

# Hepatitis C

Information for patients

# Questions

- What is Hepatitis C
- How do get hepatitis C
- How can you transmit Hepatitis C
- Long term outcomes with hepatitis C
- Additional tests for Hepatitis C
- What are the treatment options, outcomes and side effects

# Patient Issues

- Balancing chance of complications/dying from hepatitis C vs treatment outcome complications

# Hepatitis definition

Inflammation of the liver

Hepatitis C virus cause inflammation

Other causes

Viral hepatitis

Medications

Herbals

Toxins-mushrooms etc

Alcohol

# Why is your liver important?

- Liver functions
- Filtering blood from intestines
- Making fat and proteins
- Controls blood sugar
- Stores vitamins
- Makes blood clotting factors
- Clear bilirubin from blood from red blood cell breakdown

# What is Hepatitis C?

- A virus discovered in 1987
- Existence for at least 50 years
- Up to 2% of US population 5 million people
- Chronic infection of liver, usually resistant to immune system

# What do my liver tests mean?

## Liver enzymes

AST/ALT

Show if liver  
inflammation  
present

Rise and fall daily

Do not predict  
severity of disease

## Liver function tests

Bilirubin, Albumin,  
Prothrombin Time

Measure how well  
liver is working

Normal in most HCV  
patients

# How is Hepatitis C Spread

- Blood
- Blood transfusion, Intravenous drug use
- Dialysis, Tattoos, piercing
- Intranasal cocaine
- Sex(rare)
- Mother to infant (5-10%)
- Unknown-15-25%

# Diagnosis of Hepatitis C

If you have a positive Hepatitis C antibody and both of the following

Increased ALT

History of IV drug use or blood

99.5% true positive

# Viral Load

- Easy to measure the exact amount of virus
- Use to confirm diagnosis
- Not predict severity of disease and long term outcome
- Some predictive value response to therapy

# Different types of Hepatitis C

- Genotype 1 70%
- Genotype 2/3 25%
- Genotype 4/5/6 5%
- Genotype not predict long term prognosis
- Genotypes predict response to therapy
  - Genotype 2/3 better response
  - Genotype 1 poorer response

# How will Hepatitis C affect my life

- Employment no effect
- Insurance  
Preexisting condition

# How will Hepatitis C affect my life

## Risk of transmission to others

- Household contacts not a risk-don't share razors/toothbrushes
- Avoid blood contacts

# Sexual Transmission

- Risk of Sexual Transmission
- Very low between heterosexual couples
- Female to male <0.5% 12-16 yrs
- Male to Female 0-3% 12-16 yrs
- Probably higher in Gay men

# Sexual Transmission

## Advice to patients and partners

### One long term partner

- Avoid sex during menstruation
- Avoid sex if genital sores present
- Condoms Optional

### Multiple Partners

- Condoms if engaging in any sexual activity.

# Mother-Child Transmission

- Birth transmission low 5-10%
- Breast feeding not a risk

# Symptoms

- Vast majority no symptoms
- Some increase in fatigue 25%
- Some increase in diabetes over lifetime
- Mild increase joint symptoms

# Long Term outcomes with hepatitis C

- 55-85% of infections are chronic
- Low grade inflammation
- Risk is scar tissue, enough scar tissue then cirrhosis and complications

# Cirrhosis

- Severe scarring which affects how well liver functions
- <10% after 20 years
- Greatly increased with alcohol and cannabis
- Cirrhosis increases risk of death from liver failure and cancer 1-3% per year

# Natural History studies

704 Irish woman exposed to HCV from RhoGAM

45% negative for HCV with normal enzymes

2% cirrhosis after 17 years

1016 German women exposed to HCV from RhoGAM

45% negative for virus with normal liver enzymes

3% of those who has biopsies severe fibrosis/cirrhosis after 20 years

98 Canadian IVDU with acute Hepatitis C

45% negative for virus

8% positive for virus cirrhosis after 25 years

Military recruits with HCV at 45 years

17 persons

1 death due to liver disease 5.8%

# Natural History Studies

568 with blood transfusion HCV compared to 984 controls  
No increase death over 18 years

838 German patients with liver biopsies

Age > 50 same death rate as general population

Age < 50 death rate higher than general population

Predicting factors

Older age at infection

Alcohol

Fibrosis already at biopsy

# Treatment Options

- Interferon alone
- Interferon and ribavirin
- New agents-telaprevir/Boceprevir
- Stop alcohol/cannabis
- Observation

# Definition of Cure

- Start therapy
- Check virus levels 12 weeks, 6 months, 1 year (genotype 1)
- Check virus level 6 months off therapy
- If no virus at 6 months post therapy-  
"cure" long term

