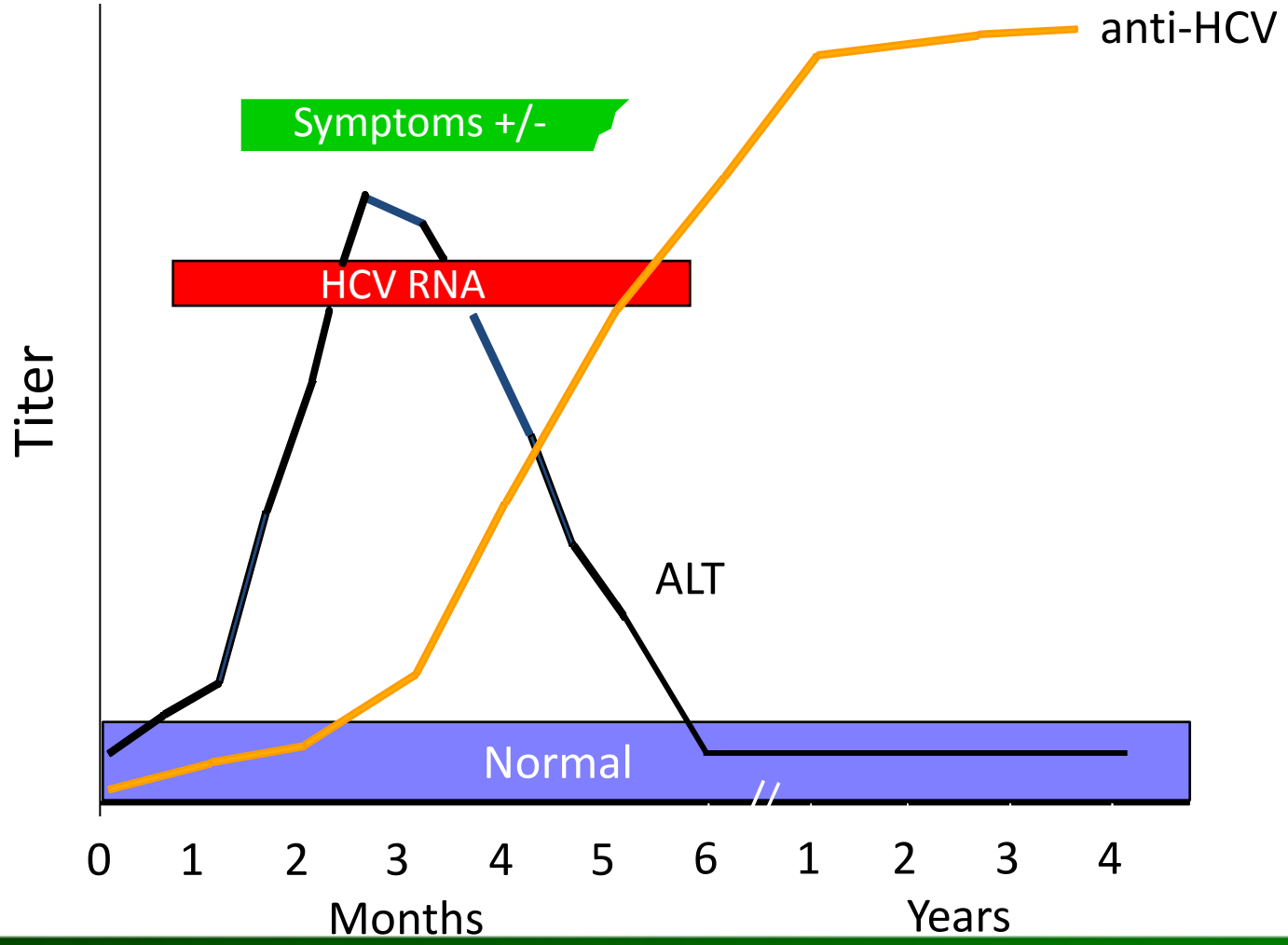




Chronic Hepatitis C
Factors Promoting Progression or Severity

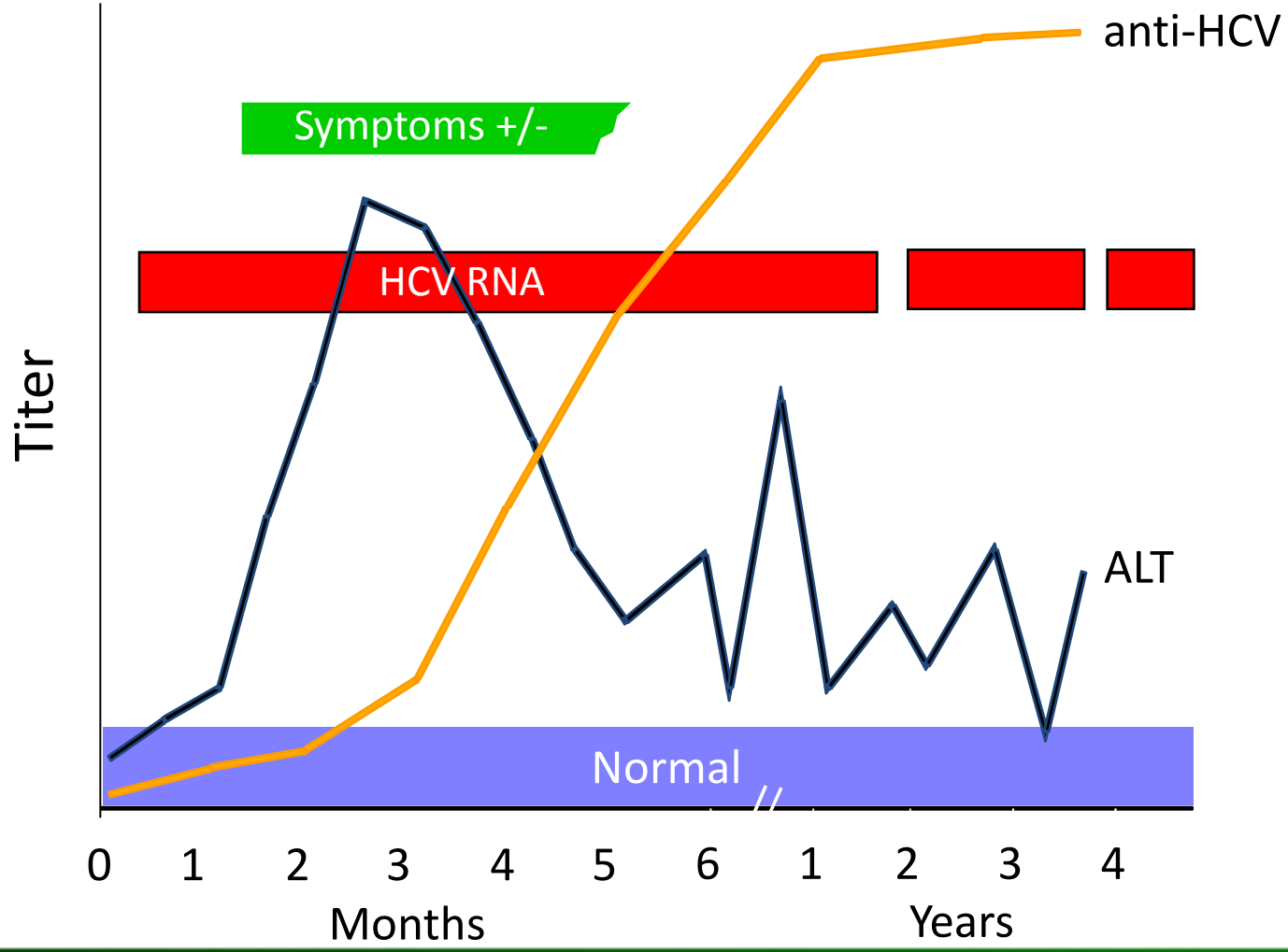
- Increased alcohol intake
- Age > 40 years at time of infection
- HIV co-infection
- Other
  - Male gender
  - Chronic HBV co-infection

