Hepatitis C Virus (HCV) Care Cascade to Cure

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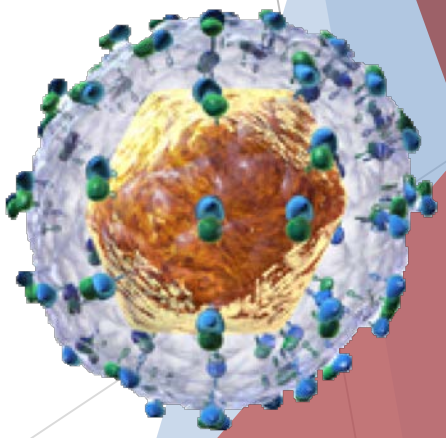
Overview of HCV Epidemiology and Care Cascade

Hepatitis C Virus (HCV)

- First identified in 1989
- An enveloped virus with single-stranded RNA genome
  - In the Flaviviridae family of viruses as well as Zika
  - Research into HCV replication led to development of novel anti-viral drugs
- Direct Acting Antivirals (DAA)
  - Target specific sites of the HCV RNA replication process
    - Protease inhibitors (anti-NS3/4A)
    - RNA-dependent polymerase inhibitors (anti-NS5B)
    - NS5A inhibitors (Anti-NS5A)



Schinazi & Assela, *Liver Int*., 2017; Ambrosio et al., *Current Opinion in Virology*, 2017

Demand for HCV Care

- Approximately 3 million persons in U.S. with chronic HCV infection but half don't know it
- Most are low income and an increasing proportion are uninsured
  - Major barriers to accessing specialty care
- Not enough specialists to meet the demand for care
- Important role for primary care

Chhatwal J et al Hepatology. 2016;64(5):1442–1450.

HCV Epidemiology

- 65-80% of persons infected with HCV spontaneously clear the infection
  - More likely to clear if young when infected
- Chronic infection is typically asymptomatic
- 20% proceed to develop cirrhosis
  - Disease progression faster with HIV infection, alcohol use, and Hispanic ethnicity
- Among those with cirrhosis, 1-4% develop hepatocellular carcinoma (HCC) annually

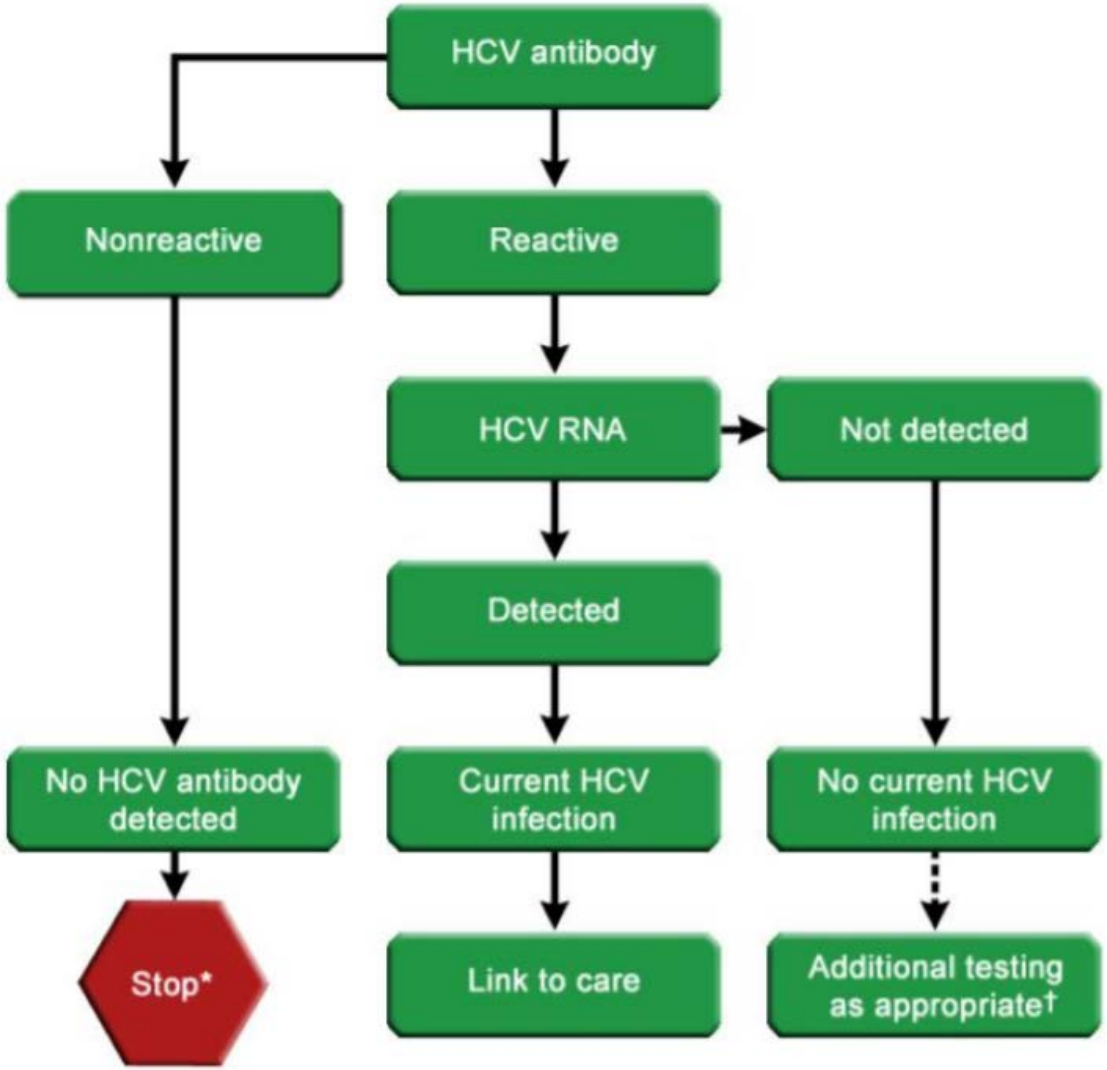
Diagnosing Chronic Infection – Risk groups

- **Baby boomers** (born 1945-65) – 70% of all chronic infections
  - Screening endorsed by the USPSTF

Other risk groups

- Injection drug use
- Homelessness
- Unsafe injections
- MSM
- Prisoners
- Hemodialysis
- Tattoos in unsafe settings
- # sex partners
- Transfusion <1992

