You Too Can Treat Hepatitis C
A Provider-Pharmacist Team Model

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Pioneer Square Clinic
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Objectives

• The Case for Primary Care Rx of HCV
• Review Epidemiology, Staging and Preparation for Treatment
• Legal requirements for treatment, resources of telemedicine specialty consultation
• Understand how Hep C Rx can be delivered with a provider/pharmacist team model
• Up to date treatment recommendations
Epidemiology

• ~ 3.5 million living with HCV in U.S.
  – 38% linked to care, 11% treated
• 33,900 New Cases/yr
• 2010 to 2015: 3-Fold increase
• 10-20 times in some homeless populations
• LA Study 534 homeless patients: 26.7% HCV-positive (Ab), 46% unaware, 72.6% never received counseling about HCV \cite{Gelberg2012}
Infection with HCV

20-50%

Spontaneous clearance

50-80%

Chronic infection

30%

Stable chronic infection

40%

Slow fibrosis progression

30%

Rapid fibrosis progression

>20 years (potentially not within a lifetime)

Compensated cirrhosis (in ~20% chronically infected)

~4% per year

 Decompensated cirrhosis

~1.5% per year

 Hepatocellular carcinoma

Greater Risk of Progression: HIV, HBV, Diabetes, Obesity, Hepatic Steatosis, Vitamin D deficiency, daily MJ use, high cholesterol diet

Chopra, UpToDate, 2017
Impact of Hepatitis C

• Leading Cause of:
  – End Stage Liver Disease
  – Hepatocellular Carcinoma
  – Liver Transplantation

• Survival Impact
  – 8000-13,000 deaths/year

• Extrahepatic Manifestations
  – Potentially life-threatening, prevented by Rx

• QOL, Fatigue, Cognition, Stigma
Five-year mortality rates (95% confidence interval) for sustained virologic response (SVR) vs non-SVR groups for each cohort. (Simmons, 2015)
Mortality Rates 1999-2008
New Era of Treatment: Direct-Acting Antivirals (DAA)

- Shorter duration
- Fewer side effects
- Higher cure rates
- Guidelines: Rx recommended in all patients
  - exception life expectancy <12 months due to non-related conditions)
  - Short life-expectancy due to liver disease—refer to a specialist
Why should PCP Treat HCV?

- Limited access
- Pre-established therapeutic relationships
  - BHCHP Survey: majority of pts most comfortable with PCP Rx
- Access to other care needs
- Skills in engaging disenfranchised patients
- Uncomplicated HCV benefits from treatment
- PCP Rx outcomes with telemedicine consultation:
  - ~ 2X increase in HCV PCR + pts starting Rx (Mitruka, 2014)
  - Equally safe and effective in achieving cure (Arora, 2010)
Barriers to Treatment by PCP

• Patient fear of side effects
• No perceived need for treatment
• State Legal restrictions
• Lack of expertise
• Rapid scientific evolution of care
• Lack of coverage for medications
• Lack of support staff to process approvals, work out insurance barriers
• High Volume, requires frequent follow-up
Judge orders Washington Medicaid to provide lifesaving hepatitis C drugs for all

A federal judge has ordered Washington’s Medicaid program to end a 2015 policy that limited expensive drugs that can cure hepatitis C infections to patients with the most severe liver disease.

The injunction was a response to a class-action lawsuit filed in February on behalf of two clients of Apple Health — and nearly 28,000 other Medicaid enrollees with hepatitis C.
WA Legal Restrictions on Rx:

• Prescriber is:
  – A specialist* in one of the following areas:
    • Gastroenterologist, Hepatologist, HIV, Infectious disease; OR

• Prescriber is participating and consulting with Project ECHO or one of the specialists listed above (requires consultation note or documentation of phone call)

• Exceptions possible if training in HCV care or ready access to specialists
Telemedicine: ECHO HCV

- PCP Specialty support PCPs to increase access to best practice treatment for complex diagnoses
- ECHO outcomes for PCP Rx of HCV
  - ~ 2X increase in HCV PCR + pts starting Rx (Mitruka, 2014)
  - Equally safe and effective in achieving cure (Arora, 2010)
- Set-up/cost--minimal
- ECHO process—who participates, frequency, structure
- ECHO resources
Treatment Selection

