Hepatitis C Testing and Care in Community Health Centers

Sarah E. Rowan, MD

Denver Health
Overview

• Pathophysiology
• Epidemiology
• Why it’s the right time for testing
• Testing and linkage program
• Findings
• Implications and Challenges
• Resources
Hepatitis C Virus

- 1980s: non–A non-B hepatitis
- First identified 1989
- 1992: blood supply testing
- Enveloped SS RNA virus
- GT1-6
- Replicates in liver and PBMCs
- Detectable in serum
- Hosts: humans, chimps
- May survive outside host days to months
Clinical course

Acute hepatitis
- HCV infection
- Hepatic artery
- Viral replication
- IFNα expression
- IFNγ expression
- HCV elimination in 30% of infected individuals
- 0–24 weeks

Chronic hepatitis C
- Infected hepatocyte
- Necrotic hepatocyte
- ISG expression in 50% of patients with CHC
- 24 weeks–50 years

Liver cirrhosis
- Cirrhotic liver nodules
- 15–25% of patients with CHC
- 10–40 years

Hepatocellular carcinoma
- Hyperplastic or dysplastic liver nodule
- Hepatocellular carcinoma
- 3% of patients with cirrhosis per year

Nature Reviews | Immunology
Transmission & Risk Factors

- IDU
- Transfusion/transplant before 1992
- Tattoo in unprofessional setting
- Sex (rare, MSM outbreak)
- Intranasal drug use
- Birth to an HCV-infected mother
- Hemodialysis
- Incarceration
- Other percutaneous exposures

http://www.uspreventiveservicestaskforce.org
MMWR / July 22, 2011 / Vol. 60 / No. 28
Epidemiology: Incidence

- DHHS: “Combating the silent epidemic of viral hepatitis.”
- 2010 -17,000/yr
- 1980s -230,000/yr

Estimated persons infected are reported in millions. Anti-HCV = antibody to HCV; HCV = hepatitis C virus; NHANES = National Health and Nutrition Examination Survey.
HCV Epidemiology

- 81% cases in “baby boomers” b.1945-1965
- HCV ab prevalence 2.6% among baby boomers
- Up to 50-75% unaware of infection
- 49% denied IDU, blood tx
- Higher prevalence in African Americans and lower SES

IOM Consensus Report

• U.S. health-care system has insufficient capacity to provide the recommended preventive and clinical-care services for the 2.7-3.9 million persons living with HCV

• Current approach to prevention and control is “not working”

• Surveillance fragmented, poorly developed and inconsistent across jurisdictions
Testing Recommendations

► August 2012: CDC recommends one-time testing without prior ascertainment of risk factors for persons born during 1945-1965

► June 2013: USPSTF recommends birth cohort screening, Grade B recommendation
Baby Boomers

1946  3.4 million children were born
‘54-64 >4 million, then tapered off
1964  > 40% of US population
2012  47-67 yo, accounting for ¾ of HCV
2030  1 in 5 Americans will be >65
Why now is a good time to increase HCV testing

• Increased morbidity and mortality from HCV (burden of disease)
• Baby boomers who acquired HCV in the 80s, now ~30+ years of infection, getting cirrhotic, HCC, death

“Give it to me straight, Doc. How long do I have to ignore your advice?”
Hepatitis C Morbidity & Mortality

• From 1996-2006
  • End Stage Liver disease increased 2 fold
  • Hepatocellular Cancer increased 20 fold

• Want to test before development of fibrosis, cirrhosis, or decompensated cirrhosis
Window of time for intervention is limited

From: The Increasing Burden of Mortality From Viral Hepatitis in the United States Between 1999 and 2007
Why now is a good time to increase HCV testing

- ACA
- DAAs
- Interferon-free regimens
  - High cure rates
  - More tolerable
  - Shorter courses
- SVR is good
- Cost effective

http://hepatitisc.uw.edu/browse/all/lectures#page/featured/lectures/state-art-therapy
Calculated cost of QALY between $4200 and $35,700, on par with other common screening tests such as colonoscopies.

