The Quest for a Hep B Cure

The liver virus affects as many as one in four people worldwide.

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As liver disease treatment improves around the world, researchers continue to diligently search for a cure for hepatitis B virus (HBV). The journal Science overviewed nearly 50 new potential treatments currently in development and suggested we could soon be one step closer to a cure for HBV.

The shape-shifting nature of hep B has long perplexed researchers. In some cases, the virus simply waits inside liver cells, barely signaling its presence. In other cases, it can establish a chronic infection, churning out lots of new virus but doing little harm. In yet other cases, the virus can trigger liver damage that can turn into cirrhosis or cancer, which kills nearly 900,000 people around the world every year.

Currently, HBV can be controlled with drugs and prevented with a vaccine. However, HBV drugs must be taken for a lifetime, and vaccine coverage around the world remains spotty.

Two major types of hep B cures are under development—those that directly attack different phases of the viral life cycle and those that boost immunity against the virus. Researchers are also looking into a latent form of viral DNA produced by HBV called covalently closed circular DNA (cccDNA), which forms a mini-chromosome inside the nucleus of infected cells that likely needs to be fully eliminated before a cure can be achieved.

Thus far, no drugs specifically target cccDNA. For now, researchers are looking to develop “functional cures” that lower the amount of virus to the point that the body’s own immune system can keep the infection in check, allowing for people to stop treatment. Experts in the field estimate that it will take five to 10 years to clear cccDNA.

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