Serologic Pattern of Acute HCV Infection with Recovery



Time after Exposure

Serologic Pattern of Acute HCV Infection with Progression to Chronic Infection



Time after Exposure

Hepatitis C: Diagnosis

- Dose not grow in cell culture
- ELISA-a serological test which is usually positive within 2-5 months after infection
  - 3rd generation assays now 99% specific and sensitive
- Confirmatory testing
  - PCR (positive 1-2 weeks post infection) both quantitative and qualitative (I.e. ye/no) available
  - RIBA (recombinant immunoblot assay)- looks for 2 or more antibodies to HCV viral antigens
- Genotype testing done when treatment anticipated

HCV Testing Routinely Recommended

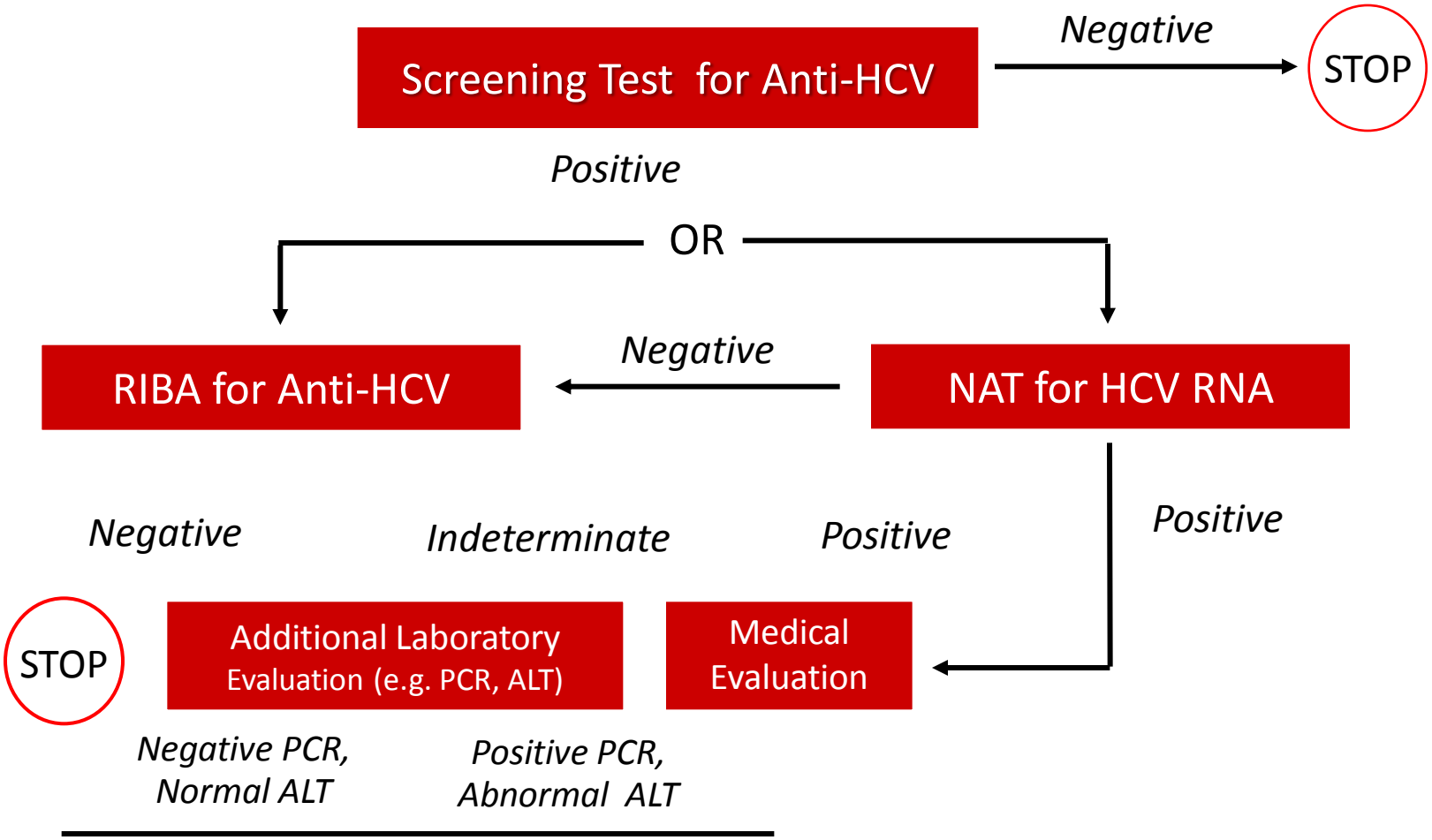
Based on increased risk for infection

- Ever injected illegal drugs
- Received clotting factors made before 1987
- Received blood/organs before July 1992
- Ever on chronic hemodialysis
- Evidence of liver disease

Based on need for exposure management

- Healthcare, emergency, public safety workers after needle stick/mucosal exposures to HCV-positive blood
- Children born to HCV-positive women

HCV Infection Testing Algorithm for Diagnosis of Asymptomatic Persons



Source: MMWR 1998;47 (No. RR 19)

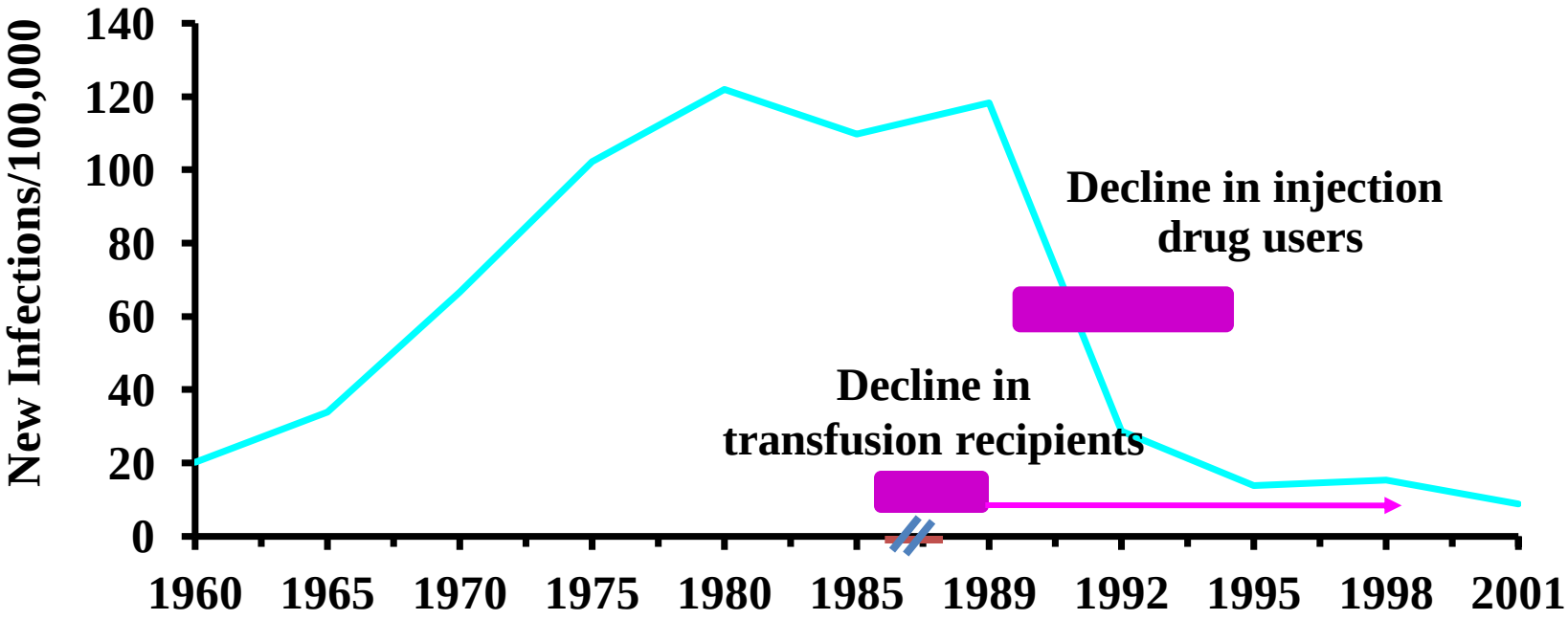
Medical Evaluation and Management for Chronic HCV Infection