- Consistency in follow-up
- Ability to adhere to regimen
- Motivation for treatment
- EtOH use disorders
- Drug use disorders
- Who requires specialty referral?
Rx Outcomes and Alcohol

Adapted from Drug And Alcohol Dependence, Vol 169, 2016
Specialty Care Considerations

- Childs Class B or C cirrhosis
- Hepatic nodules concerning for HCC
- DAA Treatment failure
- HIV coinfection
- Significant extrahepatic complications
- Renal Failure
- HBV DNA (+)
- If isolated Hep B Core Ab (+), monitor AST, ALT monthly during Rx—risk of reactivation
Preparation for Treatment

• Confirm chronicity of infection
• Counsel on infection control
• Screen/Vaccinate for Hep A/B
• Identify Genotype, check baseline labs
• Determine prior treatment history
• Assess Staging (Review past biopsy, US or CT)
• Imaging & Scoring if advanced fibrosis
• ECHO or specialty consultation
• Refer appropriate patients for specialty care
Relevance of Staging

- Informs choice or duration of Rx regimen
- May determine coverage
- Inform need for HCC screening
- Inform need for varices screening
- Inform monitoring or Rx for decompensated cirrhosis
Liver Anatomy

- Classic liver lobule
- Portal triad with surrounding connective tissue
- Central vein
Fibrosis Stage

Staging according to Metavir Score

F1
Portal fibrosis

F2
Portal fibrosis with few septa

F3
Septal fibrosis

F4
Cirrhosis

www.pathologyoutlines.com
Pros and Cons of Liver Biopsy

• Gold standard for staging
• Reveals coexisting disease: steatosis, hemochromatosis, etc.
• Invasive, painful
• Bleeding in 1/1000, Sig hemorrhage < 0.5%, death < 0.1%, low risk organ puncture (if not US guided)
• Cost: $2000-$3000
• Requires expert pathology assessment
• Is only as good as the sample, risk of sampling error and under-staging
Sampling Error of Liver Biopsy

Fibrosis area: 65%

Fibrosis area: 15%

Courtesy of M. Pinzani, Florence
### Liver Biopsy Size in 355 Samples: The Smaller the Piece the Milder the Disease

<table>
<thead>
<tr>
<th>Length of specimen</th>
<th>&gt; 3 cm</th>
<th>1.5 cm</th>
<th>1 cm</th>
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</thead>
<tbody>
<tr>
<td><strong>No. Portal Tracts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>complete</td>
<td>22.4 ± 4.9</td>
<td>10.3 ± 2.2</td>
<td>6.4 ± 1.2</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>49.7%</td>
<td>60.2%</td>
<td>86.6%</td>
</tr>
<tr>
<td>Moderate</td>
<td>38.5%</td>
<td>39.1%</td>
<td>17.4%</td>
</tr>
<tr>
<td>Severe</td>
<td>11.8%</td>
<td>0.6%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Stage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild (F0-1)</td>
<td>59%</td>
<td>68.3%</td>
<td>80.1%</td>
</tr>
<tr>
<td>Moderate (F2)</td>
<td>29.8%</td>
<td>24.2%</td>
<td>14.9%</td>
</tr>
<tr>
<td>Severe (F3-4)</td>
<td>11.2%</td>
<td>7.4%</td>
<td>4.9%</td>
</tr>
</tbody>
</table>

Colloredo, J Hep, 2003
Liver Biopsy Samples:

Optimal: 16G cutting needle, 3 passes, 3 X 1 cm (2 cm acceptable), 11 portal tracts

Rockey DC et al. Hepatology 2009;1017-44.

A. 2.7 cm, 2 passes 16G cutting needle
B. 4.8 cm, 3 passes 18G cutting needle
C. 1.1 cm, 16G suction needle
D. .5 cm, 18G needle
E. 1.5 cm, 20G needle
Non-invasive Fibrosis Staging

- Indirect laboratory markers
  - APRI, Fib-4
  - Good at excluding/confirming fibrosis
  - Indeterminate in mid-range
- Indirect biochemical markers
  - FibroSure: Age, gender, 6 serum markers
  - Fasting blood draw
- Imaging: US, CT, elastography, fibroscan
- Ideally off EtOH X 3 months prior to staging
Sensitivity of 84 - 100% and Specificity of 91 - 96%.
Staging Low Down

