

## **Introduction**

**Governments, health organizations and at least one multinational drug manufacturer announced plans to eliminate the virus entirely.**

In 2016 Georgia (former part of the U.S.S.R.) announced a hepatitis C elimination policy and Scotland debated elimination in its parliament (both cited in many news reports). The European Union HCV Summit in Brussels on February 17, 2016, announced elimination plans. Webcast at [http://www.natap.org/2016/HCV/021916\\_05.htm](http://www.natap.org/2016/HCV/021916_05.htm). Also see Catherine Jewell. "Gilead Targets Elimination of Hepatitis C." WIPO Magazine. World Intellectual Property Organization. February 2015.

## **Chapter 1: new doctor**

**The virus infects up to 150 million people worldwide . . .**

World Health Organization statistics cite 130-150 million people as being infected with hepatitis C. "Hepatitis C Fact Sheet." World Health Organization. July 2015.

<http://www.who.int/mediacentre/factsheets/fs164/en/>.

**. . . causes an estimated 500,000 deaths each year.**

As of May 2015, the Centres for Disease Control and Prevention estimated 2.7 million cases in the U.S, and the Public Health Agency of Canada estimated 242,500 cases in Canada.

**Between the United States and Canada, close to 3 million people are infected with hepatitis C.**

As of May 2015, the Centres for Disease Control and Prevention estimated 2.7 million cases in the U.S, and the Public Health Agency of Canada estimated 242,500 cases in Canada.

**Yet most persons with the disease don't know they have it.**

The Centers for Disease Control and Prevention in the United States states that up to three out of four people who are infected with hepatitis C don't know it. "CDC Vitalsigns." May 2013. <http://www.cdc.gov/vitalsigns/hepatitisc/>. The Public Health Agency of Canada says 40 percent of people with hepatitis C don't know they have it. "Hepatitis C: Get the facts." Public Health Agency of Canada. March 2, 2015. <http://www.phac-aspc.gc.ca/hepc/pubs/getfacts-informezvous/index-eng.php>.

**Dr. Phillip K. Peterson, author of *Get Inside Your Doctor's Head* . . .**

Phillip K. Peterson. *Get Inside Your Doctor's Head: 10 Commonsense Rules for Making Better Decisions about Medical Care*. (Maryland: John Hopkins University Press, 2013).

**Public schools were free only at the primary level and suffered from textbook shortages and low achievement scores.**

"The Philippines in the 1980s: A Historical Review of Social Policy and Urban Level Interventions." World Bank. Working paper. July 1993.

<http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1169585750379/twurdwp8.pdf>.

**Blood-injection phobia is three to six times more prevalent than the fear of crowded spaces.**

"Overcoming Medical Phobias." Anxiety Care UK. <http://www.anxietycare.org.uk/docs/medical.asp>.

**. . . at least 10 percent of the general population unreasonably avoid the sight of blood and injections.**

Diagnostic and Statistical Manual of Mental Disorders. 4th ed. (DSM-IV: Washington, D.C., 1994)

**Following recommendations in the Krever Report . . .**

The Honourable Horace Krever. *Commission of Inquiry on the Blood System in Canada*. (Government of Canada, 1997).

**NAAT replicates the virus's genetic material more than a million-fold.**

"Nucleic Acid Amplification Testing (NAT) of Blood Donors for HCV and HIV." ClinicalTrials.gov, a service of the National

Institutes of Health.  
<https://clinicaltrials.gov/ct2/show/NCT00004846>.

**... the test was becoming the standard in blood and plasma collection in the United States and throughout the world, as well.**

"Frequently Asked Questions." Canadian Blood Services.  
<https://blood.ca/en/donate/myaccount/fag>.

**Hemochromatosis is ... most common among people of northern European descent.**

"Hemochromatosis (Iron Storage Disease): Risk Factors & Causes." Centres for Disease Control and Prevention.  
<http://www.cdc.gov/ncbddd/hemochromatosis/causes.html>.

**It causes excess iron to collect in the organs, including the heart, the kidneys, and the liver, and can make them fail.**

Liver failure from hemochromatosis produces much the same symptoms as advanced hepatitis C.

**(it is probably worth more than \$2 million U.S. now)**

Estimated according to 2016 home prices on Zillow.com.

**... These include razors.**

"Hepatitis C Sexually Transmitted Diseases Treatment Guidelines." Centers for Disease Control and Treatment. Accessed March 18, 2015. <http://www.cdc.gov/std/treatment/2010/hepc.htm>.

**... keep themselves in good physical condition, be careful about cleanliness, sleep in a well-ventilated room and get daily exercise.**

Douglas Starr. *Blood: An Epic History of Medicine and Commerce*. (New York: Knopf, 1998), 67.

**... the earlier in life you contract the virus, the longer it will take to seriously affect your liver.**

E. Minola, D. Prati, F. Suter, F. Maggiolo, F. Caprioli, A. Sonzogni, M. Fraquelli, S. Paggi, and D. Conte. "Age at infection affects the long-term outcome of transfusion-associated chronic hepatitis C." *Blood*. 2002 June 15;99(12):4588-91. PMID: 12036892.

## Chapter 2: into the fog

**... the Latin word "itis," meaning inflammation.**

Anna Sparaco. "What is Hepatitis?" Wits University Mediclinic. Online teaching site. <http://www.dgmc.co.za/what-is-hepatitis>.

**an outbreak occurred in ancient Babylon.**

J.S. Fonesca. "History of Viral Hepatitis." *Rev Soc Bras Med Trop* 43, no. 3 (May-June 2010 May-Jun):322-30. Portuguese article translated on PubMed.gov. <http://www.ncbi.nlm.nih.gov/pubmed/20563505>.

**The Hippocratic Corpus ... predicted the outcomes of the disease according to a person's intensity of yellowness.**

Jacalyn Duffin. *Lovers and Livers*. (Toronto: University of Toronto Press, 2005).

**the Greek physician Aretaeus of Cappadocia studied the symptoms of hepatitis**

Aretaeus learned medicine in Alexandria and practiced in Rome. He followed the tenets of the Pneumatic School, which was founded by Athenaeus of Cilicia. Athenaeus believed that disease was caused by air (the pneuma) combined with the four humours: heat, coldness, moisture, dryness.

**He wrote that hepatitis weakened "the liver's power of nutrition."**

The reference combines information from 3 sources: Jacalyn Duffin, *Lovers and Livers*, 86-127. Douglas Starr. *Blood: an Epic History of Medicine and Commerce*. (New York: Knopf, 1998). J.C. Fonseca. "History of Viral Hepatitis." PMID: 20563505.

**Hepatitis B. . . It can also be spread through sex with an infected partner.**

"Viral Hepatitis - Hepatitis B Information." Centres for Disease Control and Prevention.

<http://www.cdc.gov/hepatitis/hbv/bfaq.htm#bFAQ10>.

**The virus was injected into rhesus monkeys and caused hepatitis.**

Emilio Orfei, ed. *Review of Pathology of the Liver*. Loyola University of Chicago, Stritch School of Medicine. Undated Electronic book. Accessed May 7, 2015.  
<http://www.meddean.luc.edu/lumen/MedEd/orfpath/pthcntnt.htm>.