- Assess for biochemical evidence of CLD
- Assess for severity of disease and possible treatment, according to current practice guidelines
  - 40-50% sustained response to antiviral combination therapy (peg interferon, ribavirin)
  - Vaccinate against hepatitis A
- Counsel to reduce further harm to liver
  - Limit or abstain from alcohol

Hepatitis C Therapy

- Systemic effects (fatigue, myalgias, depression, anemia)
- Standard of care is pegylated interferon alpha and ribavirin
- Overall response rate to treatment is 40-50% (higher for non 1 genotypes)

Estimated Incidence of Acute HCV Infection United States, 1960-2001

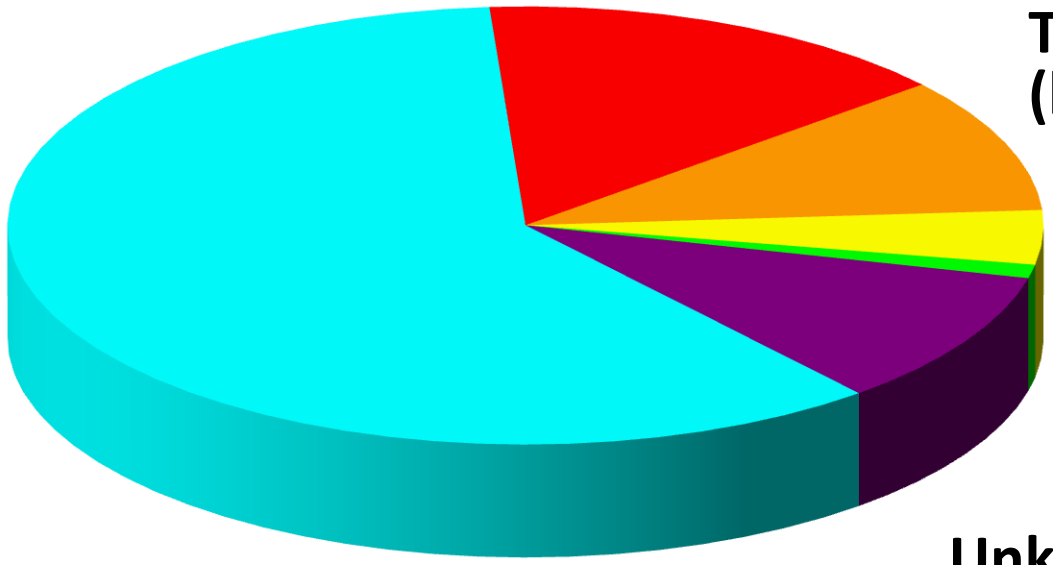


Source: Hepatology 2000;31:777-82; Hepatology 1997;26:62S-65S; CDC, unpublished data

Exposures Known to Be Associated With HCV Infection

- Injecting drug use
- Transfusion, transplant from infected donor
- Occupational exposure to blood
  - Mostly needle sticks
- Iatrogenic (unsafe injections)
- Birth to HCV-infected mother
- Sex with infected partner
  - Multiple sex partners

