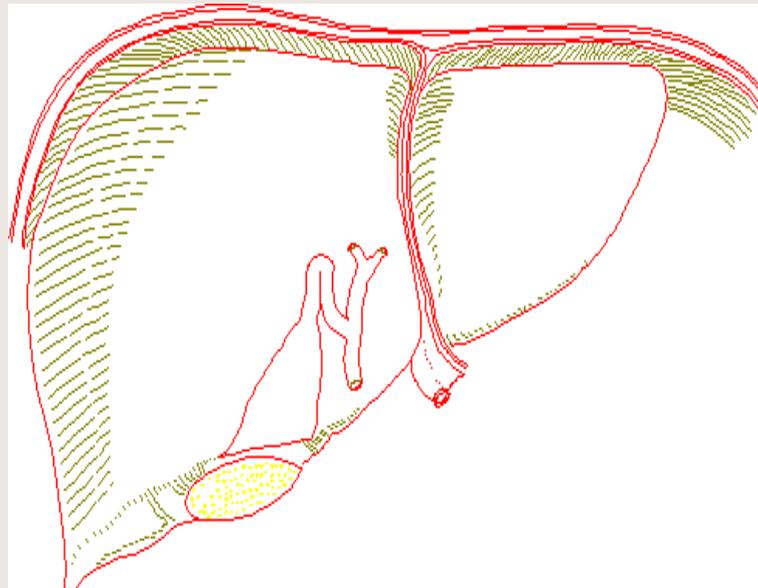


# HEPATITIS C

A DIAGNOSABLE AND TREATABLE  
DISEASE



NYS OASAS  
CONTINUING EDUCATION WORKBOOK

# HEPATITIS C WORKBOOK

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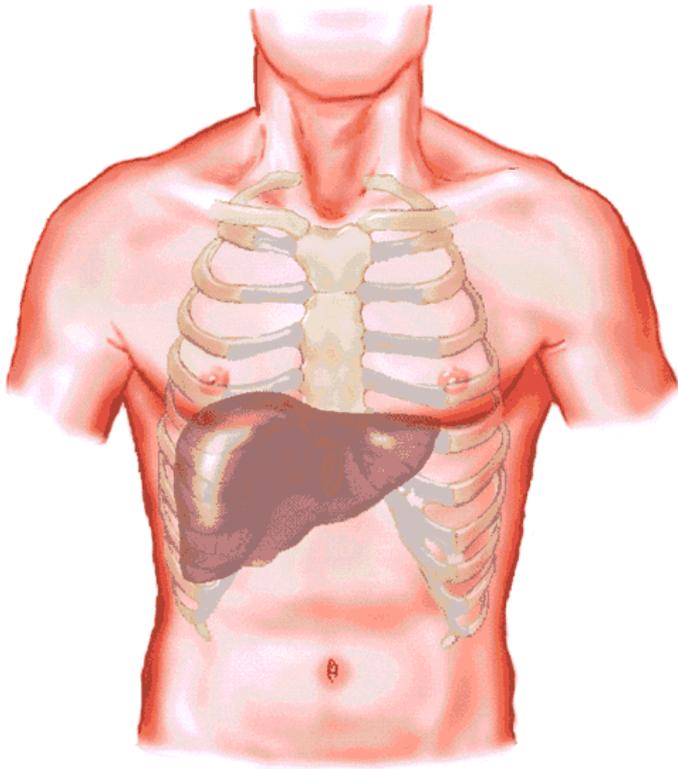
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# THE LIVER



- WEDGE SHAPED ORGAN
- LOCATED UNDER RIGHT RIB CAGE
- WEIGHS ABOUT 3 LBS.



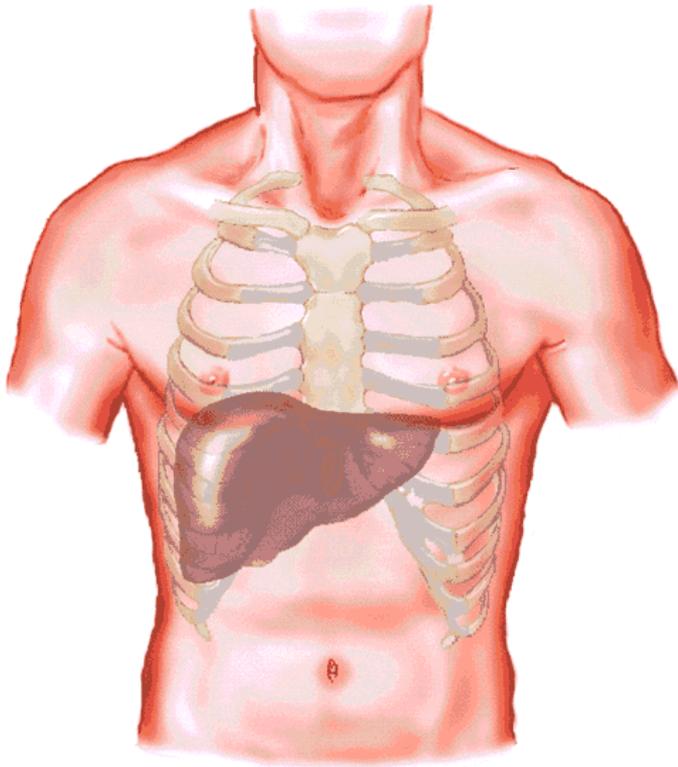
## LIVER IN ABDOMINAL CAVITY

NYS OASAS



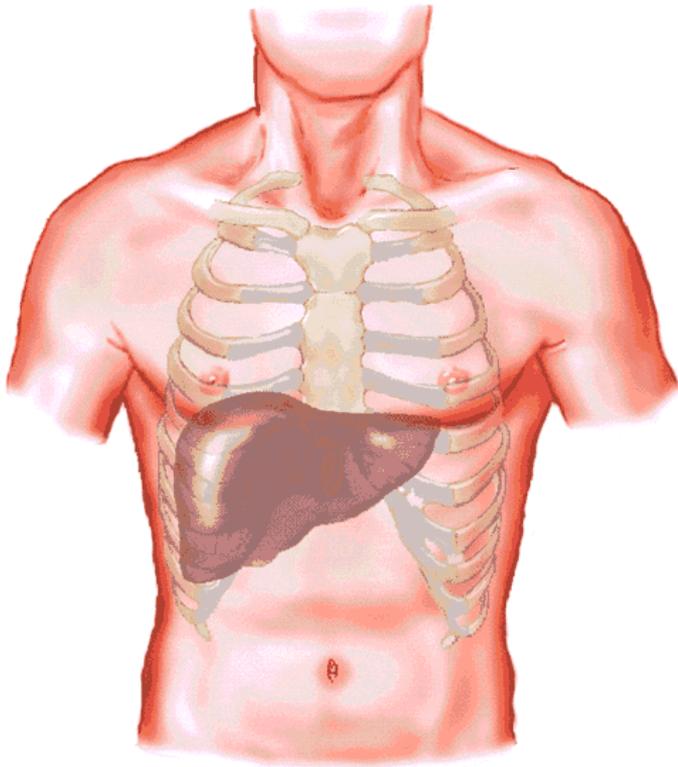
LIVER REMOVED FROM  
ABDOMINAL CAVITY

# THE LIVER



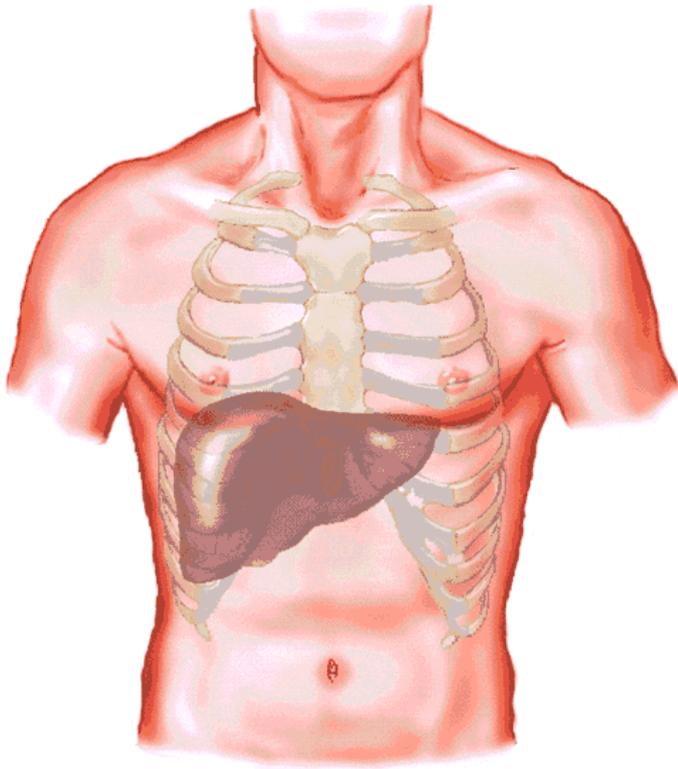
- FUNCTIONS OF THE LIVER:
  - MAKES PROTEIN NEEDED FOR BLOOD CLOTTING
  - STORES VITAMINS, IRON AND GLYCOGEN
  - METABOLIZES SUGAR, PROTEIN AND FAT TO PRODUCE ENERGY
  - REMOVES WASTE PRODUCTS AND FILTERS TOXIC SUBSTANCES FROM BLOOD

# THE LIVER



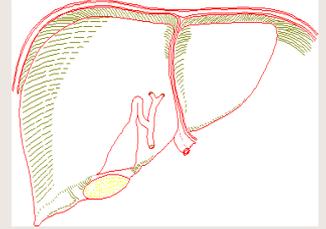
- ENZYMES (PROTEINS) FROM LIVER ARE FOUND IN THE BLOOD NORMALLY AS A RESULT OF NORMAL AGING AND DEGENERATION OF LIVER CELLS (CALLED LFT'S – LIVER FUNCTION TESTS)
  - ALT
    - ALANINE AMINOTRANSFERASE
  - AST
    - ASPARTATE AMINOTRANSFERASE
  - GGTP
    - GAMMA -GLUTAMYL TRANSPEPTIDASE