**Hepatitis G: This is transmitted through blood but doesn't do much harm to the liver.**

"Hepatitis G Fact Sheet." Public Health Agency of Canada. Feb. 16, 2004.

**But when the hep C virus invades the liver, it prevents strands of microRNA from doing their normal work**

University of North Carolina Health Centre. "How hepatitis C Virus Reprograms Human Liver Cells." *ScienceDaily*. Dec. 8, 2012.  
<https://www.sciencedaily.com/releases/2012/12/121218121427.htm>.

MicroRNA inhibits the production of specific proteins.

**The liver performs more than 500 bodily functions.**

"Liver Facts." Canadian Liver Foundation.  
<http://www.liver.ca/liver-health/liver-facts.aspx>.

**... not enough to enter deep, slow-wave sleep, without which the memory suffers.**

Bjorn Rasch and Jann Born. "About Sleep's Role in Memory." *Physiological Reviews*. (April 2013): 681-766. American Physiological Society. doi: 10.1152/physrev.00032.2012.

**Part of the relaxation I sought was the sleep inducement of free-flowing liquor. . .**

Actually, a review of 27 studies has shown that alcohol does not induce quicker or deeper sleep. Denise Mann. "Alcohol and a Good Night's Sleep Don't Mix." Sleep Disorders Health Center. WebMD. Jan. 22, 2013. <http://www.webmd.com/sleep-disorders/news/20130118/alcohol-sleep>.

**people who sold a pint of their blood would receive between \$5 and \$200, depending on blood type.**

Stephen Pemberton. *The Bleeding Disease: Hemophilia and the Unintended Consequences of Medical Progress*. (Baltimore: John

Hopkins University Press, 2011), 162. The \$5 - \$200 price range for blood was from 1962.

**... only a seven percent chance of contracting hepatitis**

"Hepatitis C Discovery." BioCentury This Week. Washington D.C.: BioCentury Publications. Segment of public affairs TV webcast. April 27, 2014.

**30 percent rate for all blood transfusions**

Ibid.

**There were countless thousands of paid donors in the '60s.**

Leslie H. Tobler and Michael P. Busch. "History of Posttransfusion Hepatitis." *Clinical Chemistry* 43, no. 8. (August 1997): 1487-1493.  
<http://www.clinchem.org/content/43/8/1487.full#T1>. The article cites a total of 12 million blood donations annually by 1971, and until the U.S. shifted to a voluntary blood donation system in 1970, most blood donations were paid for.

**... whose livers would fail because the donors' blood carried hepatitis C.**

Douglas Starr. *Bad Blood: An Epic History of Medicine and Commerce*. (New York: Knopf, 1998).

## **Chapter 3: tainted tools**

**The Normals by David Gilbert.**

New York: Bloomsbury, 2004.

**"theoretical risk of infection by sharing these objects."**

G. Lock, M. Dirscher, F. Obermeier, C.M. Gelbmann, C. Hellerbrand, A. Knöll, J. Schölmerich, and W. Jilg. "Hepatitis C - Contamination of Toothbrushes: Myth or Reality?" *Journal of Viral Hepatitis* 13, no. 9. (Sept. 2006): 571-3. PMID: 16907842.

**... HCV particles in saliva are not very infectious.**

M.C. Ferreira, P.D. Dios, and C. Scully. "Transmission of Hepatitis C Virus by Saliva?" *Oral Diseases* 11, no. 4. (July 2005): 230-5. PMID: 15984954.

**high doses of niacin have been linked to severe and even fatal liver injury.**

"Overview: Niacin." LiverTox: Clinical and Research Information on Drug-Induced Liver Injury. National Institutes of Health. <http://livertox.nih.gov/Niacin.htm>.

**The straw could have had anybody's blood on it, which may have given him hepatitis**

Sharing a cocaine straw creates a very slight risk of HCV transmission, according to researchers, but materials used to cut cocaine can rupture tiny blood vessels in the nasal cavity. This can allow absorption of blood from someone who shares the straw.

**... out of 1,300 who had been inoculated.**

Jacalyn Duffin. *Lovers and Livers*.

also

Douglas Starr. *Blood: an Epic History of Medicine and Commerce*.

**more than 26,771 soldiers who received a vaccine for yellow fever came down with hepatitis.**

J. Gordon Frierson. "The Yellow Fever Vaccine: A History." *Yale Journal of Biology and Medicine* 83, no. 2. (June 2010): 77-85. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2892770/>.

**200,000 cases of hepatitis were reported among U.S. soldiers.**

Col. David P. Dooley. "History of U.S. Military Contributions to the Study of Viral Hepatitis." *Military Medicine* 170.

**1950--the peak time for hepatitis C transmission occurred.**

Sheryl Ubelacker. "Hepatitis C peaked 15 years earlier than believed, Canadian researchers find." *Globe and Mail*. March 31, 2016. <http://www.theglobeandmail.com/news/british-columbia/hepatitis-c-peaked-15-years-earlier-than-believed-canadian-researchers-find/article29488842/>.

**Root canals and surgical removal of tartar were cited as the main culprits.**

Aldemir Branco de Oliveira-Filho, Adriana do Socorro Coelho Pimenta, Márcia de Fátima Maciel Rojas, Márcia Cristina Munhoz Chagas, Deborah Maia Crespo, José Ângelo Barletta Crescente, and José Alexandre Rodrigues de Lemos. "Likely Transmission of Hepatitis C Virus Through Sharing of Cutting and Perforating Instruments in Blood Donors in the State of Pará, Northern Brazil." *Artigo* 26, no. 4. (April 2010). Translated from Portuguese.

<http://dx.doi.org/10.1590/S0102-311X2010000400025>

**About 240 million people suffer from snail fever worldwide.**

"Schistosomiasis." Health topics. World Health Organization. Accessed Dec. 16, 2014.

<http://www.who.int/topics/schistosomiasis/en/>.

**Each year more than 200,000 people die from the disease.**

Sina Helbig et al. "Schistosomiasis (Bilharzia, Snail fever) Trematode (Fluke)." Global Health Consortium. Slide show on [cugh.org](http://cugh.org). Accessed Dec. 16, 2014.

**at least 10 percent of Egyptians, age 15 to 59 became infected with hepatitis C.**

"Egypt Steps up Efforts Against Hep C." World Health Organization. July 2014.

<http://www.who.int/features/2014/egypt-campaign-hepatitisc/en/>.

**... the health system doesn't bother screening for the virus."**

"Jenny Heathcote." *Great Teachers: Treating Chronic Hepatitis B and C*. Clinical Grand Rounds. National Institutes of Health. Online video. January 13, 2013.

<http://videocast.nih.gov/Summary.asp?File=15539&bhcp=1>.

**... at 11 different hemodialysis clinics between 2008 and 2014.**



"Healthcare-Associated Hepatitis B and C Outbreaks Reported to the Centers for Disease Control and Prevention (CDC) in 2008-2014."

<http://www.cdc.gov/hepatitis/Outbreaks/PDFs/HealthcareInvestigationTable.pdf>.

**... and the clinic stayed open.**

"Hepatitis C Outbreak Identified at Kitchener Colonoscopy Clinic." CBC News. Television broadcast. February 3, 2015.

<http://www.cbc.ca/news/canada/kitchener-waterloo/hepatitis-c-outbreak-identified-at-kitchener-colonoscopy-clinic-1.2943603>.