- Non-invasive testing preferable
- Do 2 non-invasive tests: FibroSure + Fibroscan (best) or APRI + FibroSure
- US if suggestion of cirrhosis based on labs, indices
- Consider biopsy for discordant non-invasive test results that would affect Rx decision
- Consider staging of patients not eligible for or declining Rx to inform need for HCC/varices screening
Post-treatment Management

• SVR monitoring
  – **SVR 12** = 12 weeks post-treatment for F0-F3
  – **SVR 12, 24** for F4 or HIV Coinfection

• HCC screening US every 6 mo: For F3 and F4

• EGD screening for varices: For F4
  – No EGD if plt > 150K & Liver Stiffness < 20 kPa *(Garcia-Tsao, 2017)*

• Continued HCV screening for those at risk

• Counseling reinfection possible
Pioneer Square Hepatitis Treatment Model

Provider Referral
- Determine if patient appropriate for HCV treatment and select HCV regimen
- Referral to pharmacy entered in EHR after ECHO recommendations received
- Routed to pharmacy team for review and prior authorization submission

Billing Specialist
- Billing specialist responsible for prior authorization process
- Works with provider if medication change, appeal needed
- Makes arrangement for additional financial assistance if needed
- Coordinate with clinic patient care coordinator and clinical pharmacist to arrange clinic visit after PA approved

Clinical Pharmacist
- Verifies completed prior authorization accurate and treatment plan appropriate
- RX review: DDI, prior Rx history, HIV, Hep A/B, fibrosis score, renal function, duration
- Send final RX with refills to pharmacy to dispense date coordinated with new med start visit
- All patients seen by PharmD for initial visit and at subsequent f/u per UW protocol
Legal collaborative agreement

- WAC 246-863-100
- Pharmacist prescriptive authority
- Defined authorized activities
- Clinical decision making
- Requires a referral from provider
Hepatitis C Virus

- Single stranded, RNA virus
- Exists as seven genotypes
  - 1, a and b, 2, 3, 4, 5, 6
- Transmitted through blood and sexual contact
## Overview of Hepatitis C

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Geographic area with highest prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70 – 75% of all HCV infections in USA</td>
</tr>
<tr>
<td></td>
<td>North America</td>
</tr>
<tr>
<td></td>
<td>Asia/Australia/Europe/South America</td>
</tr>
<tr>
<td>2</td>
<td>13 – 15% of all HCV infections in USA</td>
</tr>
<tr>
<td></td>
<td>South America &amp; West Africa</td>
</tr>
<tr>
<td>3</td>
<td>10% of all HCV infections in USA</td>
</tr>
<tr>
<td></td>
<td>India and parts of South East Asia</td>
</tr>
<tr>
<td>4</td>
<td>Egypt, North Africa, sub-Saharan Africa</td>
</tr>
<tr>
<td>5</td>
<td>South Africa and some part of Europe</td>
</tr>
<tr>
<td>6</td>
<td>China, Korea, Taiwan, Southeast Asia</td>
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</table>
WA HCA Preferred Treatment Regimens

- Harvoni is the preferred agent and should be used first line unless contraindicated for GT 1, 4, 5 and 6.
- Epclusa preferred in GT 2 and 3.
  - RAV testing for GT3 cirrhotic add Ribavirin if positive.
- Treatment specific exceptions exist but must be clearly documented.
  - Harvoni intolerance, Zepatier in renal disease if NS5A resistance testing negative.
Harvoni first non-interferon ribavirin treatment approved for Genotype 1 HCV infection

Combination oral tablet Ledipasvir 90 mg/Sofosbuvir 400 mg tablet

Avoid in patient’s with GFR<30 ml/minute

Monitoring:
4 weeks LFTs, Hep C RNA
- if 4 weeks is positive check a 6 week lab
12 weeks LFTs, Hep C RNA (End of Treatment)
SVR 12 (12 weeks post-Rx): LFTs, Hep C RNA
# Ledipasvir-Sofosbuvir (Harvoni) Indications and Usage

<table>
<thead>
<tr>
<th>Genotype 1 Patient Populations</th>
<th>Treatment Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment naïve with or without cirrhosis</td>
<td>12 weeks</td>
</tr>
<tr>
<td>Treatment experienced without cirrhosis</td>
<td>12 weeks</td>
</tr>
<tr>
<td>Treatment experienced with cirrhosis</td>
<td>24 weeks</td>
</tr>
</tbody>
</table>

