

Methamphetamine and HCV: Part 1



Alan Franciscus, Editor-in-Chief

The 2nd National Conference on Methamphetamine, HIV and Hepatitis was held February 1st through 3rd in Salt Lake City, Utah. This conference included many topics about and approaches to methamphetamine use and addiction, disease prevention (including HIV and hepatitis), and treatment for methamphetamine (meth) addiction. The first part of this article will focus on the basics of methamphetamine. In next month's *Advocate*, I will report on the data that is available on the connection between HCV and meth as well as on further information presented at the conference.

METH BASICS

Meth was first synthesized from ephedrine in 1893 by Nagayoshi Nagiea. In 1919 another Japanese chemist, Akira Ogata, was the first to synthesize a crystallized form of meth. The first widespread use of meth was during World War II in German, Japanese, and Allied soldiers. After World War II the drug was used for recreational purposes as well as prescribed to treat a variety of conditions such as narcolepsy, alcoholism, depression and obesity. During the 1960s recreational meth distribution and use dramatically increased in the

United States due in part to the fairly easy manufacturing process and the potential for huge profits. Today, the media and others call meth an epidemic, but a closer look at the problem tells a different story. Meth use falls along certain geographic lines in the U.S. with the majority of use in the Western and Mid-Western United States and is slowly spreading East. The National Survey on Drug Use and Health (NSDUH) released a report in 2006 on all drug use within the United States, and it was reported that meth lifetime use was on the decline. According to NSDUH "the rates for past month and past year methamphetamine use did not change between 2004 and 2005, but the lifetime rate declined from 4.9 to 4.3 percent."

To put another perspective on meth use vs. other drug use, the NSDUH reported that in the United States "[t]here were 9.0 million people aged 12 or older (3.7 percent) who were current users of illicit drugs other than marijuana in 2005. Most (6.4 million, 2.6 percent) used psychotherapeutic drugs nonmedically. Of these, 4.7 million used pain relievers, 1.8 million used tranquilizers, 1.1 million used stimulants (including 512,000 using methamphetamine), and 272,00



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used sedatives. Each of these estimates is similar to the corresponding estimate for 2004."

Methamphetamine, also called "meth," "crystal," "crank," "glass," "ice," "speed," "Tina," and many other street names is a strong and addictive synthetic stimulant. The powdered form of meth is usually white, odorless and bitter tasting. In the powdered form meth is usually smoked, snorted, eaten, ingested or injected. Crystallized meth (commonly called 'crystal') is a purer and stronger form of meth that can be smoked or injected. The tablet form (brand name Desoxyn) is a prescription medication used to treat attention deficit hyperactivity disorder, extreme obesity, narcolepsy and as a decongestant.

Meth is a potent central nervous system stimulant that works by triggering the brain to release cer-

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tain chemicals such as dopamine – a chemical produced by the brain that gives a feeling of pleasure and euphoria. Meth stimulates the brain to release large amounts of dopamine which produces a high that can last anywhere from six to 24 hours. Users experience an increase in mental alertness and energy, a decrease in appetite, and an increase in sexual desire, and frequency. Additional side effects of meth use can include diarrhea, nausea, agitation, talkativeness, jaw-clenching, performing repetitive tasks (tweaking), increased heart rate, increase in body temperature, insomnia, and dehydration. The exact mechanism of tolerance to meth is not completely understood, but with prolonged use, more meth is needed to produce the same desired effect or ‘high.’ It has been speculated that chronic meth use can leave a person feeling little or no pleasure while off meth and this can lead to higher doses and more frequent use.

Addiction to meth (like all addictions) is varied depending on the user – some people can use meth occasionally while others may become chronically addicted. Chronic addiction can lead to a deterioration of health – both physical and psychological, loss of income, loss of friends and family, and risky sexual behavior which can put someone at risk for blood borne pathogens such as HIV, STD’s and hepatitis C.

It is believed that prolonged or chronic use of meth can deplete the dopamine stores in the brain, and alter the wiring of the dopamine receptors in the brain. Side effects of chronic meth use include meth cravings, weight loss, para-

noia, tooth and gum disease (meth mouth), psychosis, delusions, hallucinations and possible brain and kidney damage. Chronic users may pick their skin because they feel like their skin is crawling or that there are bugs under the skin trying to get out. The continual picking can lead to open wounds and scarring.