Algorithm for HCV Screening



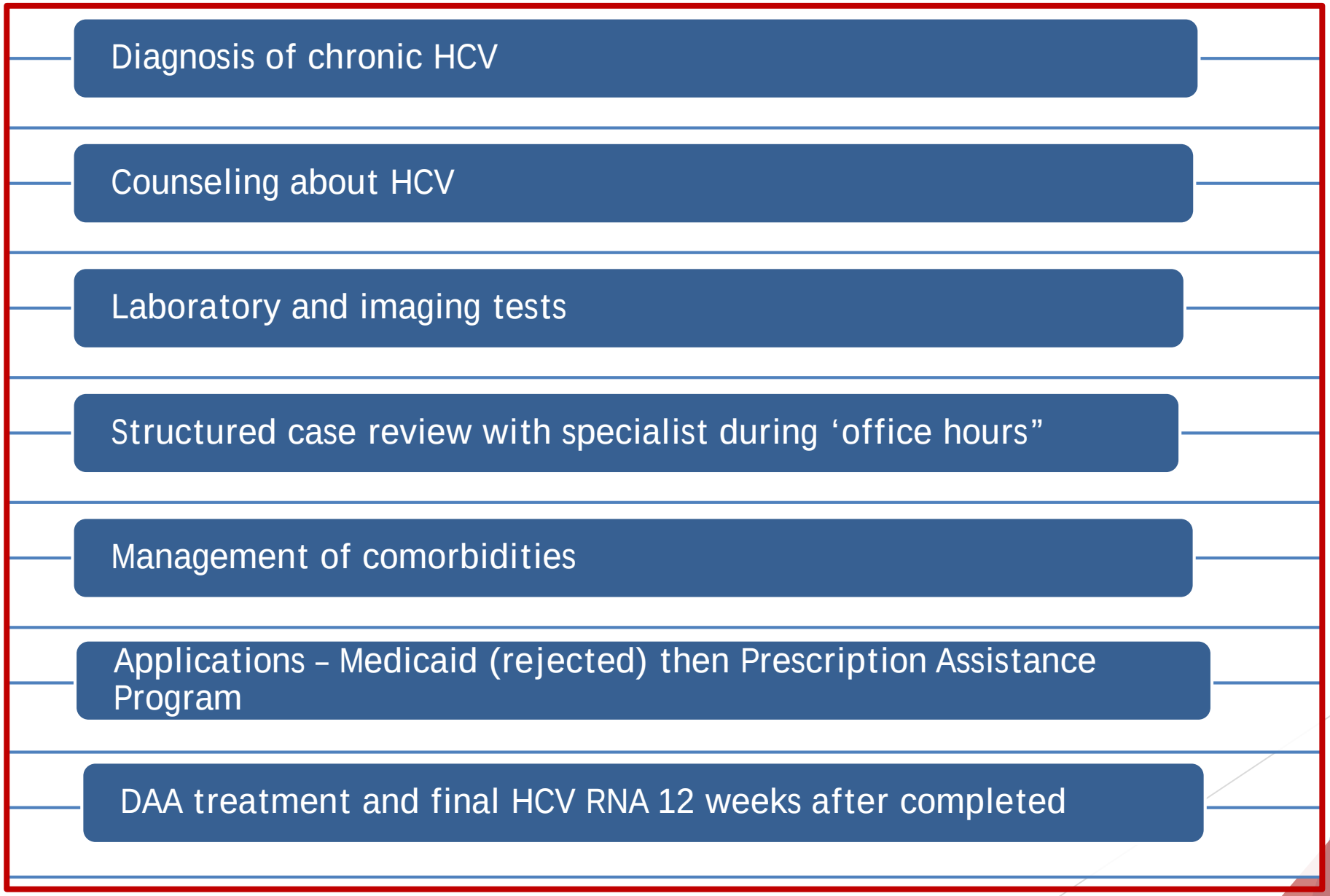
Learning Objectives

- List 7 steps in care cascade for uninsured patients with chronic HCV
- Identify 5 laboratory tests to evaluate and stage chronic HCV
- List 3 commonly prescribed DAAs and most common side effects
- Select appropriate test and medications: case studies

Care Cascade for Insured Patients with Chronic HCV

- Diagnosis of chronic HCV
- Counseling about HCV
- Referral to Specialist for evaluation and treatment
- Shared care for comorbidities

HCV Care Cascade for Uninsured



Case

- 55 yo Hispanic male comes to establish and reports nonspecific fatigue
- His BMI is 41. He drinks 2-3 beers on the weekend. He has no insurance
- You order HCV screening
  - HCV Ab with reflex to HCV RNA Quant
  - HCV antibody is positive and HCV RNA is 1.5 million
- He returns worried and upset about this unexpected finding.

What are your next steps?

Counseling Patients with Chronic HCV

Themes from focus groups with low income patients recently diagnosed with chronic HCV:

(i) social stigma, shame, fear and dealing with risky behaviors such as alcohol use

(ii) concerns about infecting others

(iii) poor understanding about HCV and how to evaluate and treat the disease

(iv) barriers to care and costly treatment while dealing with comorbidities

OFFER HOPE FOR CURE!

Turner BJ. et al J Clin Nurs. 2017;26(23-24):4605-4612.

Laboratory Tests for Chronic HCV Infection

Focusing on resource-limited practices

Learning Objectives

- List 7 steps in care cascade for uninsured patients with chronic HCV
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Tests for Chronic HCV for Mr Hernandez

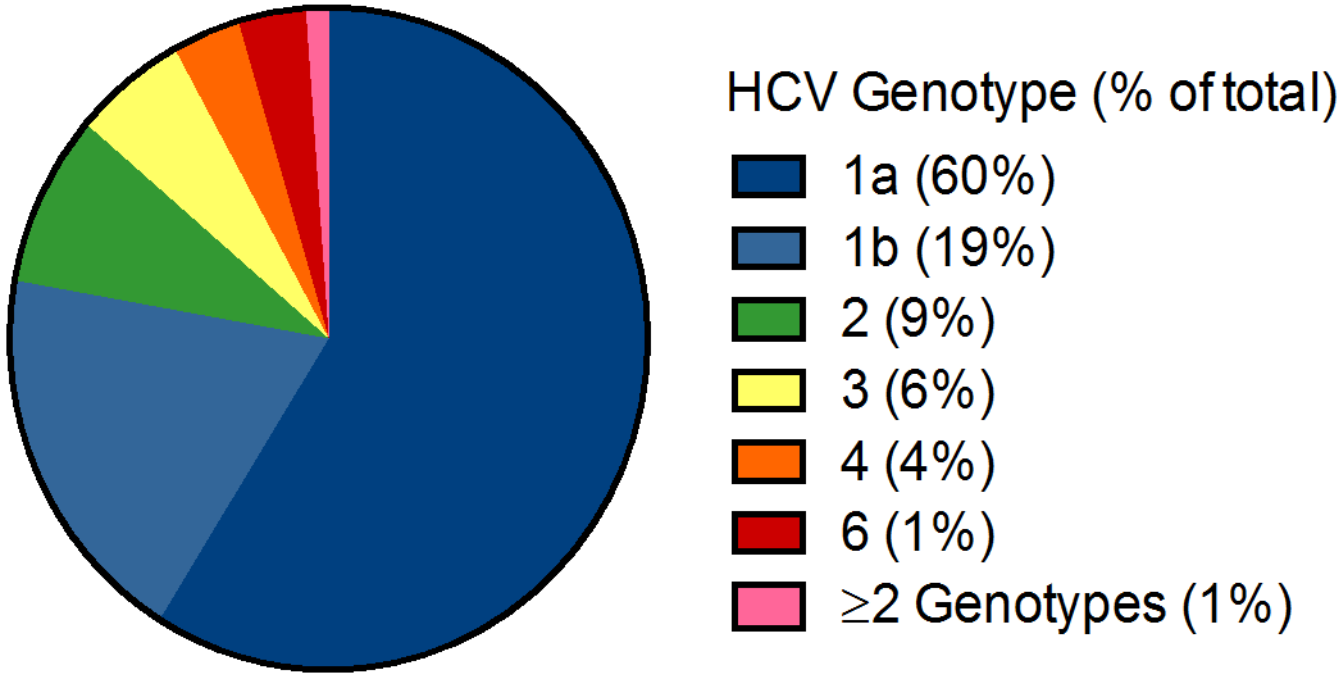
- HCV RNA Quantitative
- Genotype (+/-)
- Fibrosis staging with labs and imaging
- CMP –liver function, renal function, albumin, glucose,
- CBC –hemoglobin and platelets
- Liver imaging (ultrasound)

<u>Other Tests</u>

- Hepatitis A antibody
- Hepatitis B virus (HBV) surface Ag, HBV surface Ab
  HBV core Ab
- HIV screen
- Hgb A1c

HCV Genotype

- 1a most common
- May not be needed if treatment naïve and planning to prescribe pangenotypic DAAs