Treatment duration of 8 weeks if these criteria met:
- treatment naïve
- no cirrhosis
- HCV RNA < 6 million IU/ml
- HIV uninfected
- non-black
Direct Acting Antivirals

- **NS5B Inhibitors (RNA Polymerase Inhibitors)** - Sofosbuvir, Dasabuvir

- **NS5A Inhibitors** - Ledipasvir, Ombitasvir, Elbasvir, Velpatasvir

- **NS3A/4A(Protease Inhibitors)** - Simeprevir, Paritaprevir, Grazoprevir
Drug interactions with Harvoni

- **Antivirals:** Atripla, Complera, Stribild, Viread, Truvada, Aptivis
- **Antiarrhythmics:** Amiodarone, Digoxin
- **Cholesterol:** Crestor
- **Seizures:** Phenytoin, Carbamazepine
- **Acid Reducing agents**
# Recommendations with Acid Reducing Agents

<table>
<thead>
<tr>
<th>Common Brand Names</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mylanta, Maalox TC, Other antacids containing aluminum or magnesium hydroxide</td>
<td>Take 4 hours before or 4 hours after Harvoni</td>
</tr>
<tr>
<td>Pepcid (famotidine), Tagamet (cimetidine), Axid (nizatidine), Zantac (ranitidine)</td>
<td>Take at the same time or 12 hours apart.</td>
</tr>
<tr>
<td>Prilosec (omeprazole), Prevacid (lansoprazole), Nexium (esomeprazole), AciPhex (rabeprazole) Protonix (pantoprazole)</td>
<td>Take at the same time as Harvoni, but only on an empty stomach and at a dose that is 20 mg or lower</td>
</tr>
</tbody>
</table>
Anticipated Time to Approval

- Commercial plans: 1-3 days
- Medicare part D: 1-2 days
- DSHS: 7 days
- Commercial appeals: 30 days
- Part D: 30 days
- DSHS: 7 days
- PAN Network
Adherence to Hepatitis Therapy

- Belief in treatment
- Build a relationship with medical providers
- Customize treatment regimen
- Treating side effects
- Phone # to contact with questions
- Keeping appointments, coordinating medications
- Social support
Tips for Adherence

- Educate before you medicate
- Create a calendar or schedule
- Set up reminders
- Plan ahead for refills
- Coordinate appointments with refill pick-up and labs due
Clinical Pearls

• Do not switch insurance while undergoing treatment
• Bring home medications to the hospital if any planned procedures, jail or rehab
• No replacements for lost medications or very difficult to get a lost medication override
• Contraception
Hepatitis C Resources

- AASLD Guideline hcvguidelines.org
- Hepatitis C Online hepatitisc.uw.edu
  - Calculators for APRI, Childs Class, MELD
- EASL Guidelines easl.eu/research/our-contribuations/clinical-practice-guidelines
- ECHO Project: www.echo.unm.edu
- hcvadvisor.com (EASL web-based Rx recommendations)
- Web-based/Smartphone resources/consultation: hepcure.org
Resources

- HCV Drug Interactions: http://files.ctctcdn.com/f941a670501/a16351c7-423e-4a2a-8c36-59ae9901976c.pdf
- Patient Access Network Foundation (PAN) www.panfoundation.org
- Rx Schedule Date Calculator: Timeanddate.com
Acknowledgements

- Pioneer Square Clinic Staff
- Project ECHO
- 7MB Pharmacists and Technicians
Appendix Topics

- HCV Screening
- Transmission Counseling
- Accuracy of indirect markers for staging
- Extrahepatic Manifestations
- Rx in PWID—Guideline information
- Post-Rx progression of liver disease
- Random Fun Facts
AASLD/IDSA HCV Testing Recommendations

One-time HCV testing is recommended for persons born between 1945 and 1965, without prior ascertainment of risk (and regardless of country of birth)

Rating: Class 1, Level B

Other persons should be screened for risk factors for HCV infection, and one-time testing should be performed for all persons with behaviors, exposures, and conditions associated with an increase risk of HCV infection.