# THE LIVER



- LIVER ENZYMES (LFT'S)
  - 6% OF ALL PATIENTS HAVE ELEVATED ENZYMES. THE MOST COMMON CAUSES ARE:
    - ALCOHOL USE
    - OBESITY
    - HEPATITIS C

# HEPATITIS



“INFLAMMATION OF THE LIVER”

CAUSED BY:

- VIRUSES- HEPATITIS A, B, C, D, E, G
- OTHER INFECTIONS (MONONUCLEOSIS)
- CHEMICALS
  - ALCOHOL
  - ACETAMINOPHEN

# VIRAL HEPATITIS

---

- VIRAL HEPATITIS TYPES

- A

- CALLED “INFECTIOUS HEPATITIS” (HAV)

- B

- CALLED “SERUM HEPATITIS” (HBV)

- C

- PREVIOUSLY CALLED NON - A NON -B, NOW HCV

- D

- DEFECTIVE RNA VIRUS
    - NEEDS B TO INFECT

- E

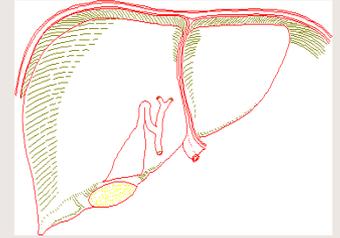
- LIKE A, ORAL/FECAL TRANSMITTED

# VIRAL HEPATITIS

---

- VIRAL HEPATITIS TYPES
  - A
    - NOT CHRONIC OR LONG-TERM
    - VACCINE AVAILABLE
  - B
    - CHRONIC CARRIER STATE IN 6% OF THOSE INFECTED
    - VACCINE AVAILABLE
  - C
    - CHRONIC IN 85% OF THOSE INFECTED
    - NO VACCINE AVAILABLE

# HEPATITIS



## SYMPTOMS OF ACUTE HEPATITIS:

MILD HEPATITIS - MALAISE, JAUNDICE,  
ABDOMINAL PAIN

SEVERE HEPATITIS – ALL OF THE  
ABOVE PLUS BLEEDING, FLUID  
RETENTION, ALTERED MENTAL  
STATUS

# ACUTE VIRAL HEPATITIS UNITED STATES, 1982 - 1993

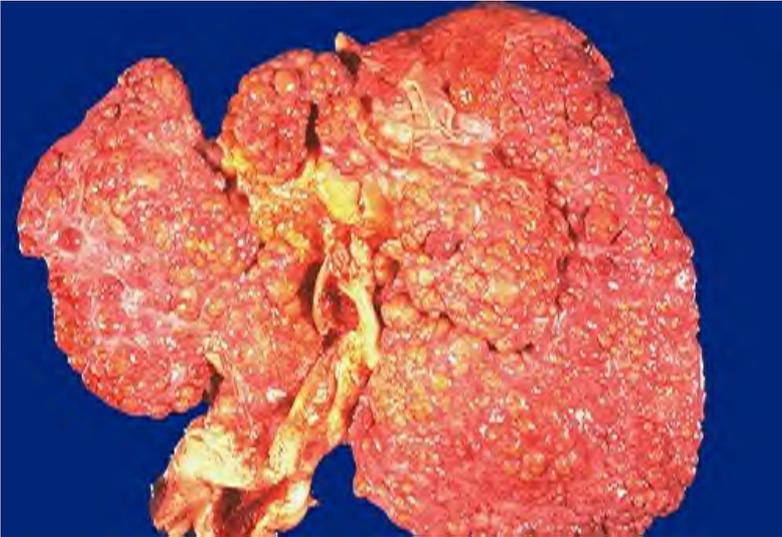


\*IT IS RARE TO SEE ACUTE HEP C (LISTED HERE AS NON A, NON B)

# WHAT IS CIRRHOSIS ?

- SCARRING OF THE LIVER WITH LOSS OF FUNCTION
- LIVER FUNCTION TESTS MAY BE NORMAL DUE TO A DECREASE IN THE NUMBER OF NORMAL LIVER CELLS





# EXAMPLES OF CIRRHOTIC LIVERS



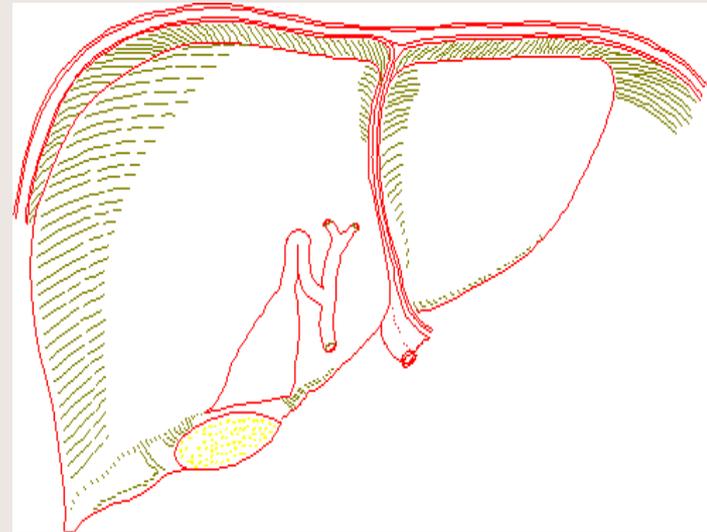
NORMAL BIOPSY



BIOPSY OF CIRRHOSIS

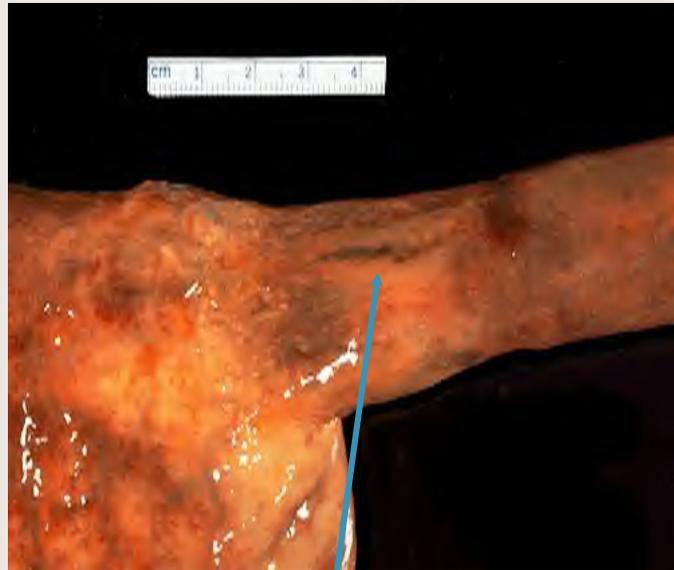
# WHAT IS CIRRHOSIS ?

- COMPLICATIONS:
  - ENCEPHALOPATHY (ALTERED MENTAL STATUS)
  - ASCITES (FLUID IN ABDOMEN)
  - EDEMA (FLUID IN LOWER EXTREMITIES)
  - SPONTANEOUS BACTERIAL PERITONITIS (SPONTANEOUS INFECTION IN THE ABDOMEN)
  - COAGULOPATHY (IMPAIRED BLOOD CLOTTING MECHANISM)





**CIRRHOSIS COMPLICATION  
CAPUT MEDUSA  
(DILATED ABDOMINAL VEINS)**

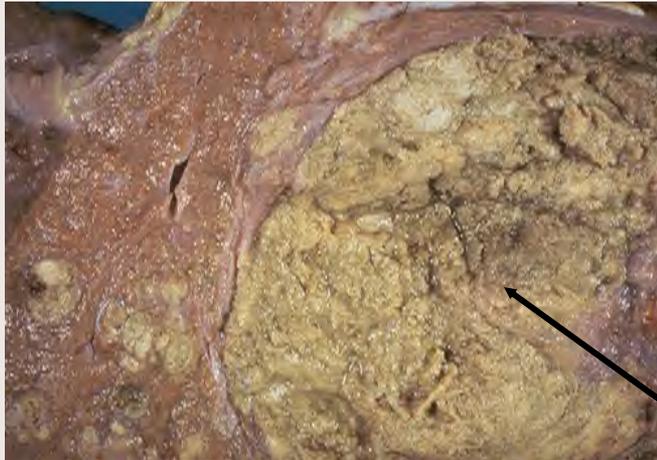


**CIRRHOSIS COMPLICATION  
ESOPHAGEAL VARICES  
(DILATED ESOPHAGEAL VEINS)**



PATIENT WITH END-STAGE LIVER FAILURE DUE TO CIRRHOSIS

# CIRRHOSIS COMPLICATIONS



## HEPATOCELLULAR CARCINOMA (HCC)

THERE IS A 7-14% RISK OF GETTING HCC IN 5 YEARS IF CIRRHOSIS IS DUE TO HEPATITIS C. THE MEDIAN SURVIVAL OF HCC IS 4.3 – 20 MONTHS AFTER DIAGNOSIS

# HEPATITIS C HISTORY

---

**1973:** NON A, NON B HEPATITIS IS DESCRIBED

**1989:** HEPATITIS C (HCV) GENOME IS CLONED; A SINGLE STRANDED, RNA VIRUS IN THE FLAVIVIRIDAE FAMILY

**1989:** HCV ANTIBODY TEST IS DEVELOPED (ELISA)

**1990:** HCV VIRAL LOAD TEST IS DEVELOPED TO DETECT HCV RNA IN SERUM (PCR TEST)

**1998:** COMBINATION THERAPY WITH INTERFERON AND RIBAVIRIN IS APPROVED BY THE FDA

**2001:** PEGYLATED INTERFERON IS APPROVED BY THE FDA

# HEPATITIS C

- AT LEAST 9 MAJOR GENOTYPES OF THIS VIRUS EXIST
  - GENOTYPE 1 - 4 HAVE SUBTYPES
  - IN U.S. GENOTYPE 1A AND 1B ACCOUNT FOR 70 - 80 % OF ALL CASES
  - IN SOUTH AFRICA AND SE ASIA PREDOMINANT TYPES ARE 5 AND 6
  - IN THE MIDDLE EAST AND CENTRAL AFRICA IT IS TYPE 4
  - **THE NATURAL HISTORY OF HCV IS NOT AFFECTED BY THE GENOTYPE** [*HEPATOLOGY* 1997;26 (SUPPL 1):345-385]
  - **TREATMENT OUTCOME IS AFFECTED**; GENOTYPE 1 IS LEAST FAVORABLE TO INTERFERON THERAPY
    - TYPE 1: 5 - 10 % RESPONSE RATE
    - TYPE 2, 3: 30 -60% RESPONSE RATE