- Eckman CID 2013: $44,000 per QALY if prevalence 1.3-1.9%
- Not cost effective if prevalence <0.84% (QALY>$50,000)


Screening would have detected 1.2 million infections and averted 82,000 deaths

Would avert 10,000-19,000 liver transplants (relieving shortage of livers, saving lives of others awaiting organs)

# Lifetime Reductions in Clinical Outcomes - Birth Cohort Screening

![Graph showing lifetime reductions in clinical outcomes](image)

### Total cases

<table>
<thead>
<tr>
<th>Condition</th>
<th>RBS:</th>
<th>BCS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.C.</td>
<td>667,100</td>
<td>520,800</td>
</tr>
<tr>
<td>D.C.</td>
<td>331,900</td>
<td>248,300</td>
</tr>
<tr>
<td>H.C.</td>
<td>190,600</td>
<td>144,600</td>
</tr>
<tr>
<td>L.T.</td>
<td>40,000</td>
<td>30,300</td>
</tr>
<tr>
<td>HCV Mortality</td>
<td>323,600</td>
<td>246,100</td>
</tr>
</tbody>
</table>

- **CC**: Compensated Cirrhosis; **DC**: Decompensated Cirrhosis; **HC**: Hepatocellular Carcinoma; **LT**: Liver Transplant
- **RBS**: Risk-based Screening Strategy; **BCS**: Birth-cohort Screening Strategy

**Total Screened**: 11,379,708 (RBS); 99,490,322 (BCS)

**Total Diagnosed**: 532,496 (RBS); 1,527,937 (BCS)

**Total Treated**: 295,423 (RBS); 873,942 (BCS)

McGarry et al 2011
Benefits of HCV Screening

• Access antiviral treatment
• Educate oneself and make an informed choice about antiviral treatment
• Obtain health insurance so that treatment will be an option in the future
• Be vaccinated against hepatitis A and B
• Take other steps to avoid complications of hepatitis C, such as avoiding or getting treated for HIV infection or alcohol consumption, avoiding hepatotoxic medications and herbal remedies, weight loss, tobacco cessation
• Take steps to avoid transmitting the infection to others, including loved ones
Hepatitis C Virus (HCV)–Infected Persons in the United States and Estimated Rates of Detection, Referral to Care, and Treatment.

3.2 million of U.S. population with chronic HCV infection

1.6 million (50%) had HCV detected

1.0–1.2 million (32–38%) were referred to care

630,000–750,000 (20–23%) had HCV RNA test

380,000–560,000 (12–18%) underwent liver biopsy

220,000–360,000 (7–11%) were treated

170,000–200,000 (5–6%) were successfully treated

Key Points

- Majority of HCV in baby boomers (75% of cases)
- Risk factor screening misses majority of cases
- Increasing morbidity and mortality assoc with HCV
- Better meds available now and near future
- Large gaps in all stages of care continuum
- <10% HCV+ patients treated
- Now is a good time to expand birth cohort testing
# DH HCV Prevalence

## Extrapolating these results to the entire DH population

<table>
<thead>
<tr>
<th>Description</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with a positive Hep C antibody test, positive viral load, or diagnosis code for Hep C – who have been seen in the DH system within the past two years</td>
<td>4784</td>
</tr>
<tr>
<td>Patients lacking any laboratory confirmation (diagnosis code only – 2%)</td>
<td>96</td>
</tr>
<tr>
<td>Patients who do not have chronic Hepatitis C (negative Hep C RNA) – 21%</td>
<td>1005</td>
</tr>
<tr>
<td>Patients with confirmed Hepatitis C (positive viral load)</td>
<td>1435</td>
</tr>
<tr>
<td>Patients with possible chronic Hepatitis C (positive antibody test, no confirmatory test)</td>
<td>2248</td>
</tr>
<tr>
<td>Patients with confirmed or possible chronic Hepatitis C</td>
<td>3683</td>
</tr>
<tr>
<td>Probable total number of patients with chronic Hepatitis C (assuming that 21% of the patients who have not had a confirmatory test done will be negative)</td>
<td>3211</td>
</tr>
</tbody>
</table>
HCV Testing and Linkage at DHHA