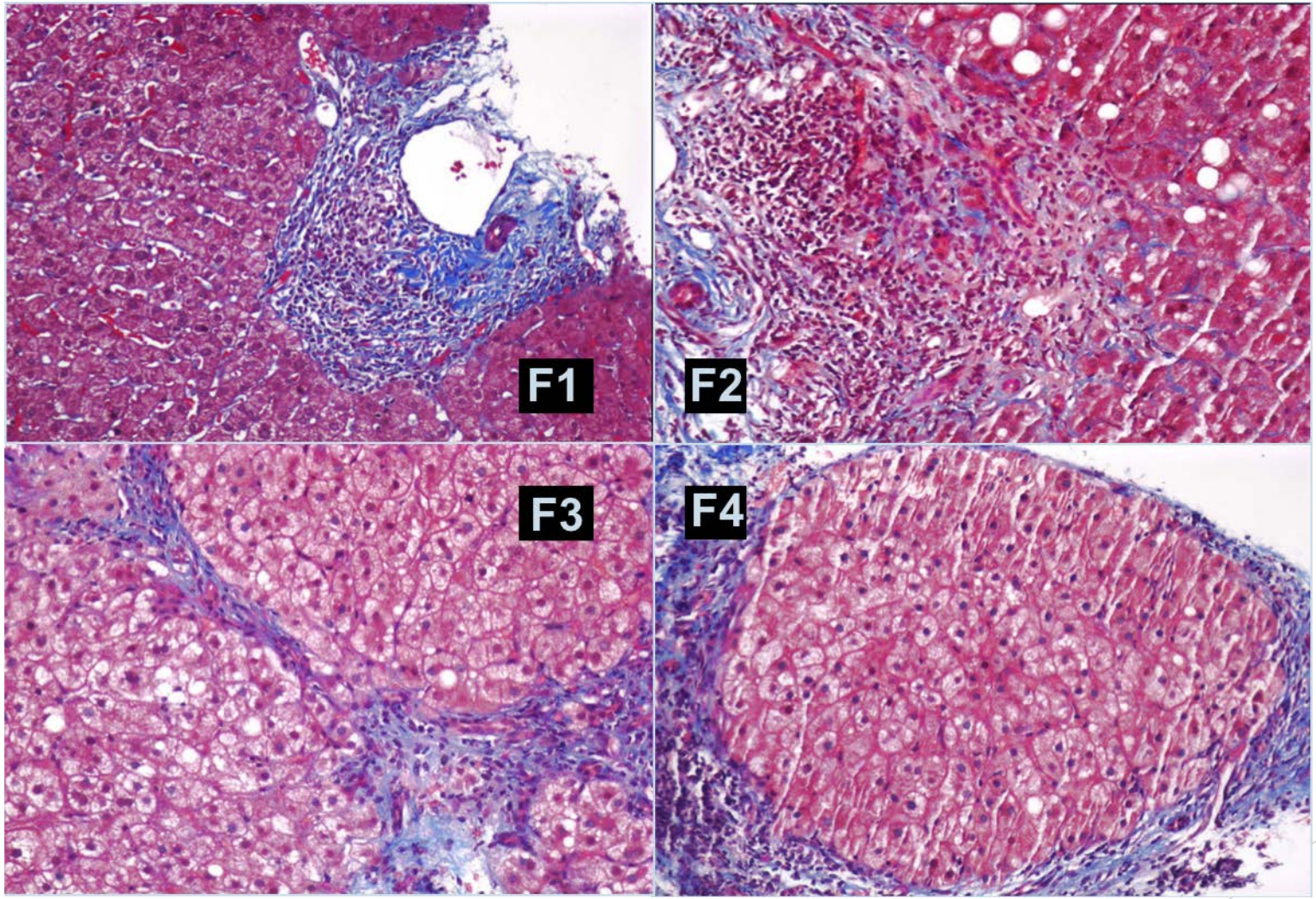


N=512

Stages of liver fibrosis

Minimal fibrosis

F1



Mild fibrosis

F2

Moderate fibrosis

F3

Severe Fibrosis: Cirrhosis

F4

Photo courtesy of Tom Smyrk, MD

Liver Disease Staging

- Influences DAA duration, response, relapse, failure risk
- Advanced liver fibrosis and cirrhosis = poorer response to therapy
- Liver cirrhosis - primary risk factor for hepatocellular carcinoma (HCC) – so affects monitoring long-term
  - 5 year risk of developing HCC: 22% with cirrhosis vs. 3.2% without cirrhosis
- Fibrosis also associated with risk of HCC
  - 5 year risk of HCC: 13.4% with fibrosis vs. 1% without fibrosis

Huang et al., 2014*; J Hepatology*; Trivedi et al., 2018 *Digest Liver Dis*

Staging Liver Disease

- Liver biopsy has been gold standard but noninvasive estimates of liver fibrosis increasingly reliable
  - **Laboratory test algorithms useful in distinguishing no fibrosis from fibrosis**
    - **Fibrosis4 (FIB-4), APRI**
  - Imaging helpful (liver ultrasound)
  - FibroSure (# 550123 thru Labcorp)
  - Fibroscan in special centers
  - MRI elastography but not widely available, costly

Calculating FIB-4

Fibrosis-4 (FIB-4) Calculator

The Fibrosis-4 score helps to estimate the amount of scarring in the liver. Enter the required values to calculate the FIB-4 value. It will appear in the oval on the far right (highlighted in yellow).

$$\text{FIB-4} = \frac{\text{Age (years)}: 0 \times \text{AST Level (U/L)}: 0}{\text{Platelet Count } (10^9/\text{L}): 0 \times \sqrt{\text{ALT (U/L)}: 1}} =$$

Non-cirrhotic
<1.45

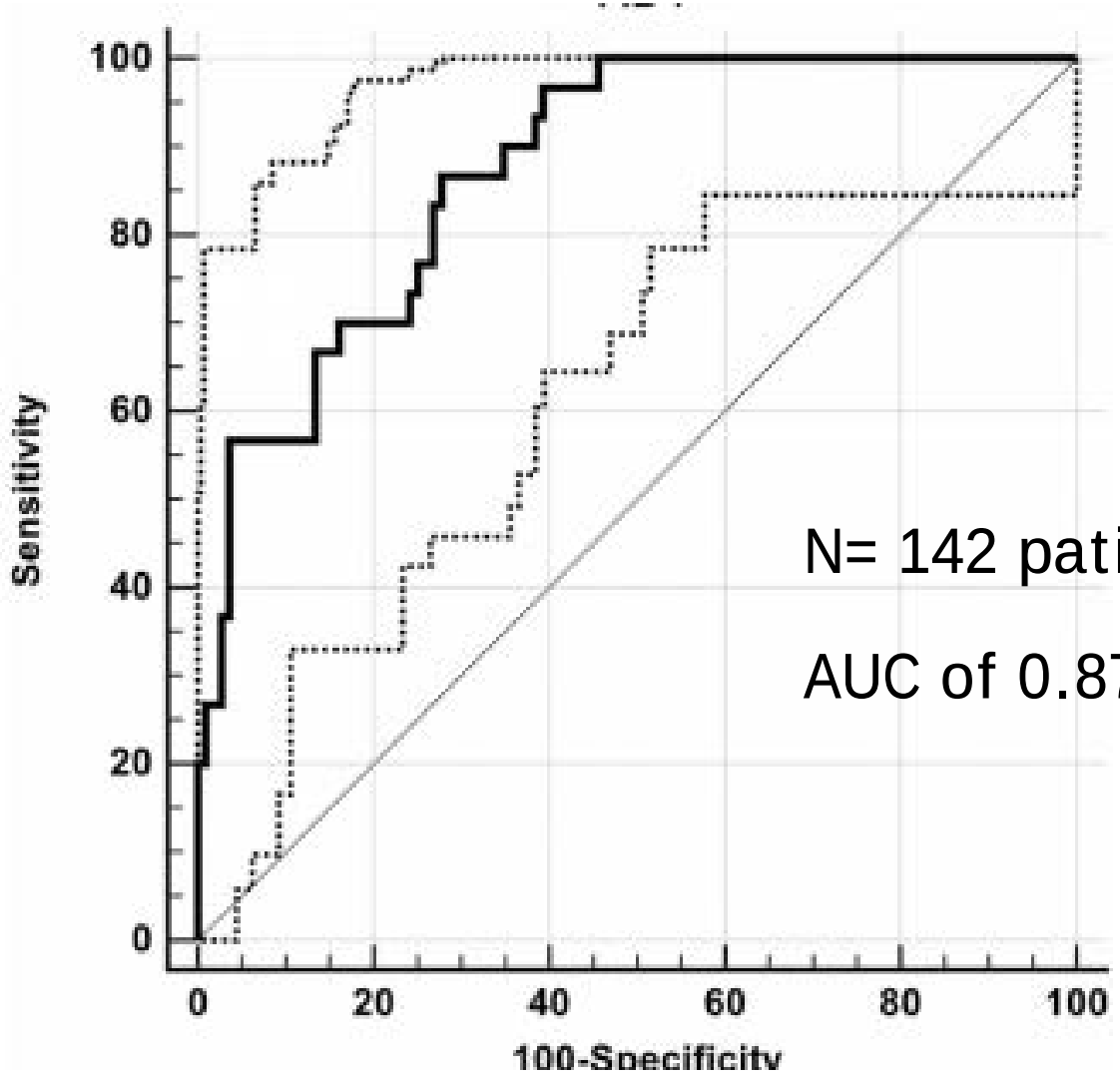
>3.25
Cirrhotic

Interpretation:
Using a lower cutoff value of 1.45, a FIB-4 score <1.45 had a negative predictive value of 90% for advanced fibrosis (Ishak fibrosis score 4-6 which includes early bridging fibrosis to cirrhosis). In contrast, a FIB-4 >3.25 would have a 97% specificity and a positive predictive value of 65% for advanced fibrosis. In the patient cohort in which this formula was first validated, at least 70% patients had values <1.45 or >3.25. Authors argued that these individuals could potentially have avoided liver biopsy with an overall accuracy of 86%.

