It is estimated that Hepatitis C (HCV) occurs in about 0.15% of 6-11 year-olds and 0.4% of 12-19 year-olds. It is estimated that there are 23,000 to 46,000 children in the US with HCV. The actual number of children with HCV is unknown because children are not routinely tested for it.

Prior to 1992, the most common transmission route for HCV in children was through blood transfusion, blood products, and organ transplantation. Now that blood products and organs are screened for hepatitis C the most frequent transmission of hepatitis C in infants is mother-to-child transmission. The second most common transmission route in children and teenagers is in those who share equipment to inject drugs (needles, cookers, cotton, water, etc.)

Transmission of HCV from an HCV-infected mother-to-infant occurs about 6% of the time. It can occur up to 10% of the time if a mother is coinfected with HIV and hepatitis C. Also, a high viral load increases the risk of mother-to-infant transmission. Unfortunately, there are no effective strategies or drugs to prevent the transmission of HCV from mother to child.

When a baby is born to an HCV-infected mother, the child will acquire the mother’s HCV antibodies. For this reason, the child will not be tested for HCV antibodies for 18 months. This is the period that it takes for the baby’s body to clear out the mother’s antibodies.
HCV in Children  — CONTINUED FROM PAGE 1

An HCV RNA or viral load test can be given as early as one month. It might be too early since the HCV RNA, or viral load fluctuates during the acute infection phase. Also, babies have a high rate of natural clearance. Most medical providers prefer to wait out the 18-month period to test for HCV antibodies and the confirmatory HCV RNA (viral load test).

<table>
<thead>
<tr>
<th>Table 1. Children for whom screening is recommended.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children and adolescents with unexplained elevated aminotransferases</td>
</tr>
<tr>
<td>Children at risk for vertically acquired HCV</td>
</tr>
<tr>
<td>Children from regions with high prevalence of HCV (adoptees, refugees, immigrants)</td>
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<tr>
<td>Children and adolescents with HIV</td>
</tr>
<tr>
<td>Children or adolescents who are victims of sexual assault</td>
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<tr>
<td>Adolescents with multiple sexual partners</td>
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<tr>
<td>Adolescents who are or were intravenous drug users, even if only once in the past</td>
</tr>
<tr>
<td>Children or adolescents who have ever been on dialysis</td>
</tr>
<tr>
<td>Sexual partner of HCV-infected person</td>
</tr>
<tr>
<td>Children or adolescent who have received needle stick (needles, piercing or tattooing)*</td>
</tr>
</tbody>
</table>


*I read this recommendation with interest because we know that receiving a tattoo or piercing in a commercial parlor is safe. Check out the call-out for recommendations to receive a safe a tattoo and piercing on page 3.

Chronic Infection
Approximately 75% of infants who are acutely infected with hepatitis C will continue to chronic infection. In children, the rate of disease progression is slow. There is, however, a small percentage (estimated at less than 2%) of children in whom there is a rapid rate of disease progression that could lead to fibrosis and cirrhosis.

Watch, Wait and Protect
A baby born to an HCV-infected mother should receive the hepatitis A and hepatitis B vaccines to protect the child from becoming infected with another liver disease. As well the baby and child should receive other immunizations to protect the health of the child.

Hepatitis C is not spread by casual contact and infected children should not be restricted from attending daycare or school. Children should be taught that they should not share toothbrushes, nail clippers, razors or any other items that have the potential to transmit hepatitis C.

Any drug, herb or supplement that the child is given should be screened to make sure that it is liver safe. When the child is older, a discussion should take place about sex, drugs, and alcohol.

Most importantly, a child should be medically monitored on a regular basis.

When to Tell a Child
Telling a child that they have hepatitis C can be one of the most difficult decisions a parent can ever make. The timing is the most important decision. The best advice...
is never to lie to a child. We have an excellent fact sheet that can provide plenty of advice to parents. http://hcvadvocate.org/hepatitis/factsheets_pdf/TellChild_HCV.pdf

Treatment
As stated above most children have a slowly progressive disease. For the small percentage that have severe fibrosis or cirrhosis, immediate treatment may be needed. The decision to treat or not is never easy and in children it is even more difficult. Some questions that are important to consider include:

• Can treatment be postponed until the interferon-free therapies are available?
• Is there an interferon-free clinical trial that your child can enroll in?
• Are you and your child ready to take on interferon treatment and the side effects?
• The new medications are very expensive—there is always the possibility that your insurance company may not cover the new medications.

Current treatment of pegylated interferon plus ribavirin is approved for children who are three years and older with compensated cirrhosis.