- CDC Prevention and Public Health Fund (PPHF): PS12-1209
- Category B Part 2a: HCV Testing and Linkage to Care in CHCs
  - Focus on baby boomers at primary care clinic
  - COMIRB exempt
- Category B Part 3: Testing and Linkage at Other Sites awarded to DPH
  - Risk factor-based testing at STD clinic, outreach
Goals

• Increase the number of persons aware of their hepatitis C diagnoses in an urban FQHC by performing one time HCV antibody testing in the 1945-1965 birth cohort in the primary care setting.

• CDC deliverables
  – 2000 tests
  – ab+ tests follow-up with RNA test
  – All results received by patient and surveillance
  – Post-test counseling
  – Linkage to medical care
  – AVT
HCV Screening and LTC Team

Sarah E. Rowan – PI
sarah.rowan@dhha.org, (303)436-4638
Kirsten Spielmann – PN/EA
Katelyn Wanttaja – PN/RA
Jack Lemon – PN/RA
Roberto Esquivel – LTC Counselor
Janice Williams – CACII
Shawni Vaughn – Data Manager
Josh Blum, Holly Batal, Bill Burman – Project Advisors
Rebecca Hanratty – Eastside Adult Medicine Clinic Director
Test Sites

• Gipson Eastside Family Health Center (Internal Med)
• Park Hill Family Health Center (Family Practice)
• Both FQHCs
• ?? Your clinic??
Test Site Target Population

- Eastside Clinic is located in Five Points Neighborhood
- Clinic population is 41% black, 34% Hispanic, 14% NH white
- 71% of patients live below the FPL
- Eastside has 3200 empaneled patients who were born between 1945 - 1965
Target Population: Background
Prevalence

• Prior to birth cohort screening, 30% of patients in the birth cohort seen at Denver Health CHCs had ever been tested for HCV ab

• Of those tested, 27% were HCV ab positive

• Thus, 8% of individuals in the entire birth cohort who receive their care at Denver Health CHCs were known to be HCV ab+ prior to birth cohort screening
HCV Testing and Treatment Cascade for Known HCV ab+ Patients

• 2005 – 2012: 500 HCV ab+ patients at Eastside Clinic

• Sample of 52 patients w/ HCV ab+ April – Oct 2012
  – 41 in birth cohort
  – 14 no PCR
  – 13 RNA-
  – 25 RNA+
    • 12 had no PTC
    • 6 referred to treatment
    • None treated yet
Eastside Testing Protocol

Patient Navigator approaches eligible patients at medical visits for HCV ab test

- **HCV ab+ pts** called to return for “lab only” visit for HCV PCR, HCV genotype, HAV, HBV, and HIV serologies
- **HCV ab- pts** receive a card notifying them of negative results

- **HCV RNA+ pts** called by linkage counselor, notified of results, scheduled for educational counseling session, substance abuse screening, and HCV-dedicated visit with PCP
- **HCV RNA- pts** informed of negative results, encouraged to avoid risk factors for HCV reinfection

Baby boomers NOT previously tested for HCV
Counseling Protocol: Education session with LTC counselor

- LTC document - Covers HCV basics, transmission, alcohol avoidance, intro to HCV treatment
- Informational folder given to patients, includes health information and list of local support groups and CBOs
- HCV appointment made with PCP
Linkage to Medical Care

- PCP orders vaccines, labs, imaging, refers to Hep C Clinic if no major barriers identified
- Mental health or substance abuse counseling referrals made if needed
- Antiviral treatment coordinated between HCV treatment specialist and PCP