# HEPATITIS C

---

- **INCIDENCE**

- AN ESTIMATED 3.9 MILLION AMERICANS HAVE CHRONIC HCV
- APPROX. 324,000 CASES IN NYS
- IT IS ESTIMATED THAT 75-85% OF SUBSTANCE USERS INJECTING FOR MORE THAN 2 YEARS WILL BE INFECTED WITH HCV

# PREVALENCE (CDC)

---

- GENERAL POPULATION: **1.8%** (3.9 MILLION) ARE HCV ANTIBODY POSITIVE - **75%** POSITIVE FOR HCV RNA (CHRONIC HEPATITIS C)
  - 30 - 49 YEAR OLDS AND AFRICAN-AMERICANS ARE THE LARGEST GROUPS
- HEALTH CARE WORKERS: **1%**
- CURRENT INTRAVENOUS DRUG USERS (IDUS): **79%**
- HISTORY OF BLOOD TRANSFUSION: **6%**
- >49 SEX PARTNERS: **9%**
- PRISONERS: **35%**

# PREVALENCE OF HCV IN HIGH - RISK POPULATIONS

- RISK FACTOR

- IV DRUG USE
- HEMOPHILIA
- INCARCERATION
- ATTENDING A VA CLINIC
- HIV INFECTED
- ALCOHOL DEPENDENT
- ALCOHOL AND LIVER DISEASE
- HEMODIALYSIS PATIENTS

- HCV PREVALENCE

- > 90%
- > 90%
- 30 -40%
- 30%
- 33%
- 10%
- 30%
- 10-20%

# HCV IMPACT

---

- EACH YEAR 8 - 10,000 AMERICANS DIE OF HCV - RELATED CIRRHOSIS OR CANCER OF THE LIVER
- IN 1995, ALMOST 1/2 OF THE LIVER TRANSPLANTS DONE ON HCV PATIENTS
- \$600 MILLION PER YEAR IN WORK RELATED LOSSES

# HEPATITIS C TRANSMISSION

---

**PRIMARILY THROUGH INFECTED  
BLOOD EXPOSURE**

**SOME RESEARCHERS THINK THAT  
THE HEPATITIS C VIRUS CAN LIVE  
SEVERAL DAYS OUTSIDE THE  
BODY**

# HEPATITIS C TRANSMISSION

---

- SHARING INJECTION EQUIPMENT
- TRANSFUSION PRIOR TO 1992
- 91 - 99% OF PATIENTS USING CLOTTING FACTOR PRIOR TO 1987 ARE POSITIVE
- OCCUPATIONAL EXPOSURE FOR HEALTHCARE WORKERS
- INFECTED MOTHER TO NEWBORN (5 - 10 % CHANCE)

# INJECTION AND TRANSMISSION

---

- BALTIMORE: AFTER 1 YEAR OR LESS OF INJECTION 60% OF IV DRUG USERS WERE HCV POSITIVE
- 54% OF HCV INFECTIONS IN IV DRUG USERS WHO DO NOT SHARE SYRINGES WAS ATTRIBUTABLE TO COOKER/COTTON SHARING
- TRANSMISSION AMONG IV DRUG USERS IS DROPPING, PROBABLY FROM EDUCATION AND SYRINGE EXCHANGE

# SEXUAL TRANSMISSION

---

- ACUTE STUDIES: 17% WITH MULTIPLE AND/OR HCV INFECTED PARTNER
- HIGHER RATE IN STD CLINIC PATIENTS - BUT NOT ASSOCIATED WITH ANAL RECEPTIVE SEX
- LOW RATES OF TRANSMISSION IN MONOGAMOUS HETEROSEXUAL COUPLES (**0.82%**)

# OTHER MODES OF TRANSMISSION

---

- MEDICAL: TRANSFUSION, TRANSPLANT, DIALYSIS, OTHER HOSPITAL ACQUIRED
- PERINATAL- **5%** TRANSMISSION, HIGHER IN HIV/HCV CO – INFECTED MOTHERS (**18%**)
  - C-SECTION CAN LOWER RATE
- TATTOO (**12.6%** POSITIVE) DUE TO SHARED INK
- PIERCING
- ACUPUNCTURE (**40 - 50 %** OF ASIANS WHO ARE HCV POSITIVE HAD ACUPUNCTURE EXPERIENCE)
- HOUSEHOLD (NO RISK IF NO BLOOD EXPOSURE)
- COCAINE (SNORTING WITH BLOOD ON EQUIPMENT)

# OTHER MODES OF TRANSMISSION

---

## STANDFORD STUDY

HEPATOLOGY 1997;26 (SUPPL 1) 665-705

SAMPLES OF CHRONIC HEPATITIS C  
PATIENTS WERE TESTED:

URINE, SEMEN, STOOL, VAGINAL SECRETIONS,  
AND BREAST MILK WERE ALL **NEGATIVE** FOR  
THE VIRUS. SALIVA WAS NEGATIVE IN THIS  
STUDY, BUT NOT IN OTHER STUDIES.

# OTHER RISKS?

---

- AT LEAST 10% OF CASES HAVE NO KNOWN RISK FACTOR
- NOT SPREAD BY
  - SNEEZING
  - HUGGING
  - COUGHING
  - FOOD OR WATER
  - SHARING EATING UTENSILS OR DRINKING GLASSES
  - CASUAL CONTACT – TOWELS

# HOW TO PREVENT OTHERS FROM BEING INFECTED IF YOU ARE HCV POSITIVE

---

- DO NOT SHARE SYRINGES, COOKERS, WATER, COTTON, OR TIES
- DO NOT SHARE STRAWS USED TO SNIFF COCAINE
- USE LATEX CONDOMS
- DO NOT SHARE RAZORS, TOOTHBRUSHES, OR OTHER PERSONAL ITEMS
- DO NOT DONATE BLOOD, BODY ORGANS, TISSUE OR SPERM
- COVER CUTS AND SORES ON SKIN
- **TELL PARTNERS YOU ARE HCV – POSITIVE**

# TESTS TO MAKE A DIAGNOSIS OF HEPATITIS C

# STANDARD TESTS FOR HCV

---

- ELISA (ENZYME IMMUNOASSAY)
- PCR (POLYMERASE CHAIN REACTION)

# WHO TO OFFER TESTING

---

- PERSONS WHO HAVE EVER INJECTED DRUGS
- PERSONS WITH HIV
- PERSISTENTLY ABNORMAL LIVER FUNCTION TESTS
- THOSE WITH RECOGNIZED EXPOSURE
- THOSE WHO RECEIVED BLOOD PRODUCTS PRIOR TO PREVENTION TECHNIQUES (1992)
- CHRONIC HEMODIALYSIS PATIENTS

# PRETEST EDUCATION MUST INCLUDE EXPLANATIONS OF:

---

- TRANSMISSION
- TESTING PROCEDURES AND MEANING OF RESULTS
- OUTCOMES
- TREATMENT
- BENEFITS AND RISK OF EARLY TESTING

**CDC 1998**

# ELISA ANTIBODY

---

- INITIAL TEST, INEXPENSIVE
- INDICATES EXPOSURE
- TESTS FOR ANTIBODY TO HCV ONLY
- POSITIVE 4-8 WEEKS AFTER INFECTION
- HIGHLY SENSITIVE (99%), NOT SPECIFIC-REQUIRES FOLLOW UP TESTING
- SENSITIVE EVEN IN HIV INFECTED PATIENTS, THOUGH IT MAY BE NEGATIVE IF THEY ARE VERY IMMUNE COMPROMISED

# VIRAL LOAD/PCR

---

- QUALITATIVE ( IS THE VIRAL RNA PRESENT?) AND QUANTITATIVE (HOW MUCH VIRAL RNA?)
- DIFFERENTIATES BETWEEN CURRENT AND PAST INFECTION
  - LEVELS SHOW SIGNIFICANT VARIATION DUE TO:
    - TEST HANDLING AND STORAGE
    - NATURAL FLUCTUATION IN VIRAL LOAD
- NEGATIVE NEEDS REPEATING IF HEPATITIS C ANTIBODY WAS POSITIVE
- VIRAL LOAD LEVELS MAY BE KEY IN EVALUATING RESPONSE TO THERAPY
- CURRENTLY LOW INSURANCE REIMBURSEMENT FOR THIS TEST

# HCV RNA VIRAL LOAD TEST LIMITATIONS

- SIGNIFICANT **VARIABILITY** EXISTS BETWEEN AVAILABLE ASSAYS (TESTS)
- AN **INTERNATIONAL STANDARD** HAS BEEN INTRODUCED TO PERMIT NORMALIZATION OF VIRAL TITERS IN IU/mL (WORLD HEALTH ORGANIZATION)
- THE **CLINICAL UTILITY** OF SERIAL HCV RNA LEVELS DEPENDS ON THE **CONTINUED USE OF THE SAME TEST**
- TESTS ARE COSTLY AND REQUIRE EXTENSIVE PERSONNEL TRAINING

# TOTAL HCV CORE ANTIGEN (Ag) A NEW MARKER OF VIREMIA

---

- QUANTITATIVE ENZYME IMMUNOASSAY (EIA)
  - DETECTS VIRUS CORE PROTEIN
  - EASY TO PERFORM
  - FAST RESULTS (3 HOURS)
  - CORRELATES WITH HEPATITIS C RNA (VIRAL LOAD) TESTING

# ALPHA – FETOPROTEIN (AFP)

---

- A TUMOR MARKER VARIABLY SECRETED BY HEPATOCELLULAR CARCINOMAS THAT CAN BE MEASURED IN SERUM. ONCE THOUGHT TO BE VERY HELPFUL IN THE DIAGNOSIS OF HEPATITIS C. NEW WORK QUESTIONS THIS
  - GUPTA ET AL IN ANNALS OF INTERNAL MEDICINE JULY 2003
    - “EVEN IF THE BEST CASE ESTIMATES OF AFP SENSITIVITY AND SPECIFICITY ARE ACCURATE, AFP HAS LIMITED UTILITY FOR DETECTING HEPATOCELLULAR CARCINOMA”

# SUMMARY

---

- BASELINE HCV RNA (<800,000 IU/mL) OR TOTAL HCV CORE Ag (<25 pg/mL) LEVELS ARE GOOD PREDICTORS OF SUSTAINED VIROLOGIC RESPONSE (SVR)
- CHANGES IN HCV RNA OR TOTAL HCV CORE Ag LEVELS BY WEEK 12 OF THERAPY ARE EARLY PREDICTORS OF TREATMENT OUTCOME

MAYNARD ET AL. AASLD: NOV. 1 – 5, 2002 BOSTON MASS.