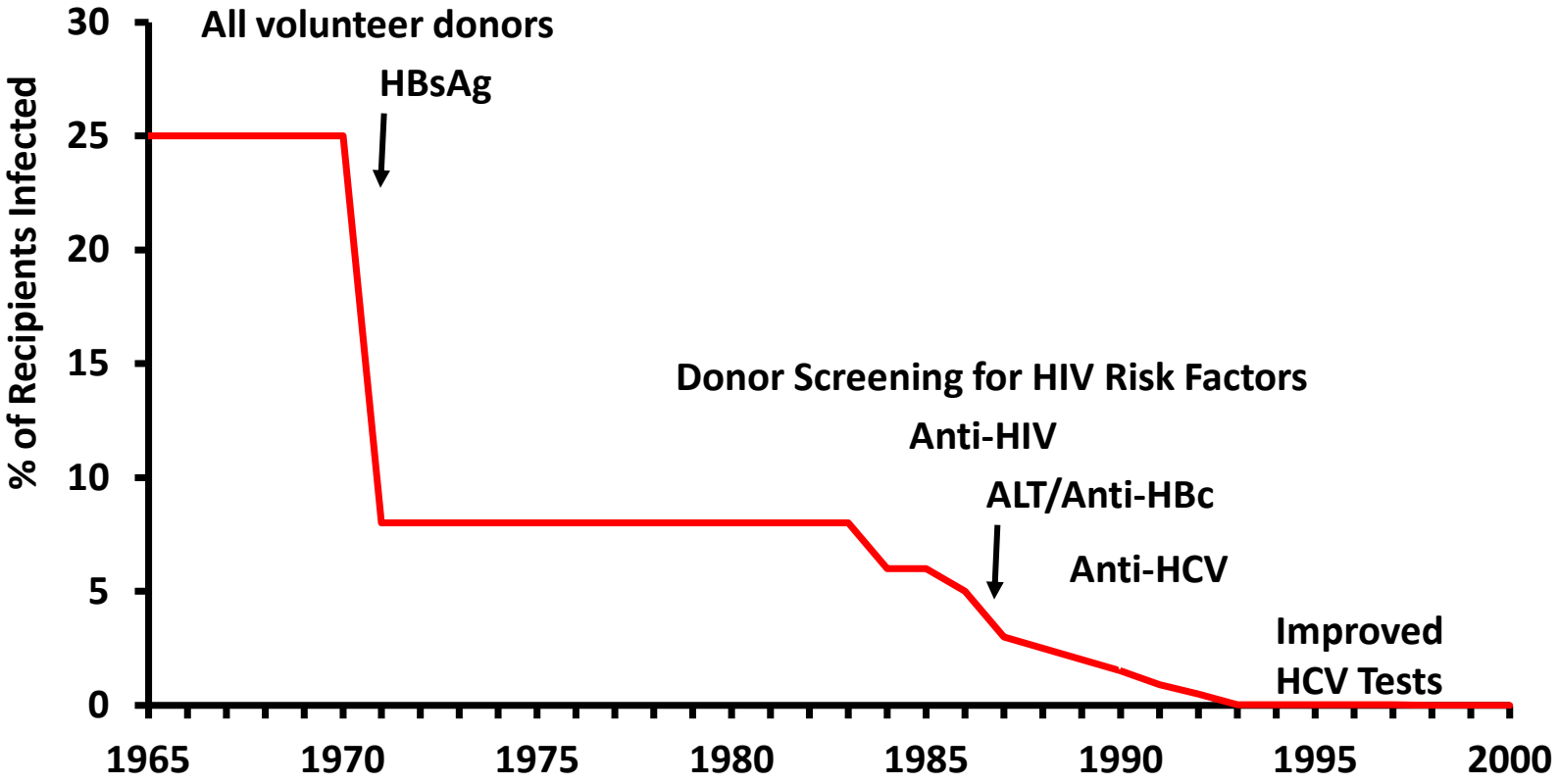
Sources of Infection for Persons With Hepatitis C



* Nosocomial; iatrogenic; perinatal

Source: Centers for Disease Control and Prevention

Posttransfusion Hepatitis C



Adapted from HJ Alter and Tobler and Busch, Clin Chem 1997

Injecting Drug Use and HCV Transmission

- Highly efficient
  - Contamination of drug , not just needles and syringes
- Rapidly acquired
- Four times more common than HIV

Occupational Transmission of HCV

- Inefficient by occupational exposures
- Average incidence 1.8% following needle stick from HCV-positive source

  Case reports of transmission from blood splash to eye; one from exposure to non-intact skin
- Prevalence 1-2% among health care workers
  - Lower than adults in the general population
  - 10 times lower than for HBV infection