**According to Evelyn V. McKnight, one of the 99 patients, there was a cover-up.**

Evelyn V. McKnight and Travis T. Bennington. *A Never Event: Exposing the Largest Outbreak of Hepatitis C in American Healthcare History*. (Arbor Books: New Jersey, 2008).

**99 patients--about one in six--progressed to advanced liver disease.**

Note that 40 of the Nebraska victims endured grueling interferon-ribavirin treatment and 80 percent of them were cured of hepatitis C.

**...25% develop cirrhosis.**

This statistic indicates that 20 percent of people who contract hepatitis C--including the acute and chronic forms of the disease--develop cirrhosis.

**Each year, 1 - 4% of people with cirrhosis are diagnosed with liver cancer.**

Athira Vincent. "Viral Hepatitis, an Introduction." Stanley Medical College. Slide show for World Health Organization 6th World Hepatitis Day. 2013.

<https://prezi.com/acvfnepvn5ec/viral-hepatitis/>.

## Chapter 4: flus and accidents

### **One person preparing food can transmit the disease to hundreds of others.**

Anthony E. Fiore. "Hepatitis A Transmitted by Food." Invited Article: Food Safety. Centres for Disease Control and Prevention. March 1, 2004.

[http://www.cdc.gov/hepatitis/pdfs/fiore\\_ha\\_transmitted\\_by\\_food.pdf](http://www.cdc.gov/hepatitis/pdfs/fiore_ha_transmitted_by_food.pdf).

### **Unlike hepatitis C, it does not become chronic.**

"Hepatitis A Questions and Answers for Health Professionals." Centers for Disease Control and Prevention.

<http://www.cdc.gov/hepatitis/hav/havfaq.htm>.

### **Swelling in the legs, confusion, or weight loss may occur.**

Mayo Clinic Staff. "Diseases and Conditions Hepatitis C: Symptoms." <http://www.mayoclinic.org/diseases-conditions/hepatitis-c/basics/symptoms/con-20030618>.

### **... researchers at John Hopkins Medical Institutions in Baltimore. . .**

W.O. Osburn, B.E. Fisher, K.A. Dowd, G. Urban, L. Liu, S.C. Ray, D.L. Thomas, and A.L. Cox. "Spontaneous control of primary hepatitis C virus infection and immunity against persistent reinfection." *Gastroenterology* 138, no. 1. (Jan. 2010): 315-24. doi: 10.1053/j.gastro.2009.09.017.

### **More definitive studies showed similar results with chimpanzees**

N.H. Shoukry, A. Grakoui, M. Houghton, D.Y. Chien, J. Ghrayeb, K.A. Reimann, and C.M. Walker. "Memory CD8+ T Cells Are Required for Protection from Persistent Hepatitis C Virus Infection." *Journal of Experimental Medicine* 197, no. 12. (June 16, 2003):

1645-55. <http://www.ncbi.nlm.nih.gov/pubmed/12810686>.

**chance had it that Dr. Radev was one of the minority. . .**

Dr. Iris Radev's estimate.

**Before symptoms appear, there may be signs of the disease.**

Phillip K. Peterson. *Get Inside Your Doctor's Head: 10 Commonsense Rules for Making Better Decisions about Medical Care*. (Maryland: John Hopkins University Press, 2013).

**ALT**

alanine transaminase.

**Until then, testing wasn't always done.**

Sonya Norris. "Canada's Blood Supply Ten Years After the Krever Commission." Library of Parliament Research Publications. Canada. July 10, 2008.

**. . . and it rarely causes lasting liver damage.**

"Hepatitis A FAQs for the Public." Centers for Disease Control and Prevention, United States. Accessed March 11, 2015.

<http://www.cdc.gov/hepatitis/A/aFAQ.htm>.

**four percent of those who develop cirrhosis will end up with liver cancer.**

Laura A. Magnifico. "The Facts about Hepatitis C: Prognosis and Life Expectancy." University of Maryland Medical Centre. Healthline slides. November 22, 2013.

<http://www.healthline.com/health-slideshow/hepatitis-prognosis-and-life-expectancy#1>.

**one to five bags of heroin, each good for a six- to eight-hour high**

Peter A. Clark. "Heroin Addiction: An ethical Evaluation of New York City's Heroin Manual." *The Internet Journal of Health* 2,

no.1.(2009). <https://ispub.com/IJH/12/1/4549>.

### **300,000 individuals who used heroin.**

Blanche Frank. "An Overview of Heroin Trends in New York City: Past, Present and Future." The Drug Policy Alliance.

<https://www.yumpu.com/en/document/view/35161374/an-overview-of-heroin-trends-in-new-york-city-drug-policy-alliance>.

### **His strategy was to force injection drug users into compulsory treatment or jail.**

Vanessa Barker. The Politics of Imprisonment: How the Democratic Process Shapes the Way America Punishes Offenders. (Oxford University Press: 2009).

### **15 years later received a best-supporting actor Oscar nomination**

Sam Shephard's Academy Award nomination was for playing Chuck Yeager in The Right Stuff, the 1983 movie about Mercury 7 astronauts.

### **the UHN**

University Health Network.

### **"They only need one injection from a person they've shared a needle with to get infected."**

"Jenny Heathcote." Great Teachers: Treating Chronic Hepatitis B and C. Clinical Grand Rounds. National Institutes of Health.

Online video. January 13, 2013.

<http://videocast.nih.gov/Summary.asp?File=15539&bhcp=1>.

### **at least half of plasma products came from prisons and paid donors.**

Douglas Starr. Bad Blood: an Epic History of Medicine and Commerce. (New York: Knopf, 1998), 2.

### **transfusion-related hepatitis dropped by 90 percent.**

Ibid.

## **Chapter 5: stigma and sharing**

### **The hepatitis C virus invades liver cells and turns them into its own virus factories**

Peter Jaret. "Hepatitis C." *Health Day*. January 20, 2016.  
[http://consumer.healthday.com/encyclopedia/hepatitis-c-23/  
hepatitis-news-373/hepatitis-c-645352.html](http://consumer.healthday.com/encyclopedia/hepatitis-c-23/hepatitis-news-373/hepatitis-c-645352.html).

### **. . . in Trinidad and Tobago, regardless of where you are eating or staying."**

"Health Information for Travellers to Trinidad and Tobago."  
Centers for Disease Control and Prevention.

[http://wwwnc.cdc.gov/travel/destinations/traveler/none/trinidad-  
and-tobago](http://wwwnc.cdc.gov/travel/destinations/traveler/none/trinidad-and-tobago).

### **. . . there was more stigma with AIDS than there should have been."**

and with leprosy, a curable infection known medically as  
Hansen's disease.

### **This happens in about six percent of births when the mother has hep.**

"Hepatitis C FAQs for the Public." Centers for Disease Control  
and Prevention.

<http://www.cdc.gov/hepatitis/hcv/cfaq.htm#cFAQ39>.

### **Hepatitis C, Cured**

Johnny Delirious. *Hepatitis C, Cured*. (Bloomington, Indiana:  
AuthorHouse, 2009).