Again, most children have slowly progressive disease, and it takes decades before serious liver disease develops. By this time, children will age to adults and be eligible for interferon- and ribavirin-free therapies that approach 100% effectiveness.

The Future
Hepatitis C infections are on the rise. The so-called Second Epidemic of hepatitis C is affecting females equally as males. As a result, there will be many women of childbearing age that will become pregnant and have children who may also have hepatitis C.

For the first time, there is an opportunity to prevent mother-to-child transmission. Direct-acting antiviral medications without ribavirin that are pregnancy category B.

Pregnancy Category B: In humans, there are no well-controlled studies. However, in animal studies, pregnant animals received the medicine, and the babies did not show any problems related to the medicine.

However, there have not been any clinical studies using the interferon- and ribavirin-free medications in pregnant women. As a result, studies are needed to evaluate the safety and effectiveness of these new drugs for the mother and the infant.

HCV in Children — CONTINUED FROM PAGE 2

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Protect yourself from getting hepatitis, HIV, and other infections by talking with your tattoo artist about what they do to keep tattooing safe and disease free.

WE RECOMMEND ONLY COMMERCIAL TATTOO ARTISTS WHO PRACTICE THE FOLLOWING:

• Use only new sterilized needles and separate ink pots
• Make sure equipment doesn’t come into contact with anything else that could spread an infection
• Sterilize any equipment that may come into contact with blood
• Use safety gloves
• Clean and disinfect surfaces
• Cover a fresh tattoo with a dressing to prevent infection or disease transmission
• Check your tattoo regularly to make sure it has not become infected

1American Liver Foundation
Do you lay awake pondering questions about hepatitis C? If so, you probably need some answers so you can sleep better. This month, I answer some common questions I hear from patients.

I just finished hepatitis C treatment. My final hepatitis C viral (HCV) load test result was “not detected.” I was hoping that my viral load would be “negative” rather than “not detected.” My doctor was happy with the result. What does this mean?

Undetected (or nondetected) means that hepatitis C is gone, and presumably all gone. The confusion over this test is because viral load tests don’t measure down to zero. Viral load tests vary. For instance, the Abbott RealTime HCV assay (assay is a fancy word for a test that determines and counts the ingredients of something) measures down to 12 IU/mL in a 0.5 mL sample of blood. This means that if you have 12 IU/ml of hepatitis C (HCV RNA) in your blood, the test can measure it. If you have less than 12, the test can’t measure it. In some cases, the test may not even see the virus.

Each test has its own detection range, some lower than others. The main thing is this:

“Not detected” = negative for hepatitis C

“Detected” or an actual number of how much HCV RNA you have = positive for hepatitis C

If you are concerned that you may have some residual HCV swimming around in your body, that will someday become a full-blown infection, rest assured, as this is quite unlikely. Hep C replicates a trillion times a day, so “not detected” might as well be zero. It is extremely unlikely that a small amount of HCV will remain alive in your body without having replicated to much higher amounts. In fact, viral load tends to replicate at much higher numbers when treatment fails.
My HCV load was nondetectable and my doctor says I am cured. How do I know for sure that the virus won’t come back?

Doctors have been treating hepatitis C for more than two decades. In the beginning, only a small percentage of patients responded to treatment. We weren’t sure these patients were permanently cured, so the term sustained viral response (SVR) was used. Over time, we learned that a sustained viral response (SVR) equals a cure, and that once gone, hepatitis C does not return unless there is exposure to a new infection. The rare exception to this is when a patient has cryoglobulinemia or a rare immune condition. I’ve worked in this field for 18 years, have crossed paths with thousands of patients, and have never known anyone who had an SVR but the virus came back, except for those who were reinfected or had an error in their testing procedure.

So, are you saying that if I am cured, I can get hep C again?

Yes. The chance of a hepatitis C reinfecion with hepatitis C is low, but it is not impossible. Risk of reinfection is higher if you are HIV positive or use injection drugs.

In a poster presented this year at CROI in Seattle, Andrew Hill and colleagues analyzed data from 11,071 patients in 66 studies. (Five-Year Risk of Late Relapse or Reinfection with Hepatitis C after Sustained Virologic Response: Meta-analysis of 49 Studies in 8534 Patients) They found:

- HCV mono-infected persons with low risk of exposure to the virus had a 1.14% reinfection rate
- HCV mono-infected persons who injected drugs or prisoners had a 13.22% reinfection rate
- HIV/HCV co-infected persons had a 21.72% reinfection rate
- All of the patients reviewed were treated with the dual regimen of pegylated interferon and ribavirin.

The best way to avoid reinfection is to reduce risky behaviors that may expose you to hepatitis C. Never share needles or syringes. Do not share injection or inhaled drugs or equipment associated with it. Avoid blood-to-blood contact with others. Use condoms if you are sexually active with a new partner or with a partner who has used injection drugs.

