

# IBUPROFEN vs. ACETAMINOPHEN

## Which Painkiller is Better for Children with Viral Hepatitis?

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Adults and children with chronic viral hepatitis suffer the same fevers, colds and body aches as everyone. But parents of infected children and teens must carefully examine the array of over-the-counter painkillers available. Many of these medicines, if taken in excess or in combination with alcohol, can damage their children's vulnerable livers.

The danger does not come from occasional use of an over-the-counter painkiller, like Tylenol (acetaminophen). In fact, doctors often prescribe acetaminophen to ease side effects of interferon, used to treat children with chronic hepatitis. The danger comes from mixing a regular dose of acetaminophen with alcohol, or unwittingly taking an over-the-counter cold medicine, which already has acetaminophen in it, with a second direct dose of acetaminophen.

Parents must exercise extra caution. Adults can confuse infant acetaminophen suspension drops, which have far more concentrated levels of the drug, with children's less-concentrated medicine. Poisoning can occur if parents administer a teaspoon of infant Tylenol instead of a dropper-full.

There are three main types of pain relievers available over-the-counter. Each has a different impact on the liver:

- Acetaminophen (Tylenol, Anacin 3, Panadol and others) is a common pain killer for mild to moderate pain and is also effective in reducing high body temperature. This painkiller can cause liver failure if taken in overdose. When taken even in normal dosages with alcohol, it can cause liver damage. Patients with liver disease should use this drug with caution because their liver may not be able to metabolize the drug. This leads to toxic metabolites or byproducts that can damage the liver. However, some doctors recommend it to children with hepatitis because non-steroidal anti-inflammatory drugs, such as ibuprofen, have a higher incidence of gastrointestinal bleeding.
- Ibuprofen (Motrin, Advil and others) is effective in reducing high body temperature, is an anti-inflammatory and inhibits normal platelet function. Ibuprofen is reported to be better for joint and muscle pain than other painkillers and has been used by people with arthritis for years. However, it can cause gastrointestinal upset and bleeding.

- Aspirin, one of the first painkillers available for mild to moderate pain, is also effective in reducing high body temperature. It is an anti-inflammatory and inhibits blood coagulation. Aspirin has been known to impact certain liver function tests if taken before tests are conducted. Aspirin should not be given to children under the age of 17 because it has been known to cause Reye's syndrome.

### **Doctors' Views on Painkillers**

All three, if taken over long periods of time or in excessive dosages, can harm the liver. Medical researchers contend acetaminophen is more toxic to the liver than ibuprofen. But researchers have found that ibuprofen at certain dosages also stresses the liver and elevates certain liver enzymes in people with hepatitis C.

Overdose of both acetaminophen and ibuprofen have been known to cause toxic hepatitis and exacerbate liver damage. However, both are safe if taken in moderation, according to experts.

“There is absolutely no contraindication to occasional doses of acetaminophen or any other necessary medication for children with chronic viral hepatitis,” said Dr. Maureen Jonas, a pediatric gastroenterologist at Children's Hospital in Boston. “Of course, parents should consult with physicians about any chronically-used medication, especially if the child has significant liver disease, which many of these children with viral hepatitis do not.”

### **Acetaminophen**

Acetaminophen can cause liver damage if taken in overdose and/or for long periods. It is therefore recommended that adults take no more than four doses per day and not for longer than 10 days. Children should take it no longer than five days. These dose time limits should be shorter for people with chronic liver disease. Consult with your doctor for more information.

Liver damage occurs from acetaminophen when the liver is depleted of glutathione, which normally detoxifies the drug by binding to potentially dangerous intermediate metabolites. When this pathway is saturated, the resulting free intermediates cause liver damage.

According to doctors at the Henry Ford Health System's Gastroenterology and Liver Disease Forum, acetaminophen causes liver damage in adults after approximately 15 grams are taken as a single ingestion. However, in patients who drink alcohol with

acetaminophen, toxicity can occur even with the recommended dosages.

When taken as directed, acetaminophen is a safe drug, according to the U.S. Poison Control Centers. However, medications must be given in the exact doses stated, and confusion commonly occurs when people don't realize that Infant Tylenol, a concentrated liquid, is three times stronger than children's strength Tylenol, and that one should never be substituted for the other.

Patients are urged to consult with their physicians if they have any questions about dosages, especially in children.

