Periodic graphics
A collaboration between C&EN and Andy Brunning, author of the popular graphics blog Compound Interest

HEPATITIS TREATMENTS
May is Hepatitis Awareness Month in the U.S. Here we look at the five types of viral hepatitis and some of the drugs that can treat the disease.

WHAT IS HEPATITIS?
Hepatitis is inflammation of the liver, usually caused by a viral infection. But liver damage from alcohol consumption or, in rare cases, autoimmune conditions can cause the inflammation.

INTERFERON THERAPY
Cells infected by pathogens release signaling proteins called interferons. These molecules serve as a warning to nearby cells, activating antiviral responses. Hepatitis B and C viruses can inhibit interferon signaling to evade the body’s antiviral responses.

REDUCE PROTEIN SYNTHESIS
ACTIVATE IMMUNE SYSTEM
INDUCE INFECTED-CELL DEATH

ANTIVIRAL DRUGS
In the past seven years, multiple direct-acting antivirals (DAAs) have been developed to treat chronic hepatitis. The drugs disrupt virus replication and infection. Some examples of commonly used DAAs are shown below. Often they are used in combination, and some are more effective against certain virus genotypes.

SOFOSBUVIR
APPROX. $84,000 FOR 12-WEEK COURSE

PEGYLATED INTERFERON α-2A
PEGYLATED INTERFERON α-2B

RIBAVIRIN

Injection of synthetic α interferons can treat chronic hepatitis B or C, enhancing the patient’s immune response to the viruses. The interferons are usually administered with an antiviral drug such as ribavirin. In some patients, this therapy is not effective, and it can cause flu-like symptoms as a side effect.

DASABUVIR
APPROX. $63,000 FOR 12-WEEK COURSE

Combinations of antiviral drugs are superseding interferon-based treatments because, in almost all cases, the antivirals can clear the hepatitis infection while causing fewer side effects. Cost is the only downside.

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