THE NORTHERN HOSPITAL

HEPATITIS A

Introduction

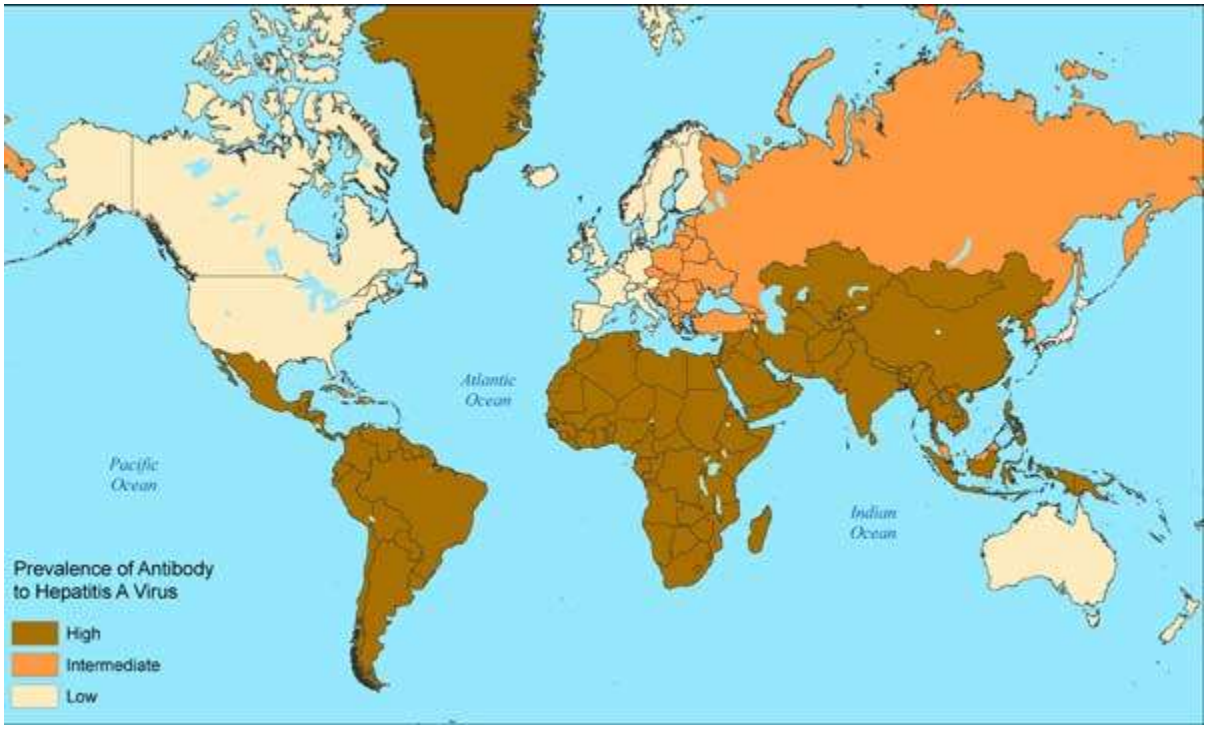
Hepatitis A occurs worldwide. It is a **highly contagious** disease.

In developing countries most people are infected during childhood.

Hepatitis A causes **acute viral hepatitis** but does *not* lead to chronic hepatitis.

With good sanitation and hygiene in the developed world, most people now reach adulthood without experiencing this infection.

Epidemiology



Prevalence of antibody to hepatitis A virus, 2006 (CDC)

Hepatitis A occurs worldwide.

The incidence of disease is related to hygiene and sanitation conditions.

When environmental sanitation is poor, infection is common and occurs at a young age.

In some South-East Asian countries, more than 90 % of the general population can have serological evidence of prior infection with hepatitis A, compared with industrialized countries, with a rate of around 33 %

Pathology

Organism

Hepatitis A virus (HAV), is classified in the hepatovirus genus from the Picornaviridae family

It is a small single-stranded non-enveloped RNA virus.

Complications

Complications of hepatitis A are uncommon.

There is usually complete recovery without sequelae.

Acute fulminant hepatitis can occur **rarely.**

Hepatitis A does **not** cause chronic liver disease or malignancy.

Transmission

The precise timing and mode of transmission are often difficult to define.

Most commonly the source of infection is from an infected household member or close contact

In about half of all **Victorian** cases, no clear source is identified.

The virus survives well in the environment and can persist on hands for several hours. It is thermostable and can remain infectious in food kept at room temperature for days, and for **weeks in frozen food,** (and so can be contracted even from **ice**).

Virus transmission is enhanced because virus shedding precedes development of symptoms and infected subjects may be unaware that they need to practice high levels of sanitation

Infection is transmitted by:

- The faecal-oral route from person to person or via fomites.
    - ♥ Infectious food handlers may contaminate non-cooked foods such as salads.
- Sexual contact may also be a source of infection.