Source: Sterling RK, Lissen E, Clumeck N, et. al. Development of a simple noninvasive index to predict significant fibrosis patients with HIV/HCV co-infection. Hepatology 2006;43:1317-1325.

http://www.hepatitisc.uw.edu/page/clinical-calculators/fib-4

FIB-4 Predicting Severe Fibrosis or Cirrhosis in HCV



N= 142 patients with liver biopsy

AUC of 0.875 (CI 0.813 – 0.936)

Karic J Infect Dev Ctries 2018; 12(3):178-182

Test comparison

Serologic Test	Stage	Sensitivity	Specificity	Limitations
FIB-4	F3-F4	74.3%-87%	65-80.1%	
APRI	F3-F4	61%-76%	38%-64%	Obesity, Inflammation

Non-serologic Test	Validity	Limitations
Fibroscan®	validated	Inflammation, passive congestion
Ultrasound (US)	Commonly used, Reliable	Operator qualifications, Obesity
Combination test (serum markers plus imaging)	Common clinical practice	

These techniques do not accurately differentiate moderate stages of fibrosis Hagen et al., (2015) p. 1252

Grgurevic et al., *Post Grad Med* J (2019) Hagen et al., (2015);Trivedi et al., 2018 Digestive and Liver Disease

Mr Hernandez's Labs

Insurance	Self-Pay
Race/Ethnicity	Hispanic
Last Updated	8/3/2018

Chronic Diseases	Current Medications
Anxiety	Viagra 25mg Tablet
Essential Htn	Vistril 25mg
Sexual Dysfunction	Paroxetine 20mg tablet
HCV	Metoprolol Tartrate 50mg Tablet
Back Pain w/o sciatica	Atorvastatin 10mg Tablet
	Amlodipine 5mg Tablet

Test Results		Date
HCV Antibody	>11.0	5/30/2018
HCV Quantitative	15,600,000	5/30/2018
Genotype	1a	5/30/2018
ALT	57	5/30/2018
AST	36	5/30/2018
Total protein	7.1	5/30/2018
Albumin	4.5	5/30/2018
Total Bilirubin	0.2	5/30/2018
Alakaline phosphatase	102	5/30/2018
Glucose	90	5/30/2018
Creatinine	0.91	5/30/2018
eGFR	101	5/30/2018
Platelet count	292	5/30/2018
Hemoglobin from CBC	14.3	5/30/2018
INR	1	5/30/2018
MELD Score	6	8/3/2018
Fib-4 Score	0.73	8/3/2018
Hemoglobin A1c	5.5	2/20/2018
Hepatitis A antibody	Positive	5/30/2018
Hepatitis B surface antibody	Non-Reactive	5/30/2018
Hepatitis B antigen	Negative	5/30/2018
Hepatitis B Core antibody	Negative	5/30/2018
HIV screen	Non-Reactive	5/30/2018

Substance Use

Tobacco (ppd x years)	Never Smoker
Alcohol	No Alcohol
Average drinks per day	
Average days per week	
Max drinks per day (binging)	

Treatment Naïve? Yes __X___ No_____

Signs of cirrhosis? Yes ___ No_X__ Uncertain___

Ultrasound Result: 5/31/18- The liver is normal in size measuring 15.2cm It is noemal in echogenicity and smooth in

Findings from Mr Hernandez's Evaluation

- Low risk for advanced fibrosis – with low FIB-4, and no abnormalities seen on U/S
- High viral load >6 million
- BMI of 41 – still at risk for NAFLD and NASH in terms of long term management
- Alcohol use – should be counseled to reduce on weekends because even small amounts can continue liver damage after treatment
- IMMUNIZE AGAINST HBV

Treating and Curing HCV Infection

Focusing on uninsured patients

Learning Objectives

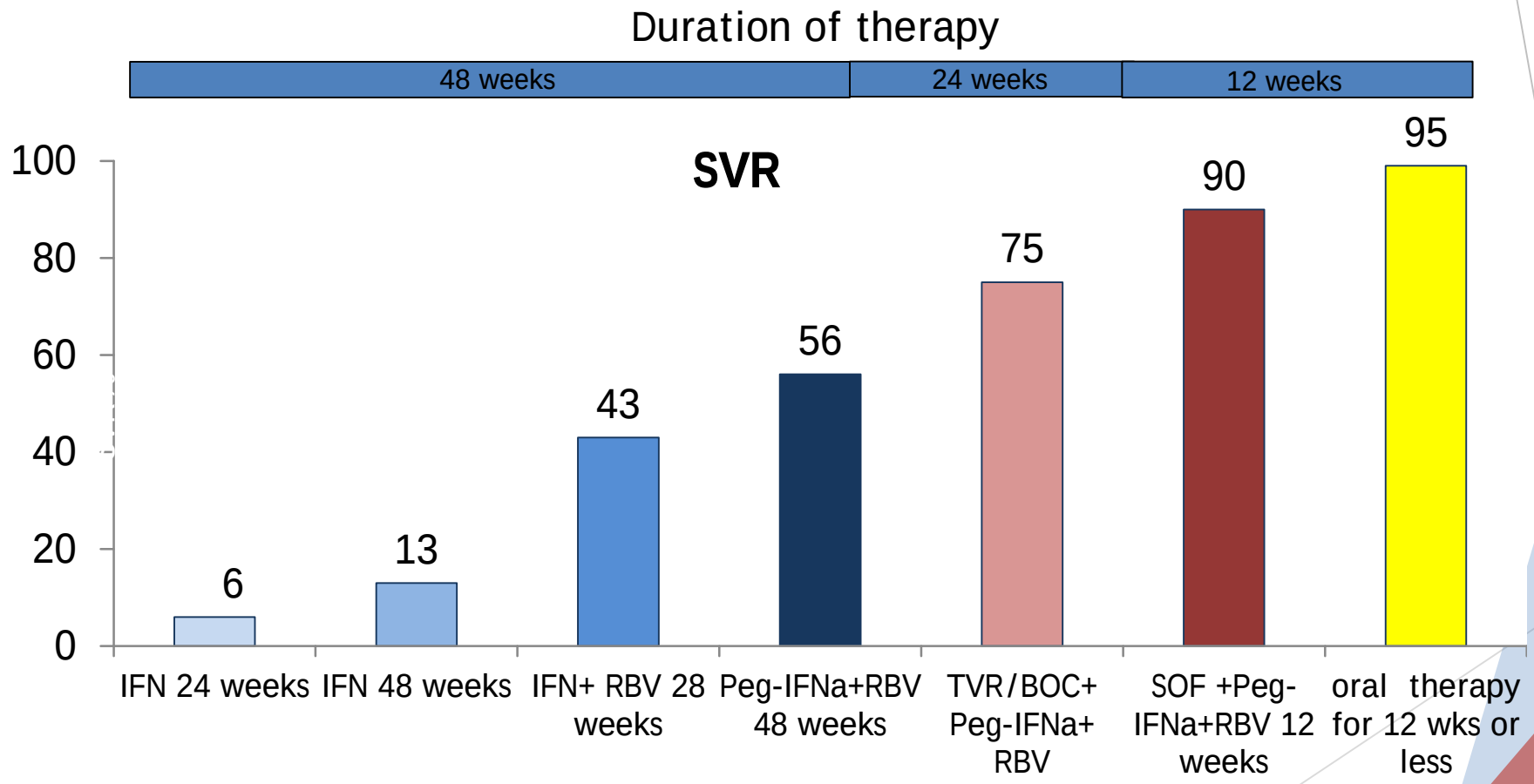
- List 7 steps in care cascade for uninsured patients with chronic HCV
- Identify 5 laboratory tests to evaluate and stage chronic HCV
- List 3 commonly prescribed DAAs and most common side effects
- Select appropriate test and medications: case studies

Directly Acting Antivirals

- **NS5A polymerase inhibitors (-asvir)**
  - High potency, pan-genotypic, but inhibition by genotype may vary by molecule
  - Intermediate **barrier** to resistance (Barrier is how many mutations it takes to develop resistance; low barrier is 1 mutation and high barrier is multiple mutations)
- **NS5B polymerase inhibitors (-buvirs)**
  - Intermediate potency, some are pan-genotypic, others not
  - High barrier to resistance but with exceptions
- **NS3/4A Protease Inhibitors (-previrs)**
  - High potency, limited genotypic coverage
  - Low barrier to resistance

Evolution of HCV Treatment
Sustained Virus Response (SVR) = HCV Cure

1991 **2014**



SVR= no HCV RNA at 12 weeks post completion of treatment

Combination Therapy is Key

- Because of risk of HCV developing resistance, combination therapy targeting different component of viral replication is essential
- Similar to treating HIV infection

Commonly Used DAA Therapies

Combination Therapies	Abbreviation	Trade name	Genotype
Ledipasvir/Sofosbuvir	LED/SOF	Harvoni®	1, 4
Sofosbuvir/Velpatasvir	SOF/VEL	Epclusa®	1-6
Glecaprevir/Pibrentasvir	GLE/PIB	Mavyret®	1-6