“Well, I think you’re wonderful.”
Data collection

![Data collection interface](image)

**Client:**
- **FirstName:** [Redacted]
- **LastName:** [Redacted]
- **Country of Origin:** United States
- **Gender:** Male
- **Race:** White
- **Ethnicity:** Hispanic

**Health Insurance:**
- **Yes**
- **No**
- **Declined to Answer**

**Risk Factors:**
- **Injection Drug Use:**
  - Yes
  - No
- **HIV Positive Status:**
  - Yes
  - No

**Contact Information:**
- **Phone:** (220) 322-4220

**Exit database**
## HepTLC

### Client:

<table>
<thead>
<tr>
<th>Test Date</th>
<th>Hepatitis C Antibody</th>
<th>Quantitative HCV RNA</th>
<th>HCV Genotype</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/7/2010</td>
<td>Public</td>
<td>3/14/2014</td>
<td>Public</td>
</tr>
<tr>
<td>3/14/2014</td>
<td>Private</td>
<td>3/14/2014</td>
<td>Private</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Hepatitis Vaccine

- **Ever Had a Hepatitis Vaccine?**
  - Yes
  - No
  - Don't Know
  - Not Asked

- **Type of Hepatitis Vaccine**
  - Hepatitis A
  - Hepatitis B
  - Hepatitis A and Hep B
  - Not Asked

- **HBsag positive?**
  - Yes
  - No
  - Not Checked

- **HBSab positive?**
  - Yes
  - No
  - Not Checked

### Test Results

- **Test Date**: 3/17/2014
- **Test Results Provided**: Yes (Yes, Results from Other Agency)
- **If Results Not Provided, Why?**
  - Refused Notification
  - Could Not Locate
  - Don't Know
  - Other, Specify 8/8th from 2010

### Additional Information

- **Client Information**
  - Name:
  - Address:
  - Phone:
  - Email:

### Site Info

- **Site Information**
  - Location:
  - Contact Person:
  - Phone:
  - Email:
Staff Training and Development

• HCV Fundamentals training session provided to grant staff: patient navigators, linkage to care counselor, certified addictions specialist/outreach provider

• HCV Essentials for Primary Care Physicians presentation given by head of Denver Health Hepatology Division to Eastside Clinic physicians

• Grant rationale and updates presented at monthly clinic-wide staff meetings

• Living with Hepatitis C: A Survivor’s Guide given to grant staff and patients
Collaborations and Partnerships

- Hep C Connection
  - Provides educational materials, hotline
  - Sponsors support group and HCV 101
- Colorado Dept of Public Health and Envt
- Denver Public Health
- Denver Health Hep C Workgroup
HCV testing results

Jan 2013-March 2014
Eastside and Park Hill

1942 HCV tests

246 HCV ab+

1696 HCV ab-

158 HCV RNA+

71 HCV RNA not detected

17 RNA testing not done

101 GT1

18 GT2

4 GT3/4

35 GT testing not done
HCV RNA+ Care Continuum

- 158 • RNA+
- 136 • PTC (13 in progress)
- 91 • PCP visit (38 in progress)
- 29 • HCV clinic referral
- 3 • Started tx (6 in progress)

Jan 2013-March 2014
Eastside and Park Hill
2013 Eastside HCV Testing and Care Continuum

- ab+, RNA tested: 96%
- HCV RNA+: 85%
- RNA+ PTC: 69%
- RNA+ Linked: 75%
- RNA+ on AVT: 2%

- CDC benchmarks:
  - ab+, RNA tested: 85%
  - HCV RNA+: 75%
  - RNA+ PTC: 75%
  - RNA+ Linked: 75%
  - RNA+ on AVT: 15%

ES patients
Testing Results

<table>
<thead>
<tr>
<th></th>
<th>ab+</th>
<th>ab-</th>
<th>RNA+</th>
<th>RNA-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>113</td>
<td>975</td>
<td>72</td>
<td>1016</td>
</tr>
<tr>
<td>Male</td>
<td>133</td>
<td>720</td>
<td>86</td>
<td>767</td>
</tr>
</tbody>
</table>