### **. . . Tylenol and death cap mushrooms, and it may help the liver grow new cells.**

"Milk thistle: Overview." University of Maryland Medical Center.  
May 26, 2014. [https://umm.edu/health/medical/altmed/herb/milk-  
thistle](https://umm.edu/health/medical/altmed/herb/milk-thistle).

**Misha co-authored The Hepatitis C Help Book, published in 2000.**

Macmillan Publishers.

**27 percent of patients taking interferon and ribavirin for hepatitis C prematurely stopped treatment because of adverse side effects.**

G.B. Gaeta, D.F. Precone, F.M. Felaco, R. Bruno, A. Spadaro, G. Stornaiuolo, M. Stanzione, T. Ascione, R. De Sena, A. Campanone, F. Filice, and F. Piccinino. "Premature Discontinuation of Interferon Plus Ribavirin for Adverse Effects: a Multicentre Survey in 'Real World' Patients with Chronic Hepatitis C." Unit of Infectious Diseases, Second University of Naples, Italy. *Aliment Pharmacol Ther* 16, no. 9. (September 2002): 1633-9. PMID: 12197842.

**in about double as many men who are co-infected with HIV/AIDS.**

Briat, E. Dulioust, J. Galimand, H. Fontaine, M.L. Chaix, H. Letur-Könirsch, S. Pol, P. Jouannet, C. Rouzioux, and M. Leruez-Ville. "Hepatitis C virus in the Semen of Men Coinfected with HIV-1: Prevalence and Origin." *AIDS* 19, no. 6. (Nov. 2005): 1827-35. <http://www.ncbi.nlm.nih.gov/pubmed/16227790>.

**transmission of hepatitis C occurs in only one out of 190,000 sexual encounters.**

N.A. Terrault, J.L. Dodge, E.L. Murphy, J.E. Tavis, A. Kiss, T.R. Levin, R.G. Gish, M.P. Busch, A.L. Reingold, and M.J. Alter. "Sexual Transmission of Hepatitis C Virus among Monogamous Heterosexual Couples: the HCV Partners Study." *Hepatology* 57, no. 3 (March 2013): 881-9. doi:

10.1002/hep.26164.

**every day for 250 years, you would have about a 50/50 chance of catching the virus.**

Author's math.

**unprotected sex during menstruation.**

Michael F. Pico. "How Common is Sexual Transmission of Hepatitis C?" Mayo Clinic.

<http://www.mayoclinic.org/diseases-conditions/hepatitis-c/expert-answers/hepatitis-c/faq-20058441>.

**rough sex increases the risk of catching hepatitis C."**

Hepatitis C FAQs for the Public." Centers for Disease Control and Prevention (U.S.A.)

<http://www.cdc.gov/hepatitis/hcv/cfaq.htm#transmission>. Also,

"Causes of Hepatitis C." Public Health Agency of Canada.

<http://healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/hepatitis-c-hepatite/causes-eng.php>.

**guru Ram Dass,**

the spiritual name of Dr. Richard Alpert, a Harvard scholar and sidekick of Timothy Leary.

**if the erection lasts more than four hours.**

"Diseases and Conditions: Priapism: Prolonged erection." The Mayo Clinic. <http://www.mayoclinic.org/diseases-conditions/priapism/basics/definition/con-20029378>.

**an early direct-acting antiviral for hepatitis C, boceprevir, has been associated with priapism.**

K.P. Hammond, C. Nielsen, S.A. Linnebur, J.A. Langness, G. Ray, P. Maroni, and J.J. Kiser. "Priapism induced by boceprevir-CYP3 inhibition and  $\alpha$ -adrenergic blockade: case report." PMID:

24092799.

**Chronic use of the drug can deplete norepinephrine from the nerves, leading to priapism.**

R. Munarriz, J. Hwang, I Goldsein, A.M. Traish, and N.N. Kim.  
"Cocaine and ephedrine-induced priapism: case reports and investigation of potential adrenergic mechanisms." *Urology* 62, no. 1. (July 2003): 187-92.

<http://www.ncbi.nlm.nih.gov/pubmed/12837464>.

## **Chapter 6: millions of virions**

**a 33 percent hepatitis infection rate among people who had received any paid, donated blood.)**

Alter's studies are explained in Harvey J. Alter and Michael Houghton. "Clinical Medical Research Award: Hepatitis C Virus and Eliminating Post-transfusion Hepatitis." *Nature America*. (2000).

<https://demystifyingmedicine.od.nih.gov/DM06/HepatitisC/Alter-Houghton.pdf>.and also "Hepatitis C Discovery." Washington D.C.: BioCentury Publications. Segment of public affairs TV webcast. April 27, 2014. In the first reference Alter cites a 33 percent rate of hepatitis through transfusions containing paid donor blood. In the second reference he cites a 30 percent rate.

**... skid-row blood sellers compared with unpaid volunteers.**

J. Garrott Allen. "Post-Transfusion Hepatitis--A Serious Clinical Problem." *Western Journal of Medicine* 104, no. 4 (April 1966): 293-299.

**Then in 1988 Michael Houghton at Chiron Corporation,**

Michael Houghton. "Discovery of The Hepatitis C Virus." *Liver*



*International* 29. (January 2009): 82-88.

**Millions of hep C viruses can sit on the head of a pin.**

Charles Daniel. "What Does the Hepatitis C Virus Look Like?"

About Health. October 19, 2014.

<http://hepatitis.about.com/od/hepatitisc/f/HCVImage.htm>.

**The average person with hepatitis C has a 6 million viral load per milliliter,**

Mark Holodniy. "Range for Viral Load in HCV." *The Body*.

<http://www.thebody.com/h/range-for-viral-load-in-hcv.html>.

**unusually large virus can be about twice that size.**

"Virus." *Encyclopaedia Britannica*.

<http://www.britannica.com/EBchecked/topic/630244/virus/32742/Size-and-shape>.

**between 30 and 75 nm. across.**

Pable Gastaminza, Kelly A. Dryden, Bryan Boyd, Malcolm R. Wood, Mansun Law, Mark Yeager, and Francis V. Chisari.

"Ultrastructural and Biophysical Characterization of Hepatitis C Virus Particles Produced in Cell Culture." *Journal of Virology* 84, no. 21 (Nov. 2010): 10999-11009.

doi:10.1128/JVI.00526-10. The article states the size as 40 - 75 nm, whereas other sources state it as 30 - 60 nm. I've cited the smallest and largest sizes noted.

**it may produce vague, intermittent, or persistent symptoms,**

"Viral Hepatitis: Managing Pain: Entire Lesson." Viral Hepatitis: for Veterans and the Public. U.S. Department of Veterans Affairs.

<http://www.hepatitis.va.gov/patient/daily/pain/single-page.asp>.

**Between 40 and 75 percent of people who have hepatitis C, don't know they have it.**

As stated in the notes for Chapter 1, conflicting percentages have been cited in Canada (40 percent) and the United States (up to 75 percent).

**one out of 30 Baby Boomers is afflicted with the virus.**

Centres for Disease Control and Prevention. "CDC Now Recommends All Baby Boomers Receive One-Time Hepatitis C Test." Press Release. Aug. 26, 2012.

[http://www.cdc.gov/nchhstp/newsroom/2012/hcv-testing-recs-pressrelease\\_pressrelease.html](http://www.cdc.gov/nchhstp/newsroom/2012/hcv-testing-recs-pressrelease_pressrelease.html).

