Hepatitis Alphabet Soup - An Outbreak Of Confusion

By Josh Bloom — August 6, 2019

Florida recently declared a **statewide emergency** because of an inordinately large number of hepatitis A infections. There are more than 2,000 confirmed cases of the viral infection this year - almost four-times that for all of 2018. And it's not just Florida that is being hit. As of August 2nd, the **CDC has reported** more than 23,000 cases nationwide resulting in 14,000 hospitalizations and 233 deaths. You do not want to catch hep A; it can make you very sick.

The virus is bad enough, but the system to name it might be worse. This is because there are **five** known types of hepatitis – A, B, C, D, and E. Of these five only the first three present a significant health risk to humans. I will be discussing only these three.

Someone without expertise in virology or medicine would conclude that hepatitis A, B, and C were similar strains of the same virus. They are not; all these three pathogens have in common is the site of infection – the liver. The three have far more differences.

**HEPATITIS A**
Hepatitis A is a short-term, highly contagious infection that is typically spread by food handlers. It can also be spread by contaminated surfaces or handshakes. Although the infection is usually self-limiting in normally healthy people it can be severe, even deadly, in the elderly and those with compromised immune systems. Symptoms include "fever, malaise, loss of appetite, diarrhea, nausea, abdominal discomfort, dark-colored urine and jaundice (yellowing of the skin and whites of the eyes)."

Hepatitis A is similar to norovirus in certain ways, especially its high infectivity, gastrointestinal symptoms, and means of transmission (1) but there are also differences:

- There is an effective vaccine available for hep A, but not for norovirus.
- Hep A infects the liver while norovirus infects the small intestine.
- The incubation period is about two weeks for hep A and about two days for norovirus.
- Hep A can be spread sexually. Norovirus is not.

Hepatitis A belongs to the *picornaviridae* family of viruses. Other members of this family include rhinovirus (common cold) and polio.

**HEPATITIS B**

Hepatitis B could not be more different than hepatitis A. It is transmitted by blood and sexual contact. While symptoms of hepatitis A begin 2-4 weeks following infection, hepatitis B infects the liver and does slow, relentless damage over the course of decades, resulting in cirrhosis, liver failure, and hepatocellular cancer.

Unlike hepatitis A, there are direct-acting antiviral drugs for the infection. There is also a vaccine, which was first approved in 1981. The CDC recommends that children receive three
vaccinations: at birth, between 1-2 months, and between 6-15 months.

Hepatitis B belongs to the *hepadnavirus* family of viruses. It is the only member [7] of this family to infect humans.

HEPATITIS C


As with hepatitis B, hepatitis C has virtually nothing in common with hepatitis A except for the site of infection. There are similarities between B and C:

- Blood (and sexual) transmission
- Irreversible liver damage over a long period of time.
- Causes cirrhosis and liver cancer

And differences:

- Blood transmission only.
- No vaccine exists
- Highly effective antiviral drugs have been developed that can cure ~95% of infection.

Hepatitis C belongs to the *flaviviridae* family of viruses. Other members of this class include yellow fever and West Nile.

The following table provides a summary of the text above.

<table>
<thead>
<tr>
<th>Virus</th>
<th>Class/family</th>
<th>Related viruses</th>
<th>Onset of symptoms</th>
<th>Vaccine?</th>
<th>Principle means of transmission</th>
<th>Therapy</th>
<th>Consequences of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hep A</td>
<td>Picornavirus</td>
<td>Cold, polio</td>
<td>Acute</td>
<td>Yes</td>
<td>Multiple</td>
<td>Vaccine</td>
<td>Usually self-limiting but can cause liver failure</td>
</tr>
<tr>
<td>Hep B</td>
<td>Hepadnavirus</td>
<td>Not much else</td>
<td>Decades*</td>
<td>Yes</td>
<td>Sexual contact, blood</td>
<td>Vaccine, antiviral drugs</td>
<td>Cirrhosis liver cancer</td>
</tr>
<tr>
<td>Hep C</td>
<td>Hepatovirus</td>
<td>Yellow fever, West Nile</td>
<td>Decades*</td>
<td>No</td>
<td>Blood</td>
<td>Antiviral drugs</td>
<td>Cirrhosis liver cancer</td>
</tr>
</tbody>
</table>

* A small number of people will develop acute symptoms. Most will not.