



# Hepatitis C and HCC: Aligned Prevention Strategies

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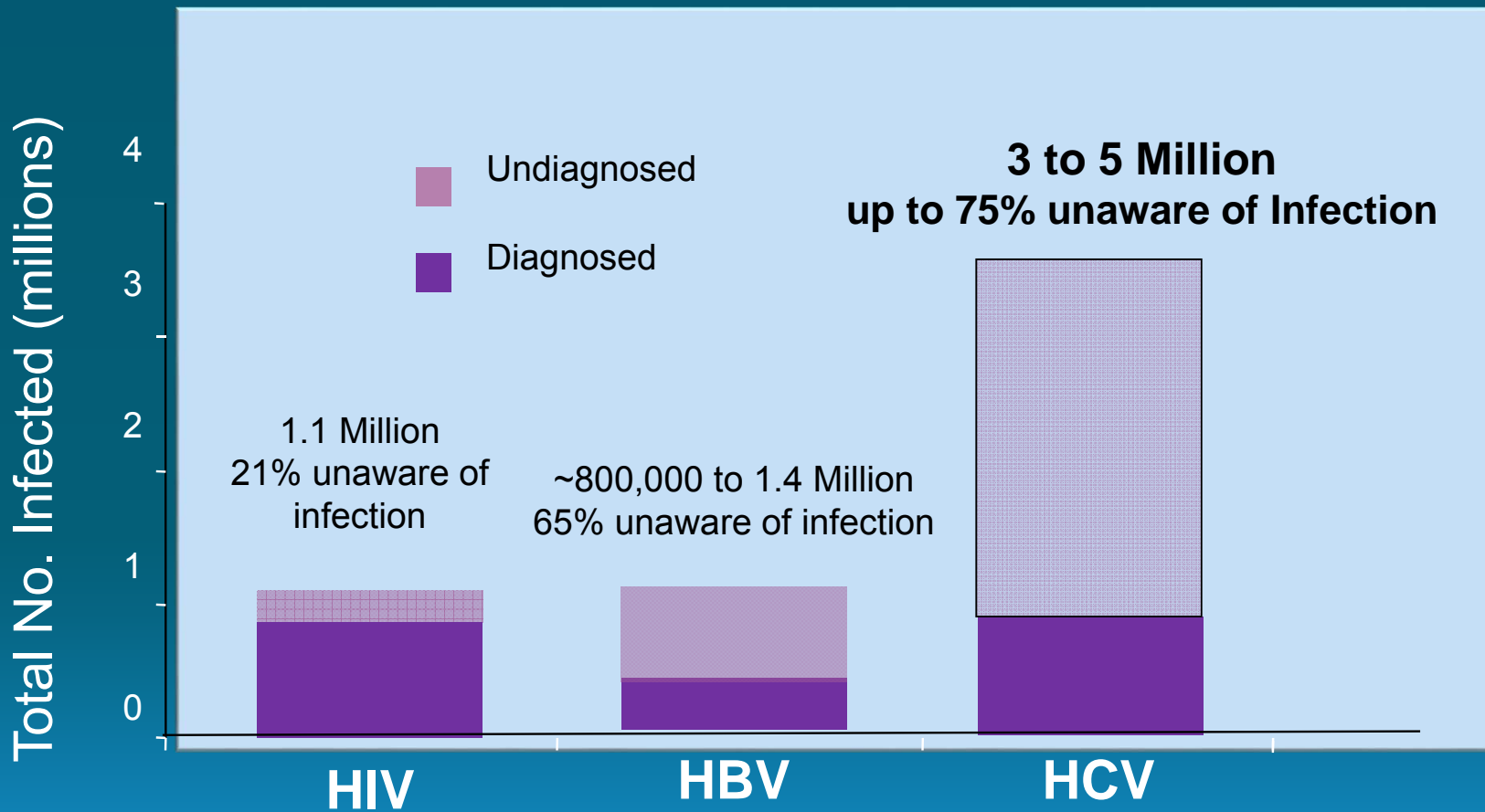
# Hepatitis C infection



- Acute
  - Short term illness
  - Becomes chronic in 60-85%
- Chronic
  - Often few or no symptoms for years
- Long-term complications
  - Fibrosis (scarring)
  - Cirrhosis (permanent scarring and liver failure)
  - Liver cancer (hepatocellular)