MANUFACTURING METH

Meth is fairly easy to manufacture. The main ingredient is ephedrine or the chemically related pseudoephedrine. Both of these chemicals are found in over-the-counter medications such as cold, cough and allergy medicines. The method most often used is to reduce or cook down the ephedrine/pseudoephedrine using common items such as ammonia, lye, paint thinner, ether, Drano, and many other products commonly found in a hardware store. The cooking down process usually takes about 48 hours and can be dangerous

“Another media hype or myth is that meth addiction can not be treated. This is not true.”

because of the risk of producing toxic fumes and the potential for chemical explosions when mixing and heating the ingredients. The making of meth also produces chemical waste that is most often dumped down a drain or on nearby property. There are also the super meth labs within and outside of the United States that produce large quantities of meth and can produce considerable volumes of toxic waste.

The over-the-counter sale of

medicines that contain the active ingredients ephedrine or pseudoephedrine has been restricted in many states and has led to a decrease in production of meth in home labs. But it has been reported that drug trafficking from outside the United States is helping to fill the gap and keep up with the demand.

Since meth is relatively easy and inexpensive to make the potential for profit is extremely high. One estimate tagged the cost of producing one ounce of meth at \$200.00. An ounce of pure meth can be cut to produce two, three or more ounces. On the streets an ounce can sell for as much as \$1,200 to \$1,600.

The cost of meth to the user can be high – some reports put it at \$400.00 a day and as much as \$5,000 to \$6,000 a month. In an effort to keep up the ‘habit’ some may turn to crime. Others may ‘use up’ all of their personal income and resources. The family and community at large also suffers due to lost productivity, redirection of income, the costs associated with law enforcement of meth, and the clean up of the toxic waste of meth production.

In an effort to stem the production of meth, the government is working with foreign governments to control the production of ephedrine and pseudoephedrine. Currently, there are only nine factories in the world that produce the majority of the world supply of ephedrine and pseudoephedrine. If the production can be regulated it could cut off or lower the supply of the ingredients needed to make meth. Federal, state and local municipalities have also enacted laws to curb the use of meth by regulating the sale of common medicines

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HealthWise:

Navigating the Internet



Lucinda K. Porter, RN

The Internet is an amazing source of information. Type *Hepatitis C* into Google's search field and more than ten million results pop up. That is more information than I need or want. I want information I can understand, is accurate and current. With ten million choices, where do I start?

It will not surprise regular *Advocate* readers that I start with www.hcvadvocate.org. For general questions about hepatitis C (HCV), this site meets most of my needs. This site provides links to other excellent websites and I rarely need to look further in a quest for information. However, what if I need information about a different subject? This month I will discuss surfing the Internet without drowning.

There are numerous search engines, such as Google, Yahoo, or Ask.com. Choose whichever you prefer. For this article, I used Google and a common health care concern – back aches. Since I wrote this article about a month ago, the results I show here will have changed by now; but I am listing them just so you can get a sense of what happens. Type *backache* into the search field and more than 2 million results are listed. Where should I start?

I skip all of the sponsored sites listed on the right. The goal of these sites is to sell products or services. They may have good information, but with 2 million listings, I have to eliminate something.

If I narrow my search, the listings drop dramatically. To do this, be as specific as possible. Type in *low backache* and the results drop to less than 1.5 million. Type in *low back ache home remedy* and the number drops to around 600,000. Using the *Advanced Search* option, I select English language entries that were updated in the past year. This makes a slight reduction, but I am still over 600,000.

If I use the same parameters, searching the U.S. government search option on Google, the number drops to 591 returns. However, do not assume that because these were in the government section, that they are useful or accurate. The third listing is a link

to purchase a book, *The Complete Book of Ayurvedic Home Remedies*. I know nothing about this book and although it may be a perfectly fine resource, I skip commercially biased sites in my initial search. The same is true for the seventh listing that is selling a remedy.

Information from the *National Institutes of Health* is usually reliable and a good place to start. The same is true for the U.S. Department of Health and Human Services, the Centers for Disease Control, and individual state and department of health websites. Excellent information is available from international websites such as the World Health Organization and other countries' government sites.