**Baby Boomers are five times more likely to have hepatitis C than all other adults.**

Mayo Clinic. "Hepatitis C and baby boomers."

<http://www.mayoclinic.org/diseases-conditions/hepatitis-c/in-depth/hepatitis-c-and-baby-boomers/art-20090585>.

**and not a permanent change in the brain.**

Marco Senzolo, Sami Schiff, Cristina Maria D'Aloiso, Chiara Crivellin, Evangelos Cholongitas, Patrizia Burra, and Sara Montagnese. "Neuropsychological Alterations in Hepatitis C Infection: The Role of Inflammation." *World Journal of Gastroenterology* 17, no. 29 (Aug 7, 2011): 3369-3374.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3160562/>.

**improved their brain functioning, but those who failed to clear the virus did not.**

V. Byrnes, A. Miller, D. Lowry, E. Hill, C. Weinstein, D. Alsop, R. Lenkinski, and N.H. Afdhal. "Effects of anti-viral therapy and HCV clearance on cerebral metabolism and cognition." *Journal of Hepatology* 56, no. 3 (March 2012): 549-556. PMID: 22027578.

**study with 150 participants found similar results. Michael R. Kraus et al.**

Michael R. Kraus, Arne Schäfer, Gerlinde Teuber, Heiner Porst, Kathrin Sprinz, Sven Wollschläger, Christian Keicher, and Michael Scheurlen. "Improvement of Neurocognitive Function in Responders to an Antiviral Therapy for Chronic Hepatitis C." *Hepatology* 58, no. 2; (August 2013): 497-504.  
<http://onlinelibrary.wiley.com/doi/10.1002/hep.26229/full>.

**Hair becomes sparse under the arms, especially in women.**

Melissa Palmer. *Dr. Melissa Palmer's Guide to Hepatitis & Liver Disease*. 2nd ed. (New York: Penguin, 2004).

**attributes the pain to the stretching of the outer edge of the liver.**

Viral Hepitais: Managing Pain: Entire Lesson." U.S. Department of Veterans Affairs.

<http://www.hepatitis.va.gov/patient/daily/pain/single-page.asp>.

**woman's liver disease progress quicker than a man's with similar drinking habits.**

U. Becker, A. Deis, T.I. Sorensen, M. Gronbaek, K. Borch-Johnsen, C. F. Muller, P. Schnohr, and G. Jensen. "Prediction of risk of liver disease b alcohol intake, sex, and age: a prospective population study." *Hepatology* 23, no. 5 (May 1996): 1025-1029. DOI: 10.1002/hep.510230513.

**42-year wait before the disease turns deadly.**

"Natural History of Hepatitis C." U.S. Department of Veterans Affairs. Website for health care providers.

<http://www.hepatitis.va.gov/provider/reviews/natural-history.asp>.

**which triggers the virus to replicate.**

National Institutes of Health. "Alcohol Increases Hepatitis C

Virus in Human Cells." Press Release. June 26, 2003.

<http://www.niaaa.nih.gov/news-events/news-releases/alcohol-increases-hepatitis-c-virus-human-cells>.

**Alcohol also can poison liver cells,**

Peter Jaret. "Alcohol and Hepatitis C." *HealthDay*. January 20, 2016.

<http://consumer.healthday.com/encyclopedia/hepatitis-c-23/hepatitis-news-373/alcohol-and-hepatitis-c-645166.html>.

**a build-up of iron in body tissues that may induce fibrosis.**

Eugene R. Schiff and Nuri Ozden. "Hepatitis C and Alcohol." National Institute on Alcohol Abuse and Alcoholism.

<http://pubs.niaaa.nih.gov/publications/arh27-3/232-239.htm>.

**an excess of free radicals in the cells, and a decrease in antioxidants.**

Charles S. Lieber. "Alcohol and Hepatitis C." National Institute on Alcohol Abuse and Alcoholism. National Institutes of Health.

<http://pubs.niaaa.nih.gov/publications/arh25-4/245-254.htm>.

**Tylenol can be toxic to people who have a gene mutation called CD44.**

Peter Cullis. *The Personalized Medicine Revolution: How Diagnosing and Treating Disease are about to Change Forever*.

(Vancouver: Greystone Books, 2015).

**It said those who take Lamisil should have their liver tested afterward.**

Note: many other prescription drugs come with liver warnings.

**serious underlying systemic conditions and an uncertain causal relationship with LAMISIL.**

"Important Drug Safety Information." Novartis Pharmaceuticals Canada Inc. Letter to Health Canada. May 17, 2001.  
healthy Canadians.gc.ca/recall-alert-rappel-avis/hc-sc/2001/14531a-eng.php.

**... Tablets in individuals with and without pre-existing liver disease."**

"Highlights of Prescribing Information."  
[http://www.accessdata.fda.gov/drugsatfda\\_docs/label/2010/020539s0171b1.pdf](http://www.accessdata.fda.gov/drugsatfda_docs/label/2010/020539s0171b1.pdf).

**Genotypes 2 and 3 did better, with a 75 percent success rate.**

"Viral Hepatitis: Frequently Asked Questions." U.S. Department of Veterans Affairs.  
<http://www.hepatitis.va.gov/patient/faqs/treatment-success.asp>.

**"lacks efficient proofreading ability as it replicates."**

"Global Alert and Response. Hepatitis C." World Health Organization.  
<http://www.who.int/csr/disease/hepatitis/whocdscsrlyo2003/en/index2.html>.

**main hepatitis C genotypes and subtypes, and where they are most likely to be found:**

List adapted from "Genotypes Explained." Hepatitis Central.  
<http://www.hepatitiscentral.com/hcv/genotype/explained/>.

**Peter raced like a wildebeest**

The sixth fastest animal on earth, according to the Conservation Institute, the blue wildebeest runs at 50 mph.

## **Chapter 7: the tiny jackhammer**

**"The majority of people with chronic Hepatitis C will never develop a major complication related to this disease."**

Nicole Cutler. "Living with Hepatitis C: Is an Occasional Drink Okay?" Hepatitis Central.

[http://www.hepatitiscentral.com/news/living\\_with\\_hep/](http://www.hepatitiscentral.com/news/living_with_hep/).

**About half of patients feel pain after a biopsy.**

"Liver Biopsy." Canadian Liver Foundation.

<http://www.liver.ca/liver-disease/diagnosing-liver-disease/liver-biopsy.aspx>.

**Researchers from the Institute of Cellular Medicine at Newcastle University in England poured through the most current**

as of May 2012.

**increasing evidence of liver regression in people who had fibrosis and had been cured of hepatitis C.**

Elizabeth L. Ellis and Derek A. Mann. "Clinical evidence for the regression of liver fibrosis." *Journal of Hepatology* 56, no. 5. (May 2012): 1171-1180.

<http://www.sciencedirect.com/science/article/pii/S016882781200044X>.