# Response Rates Interferon/Ribavirin

- Genotype 1 20-60 % depending on viral load, race, HIV status, gender  
1 year therapy
- Genotype 2/3 70-80%  
6 months therapy

# Triple Therapy PEG/Ribavirin/Telaprevir Genotype 1

- PROVE 1 and 2
- T12PR 24 SVR 60-61%
- T12PR48 SVR 67-69%
- PR 46%
- Major issue was rash 21%
- 12 discontinued due to rash
- Improve response rates 46 to 60+%

# Prior Non Responders 43% cirrhosis

- PROVE 3
  - T12PR24 51%
  - T24PR48 53%
  - African Americans 40-44% vs 11%
  - Non responders 8-10% PR to 50% with TPR
- PROVE 1
  - Latinos 65% vs 33%

# ADVANCE TRIAL

- T8/PR vs T12/PR
- Early response weeks 4/12 stopped at 24, not 48 weeks
- T8 69% T12 75%
- African American T12 62%
- Latino T12 74%
- Rashes 53-56%

# REALIZE Trial

## Previously failed therapy

- T12PR36 Retreatment
  - 86% relapsers vs PR 24%
  - 57% partial responders vs PR 15%
  - 31% null responders vs PR 5%
- 
- Retreatment works with new agents

# Illuminate Trial

- TPR 24 vs 48 weeks
- TPR x 12 wks then PR
- SVR 92% (24 wks) vs 88% (48 wks) if eRVR and completed treatment
- Overall SVR 72% 7% stop sxs, 17% adverse events
- African Americans 60% (47% eRVR then 90%)
- Latinos 67%
- Good if early response, much better in AA and Latinos

# FDA Telapravir Approval

- 750 tid for 12 weeks with PR
- Then 12 (undetectable) or 36 week <1000IU) additional therapy
- CYP3A clearance and drug interaction
- Not established in HIV/HCV and HBV/HCV and Child Pugh >7
- Many drug interactions
- 56% rash
- **CANNOT MISS DOSE-RESISTANCE**

# HCV Sprint 1 Trial

- PR x 4 wks, then boceprevir for 24 or 44 weeks
- 75% SVR
- No lead in period worse
- Significant anemia issues
- Treatment discontinuation 10-26% due to side effects

# Sprint 2 Trial

- PR 4 week lead in
- PR placebo 44 weeks SVR 40%
- PR bocepravir 24 wks, then PR 20 wks 67%
- PR bocepravir 44 wks 68%
- African Americans 23%, 42%, 53%

# RESPOND trial

## Prior relapser/partial responders

- 4 week lead in PR
- PR 44 wks 7% partial responder 25%
- Bocepravir PR 32 wks, 12 wks PR 40% Part responder 69%
- Bocepravir PR 44 wks 52% part responder 75%
- Works in retreatment especially Partial responders.

# FDA Boceprevir Approval

- 800 mg tid
- CYP3A interactions
- Unknown HIV/Cirrhosis/HBV
- PR for 4 weeks
- Boceprevir 28 weeks if eRVR at 8 and 24 wks
- 36-44 weeks depending on viral response
- Anemia 26%

# Side Effects Interferon and Ribavirin

## **Interferon**

Flu-like symptoms

Muscle aches, joint pain, fever

Depression

Fatigue

Hair Loss

Thyroid Dysfunction

Diabetes-rare

Eye disorders

## **Ribavirin**

- Anemia

Heart/breathing problems

- Skin Rash

- Birth Defects

- Numbness/Tingling of hands and feet

# How to Decide

- Do you want therapy-personal decision, age, life circumstances
- Medical Issues that increase risk of therapy-heart disease, depression
- Genotype
- Liver Biopsy-most of the time needed to guide decision

# Liver Biopsy

- A needle used to remove sample of tissue
- Local anesthetic
- 5 minute biopsy, 5 hours observation period
- 50% Local pain
- Small risk of bleeding, damage to other organs (1:300)

# Decision Making

- Can you commit to 6-12 months of therapy?
- Can you deal with side effects?
- Can you have frequent blood tests and visits?
- Do you have medical conditions that increase risk heart disease, depression, pregnancy

# Lifestyle-Stay Healthy

- No alcohol, cannabis, recreational drugs
- Diet-high fiber, low fat
- Maintain normal body weight
- Herbs-be careful
  - Milk thistle/silymarin
- Careful supplements
- Hepatitis A/B vaccine

# Summary

- Hepatitis C is common
- Hepatitis C can be serious but very slow progression
- Treatment is available but needs individualization
- Liver biopsy frequently necessary
- Avoid alcohol and cannabis

# Information

- American Liver Foundation
- <http://liverfoundation.org/>