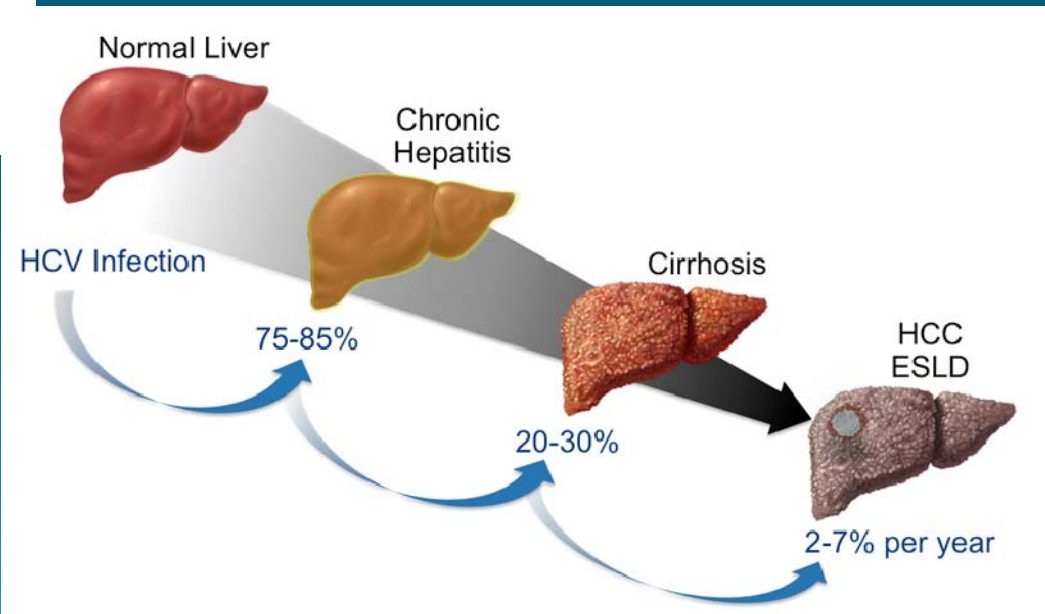
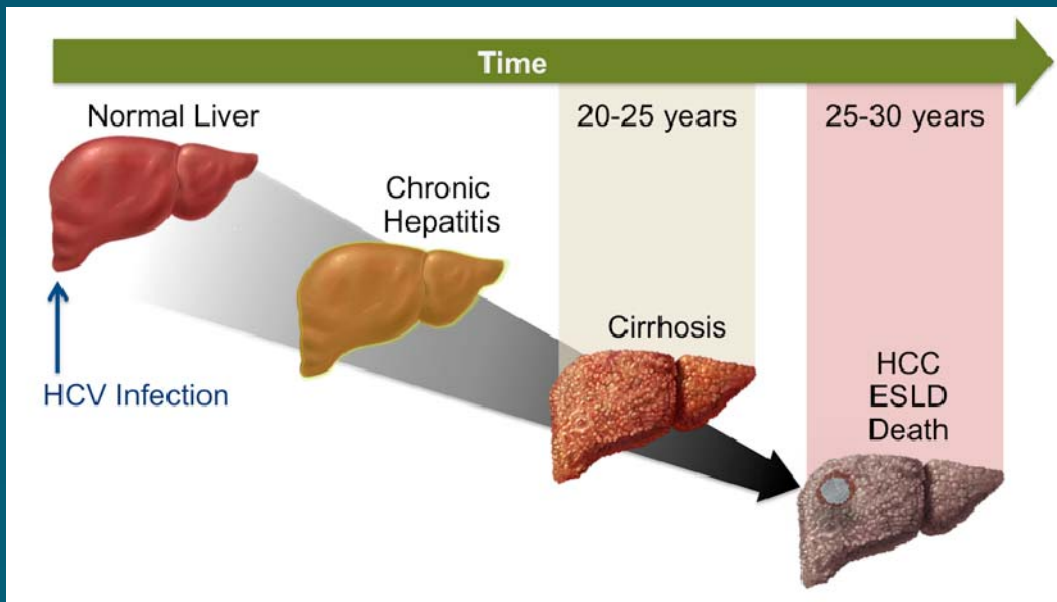
*Medscape image courtesy of Science Photo Library*

# HCV 4X as prevalent as HIV and HBV



Chak E, et al. *Liver Int.* 2011;31(8):1090-1101.

# Time from HCV infection until serious complications



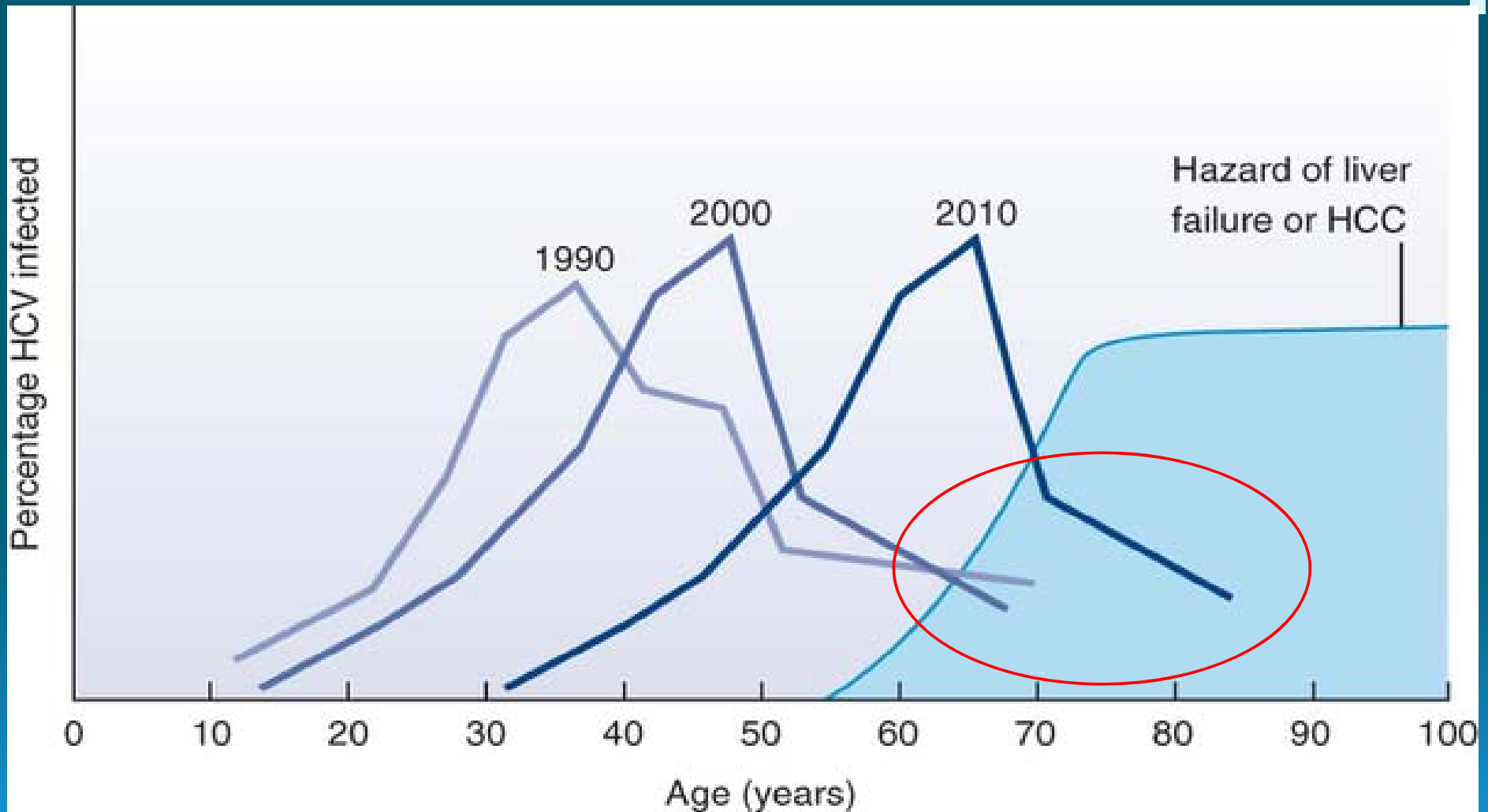
<http://www.hepatitisc.uw.edu/go/evaluation-staging-monitoring/natural-history/core-concept/all>

