HEPATITIS C VIRUS INFECTION

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Hepatitis C virus (HCV) is a hepatotropic RNA virus. Following acute infection, the majority of patients develop chronic liver inflammation that can result in cirrhosis and hepatocellular carcinoma. HCV infection is the leading indication for liver transplantation in many parts of the world.

EPIDEMIOLOGY

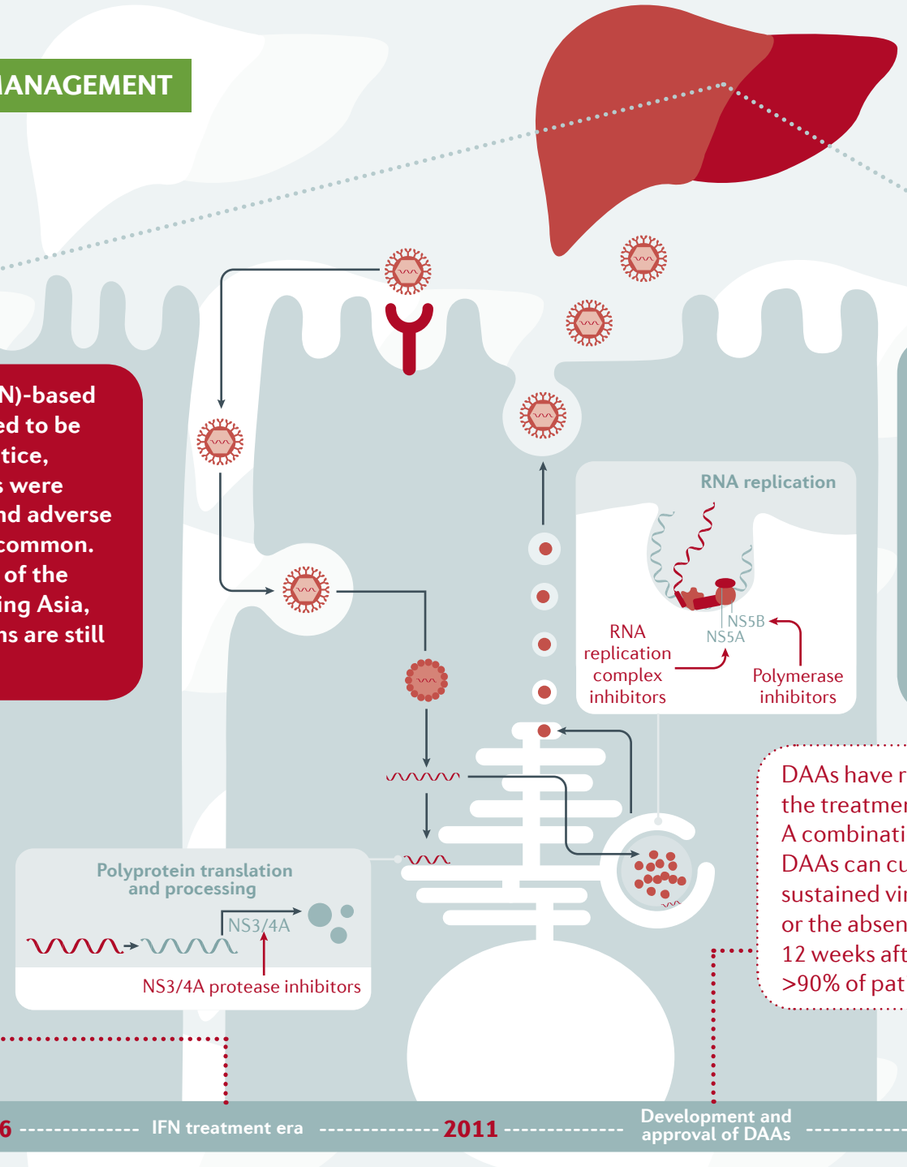
The global prevalence of HCV infection, based on the detection of viral RNA in the blood, has been estimated at ~1%, which corresponds to ~80 million infections. The age distribution of infection varies across countries. The average age of infected individuals is considerably lower in countries where injection drug use is an ongoing risk factor (~35 years) than in countries where iatrogenic infections (that is, infections due to a medical procedure) are the main cause (~50–60 years). In addition, HCV genotypes — seven of which have been detected thus far — show geographical variation.

50–60% of HCV infections in Europe and the United States are due to unsafe injection drug use.

Worldwide prevalence varies considerably, with the highest prevalence in countries with past or present history of iatrogenic infections. Some African and Asian countries have a prevalence of >5% in the adult population.

MANAGEMENT

Interferon (IFN)-based treatment used to be common practice, but cure rates were suboptimal and adverse effects were common. In some parts of the world, including Asia, these regimens are still being used.



Between 2013 and 2016, 11 different direct-acting antiviral agents (DAAs) against three viral proteins (NS3/4A, NS5A and NS5B) have been approved.

DAAs have revolutionized the treatment of HCV infection. A combination of two or three DAAs can cure (defined as a sustained virological response or the absence of viral RNA 12 weeks after treatment) >90% of patients.

DIAGNOSIS

HCV infection is often asymptomatic, until the liver damage has progressed. Diagnostic, screening and monitoring procedures include HCV antibody testing, HCV RNA measurement, viral genotype and subtype determination and the assessment of resistance-associated substitutions, which are genetic substitutions that make the virus less susceptible to commonly used DAAs.

45–85% of infected individuals are unaware of their condition.

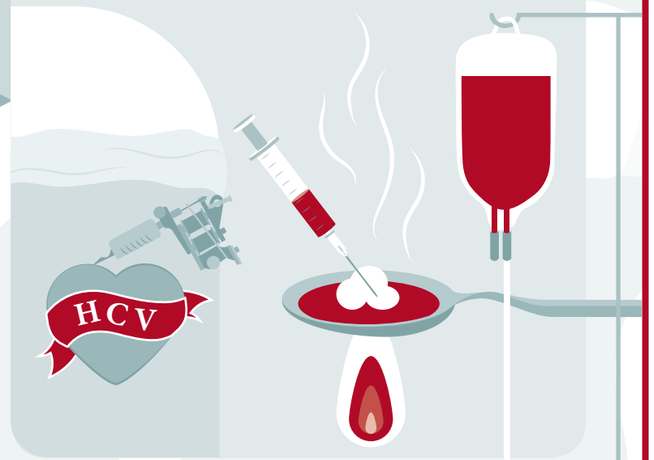
PREVENTION

HCV is mainly transmitted through percutaneous exposure to infected blood owing to unsafe injection drug use or medical procedures. Causes of iatrogenic infections range from blood transfusions or administration of clotting factors (prior to screening that started in the 1990s) to reuse of contaminated materials. Prevention is aimed at minimizing the risk of transmission: avoid direct exposure to blood; do not share needles or personal care items; only use licensed tattoo and piercing parlours; and avoid risky sexual activities. Screening of individuals at increased risk is recommended.

MECHANISMS

HCV infection can be associated with extrahepatic manifestations.

The balance between HCV clearance (the resolution of acute infection) and persistent infection (chronic HCV infection) depends on an interplay between the innate and adaptive immune systems, but the precise mechanisms remain incompletely understood. Local liver inflammation is an important driver of fibrogenesis, characterized by the activation of hepatic stellate cells into myofibroblasts, which produce excess extracellular matrix.



Written by Liesbet Lieben; designed by Laura Marshall

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