1. Risk behaviors
   - Injection-drug use (current or ever, including those who injected once)
   - Intranasal illicit drug use

2. Risk exposures
   - Long-term hemodialysis (ever)
   - Getting a tattoo in an unregulated setting
   - Healthcare, emergency medical, and public safety workers after needlesticks, sharps, or mucosal exposures to HCV-infected blood
   - Children born to HCV-infected women
   - Prior recipients of transfusions or organ transplants, including persons who:
     - were notified they received blood from a donor who later tested positive for HCV infection
     - received transfusion of blood or blood components, or underwent organ transplant before July 1992
     - received clotting factor concentrates produced before 1987
   - Persons who were ever incarcerated

3. Other
   - HIV infection
   - Unexplained chronic liver disease and chronic hepatitis including elevated alanine aminotransferase levels
   - Solid organ donors (deceased and living)

Rating: Class 1, Level B
Transmission Counseling

- Reinfection possible
- Avoid the new use of injection drugs and stop current use of injection drugs
- Reduce the frequency of injecting
- Use new, sterile needles, syringes, cotton, water, cookers each time you inject
- Do not share or reuse needles or syringes
- Safely dispose of needles and syringes
- Do not reuse or share other injection materials (cookers, cottons, water, drug)
- Receive substance-use treatment and support for safe injection practices
Household Transmission Counseling

• Risk of intra-household, non-sexual transmission very low
• Avoid sharing razors, shaving equipment, toothbrushes, dental equipment, nail clippers, or other personal care items that contain any trace of blood
• Cover cuts or sores on the skin to keep from spreading infectious blood
• HCV virus can survive outside the body \( \geq 16 \) hours so any blood spill (including dried blood) should be cleaned up using gloves and 1:10 bleach:water
• Not spread through food, water, eating utensils, or casual contact (such as sneezing, coughing, touching, hugging).
Sexual Activity Counseling

• Risk of heterosexual transmission low. Those in long-term monogamous relationships do not need to alter their sexual practices

• For MSM, risk may be substantial with sexual practices that may result in bleeding or damage to genital mucosa.
  – use condoms and avoid rough sex.
Pre-treatment Testing

• Genotype, AST, ALT, CBC, INR, Basic metabolic panel, Viral load
  – Within past 3 months
• HIV testing within the past year
• HAV and HBV serologies
Figure 3 - Aspartate Aminotransferase-to-Platelet-Ratio Index (APRI)

\[
\text{APRI} = \frac{\frac{\text{AST Level}}{\text{AST (Upper Limit of Normal)}}}{\text{Platelet Count (10}^9/\text{L})} \times 100
\]
APRI

- Cut-off $\leq 0.7$: Sensitivity 77% for ruling out $\geq$ F2 stages
- Cut-off $\geq 2.0$: Specificity 91% (sens 46%), good for ruling in F3-F4, $\geq 1.5$ threshold used by Medicaid
- Intermediate range (0.7-1.4) results have poor reliability
- Use APRI in combo with 2nd non-invasive test
FIB-4 = \frac{\text{Age (years)} \times \text{AST (U/L)}}{\text{Platelet Count (10}^9/\text{L}) \times \sqrt{\text{ALT (U/L)}}}

**Figure 4 - Fib4**
The Fib4 represents an easy-to-use test for predicting severe hepatic fibrosis or cirrhosis (*Vallet-Pichard, 2007*)
FIB-4

- < 1.45: F0-F2 (spec. 80%, sens 74%, NPV 90%)
- > 3.25: F3-F4 (specificity 97%)
- Intermediate ranges not reliable
- Overall accuracy of 86% in avoiding liver biopsy (70% cohort in cut-off ranges)
- Use in combo with 2\textsuperscript{nd} non-invasive test
Fibrosure

- Predicts histology based on 6 biochemical tests, age and gender
- Haptoglobin, α2-macroglobulin, apolipoprotein A1, GGT, bilirubin, ALT
- Costs ~ $250
- NPV F0-F1 = 85%
- PPV F3-F4 = 76%
- Intermediate values not reliable,
- Cr > 1.5: if Fibrosure elevated, may not be accurate
### Hepatitis C-Related Extrahepatic Manifestations