# SUMMARY

---

- VIRAL LOAD MONITORING TO PREDICT EARLY TREATMENT OUTCOME IS A CRITICAL COMPONENT OF THE CURRENT MANAGEMENT OF HCV THERAPY

MAYNARD ET AL. AASLD: NOV. 1 – 5, 2002 BOSTON MASS.

# LIVER BIOPSY

---

- CONFIRM DIAGNOSIS OF CHRONIC HCV AND RULE OUT UNEXPECTED DIAGNOSES (HEMOCHROMATOSIS FOR EXAMPLE)
- ONLY WAY OF DETERMINING EARLY PROGRESSION
- BEST PREDICTOR OF CONTINUED PROGRESSION TO CIRRHOSIS
- THE COST EFFECTIVENESS OF LIVER BIOPSY IS AN AREA OF DISCUSSION

# LIVER BIOPSY

---

THE DEGREE OF FIBROSIS ON INITIAL BIOPSY TELLS ABOUT THE RATE OF PROGRESSION:

GRADE 1 FIBROSIS WHICH IS THE LOWEST LEVEL OF FIBROSIS  $\Rightarrow\Rightarrow$ PROGRESSES TO CIRRHOSIS IN 14 YEARS

GRADE 3 FIBROSIS, A MODERATE LEVEL OF FIBROSIS  $\Rightarrow\Rightarrow$ PROGRESSES TO CIRRHOSIS IN 2 YEARS

# POST-TEST EDUCATION FOR THOSE TESTING HCV POSITIVE

---

- ELEMENTS TO COVER WITH ALL HCV+ PATIENTS:
  - COURSE OF DISEASE VARIES GREATLY FROM PERSON TO PERSON
  - IMPORTANCE OF WORKING CLOSELY WITH MD TO MONITOR AND POSSIBLY TREAT HCV
  - IMPORTANCE OF AVOIDING ALCOHOL AND OTHER LIVER TOXIC SUBSTANCES
  - NEW RESEARCH SUGGESTS TOBACCO SMOKING MAY WORSEN HEPATITIS C OUTCOMES
  - HOW TO PREVENT FURTHER SPREAD OF HCV

# THE DIAGNOSIS IS MADE (SUMMARY)

---

- HCV ANTIBODY: HISTORY OF EXPOSURE, POSSIBLE CHRONIC INFECTION- FOLLOW UP WITH VIRAL LOAD
- HCV PCR: POSITIVE INDICATES INFECTION, NEGATIVE SHOULD BE REPEATED
- LIVER FUNCTION TESTS: SUGGESTIVE OF PROGRESSION (IF PERSISTENTLY NORMAL - WATCH PATIENT)
- LIVER BIOPSY: DEFINES PROGRESSION

# CHRONIC HEPATITIS C SYMPTOMS CAN BE DESCRIBED AS:

---

- NO SYMPTOMS
- NON -LIVER SYMPTOMS OF HCV
  - 38% OF PATIENTS PRESENT WITH AT LEAST ONE NON- LIVER AILMENT
    - JOINT ACHES (19%)
    - SKIN DISEASES (17%)
    - DRY MOUTH (12%)
    - DRY EYES (10%)
    - NEUROPATHY (9%)
    - CRYOGLOBULINS – ABNORMAL PROTEIN COMPLEXES IN THE BLOOD THAT CRYSTALLIZE WHEN COOLED (56%)
    - LOW PLATELETS (17%)

# HEPATITIS C SYMPTOMS

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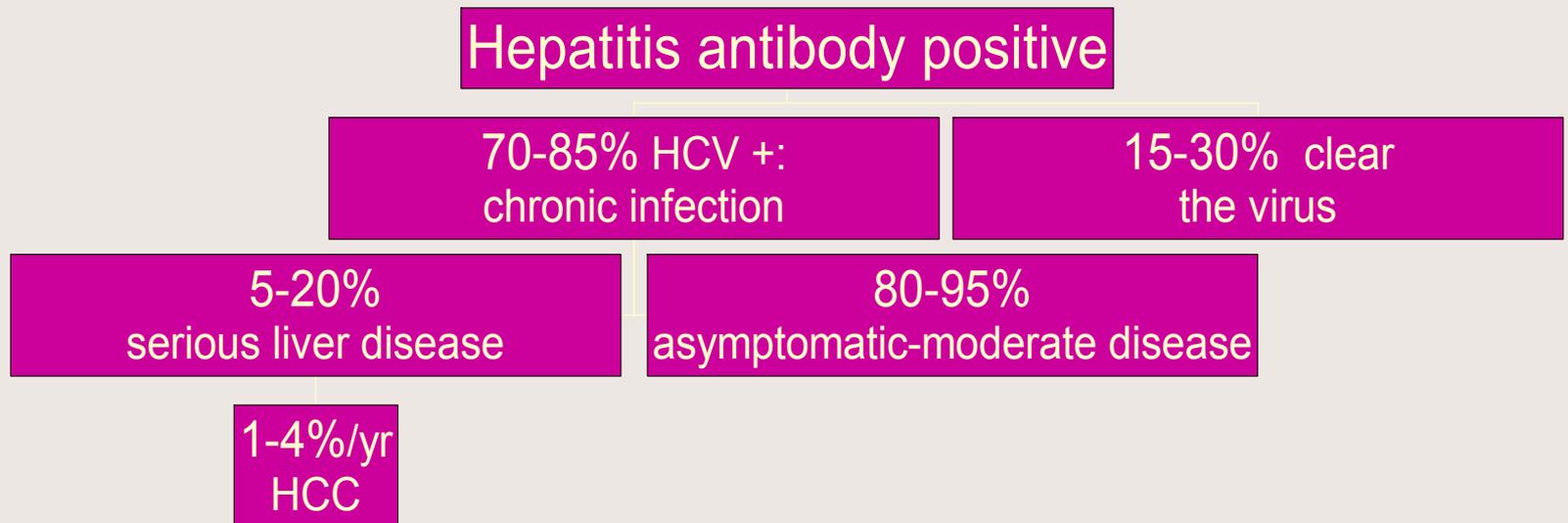
- NON - LIVER MANIFESTATIONS OF HCV (CONT.)
  - HEPATITIS C PATIENTS DEVELOP ANTIBODIES AGAINST THEIR OWN BODY (AUTOANTIBODIES). THESE CAN BE AGAINST CELL NUCLEI, HEART MUSCLE AND THYROID TISSUE.
    - TESTING CAN SHOW UP POSITIVE FOR THESE AUTOANTIBODIES IN SOME PATIENTS
      - » ANTINUCLEAR ANTIBODIES
      - » RHEUMATOID FACTOR
      - » ANTICARDIOLIPIN ANTIBODIES
      - » ANTITHYROGLOBULIN ANTIBODIES
      - » ANTISMOOTH MUSCLE CELL ANTIBODIES

# FOR EVERY 100 PEOPLE WITH HCV

---

- **85** ARE ABLE TO TRANSMIT THE VIRUS TO OTHERS
- **70** MAY DEVELOP SOME DEGREE OF CHRONIC LIVER INFLAMMATION OR DISEASE (MANY WITH NO SYMPTOMS)
- **15** MAY DEVELOP CIRRHOSIS OVER 20 - 30 YEARS
- **5** MAY DIE OF CIRRHOSIS OR LIVER CANCER [HEPATOCELLULAR CANCER (HCC)]

# PROGRESSION



# HCV OUTCOMES

---

- IT TAKES 10 - 30 YEARS AFTER INITIAL INFECTION TO PROGRESS TO CIRRHOSIS (20 YEARS IF HCV+ AND HIV+)
- PERSISTENTLY NORMAL LFT'S (REPEATED 2 TO 3 TIMES IN 6 MONTHS) UNKNOWN IF TREATMENT IS NEEDED
- COMBINATION OF HEPATITIS A AND HCV - 40% MORTALITY RATES
- IF HEPATITIS B AND C CO -INFECTED→ HEPATOCELLULAR CARCINOMA (HCC) IS SEEN IN 82.5% OF PATIENTS
- REINFECTION POSSIBLE -NO IMMUNITY
- IT IS NOT CLEAR WHY, BUT THERE IS A DISCONNECT BETWEEN SYMPTOMS AND LIVER BIOPSY FINDINGS

# FACTORS INFLUENCING PROGRESSION

---

- ALCOHOL USE
  - ESPECIALLY IF GREATER THAN 50 GRAMS (5 DRINKS) OF ALCOHOL CONSUMED PER DAY
- CO -INFECTION WITH HAV, HBV, HIV
- OLDER AGE AT INFECTION
- MALE ( THOUGHT TO BE DUE TO WEIGHT/DOSE RATIO OF MEDICATIONS, WOMEN GOT HIGHER DOSES DUE TO LOWER WEIGHTS ON AVERAGE)
- LONGER DISEASE DURATION

# CONSEQUENCES OF HEPATITIS RELATED CIRRHOSIS

---

- **75% ARE COMPENSATED**
  - NO DECREASE IN ALBUMIN
  - NO INCREASE IN CLOTTING TIMES OR BILIRUBIN
- **14% ARE DECOMPENSATED**
  - ASCITES, ENCEPHALOPATHY, PORTAL HYPERTENSION (INCREASE PRESSURE IN THE LIVER/SPLEEN VENOUS SYSTEM)
- **1 - 5% HAVE HEPATOCELLULAR CARCINOMA**

# PROJECTED U.S. HEALTHCARE BURDEN OF CHRONIC HCV

---

- 4500 LIVER TRANSPLANTS PER YEAR
- 30,000 LIVER DEATHS PER YEAR - HCV IS RESPONSIBLE FOR 1/3 OF ALL TRANSPLANTS
  - 3 TO 4 TIMES THE INCREASE IN HEPATITIS C RELATED DEATHS IN THE NEXT 10 -20 YEARS ( 40,000 DEATHS/YEAR)

# HCV TREATMENT

# HCV INDICATIONS FOR TREATMENT

---

- PERSISTENTLY ELEVATED LIVER FUNCTION TESTS
- DETECTABLE HCV RNA
- LIVER BIOPSY SHOWING EARLY SIGNS OF INJURY AND/OR INFLAMMATION

# HCV CONTRA - INDICATIONS FOR TREATMENT

---

- ADVANCED CIRRHOSIS
- PREGNANCY
- MAJOR DEPRESSIVE DISORDER
- ACTIVE DRUG OR “EXCESSIVE” ALCOHOL USE (CONTROVERSIAL – AS SOME FEEL THIS PATIENT MAY NOT BE ABLE TO ADHERE TO THE MEDICATION REGIMEN.)