If hepatitis C can live on a surface for up to 63 days, then shouldn’t I change my toothbrush (razor, cuticle scissors) during treatment, particularly when I am nondetectable. I don’t want to reinfect myself.

I haven’t seen a single study on this. There is probably no chance of reinfecting yourself with your own virus, particularly while you are taking antiviral medication. Also, the chances of hepatitis C being viable on a toothbrush, razor, or other personal instrument are extremely slim. Add to this the low reinfection rate, and I’d say the chances of self-reinfection are slim to none.

However, I had hepatitis C once, and I know full well that sometimes we just don’t care what science says. It won’t hurt you to be overly cautious, and if you want to change these items, then go ahead. Rather than throw away perfectly good personal care items, you can store them for a
few months and then use them later. You can also clean them with one part bleach to ten parts water.

I just finished HCV treatment, but my viral load was detectable at week 8 and 12. Does this mean my chances of being cured are low?

No. In the old days, back when treatment was long and used interferon, there were clear milestones that helped us know what our chances were of permanently clearing hepatitis C. Now with new direct-acting antivirals (DAAs), things have changed. Research by the NIH Clinical Center showed that low levels of HCV RNA at the end of treatment are not predictive of treatment response among patients with hepatitis C virus treated with interferon-free regimens. (Clinical Infectious Diseases, March 2, 2015). Harvoni was used in this study, but the trend is likely to apply to all treatments using HCV DAAs.

For years I thought I had genotype 1a, but a recent genotype test revealed I have 1b. How did this happen?

It may be that you have more than one genotype at the same time. When this occurs, often the genotype test shows whichever genotype is more predominate, and sometimes the genotype can switch.

Having more than one HCV genotype is not rare, with studies placing it in the 5 to 10% range. There are various ways a person could have more than one hepatitis C genotype:

- Dual infection – This occurs when a person is infected with more than one hep C genotype at the same time. Hemophiliacs who received clotting factors, which are derived from thousands of sources, were at risk for dual infections.
- Co-infection – This happens when someone is exposed from two different sources of hep C within a short time span, and acquires hep C from a second source before the first infection is established.
- Superinfection – Someone whose hepatitis C infection is established, and then they are infected with another genotype.
- Interchange – Someone whose hepatitis C infection is established, and then the viruses exchange genetic material.

If I have more than one genotype, how do I know which treatment is best for me?

If only one genotype shows up on the test, your doctor will treat you based on that genotype. If more than one genotype is apparent, then likely your doctor will recommend a regimen based on the harder to treat genotype.

Will the Giants win the series this year?

I admit, no one has ever asked me this, but they should. Lying awake worrying about hep C makes no sense, especially when there are more important issues to lose sleep over, such as whether the Giants will win the series again.

Lucinda K. Porter, RN, is a long-time contributor to the HCV Advocate and author of Free from Hepatitis C and Hepatitis C One Step at a Time. Her blog is www.LucindaPorterRN.com
Results and Conclusions
The article discussed how a common and cheap generic antihistamine drug—chlorcyclizine HCL—could be used to treat hepatitis C. In cell studies it was found that chlorcyclizine had antiviral effects against the hepatitis C virus. The antiviral effect was also synergistic with other hepatitis C drugs including telaprevir, boceprevir, sofosbuvir, daclatasvir, and cyclosporine and importantly without any toxic effect to cells.

The Bottom Line
There have been many medications that have been developed to treat certain conditions, some of their properties, and even some of the side effects help with other conditions. An example would be mirtazapine. It is approved to treat major depressive disorder, but one of the side effects is sleepiness. It was found that when taken in small doses in the evening that it helped to treat insomnia. Another example is propranolol that is approved to treat high blood pressure. Taken at a lower dose, off-label, it reduced anxiety in people who suffer from stage fright and other anxieties such as fear of public speaking.

Editorial Comment
It is way too early to tell if chlorcyclizine will be an effective therapy to treat hepatitis C. Chlorcyclizine with and without ribavirin is currently in a phase 1 clinical trial to treat hepatitis C. There is more information available about chlorcyclizine’s clinical trial information at www.clinicaltrials.gov. Type in “chlorcyclizine” or the trial identifier NCT02118012. It is being conducted by the National Institutes of Health Clinical Center.

Implementing hospital-based baby boomer hepatitis c virus screening and linkage to care: Strategies, results, and costs—Turner, BJ et al.