# HCV Statistics

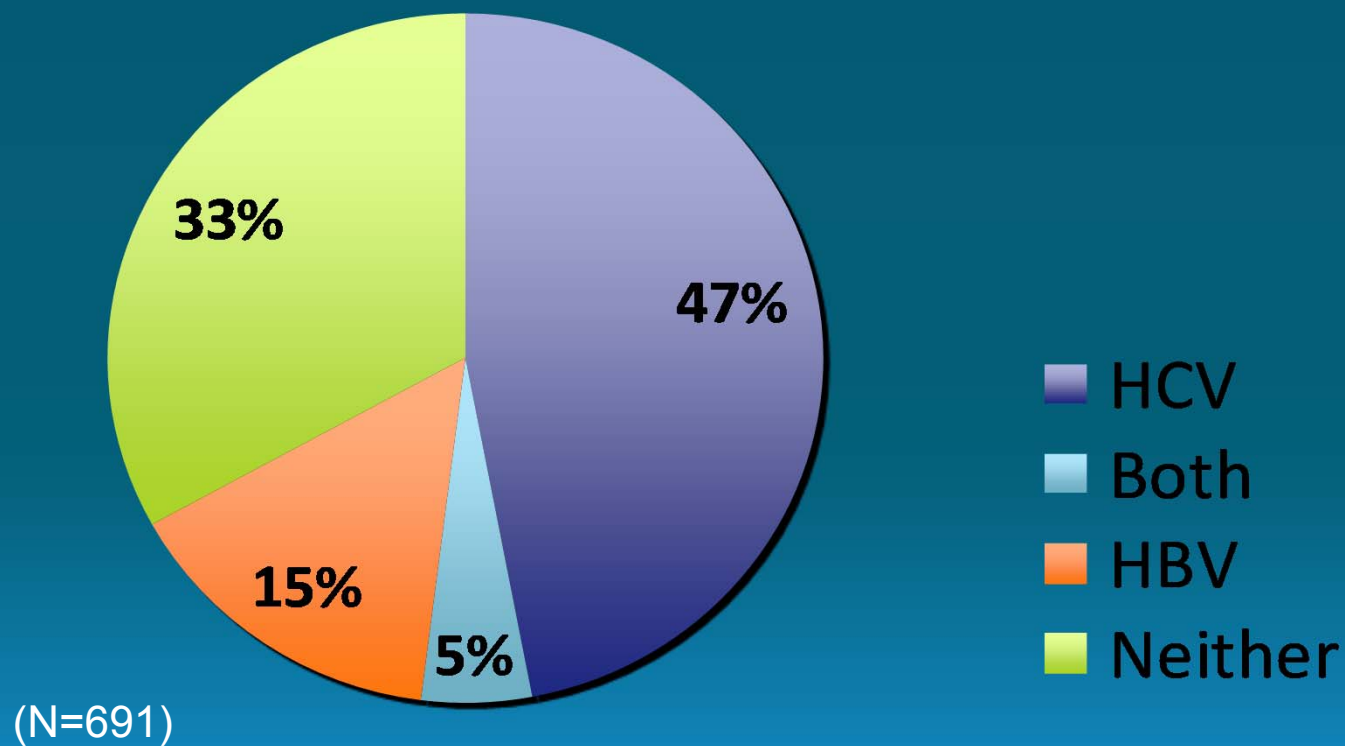
- In 1980s, yearly incidence of HCV infection  $\approx$ 230,000 cases but by 2001 declined to  $\approx$ 25,000 cases
- HCV associated with a 15- to 20-times higher risk of HCC than HCV-negative subjects in cross-sectional and case-control studies.

Chou R. Screening for Hepatitis C Virus Infection:  
Systematic Evidence Review No. 24.  
[El-Serag H. Gastroenterology. 2012 May; 142\(6\): 1264–1273.e1.](#)