# HCV TREATMENT - GRAY ZONE

---

- PERSISTENTLY NORMAL LFT'S
- ACTIVE DRUG OR SIGNIFICANT ALCOHOL USE
- ELEVATED LFT'S WITH EVIDENCE OF LIVER DAMAGE
- HIV INFECTION - DEPENDS ON DISEASE STAGE

# WHEN ARE DRUG USERS ELIGIBLE FOR HCV TREATMENT?

---

- NIH CONSENSUS STATEMENT, 1997
  - NO ACTIVE DRUG USE OR SIGNIFICANT ALCOHOL USE FOR 6 MONTHS
    - REVISED IN 2002 TO BE LESS RESTRICTIVE
- WHY THESE RESTRICTIONS AS PER NIH?
  - POOR ADHERENCE TO MEDICAL REGIMENS
  - RESISTANCE CONCERNS
  - POSSIBILITY OF RE -INFECTION DUE TO LIFESTYLE
  - PSYCHIATRIC TOXICITY
  - LACK OF URGENCY OF TREATMENT
  - ALCOHOL DOSE - DEPENDENT DECREASE IN RESPONSE TO INTERFERON
    - A SMALL STUDY SUGGESTS THAT 6 MONTHS ABSTINENCE BOOSTS RESPONSE

# WHEN ARE DRUG USERS ELIGIBLE FOR HCV TREATMENT?

- THE PRACTICAL TREATMENT OF SUBSTANCE USERS:
  - AS WITH OTHER ILLNESSES, ELIGIBILITY SHOULD BE GUIDED BY SCIENTIFIC DATA, INTERPRETED WITHIN THE CONTEXT OF THE DOCTOR - PATIENT RELATIONSHIP
  - COCAINE, OPIOIDS AND MARIJUANA ARE NOT KNOWN TO BE HEPATOTOXIC TO THE LIVER
  - METHADONE SHOULD NEVER BE AN EXCLUSION
- MOST STUDIES FIND THAT MANY DRUG USERS SUCCESSFULLY ADHERE TO HIV MEDICATIONS; WHY NOT THINK THAT THEY WILL ADHERE TO THEIR HCV REGIMEN?
- **PATIENTS NEED INDIVIDUAL EVALUATION**

# CURRENT TREATMENT FOR HCV

---

- INITIAL ACUTE HEPATITIS C MANAGED AT HOME
  - SYMPTOM CONTROL
- CHRONIC ILLNESS MANAGED WITH
  - INTERFERON ( INJECTIONS)
    - ALFA 2B (SCHERING)
    - ALFA 2A(ROCHE)
    - CONSENSUS
    - PEGYLATED INTERFERON
  - RIBAVIRIN (TABLETS)

# HCV MEDICATION RESULTS

---

- LOOK FOR SUSTAINED VIROLOGIC RESPONSE (SVR)
  - 6 MONTHS AFTER STOPPING TREATMENT THE PATIENT IS STILL NEGATIVE FOR VIRUS IN THEIR BLOOD

# ACTIVITIES OF INTERFERON AND RIBAVIRIN

---

- **INTERFERON**

- INHIBIT VIRAL ENTRY INTO CELLS
- INHIBIT VIRAL REPLICATION
- ENHANCE CYTOLYTIC (KILLER) T-CELL ACTIVITY
- STIMULATES KILLER CELL ACTIVITY

- **RIBAVIRIN**

- ACTIVE AGAINST RNA VIRUSES
- MECHANISM OF ACTION REMAINS UNKNOWN

# PEGYLATED INTERFERON

---

- POLYETHYLENE GLYCOL (PEG) IS BOUND TO INTERFERON
  - DELAYS CLEARANCE OF INTERFERON
  - MAINTAIN HIGHER BLOOD LEVELS OF INTERFERON
  - ONCE WEEKLY INJECTION
  - AVOID “PEAKS AND VALLEYS” OF 3 X’S A WEEK DOSING
  - LESS FATIGUE AND MALAISE

# PEGYLATED INTERFERON

---

- PEG INTRON
  - MANUFACTURER IS SCHERING
  - STRUCTURE IS A STRAIGHT CHAIN
  - CLEARED BY THE KIDNEY
- PEGASYS
  - MANUFACTURED BY ROCHE
  - STRUCTURE IS A BRANCHED CHAIN WHICH IS BIGGER THAN THE STRAIGHT CHAIN
  - CLEARED BY THE LIVER

# INTERFERON FOR HEPATITIS C

## FACTORS PREDICTIVE OF RESPONSE

---

- **HOST FACTORS**

- DURATION < 5 YEARS
- AGE < 45
- NON - CIRRHOTIC
- LACK OF IRON OVERLOAD
- IMMUNOCOMPETENT
- LEAN BODY WEIGHT

- **VIRAL FACTORS**

- VIRAL LOAD
- GENOTYPE

# HCV MEDICATION RESULTS

---

- PATIENTS MOST LIKELY TO RESPOND
  - YOUNG
  - FEMALES (DUE TO WEIGHT NOT ADJUSTED IN STUDIES SO THE HEAVIER MALES GOT LESS OF A DOSE PER KILOGRAM)
  - LOWER VIRAL LOAD
  - LESS ADVANCED DISEASE

# CONCLUSIONS OF NIH CONSENSUS CONFERENCE 2002

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- HIGHEST SUSTAINED VIRAL RESPONSE (SVR) IS ACHIEVED WITH PEG INTERFERON AND RIBAVIRIN COMBINATION THERAPY
- SVR SIMILAR WITH EITHER PEG INTERFERON
- IF GENOTYPE 2 OR 3, NO DIFFERENCE IN SVR IF TREATED WITH PEG VS. STANDARD INTERFERON COMBINATION
- GENOTYPE 2/3 SVR BEST WITH 24 WEEKS OF THERAPY AT LOWER DOSE OF RIBAVIRIN (800 MG/D)
- ADHERENCE TO PROTOCOLS IS IMPORTANT

# HCV MEDICATION SIDE - EFFECT

---

- **INTERFERON**

- CAUSES A DECREASE IN WHITE BLOOD CELLS
- CAUSES A DECREASE IN PLATELETS
- ABNORMAL THYROID FUNCTION CAN BE SEEN
  - 5% IRREVERSIBLE THYROIDITIS
- FLU-LIKE SYMPTOMS
- FATIGUE
- DEPRESSION(20%)
  - MANY PHYSICIANS PRETREAT THEIR PATIENTS WITH SSRI ANTIDEPRESSANTS
- JOINT PAIN
- RETINA DISEASE

# HCV MEDICATION SIDE -EFFECT (CONTINUED)

---

- INTERFERON

- DIARRHEA
- INSOMNIA
- ↑ IN PSORIASIS
- HEARING LOSS
- PERIPHERAL NEUROPATHY
- ↑ SEIZURES IN SEIZURE PATIENTS
- FRONTOTEMPORAL HAIR LOSS IN WOMEN

# HCV MEDICATION SIDE -EFFECT (CONTINUED)

- RIBAVIRIN

- HEMOLYTIC ANEMIA

- RIBAVIRIN IS PUMPED INTO RED BLOOD CELLS AND CANNOT GET OUT. RESULT IS A OSMOTIC HEMOLYSIS WHERE THE RED BLOOD CELLS BREAK APART

- THERE CAN BE A SIGNIFICANT DROP IN BLOOD COUNT DUE TO THIS BREAKAGE, SO MUCH SO, THAT SOME PHYSICIANS RECOMMEND THAT A CARDIAC STRESS TEST BE PREFORMED PRIOR TO TREATMENT SO AS TO RULE OUT CORONARY ARTERY DISEASE.

- » IF CORONARY ARTERY DISEASE IS PRESENT, THE PATIENT MAY NOT BE ABLE TO TOLERATE A DROP IN THE RED BLOOD CELLS (SEVERE ANEMIA) WHICH WOULD LEAD TO EXTRA STRAIN ON THE HEART.