- Blood borne routes:
    - ♥ Several outbreaks have been associated with injecting (and non-injecting) drug use.
    - ♥ Rarely, transmission through blood and clotting factor concentrates from viraemic donors during their incubation period has been reported.

Worldwide, most infection results from exposure to contaminated food or water.

Outbreaks in **Victoria** have been associated with contaminated shellfish, (Wallis Lake, 1997), lettuce, semi-dried tomatoes (2009), frozen berries (2015) and river water. Filter-feeding shellfish such as oysters raised in contaminated waters may harbour the virus.

Period of Communicability

- Cases are most infectious from the latter half of the incubation period until a few days after the onset of jaundice, (corresponding to a peak in transaminase levels in cases without jaundice).
- *Most* cases are not infectious after the **first week** of jaundice, however, longer term carriage / excretion (up to 6 months) of the virus in faeces has been documented in infants and children.

Susceptibility and Resistance

- All non immune people are susceptible to infection.
- Antibodies produced in response to hepatitis A usually last for life and protect against reinfection.

Incubation Period

- The incubation period is 2 - 8 weeks, with an average of about 4 weeks

Reservoir

- Humans and, rarely, non-human primates (chimpanzees and other primates) are reservoirs.

Clinical Features

Clinical disease can range from asymptomatic, especially in children below the age of 6 years to, on rare occasions, fulminating.

In children less than 6 years of age, around 70 % of infections are asymptomatic. If illness does occur, it is typically *not* accompanied by jaundice.

Hepatitis A typically causes:

1. Acute fever.

2. Non-specific constitutional symptoms:

    - Malaise / lethargy.

3. GIT upset:

    - Anorexia, nausea, vomiting

    - Right upper quadrant abdominal discomfort.

4. Jaundice:

    - This follows a few days later. Jaundice however does not always occur.

    - Dark urine and clay-coloured stools may occur. Dark urine usually *precedes* the development of jaundice

Symptoms usually last several weeks although convalescence can be prolonged.

Symptoms usually last less than 2 months, although around 15 % of symptomatic patients will have prolonged or relapsing disease for up to 1 year.

Severe illness may rarely occur when hepatitis A infection complicates pre-existing liver disease.

Investigations

1. Serology:

    The virus can be detected in the blood and stool of most people during the acute phase of infection.

    - **IgM anti-HAV antibodies** in acutely ill or recently ill patients establishes the diagnosis of acute infection.

        ♥ These antibodies become detectable around 5 - 10 days after exposure.

        ♥ They generally persist for 2 - 4 months after infection, (and rarely up to 12 months)

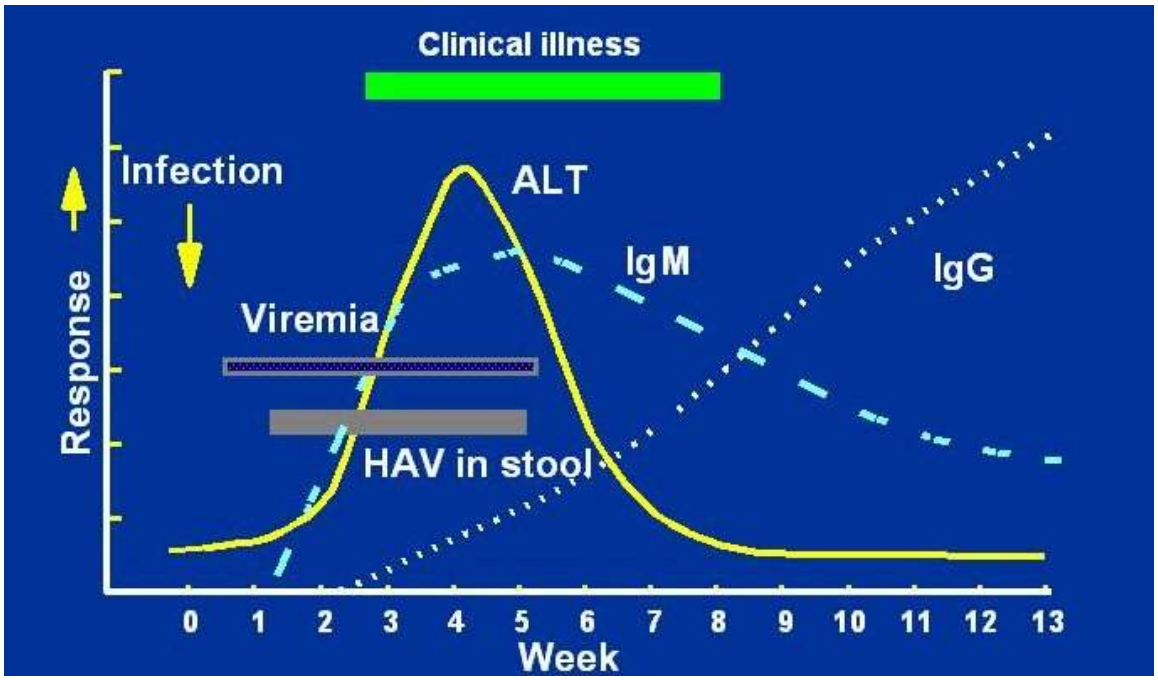
- ♥ False positive IgM results can also occur, especially in **older people,** so testing for anti-HAV IgM should ideally be done only when hepatitis A is clinically suspected.