Using another advanced search option, I switch to *University Search*. Choosing Harvard, I type in *low back ache home remedy* and find 44 entries. After eliminating the ones that did not apply to most *Advocate* readers, such as *Gynecological Morbidity among Women in a Bombay Slum*, I scan the summaries of the results. I did not find anything useful.

Switching to Google's *Scholar* option and applying the same limits to the search, 2,100 results turn up (500, if typing "low backache" – note how spelling affects search results). Confining my reading to results written within the past five years, a quick scan found some interesting reading, but certainly not the mother lode found at the government option on Google.

An effective option is to use a biosciences search engine, such as *Entrez*. The National Institutes of Health (NIH) and the National Library of Medicine (NLM) sponsor this database. This alternative provides an enormous catalog of solid information. www.ncbi.nlm.nih.gov/gquery/gquery.fcgi

If you are going to be searching the Internet on a regular basis, take an Internet search tutorial. Pub Med has a good one. www.nlm.nih.gov/bsd/disted/pubmed.html Other tutorials can be found at libraries and universities.

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INTERNET

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Here are some general tips for assessing a health website:

- It is free of commercial bias. Determine if the site is trying to sell you something. Read the *About Us* section. If there isn't one, is this because they are hiding something? If the agency is nonprofit, where is their funding coming from? If there are ties to industry, is the funding unrestricted or potentially prejudiced? The Center for Science in the Public Interest www.cspinet.org/integrity publishes information on financial ties of universities and non-profits. It is not exhaustive but it is a good start.
- It is current. If the website cites old research and is not up-to-date, be concerned.
- Beware of miracle cures.
- Never pay for general information. There is good information on the Internet and you should not have to pay for it. You may want to subscribe to a particular service after checking out the validity and usefulness of it.
- Check out more than one website. Are you finding consistent information?
- Look for privacy and security. If you provide information to a site, what happens to that information? Will it be kept private? Is there a padlock or unbroken key icon in your browser window?

Here are a few websites that are among my favorite:

- American Academy of family Physicians <http://familydoctor.org>
- Centers for Disease Control www.cdc.gov

- The Cochrane Collaboration www.cochrane.org
- Harvard School of Public Health www.hsph.harvard.edu
- Mayo Clinic www.mayoclinic.com
- MedlinePlus <http://medlineplus.gov>
- Merck www.mercksource.com Although owned by a pharmaceutical company, there is good information and no advertising.
- National Institutes of Health <http://health.nih.gov>
- U.S. Department of Health and Human Service <http://www.hhs.gov>
- United State's Office of Disease and Health Promotion www.healthfinder.gov

Sometimes information works against us. I have scared myself with a myriad of hideous diagnoses based on armchair medicine. Now I leave diagnosing to my medical provider. If I read something potentially frightening on the Internet, my rule is this: Do not panic until my doctor tells me I have a reason to panic. This keeps my anxiety level down. The Internet can be an ally or an enemy. Use it wisely and it can be a lifesaver.

Some HCSP Recommended HCV Sites

- www.gastrohep.com
- www.hep-links.com
- www.docmisha.com
- www.hepatitisdoctor.com
- www.hepcchallenge.org
- www.hepc-connection.org
- www.hepcbc.ca
- www.hivandhepatitis.com

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that contain ephedrine and pseudo-ephedrine.

METH AND SEX

Meth is known to increase the need, urgency and intensity of sex. Meth use can lead to sexual marathons in part due to the inability of a person on meth to achieve an orgasm. Prolonged sexual activity can also cause chafing and trauma to the genitals and other areas of the body that could potentially be an entry point for blood borne pathogens. The loss of inhibitions can also lead to risky behaviors, which increase the chances for acquiring HIV, other STD's and hepatitis C.

TREATMENT

Another media hype or myth is that meth addiction can not be treated. This is not true. The psychological/ behavioral models that work for treating cocaine addiction appear to work equally well for meth addiction when taking into consideration the differences between the two drugs. Some experts recommend treating meth addiction for a longer period of time, but this viewpoint is controversial. Another method, the Matrix Model, which incorporates cognitive behavioral therapies such as relapse prevention techniques, positive reinforcement, family involvement, 12-step facilitation approaches, and other scientifically proven approaches, has also been successful.

In next month's *Advocate*, I will write about the connection between HCV and meth and review further information presented at the recent conference.