# HCV MEDICATION SIDE -EFFECT (CONTINUED)

---

- RIBAVIRIN
  - RASH
  - TERATOGENIC (MUST USE 2 FORMS OF CONTRACEPTIVES AND AVOID PREGNANCY FOR 6 MONTHS AFTER STOPPING TREATMENT)
  - ITCHING
  - INSOMNIA
  - ANOREXIA

# HCV MEDICATION CONTRAINDICATIONS

---

- RIBAVIRIN
  - PREGNANCY
  - MALE WHOSE PARTNER IS PREGNANT
  - SICKLE CELL DISEASE
  - SUICIDAL IDEATION

# MANAGING HCV MEDICATION SIDE - EFFECTS

---

- FLU - LIKE SYMPTOMS
  - PREMEDICATE WITH ACETAMINOPHEN, NSAIDS, ANTIHISTAMINES
  - GIVE INTERFERON EARLY IN THE EVENING
- PSYCHIATRIC ISSUES
  - SSRI AGENTS
  - TRICYCLIC ANTIDEPRESSANTS

# MANAGING HCV MEDICATION SIDE-EFFECTS

---

- NEUTROPENIA (LOW WHITE BLOOD CELLS)
  - CONSIDER GRANULOCYTE (WHITE BLOOD CELL) STIMULATING FACTOR
- RIBAVIRIN INDUCED ANEMIA
  - CONSIDER DECREASING OR STOPPING RIBAVIRIN
  - CONSIDER EPOETIN THERAPY, A MEDICATION THAT WOULD STIMULATE RED BLOOD CELL PRODUCTION

# HCV MEDICATION RESULTS

---

- IN CHRONIC HCV , NON HIV PATIENT
  - INTERFERON ALONE **13%** CURE
    - 24 WEEK TREATMENT = 6% CURE
    - 48 WEEK TREATMENT = 16% CURE
  - INTERFERON & RIBAVIRIN **39%** CURE
    - 24 WEEK TREATMENT = 33% CURE
    - 48 WEEK TREATMENT = 41% CURE
  - “PEG” INTERFERON ALONE **25%** CURE
  - “PEG” INTERFERON & RIBAVIRIN **50%** CURE

# HCV MEDICATION RESULTS

---

- IN CHRONIC HCV , NON HIV PATIENT
  - GENOTYPE DIFFERENTIAL
    - TYPE 2, 3 **60 - 65%** RESPONSE RATE
    - TYPE 1 **20 %** RESPONSE RATE
    - IN PEG/RIBAVIRIN AND TYPE 2 OR 3 HCV THERE IS A **82-84%** SUSTAINED VIRAL RESPONSE
  - CAN SLOW PROGRESS AND REDUCE RISK OF LIVER CANCER

# OTHER MEASURES

---

- VACCINATIONS: HEPATITIS A (40% MORTALITY IF CO - INFECTION) AND B ( 82.5% RISK OF HEPATOCELLULAR CARCINOMA IF CO - INFECTION)
- REDUCE OR STOP DRINKING ALCOHOL
- VACCINES ARE NOT AVAILABLE AT PRESENT FOR HCV
  - DON'T BECOME IMMUNE AFTER INFECTION
  - NEW VIRUS VARIANTS HAVE HAMPERED VACCINE DEVELOPMENT
- IRON THERAPY – UNCLEAR IF THIS IS OF VALUE

# COMMON COMPLEMENTARY AND ALTERNATIVE THERAPIES THAT HAVE BEEN TRIED FOR HEPATITIS C

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- ACUPUNCTURE
- HERBAL MEDICINE
- HYPNOSIS
- CHIROPRACTIC
- MASSAGE
- MEDITATION
- YOGA
- SPIRITUAL HEALING
- MEGAVITAMINS
- LIFESTYLE/DIETS

# ALTERNATIVE THERAPIES

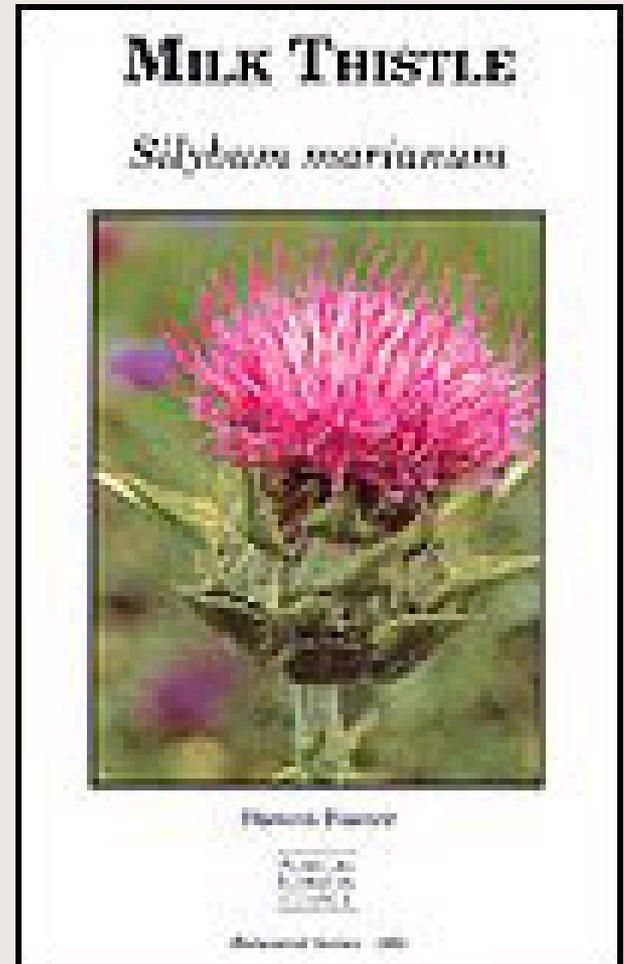
(ALWAYS DISCUSS WITH YOUR PHYSICIAN PRIOR TO STARTING THERAPY)

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- MILK THISTLE (SILYMARIN)
- BAYBERRY
- BLUE FLAG
- DANDELION ROOT
- YELLOW DOCK
- CHINESE HERBS
- FRINGETREE BARK
- GENTIAN
- GINSENG

# MILK THISTLE - SILYMARIN

- SILYBUM marianum
- USED FOR ALMOST 2000 YEARS



# MILK THISTLE

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- ANTIOXIDANT/FREE RADICAL SCAVENGER
- PREVENTS EXPERIMENTAL LIVER INJURY IN RATS AND MICE
- NO SIGNIFICANT SIDE EFFECTS
- LACK OF CLINICAL STUDIES IN PATIENTS WITH HCV

# HERBS TO AVOID AS THEY CAN LEAD TO OTHER MEDICAL PROBLEMS

---

- JIN BU HUAN – ACUTE HEPATITIS
- VALERIAN ROOT/SKULLCAP – ACUTE HEPATITIS
- COMFREY – VENOUS OCCLUSIVE DISEASE
- GERMANDER – SEVERE HEPATOTOXICITY
- CHAPARRAL LEAF – FULMINANT FAILURE
- KAVA KAVA – FULMINANT FAILURE
- GORDOLOBO HERBAL TEA – VENOUS OCCLUSIVE DISEASE
- MISTLETOE – CHRONIC HEPATITIS

# OTHER MEASURES

---

- VITAMIN E 400 - 88 IU PER DAY
  - SEE DECREASE IN ALT BUT ? IMPROVEMENT IN HISTOPATHOLOGY OF THE LIVER
- AMANTADINE???
- TRANSPLANTATION
  - HCV MOST COMMON INDICATION
  - 93% OF TRANSPLANT PATIENTS DEVELOP RECURRENT INFECTION IN THE NEW LIVER

# SPECIAL POPULATIONS

---

- HIV/HCV
- NONRESPONDERS
- CIRRHOTICS
- CHILDREN
- PREGNANT WOMEN
- HEALTHCARE WORKERS
- MENTAL HEALTH CO - MORBIDITY
- POST – EXPOSURE
- SUBSTANCE USE DISORDER PATIENTS

# SPECIAL POPULATIONS

---

- HIV/HCV
  - UP TO 10% OF HCV INFECTED PATIENTS ARE HIV INFECTED
  - UP TO 1/3 OF HIV INFECTED PATIENTS ARE HCV +
    - 1 MILLION HIV INFECTED PEOPLE IN US (1999)
      - 33.6 MILLION WORLDWIDE
    - 350,000 HIV/HCV CO - INFECTED PEOPLE IN THE US

# HIV - HCV COMPARISON

- HCV

- SINGLE STRANDED
- RNA VIRUS - FLAVIVIRUS
- WORLDWIDE DISTRIBUTION
- 9 + GENOTYPES
- ACUTE INFECTION
  - SUBCLINICAL
- CURE POSSIBLE
- VIRAL LOAD -NOT PROGNOSTIC
- GOAL IS VIRUS ERADICATION

- HIV

- SINGLE STRANDED
- RNA VIRUS-RETROVIRUS
- WORLDWIDE DISTRIBUTION
- 11+ CLADES
- ACUTE INFECTION
  - SUBCLINICAL
- NOT CURED
- VIRAL LOAD - MAJOR PROGNOSTIC INDICATOR
- GOAL IS CONTROL AND DECREASE VIRUS

# HCV - HIV COMPARISON

---

- HCV IS CYTOPATHIC (KILLS CELLS), NOT IMMUNOPATHIC (DESTROYS IMMUNE SYSTEM), LIKE THE HIV VIRUS

# HCV/HIV HIV/HCV IMPACT

---

- HCV DOES NOT MAKE HIV DISEASE
  - SOME DISAGREEMENT
- HIV INCREASES HCV VIRAL LOAD AND PROGRESSION TO FIBROSIS AND CIRRHOSIS
  - CAN SEE INCREASE ALT LEVELS BY THE HIV VIRUS AND WITH USE OF PROTEASE INHIBITORS

# HIV/HCV CO-INFECTION

---

- LOWER CD4 COUNT ASSOCIATED WITH INCREASE PREVALENCE OF CIRRHOSIS
- HCV/HIV PREGNANT WOMEN HAVE A 2 FOLD INCREASE IN PERINATAL HCV TRANSMISSION
  - C -SECTION DECREASES THE RISK
- HIV SEEMS TO FACILITATE SEXUAL TRANSMISSION OF HCV

# HIGHLY ACTIVE ANTI - RETROVIRAL THERAPY (HAART) AND THE LIVER

---

- LIVER TOXICITY IS COMMON AMONGST PROTEASE INHIBITORS
  - TOXICITY OF THESE MEDICATIONS MAYBE INCREASED IN HCV PATIENTS
- ANTI -TUBERCULOSIS MEDICATIONS ARE HIGHLY LIVER TOXIC
- CONTROVERSIAL HOW HIGH LIVER FUNCTIONS CAN GO BEFORE THEY ARE CONSIDERED TOO HIGH
- MUST FOLLOW LIVER FUNCTIONS MONTHLY

# HIV AND HCV PROGRESSION TO FIBROSIS IS RELATED TO CD4 COUNT AND ALCOHOL USE

SLOW PROGRESSION



FAST PROGRESSION

HIV -

HIV + CD4 > 200  
ALCOHOL < 5 DRINKS/DAY

HIV + CD4 < 200  
ALCOHOL < 5 DRINKS/DAY

HIV + CD4 > 200  
ALCOHOL > 5 DRINKS/DAY

HIV + CD4 < 200  
ALCOHOL > 5 DRINKS/DAY

# HIV/HCV TREATMENT WITH INTERFERON AND RIBAVIRIN

---

- POTENTIAL PROBLEMS
  - RIBAVIRIN INTERFERES WITH AZT AND D4T ACTIVITY
  - RIBAVIRIN AND DDI CAUSES KIDNEY PROBLEMS
- DRUG SIDE EFFECTS
  - ANEMIA
  - DECREASED PLATELETS
  - PATIENTS MAY NEED ADDITIONAL MEDICATIONS
    - WHITE BLOOD CELL STIMULATOR
    - RED BLOOD CELL STIMULATOR
- **NEED COORDINATION BETWEEN HIV MEDICAL TEAM AND HCV MEDICAL TEAM**

# SPECIAL POPULATIONS

---

- NON - RESPONDERS
  - 6 MONTHS NO RESPONSE - PROBABLY STOP
  - IF ON PEG, CAN CUT DOSE BY 50% AND CONTINUE FOR ANOTHER 6 MONTHS IF CLASS 3 OR 4 FIBROSIS IS PRESENT
  - IF THE PATIENT IS CLASS 1 OR 2, STOP ALL TREATMENT.