P<0.001 P=0.007
# Race/Ethnicity

<table>
<thead>
<tr>
<th></th>
<th>HCV ab+ n=246 (13%)</th>
<th>HCV RNA+ n=148 (8%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total n=1942</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>African American or Black n=887</strong></td>
<td>129 (15%)</td>
<td>94 (11%)</td>
</tr>
<tr>
<td><strong>Hispanic n=540</strong></td>
<td>51 (9%)</td>
<td>31 (6%)</td>
</tr>
<tr>
<td><strong>White Non-Hispanic n=451</strong></td>
<td>59 (13%)</td>
<td>30 (7%)</td>
</tr>
</tbody>
</table>
Hepatitis A and B

- 158 HCV RNA+
- 130 HAV total ab tests
- 77 HAV total ab+ (59%)
- 138 HBV Sag and Sab tests
- 3 HBV Sag+(2%)
- 40 HCV Sab+ (29%)
Risk Factors

• All patients tested in birth cohort
• Additional risk factors NOT solicited during initial HCV screening process
• Among 158 HCV RNA+ individuals, 58 reported history of IDU (37%), 5 in the last 12 months
• Most report no known exposure risk
• CDC: 45% report no known exposure risk

MMWR August 2012
DPH HCV Testing and LTC

Rapid Hepatitis C Test Triage Eligibility Questions

Hepatitis C is a viral infection passed by contact with an infected person’s blood. It does not take much blood to pass the virus. Many people with HCV do not know that they have it, and the only way to know is through a test. There is no vaccine for HCV. I am going to ask you some questions about things that may put you at risk for HCV.

- Were you born between 1945 and 1965?
  - Baby boomers have been shown to have a much higher percentage of HCV than other populations. This could be due to many factors, but is mainly because of risk behavior that occurred over 30 years ago (i.e. drug use, risky sexual practices, tattoos or blood transfusions in other countries, military service, etc.).

- When was the last time you used needles to inject drugs, which also includes steroids (not counting insulin)?
  - HCV can be transmitted through shared syringes, cottons, cookers, rinse water, and tourniquets that are used in the process of injecting drugs or steroids.

- When was the last time you used intranasal drugs (i.e. snorted drugs), legal or illegal? Did you share a straw or dollar bill to do so?
  - Mucosal membranes in the nose are very sensitive and can easily bleed while snorting drugs. If a straw or dollar bill is shared to shoot drugs, HCV can be transmitted through small amounts of blood on the straw or dollar bill.

- Have you ever received a tattoo in an unprofessional environment (prison, home)?
  - Tattooing supplies that are not properly sterilized (such as in a professional setting) can transmit HCV. Tattoo ink, if shared, can also transmit HCV.

- Have you ever had a sexual partner who is HCV positive?
  - Although unlikely, HCV can be transmitted through sexual partners with or without sexual activity. Sexual contact can transmit HCV.

- Have you ever received blood or blood products, like an injection?
  - The blood supply in the U.S. was not tested for HCV until 1992. If you received blood or blood products in another county at any time.

- Are you a man who has sex with men?
  - Men who have sex with men (MSM) are at an increased risk for HCV, depending on the sexual practices (anal sex).

If the client answers “yes” to any of the questions, the client is eligible for the test.

Circle the HCV test on the registration form and complete the test for the client.

