

What current treatments are available for hepatitis D?

Hepcludex (formerly Myrcludex B) is the first drug in the world to be approved for treatment of hepatitis delta. It was approved for prescription in Europe in July of 2020 and MYR Pharmaceuticals (recently acquired by Gilead Sciences) will be working to seek approval in other parts of the world throughout 2021-22. Prior to the introduction of Hepcludex, pegylated interferon (PEG-IFN) has often been and continues to be used in hopes of stimulating the body's immune system to fight the virus. A small percentage of patients (<30%) experience remission when injected with PEG-IFN weekly over 48 weeks. Oral nucleosides (antivirals) approved for hepatitis B have no effect on hepatitis D.

What new drugs are in clinical trials for hepatitis D?

Drug	Mechanism	Company	Clinical Trial Phase	Designations
Lonafarnib + Ritonavir	Prenylation Inhibitor	Eiger BioPharma, USA	Phase III	FDA Breakthrough Therapy Designation FDA Fast Track Designation FDA Orphan Drug Designation EMA Orphan Drug Designation EMA PRIME
Hepcludex (Formerly Myrcludex B)	Entry Inhibitor	Gilead Sciences, Inc.	Monotherapy: Conditional approval by EMA & ongoing Phase III; w/ PEG-INF: Phase II	EMA PRIME FDA Breakthrough Therapy Designation FDA Orphan Drug Designation Promising Innovative Medicine (PIM) Designation by British MHRA
Lambda (Pegylated Interferon)	Immune Response Stimulator	Eiger BioPharma, USA	Phase III Ready	FDA/EMA Orphan Drug Designation FDA Fast Track Designation FDA Breakthrough Therapy Designation
Ezetimibe	NTCP Inhibitor	Ziauddin University Hospital, Pakistan	Phase II	N/A
JNJ 3989 + Nucleos(t)ide Analog	RNA Interference Compound	Janssen Research & Development, LLC	Phase II	N/A
REP 2139 - Mg (in combination with PEG-INF and Tenofovir)	HBsAg Inhibitor	Replicor, Canada	Phase II	N/A
ATI-2173	ASPIN	Antios Therapeutics	Phase 2a	N/A
GI-18000	Immune Response Stimulator	Globelimmune, USA	Pre-clinical	N/A

Lonafarnib + Ritonavir PHASE 3

Lonafarnib is a "prenylation inhibitor" that works by targeting the protein assembly process, which prevents new virus from being created. In a recent study, Lonafarnib combined with Ritonavir showed promise in reducing hepatitis D virus levels.

Hepcludex (formerly Myrcludex B) PHASE 3 (PHASE 2 W/ INTERFERON)

Hepcludex is an "entry inhibitor" that works by stopping the virus from entering and infecting hepatocytes (liver cells) and breaking the cycle of reinfection. It has shown activity against the hepatitis B virus, and has been approved for treatment of hepatitis D. The purpose of the Phase III trials is to evaluate the long-term effects of this drug. Phase II trials are ongoing to test the efficacy of Hepcludex with pegylated interferon.

Pegylated Interferon Lambda (PEG-IFN-λ) PHASE 3 READY

Pegylated Interferon Lambda is a type III interferon that works by activating the body's own immune system to fight the virus. A recent study showed the ability of combination therapy with ritonavir and Lonafarnib to reduce hepatitis D virus levels.

Ezetimibe PHASE 2

Ezetimibe is a pill currently being used as a treatment to lower cholesterol. Now being studied for effectiveness against hepatitis D, it works by inhibiting NTCP, the receptor required for hepatitis D to enter and infect liver cells.

JNJ 3989 PHASE 2

JNJ 3989 is an RNA interference compound that works by targeting transcription of viral RNA, specifically those deriving from HBV cccDNA, which could also impact HDV infection. A new phase II study is currently evaluating the safety and efficacy of JNJ-3989 in people who are co-infected with HBV and HDV.

Rep 2139 (in combo w/ PEG INF & Tenofovir) PHASE 2

REP 2139 is a "nucleic acid-based amphipathic polymer (NAP)", taken as a pill, that works by preventing infected liver cells from releasing hepatitis B virus into non-infected liver cells. It is being evaluated for use in combination with PEG-IFN.

ATI-2173 PHASE 2A

ATI-2173 is an "Active Site Polymerase Inhibitor Nucleotide" (ASPIN). This is a fairly common type of antiviral, used in HCV and HBV, and even being researched for coronavirus. This drug works to stop RNA transcription. ATI-2173 has significant potential to be a key component of a synergistic combination therapy to cure HBV. Combining ATI-2173 with a chain-terminating drug such as Tenofovir or Entecavir could shut down the HBV polymerase and all viral replication.

GI-18000 PRE-CLINICAL

GI-18000 is an "immune response stimulator" that works by causing the host's T-cells to target and fight the infected liver cells.

How can patients locate clinical trial sites?

Patients can search open and upcoming clinical trials on the [Clinicaltrials.gov](https://www.clinicaltrials.gov) website. For detailed instructions on searching and locating clinical trials, visit our helpful guide, found at <https://www.hepb.org/research-and-programs/hepdeltaconnect/clinical-trials/>. Patients should also discuss the possibility of participating with their doctors, and see if their doctor can connect them with a local trial.

How long will it take for new treatments to be available to all patients?

In the United States, new drugs must go through a multi-phase clinical trial process in order to test a drug's usefulness, safety and effectiveness before it is made available to all patients. Drugs face many obstacles during this process and not all of them make it to the patient market. While this process can take anywhere from 5-15 years, fast-track and priority designations can speed up the process.

Clinical Trial Process