# Age of HCV-infected population by year and risk of advanced liver disease/HCC



# HCV and HCC in the U.S.

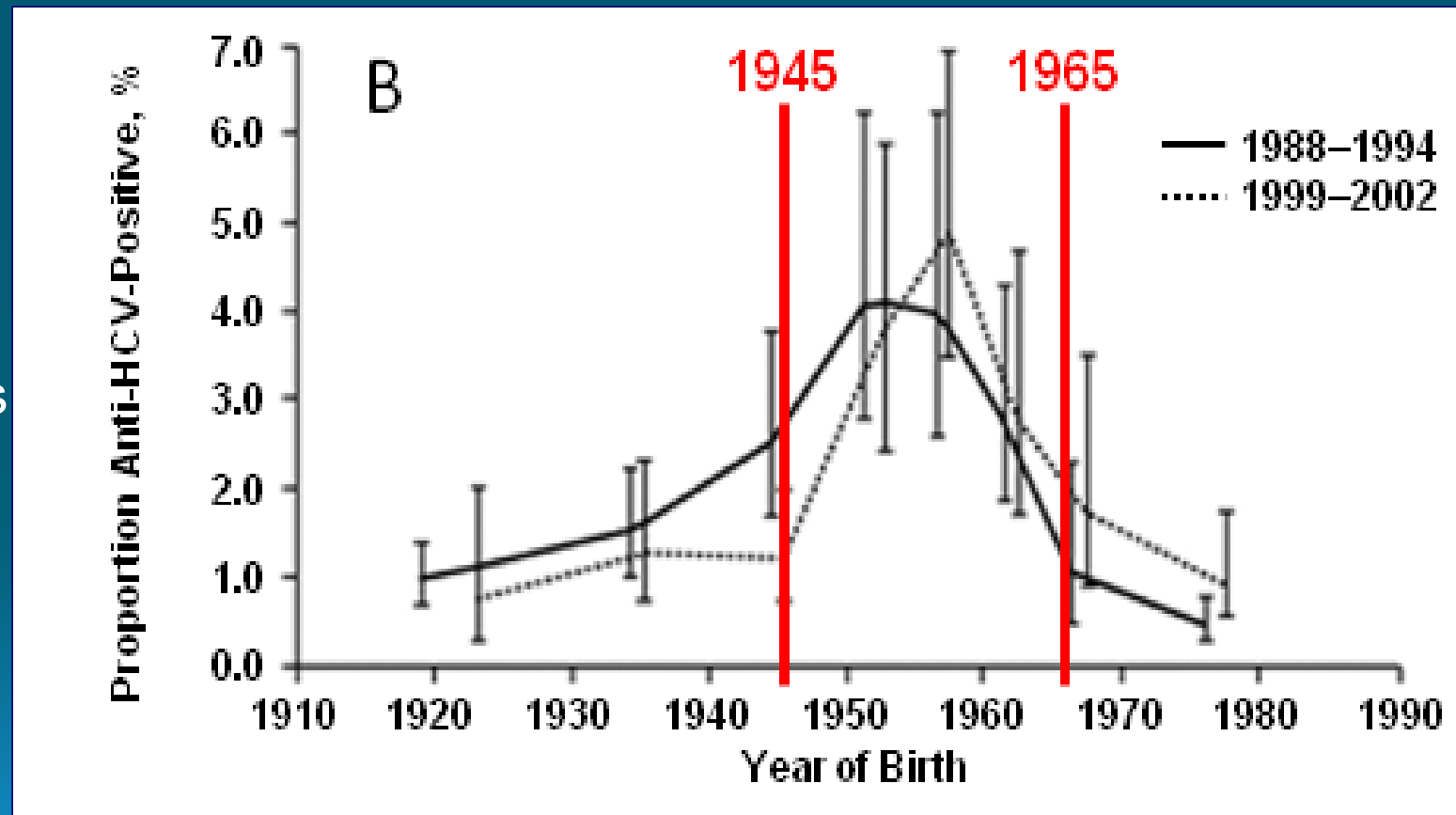


## 2 of 3 Americans with HCV are baby boomers

Reflects high incidence in past

5x higher prevalence than other birth cohorts (3.4 vs. 0.5%)

81% of HCV infected adults and 73% of HCV mortality





# US Preventive Services Task Force (USPSTF) Guidelines - 2013

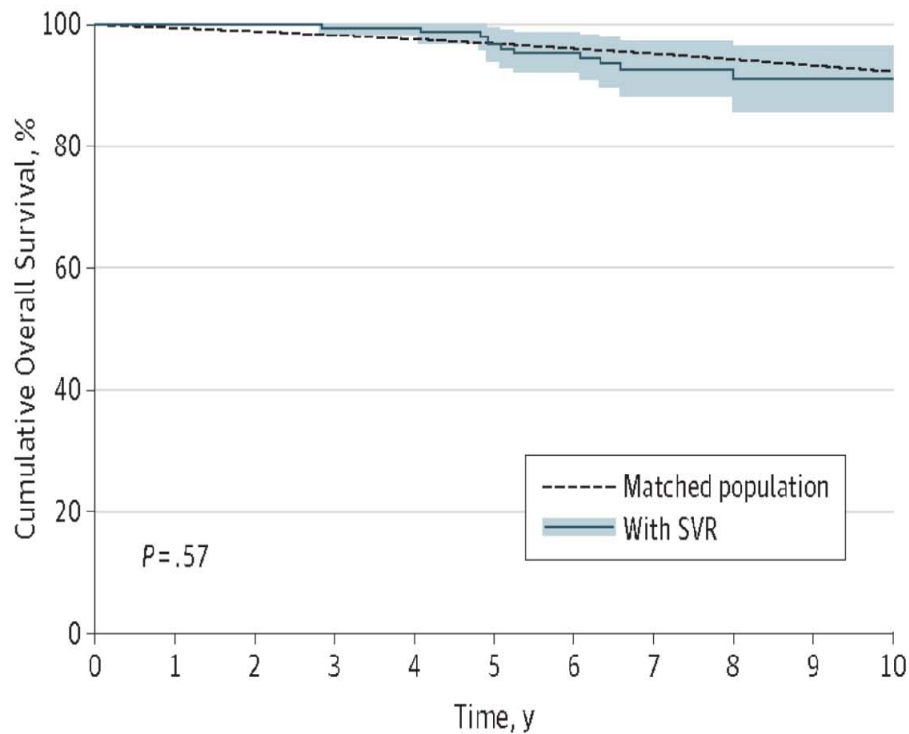
- One time screening of all baby boomers for HCV infection (USPSTF Rating: Class I, Level B)
- New highly effective anti-HCV drugs -
  - can cure HCV infection
  - can prevent serious complications of disease



Photo source: Centers  
for Disease Control  
and Prevention

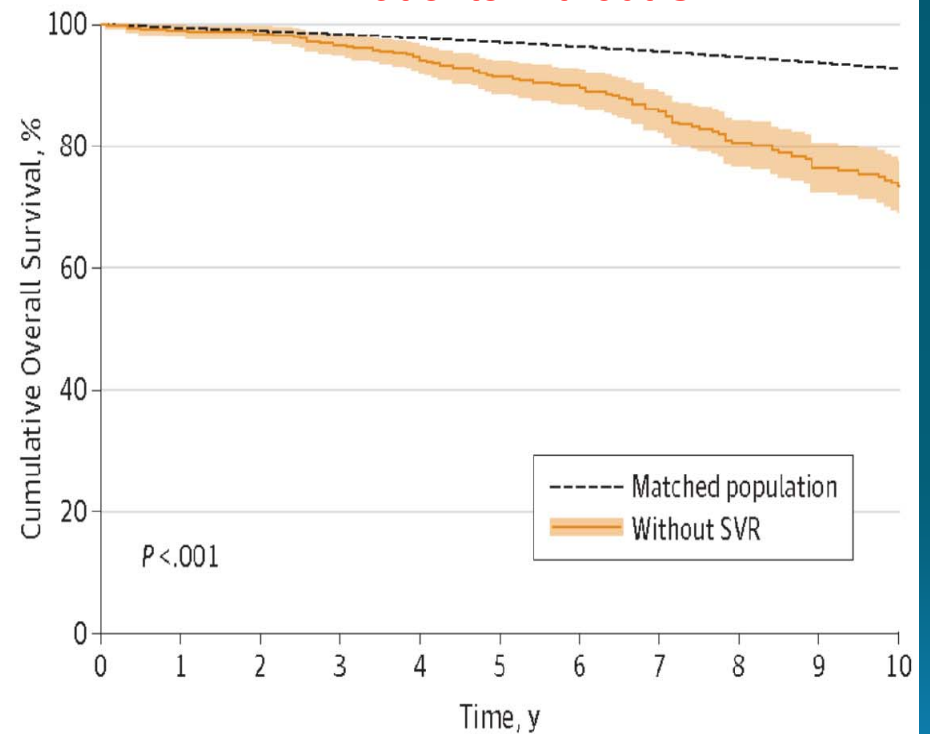
# Sustained viral response: survival vs. matched general population