Ledipasvir/Sofosbuvir

LED/SOF

Harvoni®

Ledipasvir/Sofosbuvir LED/SOF (Harvoni®)

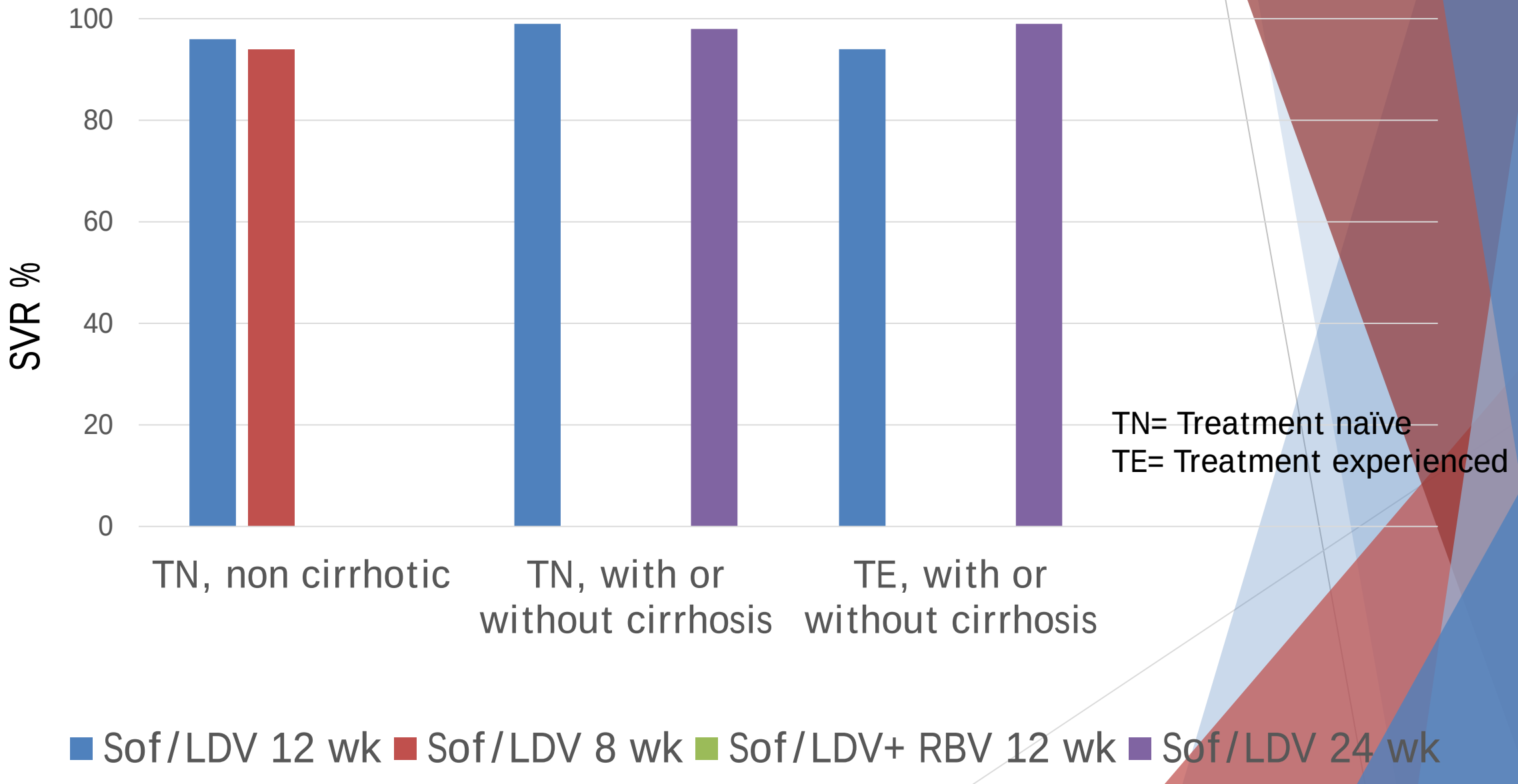
- Sofosbuvir = nucleoside NS5B inhibitor and pan-genotypic
- Ledipasvir = NS5A inhibitor with activity for genotypes 1, 4, 5, and 6
- Combination for genotypes 1, 4, 5, and 6
- One pill, once a day
- **Cannot** use with Cr Cl <30 ml/min

Harvoni

Ledipasvir/Sofosbuvir: Duration of Therapy

- Treatment naïve or non-cirrhotic treatment experienced:
  - 12 weeks
    - Exception: **8 weeks** for genotype 1 with HCV RNA <6 million and early stage disease
      - Risk of relapse if patient has advanced fibrosis
      - Do not use in patients with HIV, or African Americans
- Treatment-experienced cirrhotic:
  - 12 weeks with weight-based ribavirin

Ledipasvir/Sofosbuvir: Efficacy



Ledipasvir/Sofosbuvir LED/SOF: Drug Interactions

- Needs stomach acid so PPIs (Prilosec or Nexium) reduce efficacy
  - Alt: H2 blockers 12 hours from LED/SOF
- Hold Statins (atorvastatin and rosuvastatin): increase statin level
- Anticonvulsants: decrease efficacy
- Antimycobacterial therapy (including rifamycins): decrease efficacy
- St. John's Wort: decrease efficacy
- Amiodarone – bradycardia (Black box warning)
- HIV medications (Refer to Specialist)
  - Truvada and boosted PI combination
    - Increases tenofovir levels
  - Tipranavir

Ledipasvir/Sofosbuvir: Side Effects

- Fatigue (13-18%)
- Headaches (11-17%)
- Nausea (6-9%)
- Diarrhea (3-7%)
- Insomnia (3-6%)

- Other side effects not in package insert
- Increased appetite
- Occasional increase in creatinine

Sofosbuvir/Velpatasvir
SOF/VEL

Epclusa®

Sofosbuvir/Velpatasvir SOF/VEL: (Epclusa®)

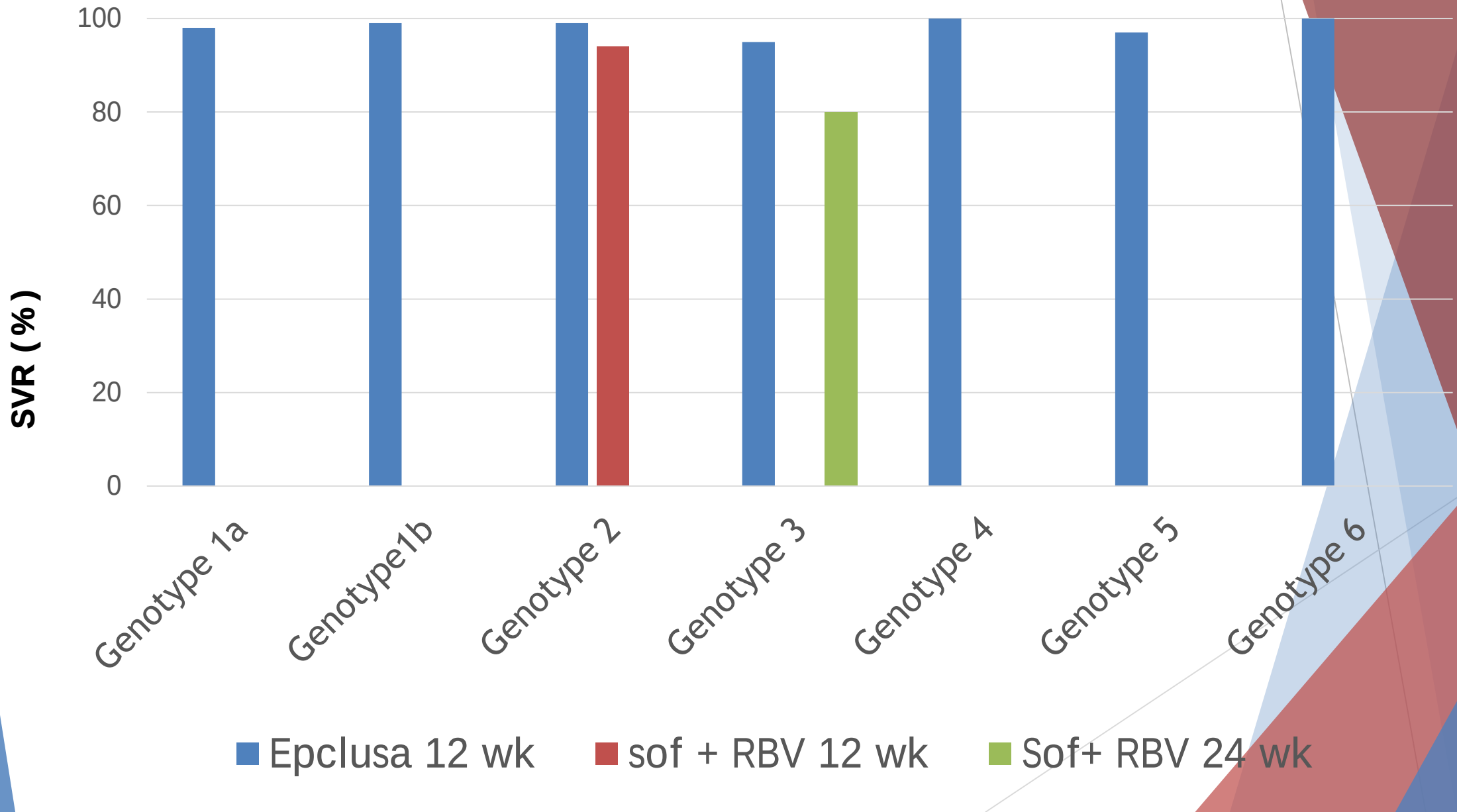
- Sofosbuvir is nucleoside NS5B inhibitor
- Velpatasvir is NS5A inhibitor
- Pangenotypic - 1, 2, 3, 4, 5, 6
- One pill once a day