# SPECIAL POPULATIONS

---

- CIRRHOISIS PATIENTS
  - 30% OF THESE PATIENTS USING THE ROCHE PEG HAVE SUSTAINED VIRAL RESPONSE

# SPECIAL POPULATIONS

---

- CHILDREN
  - OCCURS RARELY
  - APPEAR TO BE RELATIVELY SYMPTOM FREE
  - APPEAR TO BE RARELY PROGRESSIVE

# SPECIAL POPULATIONS

---

- PREGNANCY

- CAN SEE A DECREASE IN ALT AND VIREMIA DURING PREGNANCY MUCH LIKE HEP B
- PERINATAL EXPOSURE < 5%
- IF HIV+ AND HCV + RISK, INCREASES TO 14 - 17% TRANSMISSION TO THE FETUS
- NO TRANSMISSION IN BREAST MILK

# SPECIAL POPULATIONS

---

- HEALTHCARE WORKERS
  - OVERALL EQUAL TO THE GENERAL POPULATION
  - IF NEEDLESTICK WITH KNOWN HCV PATIENT
    - 3.5 - 10% INCIDENCE OF TRANSMISSION
  - HEALTHCARE WORKER WHO IS HCV + TRANSMITTING THE DISEASE TO PATIENT
    - VERY RARE

# SPECIAL POPULATIONS

---

- MENTAL HEALTH CO -MORBIDITY
  - HEPATITIS C MAY CAUSE DEPRESSION
  - INTERFERON CAUSES DEPRESSION THROUGH HORMONE INTERFERENCE AND NEUROTRANSMITTER ACTIVITY

# SPECIAL POPULATIONS

---

- MENTAL HEALTH CO -MORBIDITY
  - INTERFERON BINDS TO OPIATE RECEPTORS IN THE HYPOTHALMUS
    - CAUSES DYSFUNCTIONAL REGULATION OF HYPOTHALMUS, PITUITARY AND THE ADRENAL GLANDS
      - » INTERFERES WITH NEGATIVE FEEDBACK LOOP SO THERE IS OVERSECRETION OF CORTISOL, THEREBY CAUSING DEPRESSION

# SPECIAL POPULATIONS

---

- MENTAL HEALTH CO -MORBIDITY
  - INTERFERON CAUSES AN INCREASE IN PRODUCTION OF SEROTONIN TRANSPORTER
    - THIS LEADS TO AN EXCESSIVE AMOUNT OF SEROTONIN REMOVED FROM THE SYNAPSE OF THE NEURON; THIS DECREASED SEROTONIN LEVEL CAN CAUSES A HIGHER INCIDENCE OF DEPRESSION

# SPECIAL POPULATIONS

---

- POST EXPOSURE PATIENTS
  - AFTER KNOWN EXPOSURE
    - TEST SOURCE TO CONFIRM HCV
    - TEST EXPOSED PARTY IF CONFIRMATION IS HCV+
    - CONFIRM ALL TESTS WITH PCR
  - ANTI -VIRALS ARE NOT RECOMMENDED

# SPECIAL POPULATIONS

---

- **SUBSTANCE USE DISORDER PATIENTS**
  - 90% PREVALENCE IN INJECTION DRUG USERS
  - HCV IS ACQUIRED MORE RAPIDLY THAN HIV IN INJECTION DRUG USERS
  - CONSIDERABLE INCONSISTENCIES EXIST AMONG SEXUAL TRANSMISSION STUDIES
    - HIGH RISK SEXUAL PRACTICES (MULTIPLE PARTNERS, SEX FOR DRUGS) WHICH ARE OFTEN ASSOCIATED WITH ALCOHOL AND DRUG PROBLEMS APPEAR TO INCREASE RISK OF TRANSMISSION
      - HCV POSITIVE FEMALES GIVING HCV TO MALES – 10%
      - HCV POSITIVE MALES GIVING HCV TO FEMALES – 3%

# SPECIAL POPULATIONS

---

- **SUBSTANCE USE DISORDER PATIENTS**
  - CHICAGO STUDY : 27% OF PATIENTS WERE HCV POSITIVE
    - RISKS INCLUDE:
      - FREQ. INJECTION
      - HEAVY CRACK USER
      - INJECTING IN SHOOTING GALLERIES
      - SYRINGE SHARING (HIGHER IN SUBURBAN THAN URBAN)
      - GREATER DURATION OF INJECTION
      - HIGHER OVERALL PREVALENCE IN URBAN THAN SUBURBAN
      - NO ASSOCIATION WITH SEXUAL BEHAVIOR
    - INTERVENTIONS IN YOUNGER USERS IS WARRANTED

(THORPE ET AL JOURNAL OF INF. DIS 2000)

# SPECIAL POPULATIONS

---

- **SUBSTANCE USER DISORDER PATIENTS**
  - TREATMENT OF HCV PRESENTS SPECIAL CHALLENGES IN PERSONS WHO ARE SUBSTANCE USERS
    - BIASED ATTITUDES - STIGMA
      - IDU'S DO NOT MERIT HIGH COST OF TREATMENT
        - » THOUGH NOT DENIED TREATMENT OF OTHER CONDITIONS – TB, HIV
      - DRUG USERS ARE NONCOMPLIANT
      - NO LIVER TRANSPLANTS IN METHADONE PATIENTS
        - » RECENT LIVER TRANSPLANT IN HIV PATIENT

# SPECIAL POPULATIONS

---

- **SUBSTANCE USER DISORDER PATIENTS**
  - TREATMENT OF HCV PRESENTS SPECIAL CHALLENGES IN PERSONS WHO ARE SUBSTANCE USERS
    - MODEST ALCOHOL CONSUMPTION MAY INCREASE THE POSSIBILITY OF DEVELOPING LIVER DISEASE AND SHORTEN THE TIME PERIOD FOR ITS APPEARANCE (NALPAS ET AL ALCOHOL & ALCOHOLISM 1998)
    - ALCOHOL INCREASES HCV REPLICATION IN CELLS AND INHIBITS THE ANTI – HCV EFFECT OF INTERFERON (NIAAA 2003)

# SPECIAL POPULATIONS

---

- **SUBSTANCE USER DISORDER PATIENTS**
  - TREATMENT OF HCV PRESENTS SPECIAL CHALLENGES IN PERSONS WHO ARE SUBSTANCE USERS
    - IT APPEARS THAT A SUBSTANTIAL PERIOD OF ABSTINENCE MAY BE NECESSARY FOR THE CURRENT TREATMENT REGIMENS TO WORK (CDC 1998)

# SPECIAL POPULATIONS

---

- **SUBSTANCE USE DISORDER PATIENTS**
  - TREATMENT OF HCV PRESENTS SPECIAL CHALLENGES IN PERSONS WHO ARE SUBSTANCE USERS
    - CURRENT TREATMENTS PRODUCE SIDE – EFFECTS THAT REQUIRE SPECIAL ATTENTION
      - DEPRESSION
        - » LACK OF ENERGY ( SEEN ALSO IN COCAINE AND ALCOHOL USERS IN EARLY RECOVERY)
        - » CAN LOOK LIKE OPIATE WITHDRAWAL

# SPECIAL POPULATIONS

---

- SUBSTANCE USE DISORDER PATIENTS
  - TREATMENT OF HCV PRESENTS SPECIAL CHALLENGES IN PERSONS WHO ARE SUBSTANCE USERS
    - RELUCTANCE TO GIVE IDU'S INJECTION EQUIPMENT

# SPECIAL POPULATIONS

---

- **SUBSTANCE USE DISORDER PATIENTS**
  - TREATMENT OF HCV PRESENTS SPECIAL CHALLENGES IN PERSONS WHO ARE SUBSTANCE USERS
    - PHYSICIANS CANNOT ESTABLISH UNACCEPTABLE HIGH THRESHOLDS FOR CONTINUOUS PERIODS OF NON – USE BEFORE CONSIDERING A PATIENT FOR TREATMENT
      - SUBSTANCE USE IS A CHRONIC RELAPSING DISEASE
      - NUMEROUS STUDIES HAVE SHOWN THAT 40 – 80% OF SUBSTANCE USERS ADHERE TO TREATMENT REGIMENS – RATES THAT ARE TYPICAL FOR PATIENTS RECEIVING VARIOUS TREATMENTS FOR MEDICAL CONDITIONS

# SPECIAL POPULATIONS

---

- **SUBSTANCE USE DISORDER PATIENTS**

- TREATMENT OF HCV PRESENTS SPECIAL CHALLENGES IN PERSONS WHO ARE SUBSTANCE USERS

- RHODE ISLAND STUDY

- 87% POSITIVE IN MMTP
- 77% OF PATIENTS KNEW HCV TRANSMITTED SEXUALLY, BUT 30% DID NOT KNOW CONDOMS ARE PROTECTIVE
- 66% WHO REPORTED THEY WERE HCV NEGATIVE WERE ACTUALLY POSITIVE
- 82% WERE NEVER TESTED
- 53% WOULD TRY TREATMENT