Patients with SVR



P = .57

Patients without SVR



P < .001

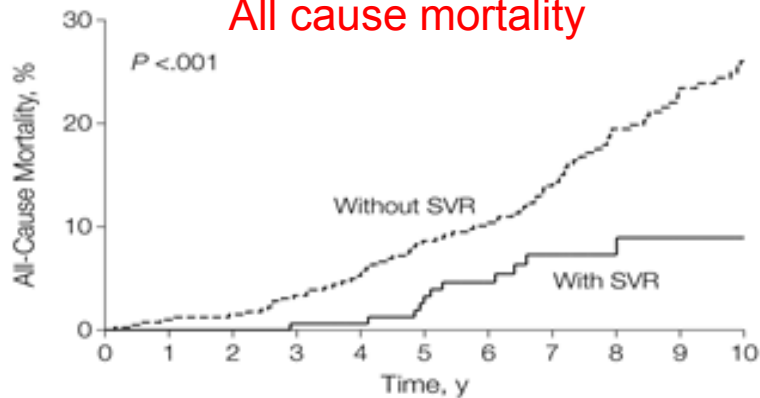
No. at risk 192 181 168 162 155 144 125 88 56 40 28

405 393 382 363 344 317 295 250 207 164 135

Van der Meer AJ, et al. Life expectancy in patients With chronic HCV infection and cirrhosis compared with a general population. *JAMA*.2014;312(18):1927-1928.

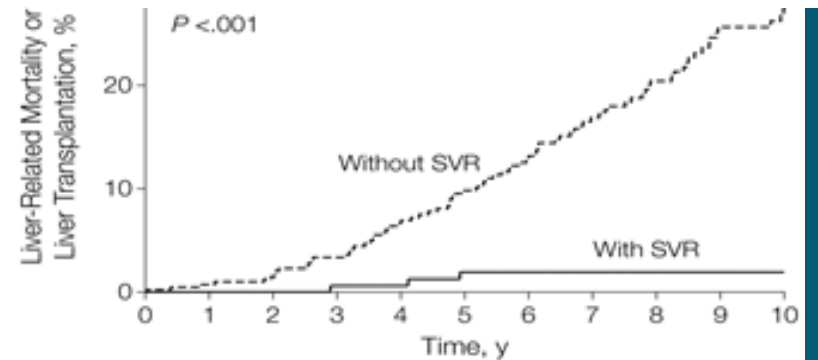
# Outcomes of patients with and without SVR

All cause mortality



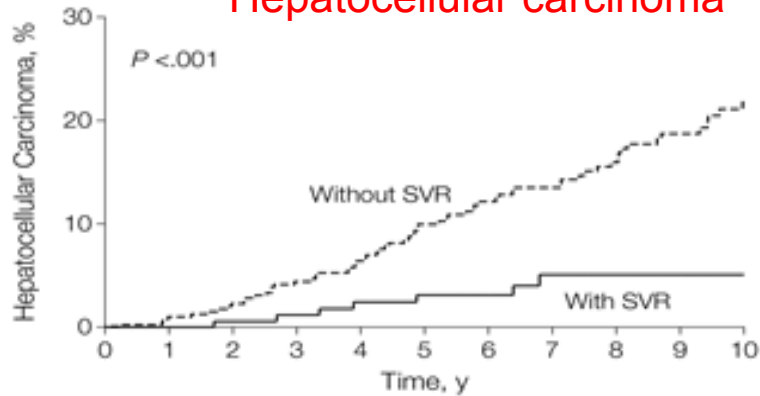
No. at risk											
Without SVR	405	393	382	363	344	317	295	250	207	164	135
With SVR	192	181	168	162	155	144	125	88	56	40	28

Liver-related mortality/transplantation



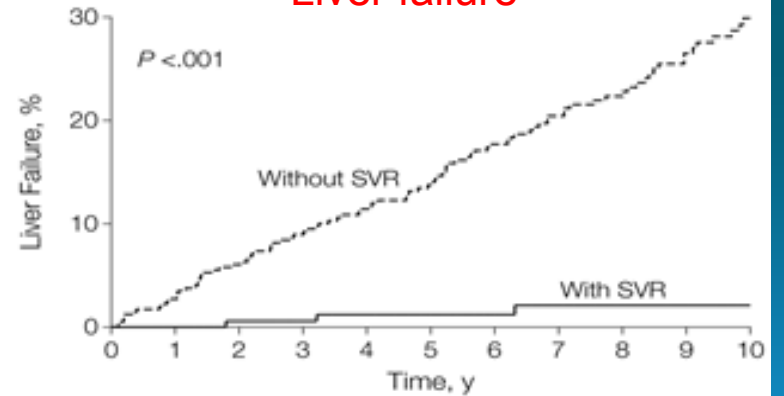
No. at risk											
Without SVR	405	392	380	358	334	305	277	229	187	146	119
With SVR	192	181	168	162	155	144	125	88	56	40	28

Hepatocellular carcinoma



No. at risk											
Without SVR	405	390	375	349	326	294	269	229	191	151	122
With SVR	192	181	167	161	152	142	124	86	54	39	27