Epclusa

Sofosbuvir/Velpatasvir SOF/VEL: Duration of Therapy

- Without cirrhosis or with compensated cirrhosis (Child-Pugh A): 12 weeks (regardless of genotype)
- Decompensated cirrhosis (Child-Pugh B and C) + ribavirin (weight-based) for 12 weeks (Refer to Specialist)
- **Cannot** use with Cr Cl <30 ml/min

Sofosbuvir/Velpatasvir: Efficacy



Sofosbuvir/Velpatasvir SOF/VEL: Drug Interactions (see Liverpool HEP Interactions)

- Drugs decrease VEL dose
  - No PPI
  - Antacids: >4 hours from SOF/VEL dose
  - H2 blockers: take 12 hours from SOF/VEL dose
- Amiodarone - symptomatic bradycardia
- Rifampin, St. John's wort, carbamazepine: may decrease concentration of SOF/VEL
- Check interactions with medications including **herbals**
- Other common interactions
  - Hold Statins (Lipitor, Crestor)
  - Anti-convulsants
  - Antimycobacterials
  - HIV anti-retroviral drugs (Ref Specialist)
  - Monitor Digoxin dose

Sofosbuvir/Velpatasvir SOF/VEL: Side Effects

- Headache (22%)
- Nausea (9%)
- Fatigue and low energy (9%)
- Insomnia (5%)
- Irritability (≥5%)

Glecaprevir/pibrenstavir
GLE/PIB

Mavyret®

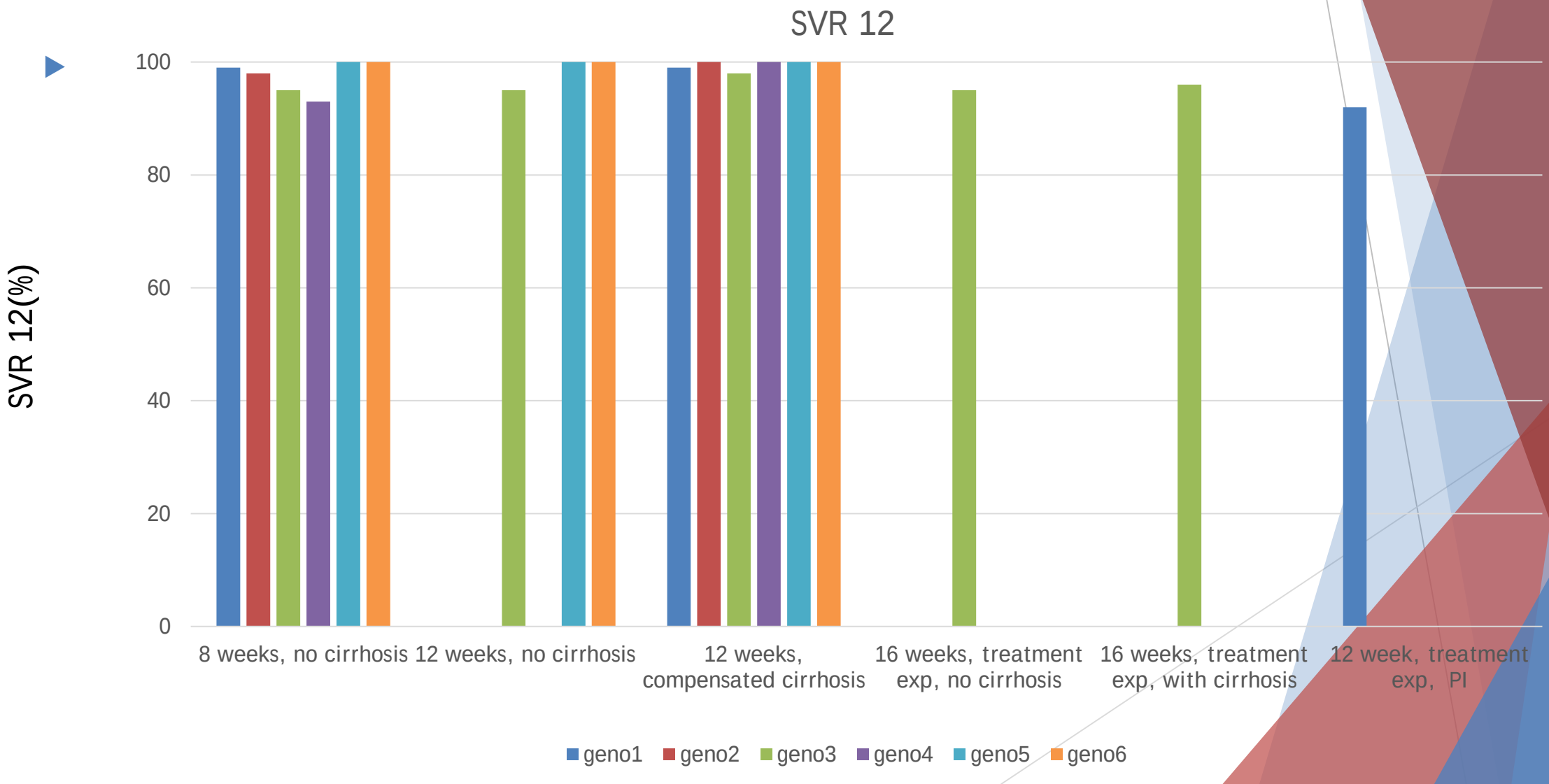
Glecaprevir/pibrenstavir GLE/PIB (Mavyret®)

- Glecaprevir is a NS3/4a inhibitor
- Pibrentasvir is a NS5A inhibitor
- Pan-genotypic: 1, 2, 3, 4, 5, 6
- Take 3 tablets once a day, with food
- Do not use with Rifampin (contraindicated)

Glecaprevir/Pibrenstavir GLE/PIB: Duration of Therapy

- Treatment naïve or experienced with **no** cirrhosis: 8 weeks
- Treatment naïve or experienced with cirrhosis, compensated (Child Pugh A): 12 weeks

Glecaprevir/pibrenstavir : Efficacy



Glecaprevir/Pibrenstavir GLE/PIB: Drug Interactions and Contraindications

- Statins
  - atorvastatin, lovastatin, simvastatin
- Ethinyl estradiol (OCPs)
  - increased risk of ALT elevation
- Anti-convulsants
- Rifamycins
- St. John's Wort
- Cyclosporine
- HIV Medications (refer to specialist)

Glecaprevir/pibrenstavir GLE/PIB: Side Effects

- Headache (up to 17%)
- Fatigue (up to 16%)*
- Nausea (up to 12%)
- Diarrhea (up to 10%)
- Pruritis (up to 17%)*

* More common with severe renal dysfunction

Summary for Treatment Naïve Patients

Common Genotypes1, 4 Genotype 1		Genotype 2		Genotype 3	
Without Cirrhosis	**With Cirrhosis**	**Without Cirrhosis**	**With Cirrhosis**	**Without Cirrhosis**	**With Cirrhosis**
LED/SOF 8 weeks*	LED/SOF 12 weeks*	SOF/VEL 12 weeks	SOF/VEL 12 weeks	GLE/PIB 8 weeks	GLE/PIB 12 weeks
GLE/PIB 8 weeks	GLE/PIB 12 weeks	GLE/PIB 8 weeks	GLE/PIB 12 weeks	SOF/VEL 12 weeks	SOF/VEL 12 weeks**
SOF/VEL 12 weeks	SOF/VEL 12 weeks				