Results and Conclusions
The authors developed strategies to implement the US Preventive Services Task Force recommendations to screen all patients born 1945-1965 (“Baby Boomers”) in a hospital setting. There were 6,140 “Baby Boomers” admitted to a hospital in South Texas from December 01, 2012 to January 31, 2014, and followed to December 10, 2014. The hospital was a safety net hospital (serving low-income populations). “Baby Boomer” patients seen at the hospital were screened (antibody, HCV RNA) and received counseling, case management and linkage to care.

The Bottom Line
There were 3,168 eligible patients to be tested—240 or 7.6% were HCV antibody positive. The patients were more likely to be men, younger age and uninsured. Of the 214 who received a viral load test, 134 were HCV RNA positive. Of those who had chronic hepatitis C, 129 (96.3%) were counseled, 108 (80.6%) received follow-up primary care, and 52 (38.8%) patients received
hepatology care. Five patients initiated HCV therapy. The bottom line is that the cost for the 14 months of the program from start-up at implementation was $286,482.

Editorial Comment
It is difficult to differentiate from among the start-up costs, the implementation costs, and the actual program costs. The overall costs, however, do not seem particularly exorbitant. The costs were picked up by the hospital. This program would appear to be a perfect fit for some type of funding stream by a grant.

Results and Conclusions
A program was initiated to test hepatitis C in people with a history of injection drug use and “Baby Boomers” (1945-1965). There were 26,639 people seen at Highland Hospital, Oakland, CA at their emergency department between April 17 and October 31, 2014.

Bottom Line
Of 2581(9.7%) who completed the HCV antibody test—267 or 10% were positive for the HCV antibody. Only 24% were aware that they had hepatitis C. The highest risk factor was injection drug use, homelessness, Baby Boomer birth cohort, and male.

The staff was able to offer follow-up appointments and testing—67% had confirmatory testing (70% confirmed chronic infection), 45% had a follow-up appointment.

Interestingly, the staff also tested 613 patients who did not meet the screening guidelines for the study. In this group, however, the rate of HCV-positive HCV antibody results was 2.6%.

Editorial Comment:
These results are similar to the outcomes of the study above and other similar studies conducted in emergency rooms. The biggest barriers to testing in emergency rooms are funding, educating staff, and follow-up care. Testing and follow-up care and referrals are expensive, but these and other studies have proven that it can be cost-effective. Now we need a national strategy for testing and monitoring protocol and more importantly money to support it. This could be a program that could identify the many thousands of people who have hepatitis C and don’t know they have it.

These results are similar to the outcomes of the study above and other similar studies conducted in emergency rooms. The biggest barriers to testing in emergency rooms are funding, educating staff, and follow-up care.
Recently I had to fill a prescription drug for my Dog—Buddy. I had the prescription filled at a well-known national drug store chain. A 30-day supply cost me $52.00 for a generic drug! He needed two prescriptions so after I had that one filled I called around to see if I could find a cheaper medicine. BAM—not only did I find a cheaper generic prescription, but it was only $9.00 for a 30-day supply. The generic company is a well-recognized and respected generic manufacturer. How could the same drug cost so much more from one location in the same city? I guess this can happen when you are dealing with prescriptions, insurance coverage, and pharmacies. I am now in the process of checking to see if my generic medicines would be cheaper at the other pharmacy that my insurance co-pays. As the saying goes – it pays to shop around!

Coincidently, today I received a booklet in the mail from Needymeds.org titled “Consumer Reports Best Drugs for Less.” This little book is chock full of information about saving people money on drugs, gives examples of how much money you can save, provides information on the best choices on different medications, what drugs are safe split in half (and medications that should not be broken in half), generic drugs, reading drug labels, understanding drugstore services and much more health advice.

The booklet is free! It can be viewed and downloaded in English and Spanish at CRBestbuydrugs.org
We have posted new Fact Sheets, Check them out!

Hepatitis C Training Workshop Schedule

SEPTEMBER

Oklahoma City, OK ................................................. September 9, 2015
Ardmore, OK .......................................................... September 10, 2015
Chicago, IL ............................................................. September 21, 2015
Flint, MI ................................................................. September 23, 2015
Kalamazoo, MI ........................................................ September 24, 2015

OCTOBER

Philadelphia, PA ..................................................... October 6, 2015
Mobile, AL ............................................................. October 8, 2015
Denver, CO ............................................................. October 15, 2015
Tampa, FL ............................................................... October 21, 2015

DECEMBER

Houston, TX .......................................................... December 3, 2015
Texas (City TBD) ..................................................... December 4, 2015

The HCV Advocate offers information about various forms of intervention in order to serve our community. By providing information about any form of medication, treatment, therapy or diet we are neither promoting nor recommending use, but simply offering information in the belief that the best decision is an educated one.

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