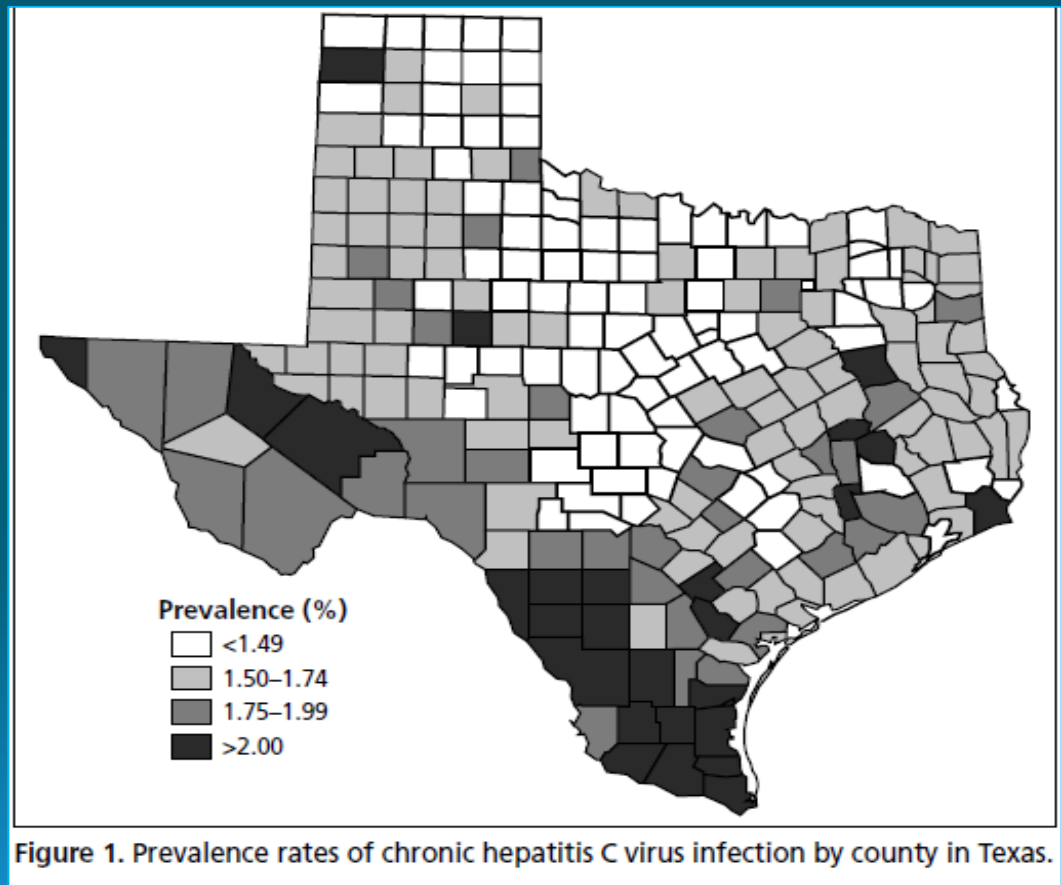
Liver failure



No. at risk											
Without SVR	405	384	361	337	314	288	259	216	184	143	113
With SVR	192	180	166	160	152	141	123	88	56	40	28

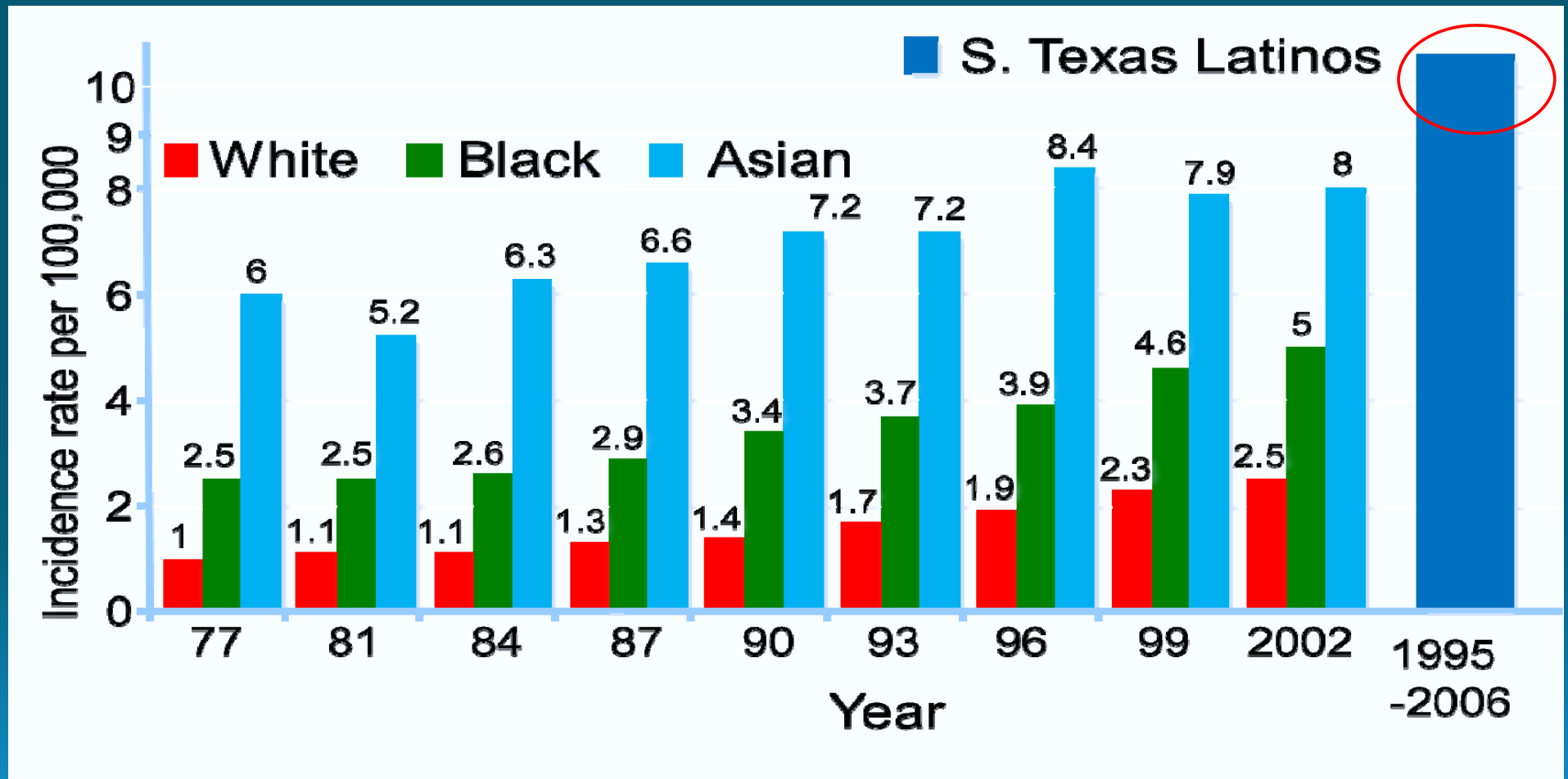
# Chronic HCV in Texas

In 2000, nearly 400,000 Texans (1.79%) were estimated to be chronically HCV+



Yalamanchili K. Proc (Bayl Univ Med Cent). 2005 Jan; 18(1): 3-6.