***dependent on viral load**

****dependent on subtype and underlying Resistance Associated Substitutions**

Summary for Treatment Experienced Patients

Genotype 1		Genotype 2		Genotype 3	
Without Cirrhosis	**With Cirrhosis**	**Without Cirrhosis**	**With Cirrhosis**	**Without Cirrhosis**	**With Cirrhosis**
LED/SOF 12 weeks	LED/SOF + weight based RBV 12 weeks	GLE/PIB 8 weeks	GLE/PIB 12 weeks	SOF/VEL 12 weeks*	SOF/VEL 12 weeks*
SOF/VEL **12 weeks**	**SOF/VEL** **12 weeks**	**SOF/VEL** **12 weeks**	**SOF/VEL** **12 weeks**	**GLE/PIB** **16 weeks**	**GLE/PIB** **16 weeks**
GLE/PIB 8 weeks	GLE/PIB 12 weeks				

Evaluation and Management of Chronic HCV – Role for Primary care

- Primary care providers increasingly treating HCV infection
- Newer direct acting antiviral (DAA) drugs for HCV are well tolerated and safe for most patients
- Cure rates (defined as sustained viral response at 12 weeks post treatment) for patients treated in primary care are similar to specialists' rates
  - San Francisco General Hospital Network – 91% of 762 patients cured, most treated in primary care
  - South Texas practices – 95.5% of 67 patients cured

Kim NJ et al. JGIM 2018 in press

Primary care: refer and do not treat decompensated cirrhosis

- No treatment with a protease inhibitor in cirrhosis with decompensation
- Options include
  - Glecaprevir/pibrentasvir
  - Elbasvir/grazoprevir
- Drugs that could be used include
  - Ledipasvir/sofosbuvir
  - Sofosbuvir/velpatasvir
- Refer to transplant program if insured. They can be treated for HCV effectively post-liver transplant.

Treatment Plan for Mr Hernandez

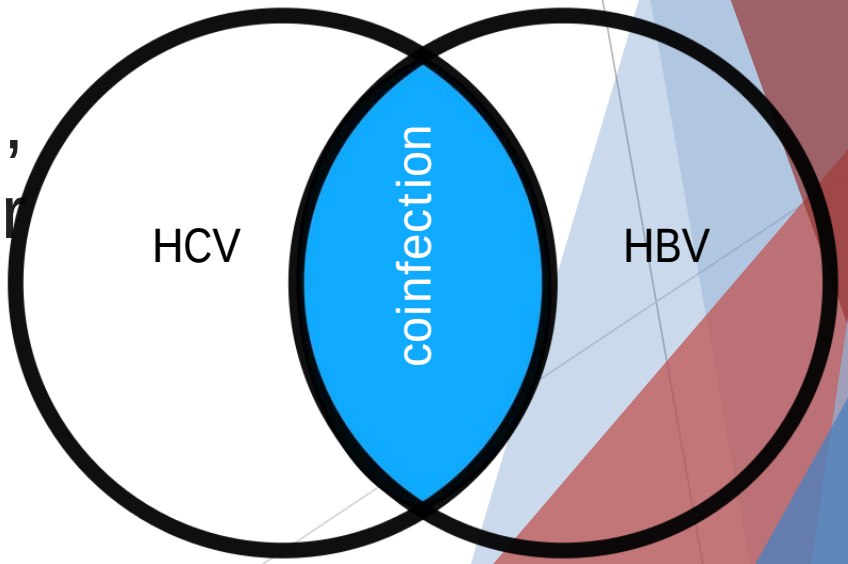
- Treatment naïve
- FIB-4 <1.45 and normal ultrasound
- But viral load >6 Million
- Genotype 1a - Good candidate for LED/SOF
  - 12 weeks because of high viral load (>6 million)
- Counseling about diet and alcohol use – this is a teachable moment
- Adherence support for 100% compliance with DAAs

Monitoring During DAA Therapy

- No cirrhosis - No need to monitor labs during therapy if no symptoms
- HCV RNA at end of treatment and 12 weeks after
- Cirrhosis – check liver function tests at 4 weeks
- Check CBC if on ribavirin

HCV/HBV Coinfection

- Worldwide HBV-HCV coinfection is estimated to be 1-15%
- **Risk of HBV reactivation with DAA's**
- **Treat if HBV Surf Ag positive**
- **Monitor LFTs monthly if HBV Core Ab + (even if Surf Ag neg) and if increasing check HBV DNA**
- Entecavir (Baraclude), tenofovir (Viread), lamivudine (Epivir), adefovir (Hepsera) or and telbivudine (Tyzeka)
- **Start with or before HCV drugs**



Blackard & Sherman (2018), *Rev Med Virol*; Mavilia & Wu, 2018; Journal of Clinical and Translational Hepatology

Threats to a Cure

- Alcohol or substance abuse
- Poor adherence to medications for other diseases (e.g. diabetes)
- Poor social support or unstable housing
- Unstable mental health
  - But depression not a contraindication
- Cirrhosis
- Treatment with a proton pump inhibitor
- NS5A mutations

Terrault et al .Gastroenterology. 2016;151(6):1131-1140
Parlati L, Pol S. Gastroenterol Hepatol. 2018;12(12):1245-1250.

HCV Treatment and Pregnancy

- HCV infection increasing in women of childbearing age
  - From 15,500 in 2006 to 31,000 in 2014
- **DAA's and ribavirin are contraindicated in pregnancy**
  - Serum pregnancy test recommended
  - Treat before pregnancy (with contraception)
  - Counsel to delay pregnancy for at least 6 months post-treatment
  - Test both infant and mother after delivery and treat if needed

Kushner T, Terrault NA. Hepatol Commun. 2018 Nov 30;3(1):20-28. doi: 10.1002/hep4.1282. Boucher & Gruslin, 2017

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- Select appropriate test and medications: case studies

Case 1

- 60 yo man with HTN, hyperlipidemia, and GERD
- Hepatitis C RNA- 1.5 million

- What test is not indicated?
  A. CMP, CBC
  B. HCV genotype
  C. Ferritin
  D. Hepatitis A and B studies, HIV screen
  E. Ultrasound

Case 1

- 60 yo man with HTN, hyperlipidemia, and GERD
- Hepatitis C RNA- 1.5 million

- What test is not indicated?
  A. CMP, CBC
  B. HCV genotype (but this can be optional)
  C. Ferritin
  D. Hepatitis studies, HIV screen
  E. Ultrasound

Case 1

- Age 65
- ALT: 100, AST: 80
- Hemoglobin: 13.1, Platelet Count 149K, eGFR 70
- HCV genotype is 1a
- HCV RNA 1.5 million, HAV and HBV tests negative

- What is the next step for this uninsured patient?
  A. Obtain liver biopsy
  B. Stage liver disease by using fibrotest
  C. Stage liver disease by using FIB-4 Score and ultrasound
  D. No further tests needed

Case 1

- Age 65
- ALT: 100, AST: 80
- Hemoglobin: 13.1, Platelet Count 149K, eGFR 70
- HCV genotype is 1a
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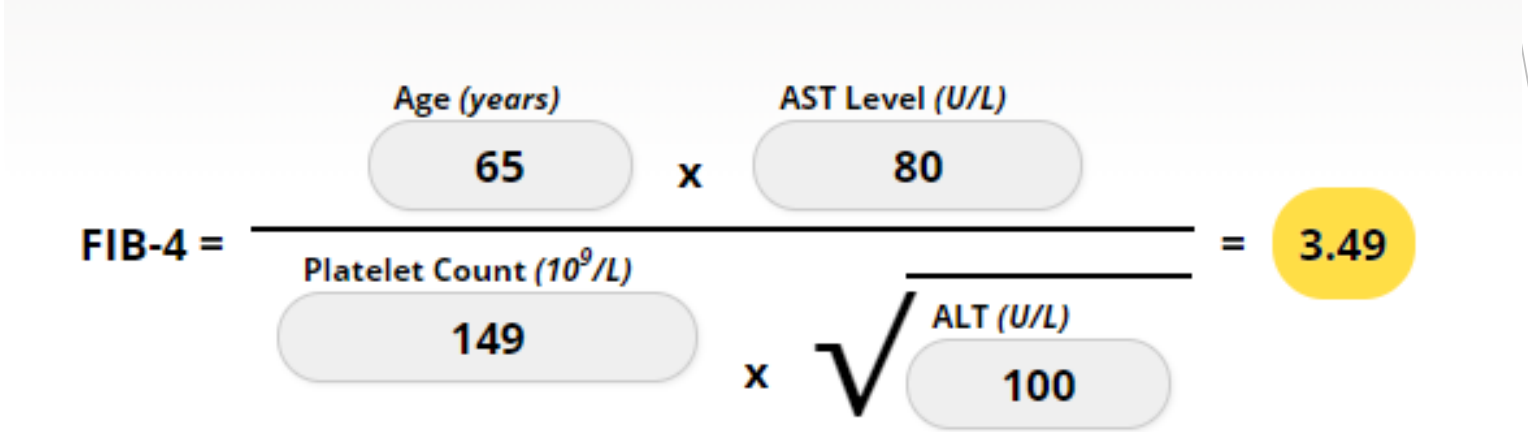