- **IgG anti-HAV antibodies** alone are evidence of **past infection** or **immunization.**

  A fourfold or greater increase in IgG anti-HAV antibodies in paired sera may also establish the diagnosis of acute hepatitis A.

2. LFTs:

In the acute stage of the illness, blood biochemistry shows elevated transaminase levels indicating hepatocellular damage. The pattern of liver function tests may be non-specific in later illness.



From CDC Website

3. PCR Testing:

PCR testing can also be done for hepatitis A virus.

It is an expensive test that is not done routinely, but may be considered when:

- Serology testing is inconclusive, or there is a possibility of a false positive test or false negative test.

- Very early in the course of illness in unwell patients with suggestive symptoms and raised liver transaminases.

- In outbreak scenarios where further characterization of the virus by genotyping and sequence may aid in identifying the source

Management

1. Treatment is generally supportive.

2. Educate the patient and their family / close contacts on the need for strict hygiene practices.

3. Infected persons should not prepare meals for others while infectious, nor share utensils, toothbrushes, towels and face washers.

4. Dispose of or thoroughly wash nappies of infants that have hepatitis A.

Prevention

Boiling or cooking food and beverage items for at least 1 minute to 185° F (85° C) inactivates HAV. Foods and beverages heated to this temperature and for this length of time cannot serve as vehicles for HAV infection unless they become contaminated after heating.

Adequate chlorination of water will inactivate HAV.

Travellers should be advised that, to minimize their risk of hepatitis A and other enteric diseases in developing countries, they should avoid potentially contaminated water or food.

Travelers should also be advised to avoid drinking beverages (with or without ice) of unknown purity, eating uncooked shellfish, and eating uncooked fruits or vegetables that are not peeled or prepared by the traveler personally.

Vaccination

Inactivated hepatitis A vaccines are available for use in people **1 year of age and over.**

Protection begins within **14 - 21 days** after the first dose. A second dose is required for long term protection.

Seroconversion occurs after **4 weeks.**

In Australia the vaccine is recommended for the following groups:

- All travellers to, and all expatriates living in, moderate to high endemic areas (including all developing countries)

- Aboriginal and Torres Strait Islander children residing in the Northern Territory, Queensland, South Australia and Western Australia
- Those whose occupation may put them at risk of acquiring hepatitis A
- Those who live and work in rural and remote Indigenous communities
- Childcare and preschool personnel
- Carers of people with intellectual disabilities
- Healthcare workers who regularly provide care for Aboriginal and Torres Strait Islander children
- Plumbers / sewerage workers
- Sex workers
- Those whose lifestyle may put them at risk of acquiring hepatitis A
- Men who have sex with men
- People who inject drugs
- People with intellectual disabilities
- People chronically infected with hepatitis B or hepatitis C viruses
- People with chronic liver disease.

See The Australian Immunization Handbook for full prescribing details of hepatitis A vaccination.

Post Exposure Prophylaxis:

Normal Human Immunoglobulin **(NHIG)** can be given to **susceptible contacts**, (including sexual) as either pre-exposure or post exposure to hepatitis A.

A close contact is a person who has had contact with a case during the 2 weeks before and up until 1 week after the onset of jaundice or dark urine.

NHIG must be given **as soon as possible** and **within 14 days** of exposure to be effective.

Timely administration of NHIG will prevent or modify clinical illness for approximately six weeks after the dose.

However, people exposed and infected before the administration of NHIG may still experience a mild infection, and may have the potential to infect others if strict personal hygiene is not maintained.

See The Australian Immunization Handbook for full prescribing details of NHIG administration.

Notification

Hepatitis A (Group A disease) must be notified immediately by telephone, followed by written notification within 5 days.

This is a Victorian statutory requirement.

Exclusion:

Exclude patients from childcare, school or work (for food handlers, and healthcare workers with direct patient contact) for **1 week** *after the onset of illness or jaundice* and until they are *well.*

References

1. The Blue Book, Website, Accessed June 2017

2. The Australian Immunization Handbook 10th ed. June 2015.

3. CDC Website, Accessed June 2017.

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Professor Scott Bowden, Head of Molecular Microbiology, VIDRL
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