<table>
<thead>
<tr>
<th>Symptom/Manifestation</th>
<th>Potential HCV-Related Syndrome</th>
</tr>
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</table>
| Hypertension                | Membranoproliferative glomerulonephritis  
Nephropathy                  |  
Cryoglobulinemia              |
| Skin disease                | Lichen planus  
Porphyria cutanea tarda       |  
Leukocytoclastic vasculitis  
Cryoglobulinemia vasculitis   |
| Purpura                     | Cryoglobulinemic vasculitis  
Leukocytoclastic vasculitis   |
| Distal neuropathic pain     | Membranoproliferative glomerulonephritis without cryoglobulin  
Cryoglobulinemia-Membranoproliferative glomerulonephritis |
| Renal insufficiency Hematuria| Membranoproliferative glomerulonephritis without cryoglobulin  
Cryoglobulinemia-Membranoproliferative glomerulonephritis |
| Lymphadenopathy             | Lymphoproliferative disorder                                                                 |
| Fever                       | Cryoglobulinemia  
Cryoglobulinemic vasculitis  
Lymphoproliferative disorder |
| Arthralgia, weakness        | Cryoglobulinemia  
Lymphoma  
Cryoglobulinemic vasculitis   |

*Fox, 2015, UW Hep C Online*
Ideally, treatment of HCV-infected persons who inject drugs should be delivered in a multidisciplinary care setting with services to reduce the risk of reinfection and for management of the common social and psychiatric comorbidities in this population. Regardless of the treatment setting, recent and active IDU should not be seen as an absolute contraindication to HCV therapy. There is strong evidence from various settings in which persons who inject drugs have demonstrated adherence to treatment and low rates of reinfection, countering arguments that have been commonly used to limit access to this patient population (Aspinall, 2013); (Hellard, 2014); (Grebely, 2011). Indeed, combining HCV treatment with needle exchange and opioid agonist therapy programs in this population with a high prevalence of HCV infection has shown great value in decreasing the burden of HCV disease. Elegant modeling studies illustrate the high return on the modest investment of addressing this often-ignored segment of the HCV-infected population (Martin, 2013b). These conclusions were drawn before the introduction of the latest DAA regimens. Conversely, there are no data to support the utility of pretreatment screening for illicit drug or alcohol use in identifying a population more likely to successfully complete HCV therapy. These requirements should be abandoned, because they create barriers to treatment, add unnecessary cost and effort, and potentially exclude populations that are likely to obtain substantial benefit from therapy. Scale up of HCV treatment in persons who inject drugs is necessary to positively impact the HCV epidemic in the United States and globally.
Childs Class A Rx Outcomes

- In IFN trials, SVR has been associated with decreasing Portal Pressures, prevention of varices, reducing incidence of hepatic decompensation, and HCC.
- Fibrosis regression does not happen in all patients after SVR even in non cirrhotics (7-12%)
- If regression occurs it takes a long time. Several studies have shown fibrosis regression at a median of >5 years. In a study by Lens et al, clinical significant portal HTN (HVPG> 6mm/Hg) persisted 6 months post treatment in 86% of patients in spite of good>10mm/Hg reduction
• Limited data from IFN trials
  In registration trials and expanded access trials an initial improvement in MELD was seen at month 6, but discreet deterioration at month 15.

• In one study looking at HVPG in which patients were treated for 48 weeks with SOF/RBV viral suppression was associated with lower pressures especially in those with HVPG<16mm/Hg baseline. Unknown if this will offer long term benefit at this point

  N. Afdhal et al, 2016
Rx Impact on Development of HCC

• IFN based regimens showed clear benefit of SVR reducing risk for development of HCC by 75%.
• Would suspect this to be higher with DAA since more people getting SVR
• Recent data about recurrence of HCC after locoregional therapy in those treated for hepatitis C.
• This topic remains controversial. Therefore all cirrhotic patients should be routinely screened for HCC
Random Fun Facts

• Low viral load (< 6 million) can indicate mild viral activity or advanced fibrosis with few hepatocytes for HCV to replicate in

• As fibrosis progresses the ALT > AST can “flip” as hepatocytes die (AST has other sources)

• Treatment does not confer immunity, reinfection can occur after spontaneous clearance or SVR—continue screening

• Chronic HCV can spontaneously clear

• Isolated HBV Core Ab—no vaccination indicated

• Email us with any questions
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