Extrahepatic Manifestations: *Rheumatological Conditions*



Liz Highleyman

It is well known that hepatitis C virus (HCV) infection can lead to advanced liver disease, but not all conditions associated with chronic hepatitis C involve the liver.

Rheumatological conditions are among the many extrahepatic (outside the liver) manifestations that may occur in people with hepatitis C. Although their exact cause is unknown, these conditions appear to involve an abnormal autoimmune response, in which the immune system attacks the body's own tissues. Although it is not possible to predict who will develop HCV-related rheumatological conditions, they are more common in women than men, and appear to have a significant genetic component.

HCV-RELATED ARTHRITIS

Arthritis is perhaps the most common rheumatological condition in people with HCV, with rates ranging from 10-50 percent in various studies. HCV-related arthritis is similar to rheumatoid arthritis (RA), a chronic disease in which the immune system attacks the synovial lining of the joints. Symptoms usually first appear in the small joints of the fingers, wrists, feet, and ankles on both sides of the body, and may include pain, swelling, and stiffness, especially in the morning. Over time, inflamed cells release enzymes that damage the bone and cartilage, resulting in chronic pain, deformity, and loss of mobility. RA may also

affect the skin, nerves, lungs, and heart. Most people with RA have elevated blood levels of an antibody called rheumatoid factor, but this is not always present during early stages of disease. They also typically have an elevated erythrocyte sedimentation rate (ESR) and elevated C-reactive protein, two biological markers of inflammation.

HCV-related arthritis differs from classic RA in that it tends to be milder and is less likely to lead to bone erosion and resulting deformities. It may affect either multiple small joints like RA (polyarthritis) or a few large or medium-sized joints (oligoarthritis); it is often intermittent, with flare-ups followed by periods of remission.

It can be difficult to distinguish between HCV-related arthritis and classic RA. Studies have shown that people with HCV are much more likely than HCV-negative people with RA to have mixed *cryoglobulinemia*, a condition in which immune complexes made up of antibodies and viral particles clump together in the blood, potentially damaging the joints, skin, nerves, blood vessels, and kidneys. Conversely, HCV-positive people with arthritis are less likely to have detectable rheumatoid factor and anti-keratin antibodies.

OTHER RELATED CONDITIONS

Other rheumatological conditions are seen in individuals with chronic hepatitis C, but data are mixed regarding how often they occur and whether they are more common in HCV positive people

compared with the general population. Among the autoimmune conditions most often linked to HCV – any of which may occur along with arthritis – are *Sjögren's syndrome*, in which the immune system attacks moisture-producing glands leading to dry eyes (keratoconjunctivitis sicca) and dry mouth; *scleroderma* (excessive production of scar tissue affecting the skin, blood vessels, and internal organs); *lichen planus* (a skin condition); and *vasculitis* (blood vessel inflammation).

Along with manifestations affecting specific parts of the body, rheumatological diseases may also cause systemic flu-like symptoms such as fatigue, generalized muscle pain and weakness, loss of appetite, and low-grade fever – which overlap with the symptoms of HCV infection itself and the side effects of interferon-based therapy. Anemia is also common. In some cases, these symptoms may be signs of chronic fatigue syndrome or fibromyalgia (generalized musculoskeletal pain and localized tender points); both conditions appear to involve immunological and endocrine dysfunction, though their exact causes are not well-understood.

It is not yet clear how – or even whether – HCV infection contributes to the development of rheumatological conditions and other autoimmune diseases. Researchers have hypothesized that HCV-related arthritis may be a manifestation of cryoglobulinemia, or HCV

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may directly invade synovial cells and trigger inflammation, or HCV infection may disrupt normal immune regulation or stimulate production of antibodies that target normal tissues. Some symptoms are more common in patients with cirrhosis, suggesting that liver dysfunction may play a role. While much remains to be learned, some experts, including Leonard Calabrese, MD, of the Cleveland Clinic, believe that, “HCV represents a major cause of undetected rheumatologic symptomatology.” Indeed, many doctors recommend that patients with unexplained joint pain or other rheumatological symptoms should be tested for HCV.