**had done exceptionally well in recent clinical trials for my genotype.**

Eric Lawitz, Mark S. Sulkowski, Reem Ghalib, Maribel Rodriguez-Torres, Zobair M. Younossi, Ana Corregidor, Edwin DeJesus, Brian Pearlman, Mordechai Rabinovitz, Norman Gitlin, Joseph K Lim, Paul J Pockros, John D Scott, Bart Fevery, Tom Lambrecht, Sivi Ouwerkerk-Mahadevan, Katleen Callewaert, William T Symonds, Gaston Picchio, Karen L. Lindsay, Maria Beumont, and Ira M. Jacobson. "Simeprevir plus sofosbuvir, with or without ribavirin, to treat chronic infections with hepatitis C virus genotype 1 in non-responders to pegylated interferon and ribavirin and treatment-naive patients: the COSMOS randomised

study." *The Lancet* 384, no. 9956 (July 27, 2014).

DOI: [http://dx.doi.org/10.1016/S0140-6736\(14\)61036-9](http://dx.doi.org/10.1016/S0140-6736(14)61036-9).

**about half of those who took the drug for hepatitis C were cured.**

Cited as 40 - 45 percent in a New York Times report: Peter Loftus. "Patient Delimma: Treat Hepatitis C Now or Hold Out?" March 4, 2013.

<http://www.wsj.com/articles/SB10001424127887323293704578330712442353712>.

**two protease inhibitors introduced in 2011 upped the cure rate to 66 to 79 percent.**

Peter Loftus. Ibid.

**allergic reactions, depression, shortness of breath, weakness, and pale skin.**

"Sofosbuvir." Wolters Kluwer Health. Document that came with my prescription. July 15, 2014.

**for a total of \$84,000 for a 12-week treatment.**

Maria Ancheta-Schmidt.

also

Pharmacist's Letter / Prescriber's Letter. Therapeutic Research Centre. January 2015.

**lowered the cost for patients to about \$68,000.**

This was my cost, including dispensing fees in Canadian funds. About six months later The Pharmacist's Letter (ibid.) cites the Canadian base cost as \$59,400. The U.S. price is cited in U.S. funds, which would be higher in Canadian dollars.

**allergic reaction, shortness of breath, red, skin irritation, mouth sores, and eye irritation.**

"Simeprevir: Patient Education - Adult Medication." Wolters Kluwer Health. Document that came with my prescription. July 15,

2014.

**cost \$66,000 in the U.S.**

Pharmacist's Letter.

**or \$47,000 in Canada**

My cost.

## **Chapter 8: stock and other tickers**

**Manulife, and mine, Pacific Blue Cross.**

The government covers necessary medical care in Canada and some drug costs. Private plans through employers often pay for drugs and non-essential health services.

**the average cost of treatment with interferon plus ribavirin, laboratory testing, and visits to the doctor gobbled up \$10,000 to \$12,000.**

David Bernstein. "Hepatitis C: To Treat or Not to Treat--Can We Afford Not To?" Medscape Multispecialty. Accessed Aug. 4, 2015. <http://www.medscape.org/viewarticle/419976>.

**increased to about 60 percent when ribavirin and pegylated interferon were combined.**

P. Feuerstadt, A.L. Bunim, H. Garcia, J.J. Karlitz, H. Massoumi, A.J. Thosani, A. Pellecchia, A.W. Wolkoff, P.J. Gaglio, and J.F. Reinus. "Effectiveness of Hepatitis C Treatment with Pegylated Interferon and Ribavirin in Urban Minority Patients." *Hepatology* 51, no. 4. (April 2010): 1137-43. doi: 10.1002/hep.23429.

**80 percent, depending on genotype.**

"Treating Chronic Hepatitis C: A Review of the Research for Adults." Agency for Healthcare Research and Quality. Nov. 27, 2012. <http://effectivehealthcare.ahrq.gov/search-for-guides->



[reviews-and-reports/?pageaction=displayproduct&productid=1288.](http://www.hc-sc.gc.ca/dhp-mps/prodpharma/sbd-smd/drug-med/sbd_smd_2014_galexos_164021-eng.php)

**the use of the first non-interferon, non-ribavirin treatment for hepatitis C.**

Health Canada.

[http://www.hc-sc.gc.ca/dhp-mps/prodpharma/sbd-smd/drug-med/sbd\\_smd\\_2014\\_galexos\\_164021-eng.php.](http://www.hc-sc.gc.ca/dhp-mps/prodpharma/sbd-smd/drug-med/sbd_smd_2014_galexos_164021-eng.php)

**The PMPRB states on its website**

Patented Medicine Prices Review Board. Website. <http://pmprb-cepmb.gc.ca/home>.

**treatment patients paid just \$840 U.S. for three months of the drug.**

Ewen Callaway. "Hepatitis C drugs not reaching poor." *Nature: International Weekly Journal of Science*. April 15, 2014.

**Kenyans and Iranians paid only \$900.**

Polly Mosendz. "\$1,000-a-Day Hepatitis C Miracle Drug Gets a Major Price Cut, Just Not in the U.S." *The Wire: News from the Atlantic*. April 11, 2014.

<http://www.thewire.com/global/2014/04/1000-a-day-hepatitis-hepatitis-c-miracle-drug-gets-a-major-price-cut-just-not-in-the-us/360505/>.

**\$44,900 in August 2014**

Tami Luhby. "America's Middle Class: Poorer Than You Think." *CNN Money*. Aug. 5, 2014.

**just \$53,046 according to the 2013 census.**

United States Census: Quick Facts.

<http://quickfacts.census.gov/qfd/states/00000.html>.

**insurance companies in the U.S. were getting about a 45 percent discount**

"FDA OKs Merck hepatitis C drug, adding to patient choices."  
Townhall.com. Jan. 18, 2016.

<http://townhall.com/news/us/2016/01/28/fda-oks-merck-hepatitis-c-drug-adding-to-patient-choices-n2111576>.

**NASDAQ doubled in price between the year before and the year after my treatment.**

Aug. 1, 2013, share price \$60.05; Aug. 1, 2015, \$199.60.

**hepatitis C drug, Harvoni, totaled \$12.4 billion.**

Andrew Pollack. "Sales of Sovaldi, New Gilead Hepatitis C Drug, Soar to \$10.3 Billion." *Business Day, New York Times*. Feb 3, 2015.

**letter to Gilead asking that its hep C drug prices be lowered.**

Ransdell Pierson and Bill Berkrot. "Massachusetts official challenges Gilead's hepatitis C drug prices." Reuters. Jan. 27, 2016. <http://www.reuters.com/article/us-gilead-sciences-massachusetts-idUSKCN0V51Y3>.

**predicted the drug could be produced for less than \$2 a pill.**

Based on an estimate of \$68-\$136 for a 12-week supply of sofosbuvir in Andrew Will, Saye Khoo, Joe Fortunak, Bryony Simmons, and Nathan Ford. "Minimum costs for producing Hepatitis C Direct Acting Antivirals, for use in large-scale treatment access programs in developing countries." *Clinical Infectious Diseases* 58. No. 7 (April 2014): 928-36.  
<http://www.ncbi.nlm.nih.gov/pubmed/24399087>

**\$94,500 U.S. for a 12-week course of its one-pill hep C miracle cure, Harvoni.**

Andrew Pollack. "Gilead Faces Fights Over Hepatitis C and H.I.V. Drugs." *New York Times*. January 27, 2016.  
<http://www.nytimes.com/2016/01/28/business/gilead-faces-fights->

[over-hepatitis-c-and-hiv-drugs.html?\\_r=0.](#)

**as well as Janssen's Galexos**

Janssen is part of Johnson & Johnson.