Prenatal Transmission of HCV

- Transmission only from women HCV-RNA positive at delivery
  - Average rate of infection 6%
  - Higher (17%) if woman co-infected with HIV
  - Role of viral titer unclear
- No association with
  - Delivery method
  - Breastfeeding

Sexual Transmission of HCV

- Occurs, but efficiency is low
  - Rare between long-term steady partners
  - Factors that facilitate transmission between partners unknown (e.g., viral titer)
- Accounts for 15-20% of acute and chronic infections in the United States Partner studies
  - Low prevalence (1.5%) among long-term partners
    - infections might be due to common percutaneous exposures (e.g., drug use), BUT
  - Male to female transmission more efficient
    - more indicative of sexual transmission

Household Transmission of HCV

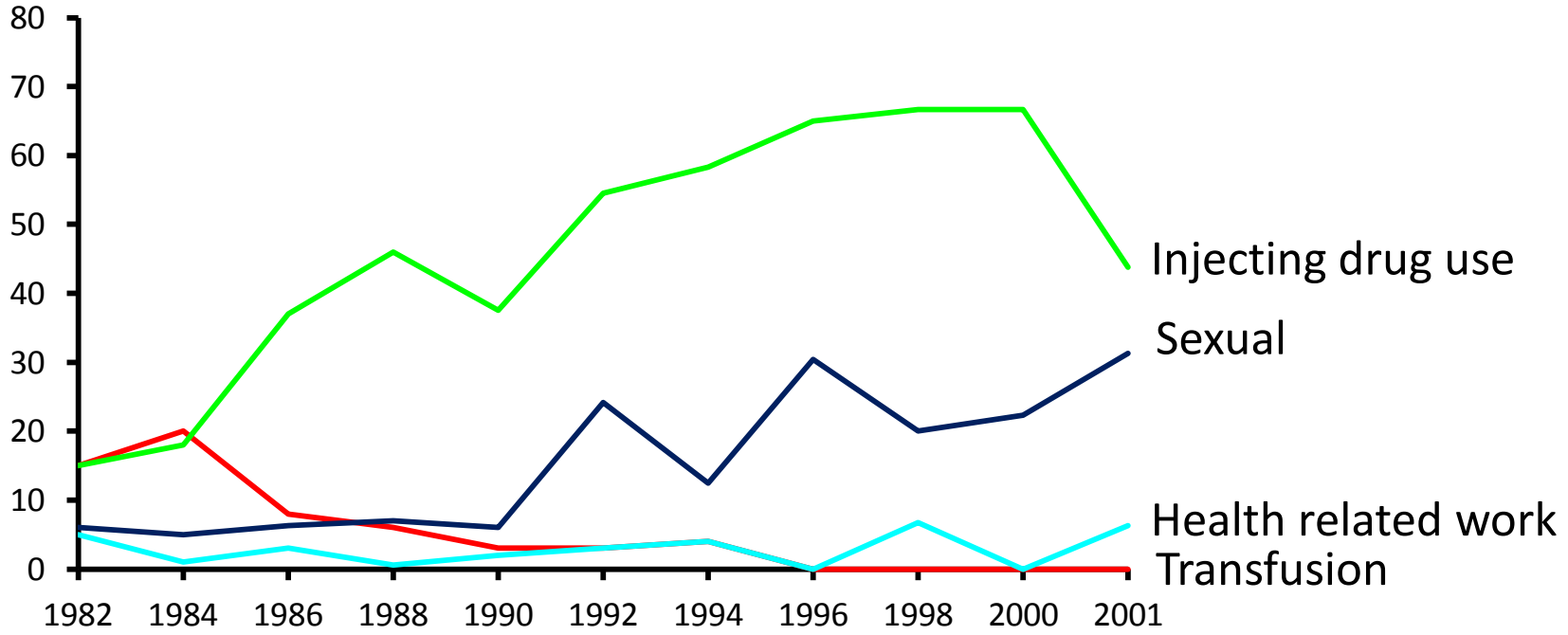
- Rare but not absent
- Could occur through percutaneous/mucosal exposures to blood
  - Contaminated equipment used for home therapies
    - IV therapy, injections
  - Theoretically through sharing of contaminated personal articles (razors, toothbrushes)

Occupational Exposure to HCV

Hepatitis C

- Hepatitis C - transmitted like HBV.
- Chances of infection following an exposure 10 times higher for HBV
- HCV - RNA virus with at least 6 different genotypes and 90+ subtypes.
- U.S. - Most common genotype is type 1 - accounts for ~70% of Hepatitis C infections
- No vaccine available for Hepatitis C
- Genotype 1 responds least favorably to alpha interferon and ribavirin treatments.