# HCC incidence by race-ethnicity in U.S. and for South Texas Latinos



\* Per 100,000

Ramirez AG, PLoS One. 2014; 9(6): e99365. El-Serag HB et al, Ann Intern Med 2003

# High Priority for Hepatitis C Screening in Safety Net Hospitals: Results From a Prospective Cohort of 4582 Hospitalized Baby Boomers

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Hepatology, 2015 Nov;62(5):1388-95.

All eligible baby boomers admitted to the hospital were screened for HCV through a universal testing program conducted in 2012-14

# Outcome Measures

- Anti-HCV antibody positive
- HCV PCR positive (chronic HCV)
- Advanced liver disease
  - Fib 4  $>3.25^*$  and Ultrasound or CT scan finding cirrhosis or HCC

\*Hsieh YY et al *World J Gastroenterol*  
2012; 18(8): 746-753

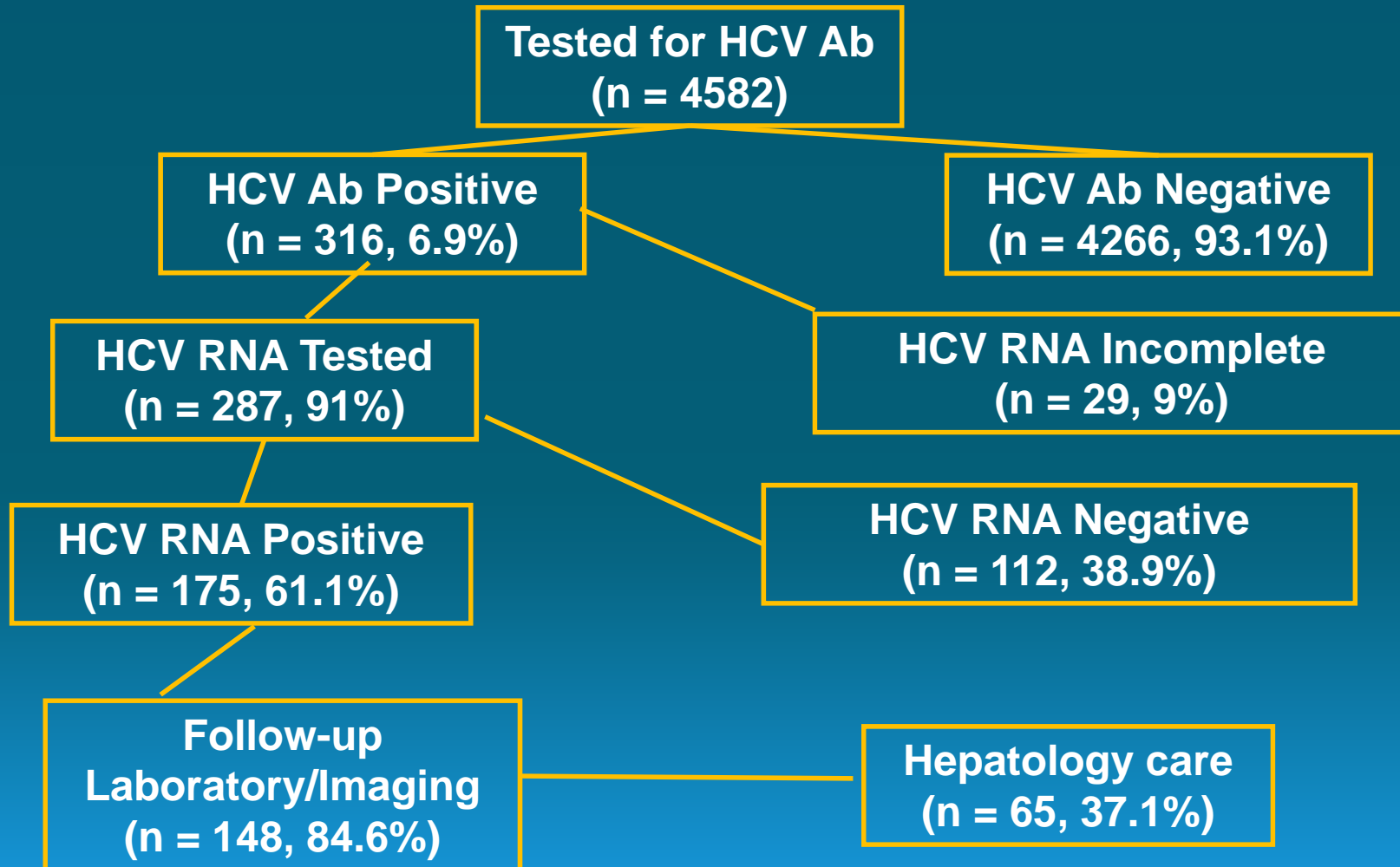
# Results

- Unique admissions: 9,037
  - Mean age: 56.6 y (SD 6.5)
  - Women 44.7%
  - Self-identified Hispanic 59.1%
- Excluded
  - HCV diagnosis: 993 (10.9%)
  - Prior HCV test but no HCV diagnosis: 2,957 (32.7%)
  - Other exclusions or refused†: 505 (5.6%)
- Screened: 4,582 (50.7% or >95% of eligible patients)