---

**Denver Metro Health Clinic, January 1 - December 31, 2013**

<table>
<thead>
<tr>
<th># of persons with HCV antibody result</th>
<th>2,857</th>
</tr>
</thead>
<tbody>
<tr>
<td># of persons with documented risk factor</td>
<td>2,491 (87%)</td>
</tr>
<tr>
<td># of persons with documented counseling</td>
<td>1,326 (46%)</td>
</tr>
<tr>
<td># of persons with positive HCV antibody</td>
<td>58 (2%)</td>
</tr>
<tr>
<td># of persons with HCV RNA result</td>
<td>54 (93%)</td>
</tr>
<tr>
<td># of persons with positive HCV RNA</td>
<td>32 (59%)</td>
</tr>
</tbody>
</table>
Challenges

• Data warehouse
• Refined inclusion criteria for data lists
• Visit No-shows
• Much lower testing rates when patient navigator not present (MDs left to order HCV ab tests w/o reminders)
• Patients may be hard to reach for follow-up testing or counseling
• RTD passes
• Standardized PTC
Challenges/Lessons learned

• Strict criteria for referral and treatment: high rates of substance abuse, homelessness, uncontrolled medical disease in clinic
• HCV-treatment deferred while awaiting ifn-free regimens – need for consistent messaging
Lessons learned – other grantees

– Primary care setting is ideal for screening
– Trainees: can spread intervention beyond project/institution
– Opt-out testing preferable
– RNA reflex at lab
– EMR reminders helpful

STOP! Was your patient born between **1945 and 1965**? If yes, order HCV antibody today.

HCV Ab ordered? [Y/N]

“The CDC recently made new recommendations about hepatitis C testing. They recommend that all people born between 1945-1965 get tested one time for hepatitis C. Because you fall within this age group, I recommend that you get a hepatitis C test today.”
Future Directions

“Arriving at one goal is the starting point to another.”
- John Dewey, American Philosopher

- Further data analyses (HAV, HBV vaccines, etc)
- Spread initiative to additional CHCs
- Stream-line HCV testing and counseling process
- Better evaluation and monitoring systems needed
- Increase capacity for HCV treatment -> ECHO
### AbbVie HCV Clinical Development Program

<table>
<thead>
<tr>
<th>Phase 2a</th>
<th>Phase 3</th>
<th>Special Patient Populations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PILOT</strong></td>
<td><strong>SAPPHIRE– I</strong></td>
<td><strong>TURQUOISE – I</strong> (HIV/HCV)</td>
</tr>
<tr>
<td>GT1 naïve N=11</td>
<td>GT naïve, N=631</td>
<td>GT naïve/experienced, N=300</td>
</tr>
<tr>
<td>ABT-450/r + ABT 072 + RBV</td>
<td>ABT-450/r/ABT-267 + ABT-333 + RBV</td>
<td>ABT-450/r/ABT-267 + ABT-333 + RBV</td>
</tr>
<tr>
<td><strong>CO-PILOT</strong></td>
<td><strong>SAPPHIRE–II</strong></td>
<td><strong>TURQUOISE – II</strong> (Compensated Cirrhosis)</td>
</tr>
<tr>
<td>GT1 naïve/experienced, N=50</td>
<td>GT1b experienced, N=394</td>
<td>GT naïve/experienced, N=380</td>
</tr>
<tr>
<td>ABT-450/r + ABT-333 + RBV</td>
<td>ABT/450/r/ABT-267 + ABT-333 + RBV</td>
<td>ABT-450/r/ABT-267 + ABT-333 + RBV</td>
</tr>
<tr>
<td><strong>Phase 2b</strong></td>
<td><strong>PEARL-II</strong></td>
<td><strong>M12-999</strong> (Liver Transplant Recipients)</td>
</tr>
<tr>
<td><strong>AVIATOR</strong></td>
<td>GT1b experienced, N=179</td>
<td>GT1 naïve/experienced, N=30</td>
</tr>
<tr>
<td>GT1 naïve/experienced, N=571</td>
<td>ABT-450/r/ABT-267 +/- ABT-333 +/- RBV</td>
<td>ABT-450/r/ABT-267 + ABT-333 + RBV</td>
</tr>
<tr>
<td>ABT-450/r ABT-267 +/- ABT-333</td>
<td><strong>PEARL-III</strong></td>
<td><strong>Comparative Trials</strong></td>
</tr>
<tr>
<td><strong>NAVIGATOR</strong></td>
<td>GT1a naïve, N=419</td>
<td><strong>MALACHITE– I</strong></td>
</tr>
<tr>
<td>GT1, 2, 3 naïve, N=60</td>
<td>ABT-450/r/ABT-267 + ABT-333 +/- RBV</td>
<td>GT1 naïve, N=314</td>
</tr>
<tr>
<td>ABT-450/r + ABT-267 +/- RBV</td>
<td><strong>PEARL-IV</strong></td>
<td>ABT-450/r/ABT-267 + ABT-333 + RBV</td>
</tr>
<tr>
<td><strong>PEARL–I</strong></td>
<td>GT1a naïve, N=305</td>
<td>Compared to TPV+ PegIFN + RBV</td>
</tr>
<tr>
<td>GT1b naïve, N=320</td>
<td>ABT-450/r/ABT-267 + ABT-333 +/- RBV</td>
<td><strong>MALACHITE–II</strong></td>
</tr>
<tr>
<td>ABT-450/r + ABT-267 +/- RBV</td>
<td><strong>PEARL-IV</strong></td>
<td>GT1 experienced, N=150</td>
</tr>
<tr>
<td><strong>PEARL–II</strong></td>
<td>GT1a naïve, N=305</td>
<td>ABT-450/r/ABT-267 + ABT-333 + RBV</td>
</tr>
<tr>
<td>GT1b naïve, N=320</td>
<td>ABT-450/r/ABT-267 + ABT-333 +/- RBV</td>
<td>TPV + PegIFN + RBV</td>
</tr>
</tbody>
</table>