MANAGING RHEUMATOLOGICAL CONDITIONS

The goal of treatment for rheumatological conditions is to manage symptoms such as pain and fatigue, minimize loss of function, and slow further damage. Given the lack of specific research, HCV-related arthritis is often treated the same as classic RA, with drugs and surgery. Medications for RA include:

- *Analgesic agents*: pain relievers such as acetaminophen or opiates.
- *Non-steroidal anti-inflammatory drugs (NSAIDs)*: over-the-counter medications such as aspirin or ibuprofen, as well as COX-2 inhibitors such as celecoxib (Celebrex).
- *Immunosuppressive agents*: corticosteroids (glucocorticoids) such as prednisone.
- *Disease-modifying anti-rheumatic*

drugs (DMARDs): including cyclosporine, penicillamine, azathioprine (Imuran), hydroxychloroquine (Plaquenil), leflunomide (Arava), methotrexate (Rheumatrex), minocycline (Minocin), sulfasalazine (Azulfidine), and oral or injected gold.

- *Biological response modifiers (BRMs)*: agents that influence the activity of cytokines, including the tumor necrosis factor blockers etanercept (Enbrel), infliximab (Remicade), and adalimumab (Humira), and the interleukin-1 blocker anakinra (Kineret).

Analgesics and NSAIDs relieve symptoms such as pain and stiffness, but do not slow disease progression or prevent joint damage like DMARDs, BRMs, and (to a lesser extent) corticosteroids. Often, different classes of drugs are used together; a combination of methotrexate plus a BRM is among the most effective. While it once was common practice to start with NSAIDs or corticosteroids and wait for signs of joint damage before initiating DMARDs or BRMs, it is now considered preferable to begin aggressive therapy early to prevent irreversible bone erosion.

The optimal treatment for HCV-related arthritis remains to be established. NSAIDs and low-dose corticosteroids have traditionally been the mainstays of therapy, but unfortunately, some studies suggest that HCV-related arthritis does not respond as well as classic RA to anti-inflammatory drugs.

In addition, side effects are a concern for people with chronic hepatitis C. Methotrexate, for example, can cause liver toxicity as well bone marrow suppression, and long-term corticosteroids can lead to bone loss. Many experts prefer to avoid methotrexate (sub-

stituting, for example, hydroxychloroquine or sulfasalazine), but others believe it can be used safely as long as liver function is carefully monitored; one French study found that a majority of HCV patients treated with methotrexate demonstrated improved rheumatological symptoms with few negative outcomes. Another concern is that drugs that suppress the immune system may lead to increased HCV replication.

Based on the limited data available, BRMs appear to be safe for people with hepatitis C. In the January 2007 issue of *Rheumatology*, for example, another French research team reported that three-month treatment with etanercept in nine patients with HCV-related rheumatological manifestations did not lead to increased liver enzymes or HCV RNA. But clinical improvement was variable, and appeared less than that observed in patients with classic RA.

Use of interferon has been shown in some studies to improve – or even produce complete resolution – of conditions such as HCV-related arthritis and cryoglobulinemia. However, as an immune-modulating agent, interferon can sometimes trigger or worsen autoimmune disorders (for example, thyroid inflammation). Some experts do not recommend using interferon to treat rheumatological or other autoimmune conditions unless a person also needs it for treatment of liver disease, but others feel the presence of arthritis is a reason to start interferon-based therapy sooner rather than later.

Beyond pharmaceutical therapies, individuals with HCV-related rheumatological conditions can take various steps to improve their quality of life. These include

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Factor 8: The Arkansas Prison Blood Scandal, a film by Kelly Duda

■■■
C.D. Mazoff, PhD, Managing Editor

That this film ever saw the light of day is a testament to the courage and heart for justice of Kelly Duda. . . Kelly who?

Well nobody can really blame you for not knowing who this person is if you are an American with hepatitis C, but if you're a Canadian or British hemophiliac and you received blood products from the US in the 1980's, chances are you got tainted blood harvested from the Arkansas prison system, and that you are already sadly familiar with this debacle.

Factor 8 is an award winning documentary that investigates how it was that blood from prisoners, many of whom were not screened, was legally harvested in Arkansas and then sold to Canada and other countries, although the use of this blood and its products (clotting factors, gammaglobulin, etc.) in the United States was prohibited by American law.

As a result of what can only be seen as a ridiculously hideous affair, in which the greedy and the small-minded managed to outdo even themselves, thousands of people were infected with hepatitis C, hepatitis B and HIV. Many have since died; others linger on in pain and suffering. Few have been compensated as a result of this injustice; a suit in Canada is in the process of being settled for victims of the Arkansas blood, and as I remember, attempts in the UK to hold the blood brokers accountable has come to naught.