- Fib-4 over 3.25
- What is the best treatment option?
  A. Order ledipasvir/sofosbuvir 8 weeks
  B. Order ledipasvir/sofosbuvir 12 weeks
  C. Order ombitasvir, paritaprevir, and dasaburvir 12 weeks
  D. Order glecaprevir/pibrentasvir 8 weeks

Case 1

- Genotype 1a
- US shows nodular liver
- Fib-4 3.49 (likely fibrosis/cirrhosis)
- eGFR = 70 so stage 2 CKD

- What is the best treatment option?
  A. Order ledipasvir/sofosbuvir 8 weeks
  B. Order ledipasvir/sofosbuvir 12 weeks
  C. Order ombitasvir, paritaprevir, and dasaburvir 12 weeks
  D. Order glecaprevir/pibrentasvir 8 weeks

Case 1 Other issues to address

- Stop the PPI, possible to use H2 blocker 12 hours away from DAA dose
- System for ensuring strict adherence to DAA (eg. pill box, alarm on watch or cell phone, family support)
- Brief intervention counseling about risks of alcohol for continued liver damage with ongoing support
- Immunize against both HAV and HBV
- He has fatty liver and may have concurrent NAFLD as an ongoing risk factor for ongoing liver damage
  - DASH diet or other dietary intervention
  - Ultrasound every 6 mos to monitor for HCC

Case 2

- 65 year old patient on Medicare diagnosed with chronic HCV several years ago
- He takes medication for HTN, hyperlipidemia, and DM. BMI is 33. He does not drink. He smokes ½ pk per day.
- HCV RNA comes back 2.8 million
- He denies having been treated for HCV.
- He admits to being fatigued and lack energy but no history compatible with decompensated liver disease.
- He heard the medications are expensive and make you feel sick.

Case 2

- ALT:143, AST: 134
- Hemoglobin: 16.6, Platelet Count: 125K
- He is Genotype 3, HCV RNA 4 million
- Fib-4 Score: 3.98
- He has eGFR of 28 mg/dL
- Hemoglobin A1c 9%, HAV immune, HBV not immune

- What treatment do you offer?
  A. ledipasvir/sofosbuvir 12 weeks
  B. glecaprevir/pibrentasvir 8 weeks
  C. sofosbuvir/valpatasvir 12 weeks
  D. glecaprevir/pibrentasvir 12 weeks

Case 2

- Genotype 3
- Fib-4 Score: 3.98 – compatible with advanced fibrosis or cirrhosis
- US shows mildly echogenic liver compatible w/ hepatic fibrosis

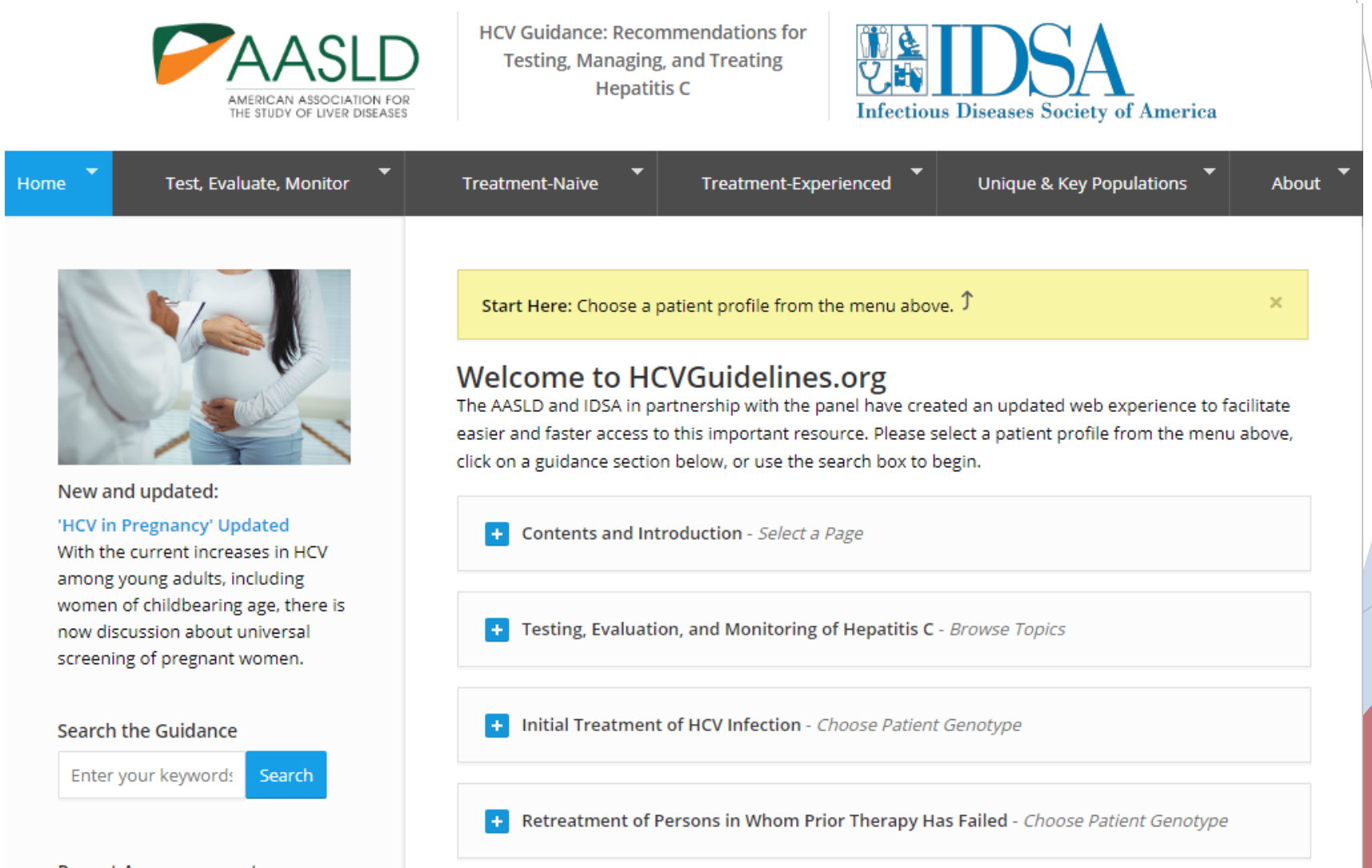
- What treatment do you offer?
  A. ledipasvir/sofosbuvir 12 weeks
  B. glecaprevir/pibrentasvir 8 weeks
  C. sofosbuvir/valpatasvir 12 weeks
  D. glecaprevir/pibrentasvir 12 weeks (likely cirrhosis, pangenotypic, ok in CKD)

Case 2 Other issues to address

- Need to hold the statin during treatment
- He has a high FIB-4 and abnormal U/S – likely to have cirrhosis
- At risk for HCC so he needs ongoing U/S to monitor for HCC – risk continues even after cured HCV
- Immunize against HBV
- Obesity - needs education about likely NAFLD or even NASH and dietary counseling
- He needs smoking cessation intervention – cured the HCV but at risk for CVD and cancer

HCV Treatment Resource

- www.HCVGuidlines.org



ADD OUR STOPhepatitis C website

In Summary

- **Screen with HCV Ab and if + HCV RNA**
- **Counsel patients diagnosed with chronic HCV**
- **Laboratory and imaging tests to stage disease and comorbidities**
- **Immunize if needed against HAV and HBV**
- **Know indications, drug interactions, side effects of commonly used medications in HCV treatment**
  - Havoni (LED/SOF), Epclusa (SOF/VEL), Mavyret (GLE/PIB).
- **Followup to address substance use and comorbidities that increase liver damage**
- **U/S for cirrhotics every 6 mos for HCC**

For more info on HCV, visit:
StopHepatitisC.com

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STOP HCC by Treating HCV

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