**The initial cost was \$76,653 for 12 weeks.**

"Bristol-Meyers Wins Approval for 1st Hepatitis C Type 3 Drug." *Mail Online*. Associated Press story. July 24, 2015.

<http://www.dailymail.co.uk/wires/ap/article-3173810/Bristol-Myers-wins-approval-1st-hepatitis-C-type-3-drug.html>.

**The list price was 54,600 U.S. for a 12-week treatment.**

"Merck Receives FDA Approval of ZEPATIER (elbasvir and grazoprevir) for the Treatment of Chronic Hepatitis C Virus Genotype 1 or 4 Infection in Adults Following Priority Review." *Business Wire*. January 28, 2016.

<http://www.businesswire.com/news/home/20160128006608/en/Merck-Receives-FDA-Approval-ZEPATIER%E2%84%A2-elbasvir-grazoprevir>.

**(cited at 61 percent of hep C patients in 2010).**

"Hepatitis C in Canada: 2005-2010." Public Health Agency of Canada. <http://www.phac-aspc.gc.ca/sti-its-surv-epi/hepc/surv-eng.php>

## **Chapter 9: a letter**

**... unsterilized tattooing equipment the risk rises to 2.0–3.6 percent, according to researchers.**

Raina A. Tohme and Scott D. Holmberg. "Transmission of Hepatitis C Virus Infection Through Tattooing and Piercing: A Critical Review." *Clinical Infectious Diseases* 58, no. 8. (April 2012): 1167-78. doi: 10.1093/cid/cir991.

## Chapter 10: another letter

**varied between 94 and 99 percent sustained virologic response for a 12-week treatment.**

Chris Kardish. "FDA Approves Harvoni, Another Expensive Hepatitis C Drug." *Governing: the States and Localities*. Oct. 10, 2014. <http://www.governing.com/topics/health-human-services/gov-fda-approves-another-expensive-hepatitis-drug.html>. Note that Harvoni commercials on TV in 2015 cited cure rates of 96 to 99 percent.

**had occurred after EVR in one-third of patients who had taken interferon.**

Peter Ferenci, Michael W. Fried, Mitchell L. Shiffman, Coleman I. Smith, George Marinos, Fernando L. Gonçales Jr., Dieter Häussinger, Moises Diago, Giampero Carosi, Daniel Dhumeaux, Antonio Craxì, Monique Chaneac, and K. Rajender Reddy. "Predicting sustained virological responses in chronic hepatitis C patients treated with peginterferon alfa-2a (40 KD)/ribavirin." *Journal of Hepatology*. September 2005. Vol. 43, No. 3, 425-433.

**infections, perforations of the uterus, hysterectomies, miscarriages, or ectopic pregnancies because of the device, and 17 women died.**

Anna Bahr. "As Memories of Dalkon Shield Fade, Women Embrace IUDs Again." *Ms. Magazine Blog*. August 29, 2012. <http://msmagazine.com/blog/2012/08/29/as-memories-of-dalkon-shield-fade-women-embrace-iuds-again/>. Also, K. Byrne. "Medical Records in Litigation: the Dalkon Shield story." *AMRO* 32 no. 5. (February 1992):11-4. PMID: 10117045.

**Prestige Health Care refused to pay for the \$95,000 drug,**

An uninsured patient would pay \$95,400 for a 12-week treatment. Most health insurance companies get large discounts, but the

percentage discount is proprietary to the companies and not disclosed.

### **Doctors had prepared three units**

A unit of blood is 525 ml, which is approximately a pint.

### **up to 100 pints of blood can be used.**

"Blood Facts and Statistics." American Red Cross.

<http://www.redcrossblood.org/learn-about-blood/blood-facts-and-statistics>.

### **which would be close to \$17,000 now.**

Estimated through Inflation Calculator available at

<http://www.in2013dollars.com/>.

## **Chapter 11: the swab**

### **it's because liver damage advances more rapidly as people age.**

S.D. Ryder and Trent Hepatitis C Study Group. "Progression of hepatic fibrosis in patients with hepatitis C: a prospective repeat liver biopsy study." *Gut* 53. No. 3 (March 2004).

PMC1773967.

### **in Canada the government usually pays the transplant cost,**

Patrick Sullivan. "New Price Tag Put on Liver Transplants." *Canadian Medical Association Journal* 168, no. 2. (January 21, 2003). The cost of a liver transplant varies wildly, depending on the severity of liver disease and complications. A study in 2003 cited an average cost of \$122,000 with a possible range to almost \$700,000.

### **UNOS, a non-profit organization that coordinates all types of organ transplants.**

2011 figure (\$577,100) is from "UNOS Transplant Living."

<http://www.transplantliving.org/before-the-transplant/financing-a-transplant/the-costs/>.

**The government regulated the market to keep prices low.**

Peter Erlinder. "The Hidden Truth Behind the High Cost of Hepatitis C Drugs." Star Tribune." Aug. 20 2015. Also at Global Research. <http://www.globalresearch.ca/counterpoint-the-hidden-truth-behind-the-high-cost-of-hepatitis-c/5470674>.

**(for \$500 more you could get a whopping 1 gig hard drive),**

"Computers: The 1990's -- You paid how much?" The Piffle Lab. <http://pifflelab.com/2012/07/22/computers-the-1990s-you-paid-how-much/>.

**The Veterans Administration usually gets a 40 percent discount on pharmaceuticals.**

International Antiviral Society-USA. Pricing of Drugs and Formulary Placement. Dr. Camilla S. Graham, facilitator. Webinar. April 2015. [https://iasusa.adobeconnect.com/\\_a1090822362/p2h0yk85lmq/?launcher=false&fcsContent=true&pbMode=normal](https://iasusa.adobeconnect.com/_a1090822362/p2h0yk85lmq/?launcher=false&fcsContent=true&pbMode=normal).

**2015 Medicaid in the U.S. refused to pay for half off all requests for DAA treatment for hepatitis C.**

Dennis Thompson. "Pricey Hepatitis C Drugs Denied to Almost Half of Medicaid Patients: Study." HealthDay. November 24, 2015. <http://consumer.healthday.com/infectious-disease-information-21/hepatitis-news-373/almost-half-of-medicaid-patients-who-need-pricey-hepatitis-c-drugs-are-denied-study-705552.html>.

**Statistics didn't help. In a 2002 study**

T. Poynard, J. McHutchison, M. Manns, C. Trepo, K. Lindsay, Z. Goodman, M.H. Ling, and J. Albrecht. "Impact of Pegylated

Interferon Alfa-2b and Ribavirin on Liver Fibrosis in Patients with Chronic Hepatitis C." Gastroenterology 122 (2002): 1303-1313.

**patients with cirrhosis are likely to experience some regression.**

Ehsaan Akhtar. "SU1037 Cirrhosis Regression in Hepatitis C Patients With Sustained Virologic Response After Anti-Viral Therapy: A Meta-Analysis." Liver international: official journal of the International Association for the Study of the Liver 35, no. 1 (April 2014). DOI: 10.1111/liv.12576.