Source: www.clinicaltrials.gov; Data on File, AbbVie.
Hepatitis C Therapy Will Parallel Helicobacter pylori Therapy

<table>
<thead>
<tr>
<th>Treatment regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omeprazole (Prilosec) 20mg daily, plus amoxicillin (Biaxin), 500mg daily</td>
</tr>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>Eradication rate (%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lansoprazole (Prevacid), 30mg twice daily, plus amoxicillin, 1g twice daily, 500mg twice daily</td>
</tr>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>Eradication rate (%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bismuth subsalicylate (Pepto-Bismol) 525mg four time daily, plus metronidazole (Flagyl), 250mg four times daily, plus tetracycline, 500mg four time daily, plus histamine H2 blocker</td>
</tr>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>Eradication rate (%)</td>
</tr>
</tbody>
</table>

Source: Paul Kwo MD
High cost of new DAAs

- “Uh-oh, your coverage doesn’t include illness.”
- Currently not covered by CO Medicaid
- Cost to make drugs: ~$100-$250/12 week course

**Business Day**

*Lawmakers Attack Cost of New Hepatitis Drug*

By ANDREW POLLACK
March 21, 2014

A new drug to treat hepatitis C that costs $1,000 a pill has caused rising concern among insurers and state [Medicaid](http://www.medicare.gov) programs. It has now also spurred interest from Democratic congressmen whose queries about the drug prompted a sell-off in biotechnology stocks on Friday.

Three Democratic members of the House Energy and Commerce Committee have demanded that [Gilead Sciences](http://www.gilead.com), the developer, justify the price of its drug, which is called Sovaldi.

“Our concern is that a treatment will not cure patients if they cannot afford it,” the congressmen said in their letter, which was sent...

While the drug will still cost $900 for a 12- week course of treatment, that is a fraction of the $84,000 charged for a course of treatment in the United States.

Hill et al. CID 2014
Hepatitis Risk Assessment

Are you at risk for viral hepatitis?

Take this 5 minute assessment developed by the CDC and get a personalized report.

Get a blood test for Hepatitis B. [Click for explanation]

Get vaccinated for Hepatitis B. [Click for explanation]

Print Only Recommendations  Print Recommendations and Explanations

http://www.cdc.gov/hepatitis/RiskAssessment/