(STEIN ET AL DRUG AND ALC DEPENDENCE 2001)

# SPECIAL POPULATIONS

---

- **SUBSTANCE USE DISORDER PATIENTS - PROGRAMS**
  - TREATMENT OF HCV PRESENTS SPECIAL CHALLENGES IN PERSONS WHO ARE SUBSTANCE USERS
    - SURVEY OF PROGRAMS (479/1063 RESPONDED): 40 MMTP, 274 OUTPATIENTS, 109 RESIDENTIAL, 56 MIXED
      - 52% PROVIDED HCV EDUCATION
      - 54% OF STAFF RECEIVED HCV TRAINING
      - 81% ASSISTED PATIENTS IN AFTERCARE

**WE NEED TO DO A BETTER JOB OF EDUCATING PATIENTS AND STAFF**

# SPECIAL POPULATIONS

- PRINCIPLES OF MANAGING HEALTH CARE RELATIONSHIPS WITH SUBSTANCE USE DISORDER PATIENTS
  - ESTABLISH A CLIMATE OF MUTUAL RESPECT
  - MAINTAIN A PROFESSIONAL APPROACH THAT REFLECTS THE AIM OF ENHANCING PATIENT'S WELL BEING
  - AVOID CREATING AN ATMOSPHERE OF BLAME OR JUDGMENT
  - EDUCATE PATIENTS ABOUT THEIR MEDICAL STATUS AND PROPOSED TREATMENTS AND SIDE EFFECTS
  - INCLUDE PATIENTS IN DECISION MAKING
  - ESTABLISH A MULTIDISCIPLINARY TEAM:RN, MD, SOCIAL WORKERS WHEN POSSIBLE
  - HAVE A SINGLE PRIMARY CARE PROVIDER COORDINATE THE CARE
  - SET LIMITS AND RESPONSIBILITIES (PATIENT AND TEAM)
  - BE FAMILIAR WITH LOCAL RESOURCES
  - AVOID PITFALLS
    - UNREALISTIC EXPECTATIONS, FRUSTRATION, ANGER, MORALIZING, BLAME , WITHHOLDING THERAPY

# NYS OASAS GOALS REGARDING HEPATITIS C

---

- INCREASE THE KNOWLEDGE AND AWARENESS OF THE THREAT OF HEPATITIS WITHIN THE CLIENT AND PROVIDER COMMUNITY
- IDENTIFY AND REDUCE THE INCIDENCE OF HEPATITIS AMONG CLIENTS IN TREATMENT
- IMPROVE ACCESS TO CARE FOR THOSE CLIENTS INFECTED WITH HEPATITIS

# NYS OASAS RECOMMENDATIONS TO ACHIEVE GOALS

---

- INCREASE THE KNOWLEDGE AND AWARENESS OF THE THREAT OF HEPATITIS WITHIN THE CLIENT AND PROVIDER COMMUNITY
  - REQUIRE BY REGULATION THAT ALL CLIENTS RECEIVE EDUCATION AND TRAINING REGARDING ALL TYPES OF HEPATITIS SIMILAR TO WHAT IS CURRENTLY BEING DONE WITH HIV AND STD'S
  - DEVELOP AND DISTRIBUTE A BULLETIN FOR ALL LICENSED PROGRAMS ON HCV AND HEPATITIS
  - ADVOCATE FOR, AND PARTICIPATE, IN A GENERAL PUBLIC EDUCATION CAMPAIGN ON HEPATITIS

# NYS OASAS RECOMMENDATIONS

---

- INCREASE THE KNOWLEDGE AND AWARENESS OF THE THREAT OF HEPATITIS WITHIN THE CLIENT AND PROVIDER COMMUNITY
  - INCORPORATE HEPATITIS INFORMATION INTO PREVENTION ACTIVITIES IN SCHOOLS AND COMMUNITY - BASED PROGRAMS
  - USE NEW TECHNOLOGIES TO EDUCATE THE PROVIDER COMMUNITY AND GENERAL PUBLIC
  - REQUIRE TRAINING IN HEPATITIS FOR CASAC'S

# NYS OASAS RECOMMENDATIONS

---

- IDENTIFY AND REDUCE THE INCIDENCE OF HEPATITIS AMONG CLIENTS IN TREATMENT
  - REQUIRE ON – SITE COUNSELING FOR ALL PATIENTS AND TESTING FOR ALL INTERESTED PATIENTS ( HEP A, B, C)
  - PROGRAMS WITH MEDICAL CAPACITIES SHOULD VACCINATE ALL SERO – NEGATIVE PATIENTS FOR HEPATITIS A AND B
  - WORK WITH ALL INSURANCE CARRIERS SO THAT VIRAL LOAD TESING AND GENOTYPE TESTING IS COVERED
  - EXPAND CURRENT PREVALENCE AND INCIDENCE STUDIES TO INCLUDE SUBSTANCE USERS WITHIN AND OUTSIDE THE TREATMENT SETTING

# NYS OASAS RECOMMENDATIONS

---

- IMPROVE ACCESS TO CARE FOR THOSE CLIENTS INFECTED WITH HEPATITIS
  - PROGRAMS SHOULD DEVELOP LINKAGES WITH HEPATITIS EXPERTS SO AS TO FACILITATE REFERRALS FOR TREATMENT
  - MAKE SURE THAT CLIENTS CONTINUE MEDICAID ELIGIBILITY SO AS TO COMPLETE TREATMENT
  - CHALLENGE POLICIES THAT EXCLUDE SUBSTANCE USERS FROM TREATMENT DUE TO UNREALISTIC TIME PERIODS OF ABSTINENCE

# FACING THE REALITIES OF CARE

---

- TREATMENT SUCCESS RATE IS STILL LIMITED
- CLIENT CONCERNS ABOUT SIDE EFFECTS
- NOT EVERY INFECTED PERSON IS AN IDEAL CANDIDATE FOR TREATMENT
- NEW MEDICATIONS ARE UNDER DEVELOPMENT

# FACING THE REALITIES OF CARE

---

- PSYCHOSOCIAL BARRIERS TO CARE
  - FEAR OF DISCRIMINATION/ISOLATION/STIGMA
  - MAY NOT WANT TO SEEK CARE FOR AN ILLNESS WHICH IS ASYMPTOMATIC OR INTERMITTENT
  - THE PATIENT IS EMOTIONALLY OVERWHELMED
    - RECOVERY
    - HCV
    - HIV
    - RELATIONSHIP/LIFE ISSUES
  - CONCERNS ABOUT HCV AS A “CONSPIRACY”
  - FINANCIAL ISSUES

# FACING THE REALITIES OF CARE

---

- **PSYCHOLOGICAL ISSUES**

- **HOW WILL PERSON REACT?**

- EMPOWER CLIENT TO STAY SOBER
    - MAY CONTRIBUTE TO FEELING POWERLESS, ANGRY, OVERWHELMED AND/OR DENIAL
    - ACTUAL DISCRIMINATION AND/OR FEAR OF DISCRIMINATION CAN RESULT IN ISOLATION
    - SIDE EFFECTS OF INTERFERON MAY INCLUDE DEPRESSION AND SUICIDAL IDEATION
    - MEDICATIONS ADMINISTERED VIA INJECTION MAY TRIGGER RELAPSE

# FACING THE REALITIES OF CARE

---

- BARRIERS TO CARE
  - CO - LOCATION OF SERVICES MOST DESIRABLE
  - ESTABLISH ONGOING RELATIONSHIP WITH HEALTH FACILITIES AND HCV EXPERTS
  - IDENTIFY RESOURCES FOR TRANSPORTATION
  - CARE OFTEN REQUIRES MULTIPLE PROVIDERS
    - COORDINATION IS CRITICAL
    - ENCOURAGE THE PATIENT TO SIGN CONSENT TO ALLOW INFORMATION SHARING

# FACING THE REALITIES OF CARE

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- BARRIERS TO CARE
  - ADMINISTRATIVE ISSUES
    - REIMBURSEMENT FOR HCV SCREENING
    - DEDICATION OF STAFF TIME TO PROVIDE HCV EDUCATION AND ATTEND TRAININGS
      - FACTS ABOUT HCV, STAFF CONCERNS, SENSITIVITY TO PATIENT NEEDS
    - STRENGTHEN CAPACITY FOR CASE CONFERENCING FOR COMPLEX CASES
    - ALLOCATE RESOURCES FOR INNOVATIVE PROGRAMS
      - SUPPORT GROUPS

# QUALITY OF LIFE ISSUES

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- SYMPTOMS OF HCV THAT AFFECT QUALITY OF LIFE
  - FATIGUE
  - IRRITABILITY
  - DEPRESSION
  - MUSCLE AND JOINT PAIN
  - NAUSEA
  - ANOREXIA
  - SEXUAL DYSFUNCTION

# LIMITATION TO ACHIEVING ENHANCED SVR RATES

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- ADVERSE EVENTS
- ADHERENCE TO THERAPY
- DECREASED QUALITY OF LIFE DUE TO THERAPY

# QUALITY OF LIFE AND ADHERENCE TO THERAPY

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- **FACTS**
  - MORE SIDE EFFECTS → LOWER QUALITY OF LIFE → ADHERENCE TO REGIMEN IS DECREASED → THUS LOWER RESPONSE RATES
- **MISSION**
  - DEVELOP THERAPIES THAT RESULT IN LESS DRAMATIC EFFECTS ON QUALITY OF LIFE, THEREBY IMPROVING ADHERENCE AND THUS RESPONSE

# ADDITIONAL INFORMATION

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- HEPATITIS FOUNDATION INTERNATIONAL
  - (800) 891 -0707
- CDC, HEPATITIS BRANCH
  - (800) 443 - 7232
- AMERICAN LIVER FOUNDATION
  - (800) 223 - 0179
- NATIONAL DIGESTIVE DISEASES CLEARING HOUSE
  - (301) 654 - 3810
- <http://www.cdc.gov/nicdod/diseases/hepatitis/c/fact.htm>