Reported Cases of Acute Hepatitis C by Selected Risk Factors, United States, 1982-2001*



* 1982-1990 based on non-A, non-B hepatitis

HCV Infection in Dentistry

- Frequency of HCV infection among dentists similar to that of general population (~ 1-2%)
- No reports of an HCV transmission from infected dental personnel to patients
- No reports of patient-to-patient transmission of HCV
- Risk of HCV transmission is very low

Occupational Risk of HCV Transmission among HCP

- Inefficiently transmitted by occupational exposures
- Three reports of transmission from blood splash to the eye
- Report of simultaneous transmission of HIV and HCV after non-intact skin exposure

HCV Infection in Dental Health Care Settings

- Prevalence of HCV infection among dentists similar to that of general population (~ 1%-2%)
- No reports of HCV transmission from infected DHCP to patients or from patient to patient
- Risk of HCV transmission appears very low

Occupational Transmission of HCV: I

- HCV is not transmitted efficiently through occupational exposures to blood. The average incidence of anti-HCV seroconversion after accidental percutaneous exposure from an HCV-positive source is 1.8%.
- Transmission rarely occurs from mucous membrane exposures to blood, and no transmission in HCP has been documented from intact or nonintact skin exposures to blood.

Occupational Transmission of HCV: II

- Data are limited on survival of HCV in the environment. In contrast to HBV, the epidemiologic data for HCV suggest that environmental contamination with blood containing HCV is not a significant risk for transmission in the health-care setting, with the possible exception of the hemodialysis setting where HCV transmission related to environmental contamination and poor infection-control practices have been implicated.

Postexposure Management for HCV

- IG, antivirals not recommended for prophylaxis
- Follow-up after needlesticks, sharps, or mucosal exposures to HCV-positive blood
  - Test source for anti-HCV
  - Test worker if source anti-HCV positive
    - Anti-HCV and ALT at baseline and 4-6 months later
    - For earlier diagnosis, HCV RNA at 4-6 weeks
  - Confirm all anti-HCV results with RIBA
- Refer infected worker to specialist for medical evaluation and management

HCV Post-exposure Management: I

- Baseline evaluation and testing of source patient
- Baseline evaluation and testing of HCW
- If HCV + Source, labs for HCW:
  - Baseline HCV Ab, baseline LFTs (ALT), and HCV RNA (if +HCV Ab)*
  - Follow-up testing for HCV RNA between 4-6 weeks after exposure (Penn has f/u in 2 weeks*)
  - Follow-up testing for HCV Ab, HCV RNA, and ALT between 4-6 months after exposure

HCV Post-exposure Management: II

- There is NO proven effective post-exposure prophylaxis for persons exposed to HCV BFEs. Immunoglobulin and antiviral agents are NOT recommended.
- When HCV transmission is identified early, the individual should be referred to a specialist knowledgeable in the management of acute HCV infection, since early treatment is associated with excellent cure rates.
- HCV can remain infectious for between 16 hours and 4 days.

HCV Postexposure Management: III

- In 1994, the Advisory Committee on Immunization Practices (ACIP) reviewed available data regarding the prevention of HCV infection with IG and concluded that using IG as PEP for hepatitis C was not supported.

This conclusion was based on the following facts:

- No protective antibody response has been identified following HCV infection.
- Previous studies of IG use to prevent posttransfusion non-A, non-B hepatitis might not be relevant in making recommendations regarding PEP for hepatitis C.
- Experimental studies in chimpanzees with IG containing anti-HCV failed to prevent transmission of infection after exposure.

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