**donor's and the recipient's livers are expected to almost completely regenerate.**

"Living Donor Liver Transplant: The Facts." University of California San Francisco Medical Centre.  
[http://www.ucsfhealth.org/education/living\\_donor\\_liver\\_transplant\\_the\\_facts/](http://www.ucsfhealth.org/education/living_donor_liver_transplant_the_facts/).

## **Epilogue**

**many combination treatments either recently approved or in trials for hepatitis C.**

These included Sofosbuvir, an NS5B polymerase inhibitor; Ledipasvir, an NS5A inhibitor; Velpatasvir an NS5A protein inhibitor; Simeprevir, an NS3/4A protease inhibitor; Paritaprevir, an NS3/4A protease inhibitor; Dasabuvir (Daklinza), an NS5B polymerase inhibitor; Ombitasvir, an NS5A inhibitor; Grazoprevir, an NS3/4A protease inhibitor; Elbasvir, an NS5A replication inhibitor; Daclatasvir, an NS5A replication inhibitor; and Asunaprevir, an NS3 protease inhibitor. From William F. Balistreri MD. "Hepatitis C: The Pill, \$1,000; The Cure, Priceless." Medscape Multispecialty. Sept 10, 2015. <http://www.medscape.com/viewarticle/850622> and Benjamin Ryan. "The 2016 Hepatitis C Drug Approval Outlook." Hep. Jan. 15,

2016. <https://www.hepmag.com/article/2016-hepatitis-c-drug-approval-outlook>.

### **the Sherman Antitrust Act and the Affordable Care Act.**

"Class Action Lawsuit Challenges the Exorbitant Pricing of Gilead's Hepatitis-C Drug Sovaldi." PR Newswire. December 9, 2014. <http://www.prnewswire.com/news-releases/class-action-lawsuit-challenges-the-exorbitant-pricing-of-gileads-hepatitis-c-drug-sovaldi-300007372.html>.

### **Minnesota's Department of Corrections for refusing to fund their hep C treatment.**

Greg Dober. "Minnesota DOC Sued Over Failure to Provide New Hepatitis C Treatment Protocol." *Prison Legal News*. July 31, 2015. <http://www.prnewswire.com/news-releases/class-action-lawsuit-challenges-the-exorbitant-pricing-of-gileads-hepatitis-c-drug-sovaldi-300007372.html>.

### **insurance companies that had denied them coverage for direct-acting antivirals.**

Ed Silverman. "Consumers Sue Anthem for Denying Coverage for a Gilead Hepatitis C Drug." *The Wall Street Journal*. May 26, 2015. <http://blogs.wsj.com/pharmalot/2015/05/26/consumer-sue-anthem-for-denying-coverage-for-a-hepatitis-c-drug/>.

### **uptick in yearly drug costs in 2014-15, mostly attributed to the two top hep C drugs.**

*White Coat, Black Art*. BC Radio broadcasted show. October 10, 2015, 6:45 p.m. Available online at <http://www.cbc.ca/radio/whitecoat/swedish-pharmacare-i-m-so-glad-i-m-paying-taxes-to-give-you-this-medicine-1.3263161>.

### **India, Argentina, Brazil, China, Russia and Ukraine**

Andrew Pollack. "High Cost of Sovaldi Hepatitis C Drug Prompts a Call to Void its Patents." *New York Times*. May 19, 2015.



[http://www.nytimes.com/2015/05/20/business/high-cost-of-hepatitis-c-drug-prompts-a-call-to-void-its-patents.html?\\_r=0](http://www.nytimes.com/2015/05/20/business/high-cost-of-hepatitis-c-drug-prompts-a-call-to-void-its-patents.html?_r=0).

**bypass patent rules on Gilead and AbbVie hepatitis C drugs.**

Ed Silverman. "Sanders Asks VA to Break Patents on Gilead and AbbVie Hep C. Drugs." *Wall Street Journal*. May 12, 2015.

**one primary goal, maximizing revenue, regardless of the human consequences."**

"Wyden-Grassley Sovaldi Investigation Finds Revenue-Driven Pricing Strategy Behind \$84,000 Hepatitis Drug." Online Newsroom of the United States Senate Committee. December 1, 2015.

<http://www.finance.senate.gov/ranking-members-news/wyden-grassley-sovaldi-investigation-finds-revenue-driven-pricing-strategy-behind-84-000-hepatitis-drug>.

**insurers in the United States had begun to reduce their fibrosis-level restrictions.**

"Easing Insurance Restrictions." *The HCV Advocate* 19, no. 1.5. January 2016.

[http://hcvadvocate.org/news/NewsUpdates\\_pdf/Advocate\\_2016/advocate0116\\_mid.pdf](http://hcvadvocate.org/news/NewsUpdates_pdf/Advocate_2016/advocate0116_mid.pdf).

**I had learned from a genealogist**

Judith Comfort.

**My Good for the Liver List**

**and performs the body's most complex work.**

Liver Information: About the Liver." *Liver Transplant India.com*.  
<http://livertransplantindia.com/about-liver.asp>.

**Our bodies contain up to 60 percent water.**

"The water in you." The USGS Water Science School.  
<http://water.usgs.gov/edu/propertyyou.html>.

**hesperidin has been shown to protect the liver against toxicity.**

G. Hozayen, S. Howida. Abou Seif, and Suman Amin. "Protective Effects of Ruitn and/or Hesperidin Against Doxorubicin-Induced Hepatotoxicity." *International Journal of Clinical Nutrition* 2. no. 1. (2014): 11-17. DOI: 10.12691/ijcn-2-1-2.

**flavonoid naringenin, which may inhibit hep C's secretion from cells.**

Massachusetts General Hospital. "Grapefruit Compound May Help Combat Hepatitis C Infection." *Science Daily*. February 4, 2008. <https://www.sciencedaily.com/releases/2008/02/080204124110.htm>.

**sugar may stress the digestive process and the liver.**

"A Basic Diet for Hepatitis: Foods You Should Avoid." Hepatitis Central. <http://www.hepatitiscentral.com/hcv/diet/>.

**beneficially affects enzyme levels and decreases the onslaught of cirrhosis.**

Sammy Saab, Divya Mallam, Gerald A. Cox II, and Myaron J. Tong. "Impact of Coffee on Liver Diseases: A Systematic Review." Medscape Multispecialty, from *Liver International* 34, no. 4 (2014): 495-504. [http://www.medscape.com/viewarticle/827617\\_2](http://www.medscape.com/viewarticle/827617_2).

**five compounds in avocados reduced liver damage in rats.**

rican Chemical Society. "Avocados Contain Potent Liver Protectants." *ScienceDaily*. December 20, 2000. [www.sciencedaily.com/releases/2000/12/001219074822.htm](http://www.sciencedaily.com/releases/2000/12/001219074822.htm).

**glucosinolate reduces cholesterol levels and prevents disease.**

"Compound found in broccoli is a powerful disease fighter." *News Medical*. March 21, 2005. <http://www.news-medical.net/news/2005/03/21/8589.aspx>.

**Just avoid bacon or sausages on the side.**

Francosco Lopez-Jimenez. "Are chicken eggs good or bad for my cholesterol?" Diseases and Conditions: High cholesterol. Mayo Clinic. <http://www.mayoclinic.org/diseases-conditions/high-blood-cholesterol/expert-answers/cholesterol/faq-20058468>.