Doctors routinely recommend acetaminophen to patients with occasional headaches or other discomforts associated with interferon.

"I personally like to recommend acetaminophen in the correct amounts to liver patients," said Dr. Philip Rosenthal, medical director of the Pediatric Liver Transplant Program and director of Pediatric Hepatology at the University of California, San Francisco.

"Nonsteroidal anti-inflammatory drugs like ibuprofen have a higher incidence of gastrointestinal bleeding. In patients with liver disease who may have portal hypertension and are already at increased risk for bleeding, adding to that risk by the possibility of inducing an ulcer does not seem to me to be a good idea. So, I recommend acetaminophen over ibuprofen for all my liver patients," he explained.

### **Are Clearer Warnings Merited?**

However, the Division of Viral Hepatitis at the National Centers for Disease Control and Prevention (CDC) has clearly identified acetaminophen as causing toxic (drug-induced) hepatitis. CDC, meanwhile, has identified ibuprofen as a cause of liver inflammation.

The U.S. Food and Drug Administration (FDA) is currently investigating whether stronger warnings should accompany acetaminophen medication.

Because acetaminophen is nonprescription, people think "it must be safe and they take it like M&Ms," said Dr. William Lee of the University of Texas Southwestern Medical Center in Dallas. Lee's data suggest acetaminophen overdoses could be a bigger cause of liver failure than some prescription drugs recently banned for liver poisoning, such as the diabetes medicine Rezulin.

Lee tracked more than 300 acute liver failure cases at 22 hospitals and linked 38 percent to acetaminophen, versus 18 percent of cases caused by other medications. In a second database tracking 307 adults suffering severe liver injury at six hospitals, Lee linked acetaminophen to 35 percent of the cases.

In Great Britain, so many people have ingested acetaminophen during suicide attempts that it now restricts how many tablets are sold at each purchase.

Acetaminophen's liver toxicity "is conspicuous in its magnitude compared to some of the other bad players we've taken off the market," observed Dr. Peter Honig, FDA's post-marketing drug safety chief. "We're looking at the data to decide if something has to be done, and what."

## **Ibuprofen**

This is one of the newest over-the-counter painkillers used to treat mild to moderate pain, fever and flu symptoms. It is an effective anti-inflammatory and inhibits normal platelet function. Ibuprofen is reported to be better for joint and muscle pain than other painkillers.

According to doctors at the Henry Ford Health System's Gastroenterology and Liver Disease Forum, ibuprofen is not hepatotoxic or toxic to the liver as acetaminophen is.

However, ibuprofen can cause a transitory rise in alanine aminotransferase (ALT), an enzyme that is released when liver cells are damaged or die. And ibuprofen, when taken in excessive doses over time, has been known to cause toxic hepatitis.

According to a 1998 report in the *American Journal of Gastroenterology*, patients with chronic hepatitis C may have markedly elevated levels of liver enzymes—a sign of liver cell damage—if they take ibuprofen.

"Based on this report, the recommendation on the use of analgesics [ibuprofen] to patients infected with [the hepatitis C virus] should be to avoid it when possible," wrote researchers at Pennsylvania State University in Hershey in the journal.

The report, based on three case studies, describes patients with chronic hepatitis C who were found to have high levels of enzymes known as liver transaminases in their blood after taking a normal course of ibuprofen. Enzyme levels returned to normal within three months of discontinuing the pills.

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“These cases support the recommendation of acetaminophen over nonsteroidal anti-inflammatory drug use in patients with chronic hepatitis C,” state Drs. Thomas R. Riley, III and Jill P. Smith in their report.

If ibuprofen is deemed necessary in these patients, “careful monitoring of the liver function tests should take place with monthly testing (at least) for the first three months of use and then every three months thereafter,” they recommend.

Some parents prefer to use ibuprofen in children suffering fevers, colds or ear aches because a dose lasts for eight hours and both the child and parent may sleep longer, as opposed to four hour dosing periods with acetaminophen.

According to doctors at the Children's Hospital Medical Center of Cincinnati, acetaminophen may be taken every four hours, but not more than five times daily.

Ibuprofen may be given every six hours, but not more than four times daily. Side effects of ibuprofen can include upset stomach, vomiting, ulcers, or even kidney damage if ibuprofen is taken repeatedly or if the child is not drinking well.

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