And no wonder why! Big names

are involved. Former president Bill Clinton was governor of Arkansas at the time this was happening, and former Canadian Prime Minister, Paul Martin, sat on the board of directors of the Canadian Development Corporation, the holding company for the private company, Connaught Laboratories, the major supplier of blood products in Canada, specifically Factor VIII used by hemophiliacs. The Canadian Red Cross got a slap on the wrist for trying to save a few pennies by not testing the blood for elevated ALT's, although this test was used in the US in the late 1980's - but that's neither here nor there, since the US was smart enough to ban Arkansas blood from distribution within US borders.

What can one say? The film is excellent, well photographed, well-told and extremely unsettling. It is depressing as heck, but necessary for the soul. How Mr. Duda persisted through all the personal harassment he underwent as various agencies tried to stop him from making this film, I don't know. A man with a great soul and a bigger heart!

Even now Mr. Duda has troubles having the film aired - even on PBS in the US and in Canada, despite the fact that it has received rave reviews from the major independent film critics and even *Variety* magazine. The political pressure to keep this film SILENT is very strong. It makes you wonder what else there is they haven't told us.

As Kelly told the audience in a recent screening of his film at the The King Center in Atlanta, Georgia, "Make no mistake about it; evil men

did evil things in Arkansas. Their motivation was greed. But these men were relatively few. However, what made them powerful was the silence of many, many others that stood by and did nothing while the crimes were continuing and lives were being destroyed."

If you have hepatitis C, this movie is for you. If you are a community advocate this movie is even more for you because it is a real inspiration and a reminder of what advocacy entails, as well as of the many battles that still lay before us. This is something that should be in every hepatitis C support group's library.

Factor 8: The Arkansas Prison Blood Scandal, a film by Kelly Duda, can be ordered at www.factor-8movie.com



Action alert!

Urge your Members of Congress to fund hepatitis C prevention in their appropriations request letters.

The first thing you can do this year to fight for HCV funding is to contact your elected representatives and ask them to include funds for hepatitis C prevention programs in their programmatic appropriations request letter. Please take a few minutes to make these important phone calls!

To find out more please go to:

<http://www.hcvadvocate.org/community/advocacy.asp>

MICHIGAN DONOR REGISTRY

The state of Michigan actively supports organ donation. Michigan has eased the process by providing an organ donor registry. Those who enroll may apply a heart-shaped sticker to their driver’s license or state identification card. The campaign to increase donor awareness is called *Show Our Heart* or *SOS*. Last year, sign-ups for the state’s organ donor registry passed the one million mark. Good job, Michigan.

Willing donors may sign-up on line at:

<https://services.sos.state.mi.us/OrganDonor/Registry.aspx>

or: www.giftoflifemichigan.org or call toll free: 1.800.482.4881

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balancing activity with rest, getting regular moderate exercise to maintain strength and flexibility (swimming is a good choice with low impact on the joints), managing stress, and using complementary pain-relief techniques such as acupuncture or biofeedback.

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Liver-Related Trivia



Alan Franciscus, Editor-in-Chief

- There are approximately 200 billion **liver cells** in the adult human.
- In 'olden' days if a person was disagreeable or crabby they were said to have a **liverish** disposition.
- We all know that the liver is the largest internal organ, but did you know that the liver is the **largest gland** in the body?
- The Greeks knew about the **regenerative** properties of the liver. According to Greek mythology, Prometheus angered Zeus and was punished by being chained to a rock. Every day an eagle would come and pick at his liver until it was destroyed. But the liver would quickly grow back and the eagle would return to a 'liver' feast the next day. About 12 generations later, Heracles freed Prometheus from his punishment. First order of business for Prometheus was to catch, kill and eat the eagle that had been torturing him.
- Cod liver oil (as the name suggests) is an extract from cod (fish) livers. It is made by cooking (steaming) the **livers of the cod fish** and then pressing them to extract the oil. Cod liver oil is high in heart healthy omega-3 fatty acids, but it is also high in vitamin A and vitamin D (fat soluble vitamins). Because fat soluble vitamins are stored in the liver, it is possible to damage the liver by taking amounts that exceed the Recommended Dietary Allowance (RDA).



HEPATITIS C
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