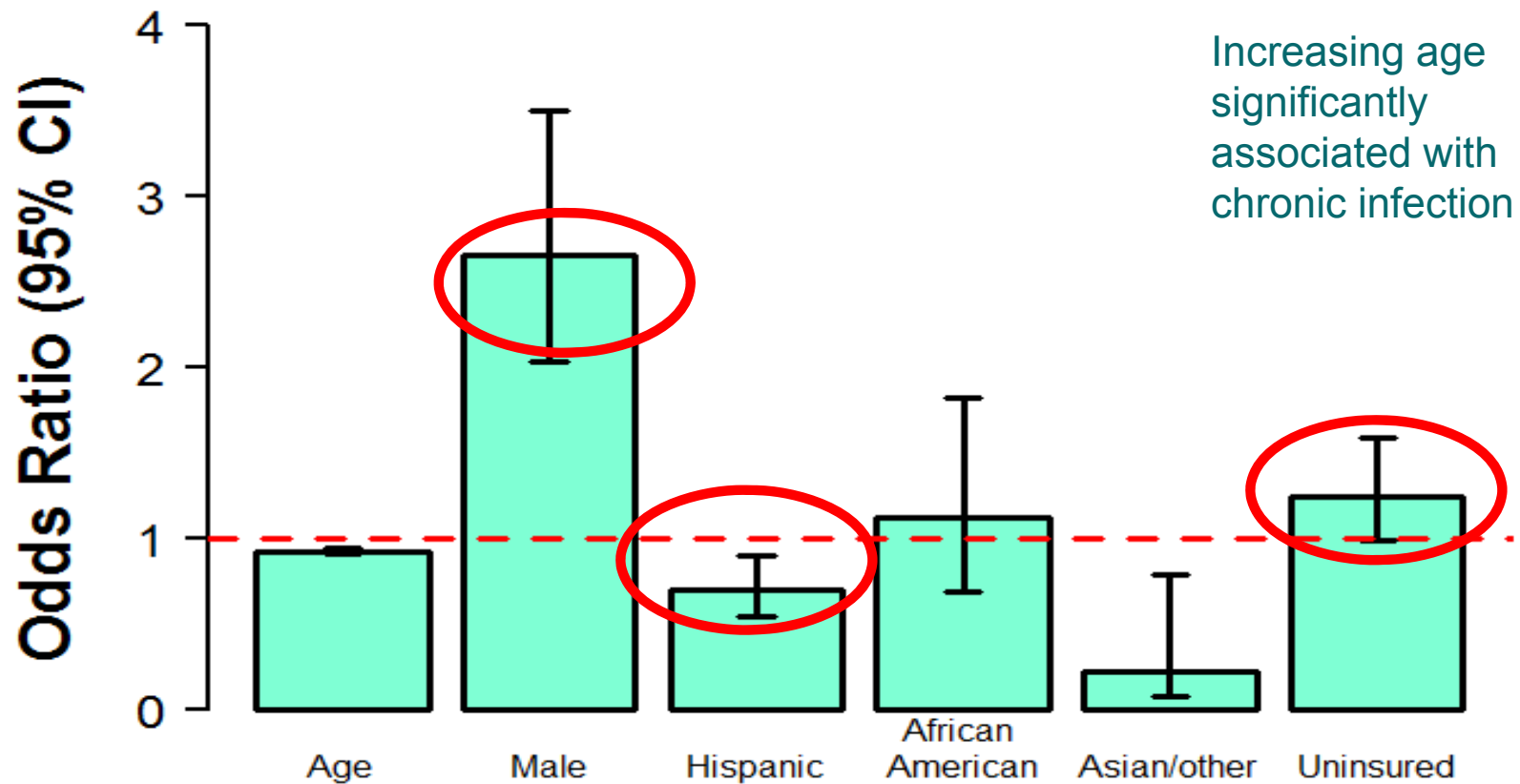
†Additional exclusions: poor prognosis (e.g., metastatic cancer) or psych admission, prior HCV diagnosis (not in record)



# Testing and Follow-up Care

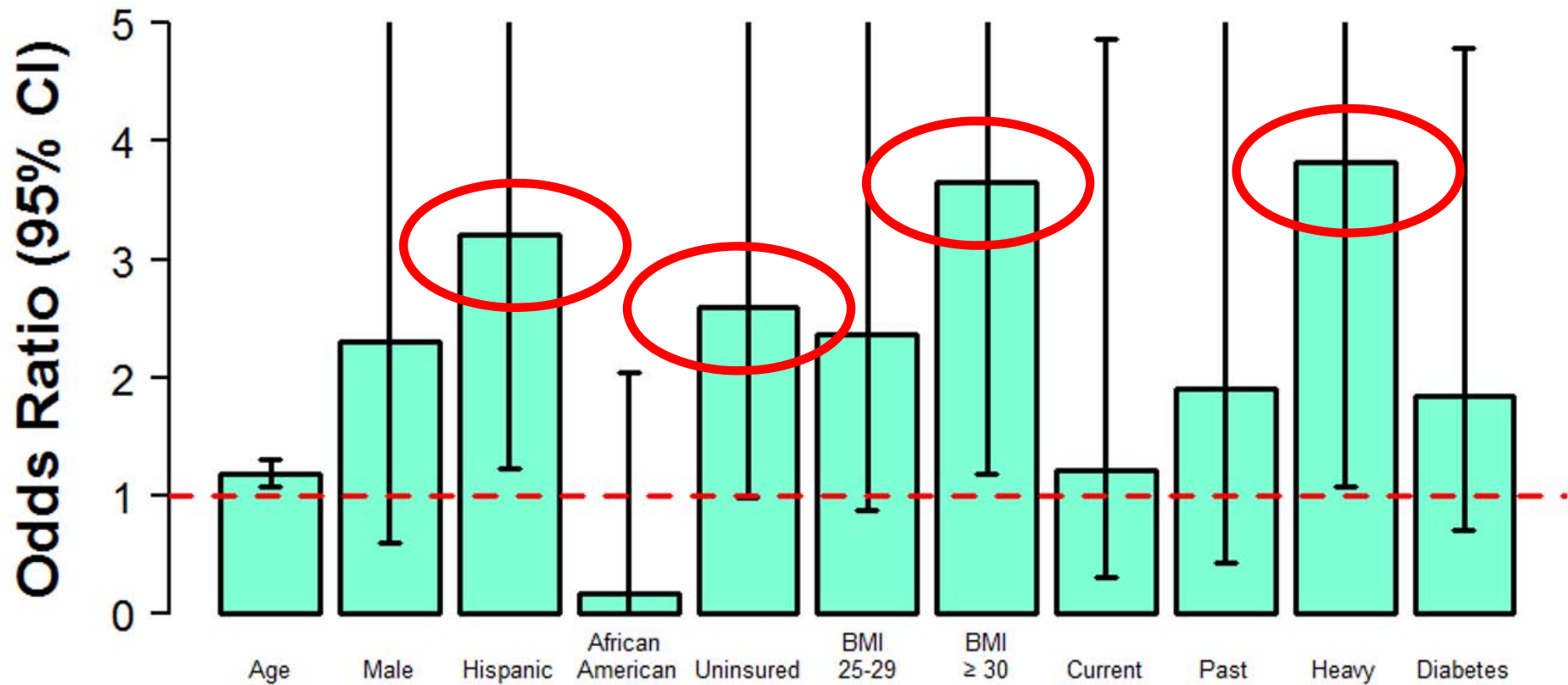


# Adjusted odds of HCV infection



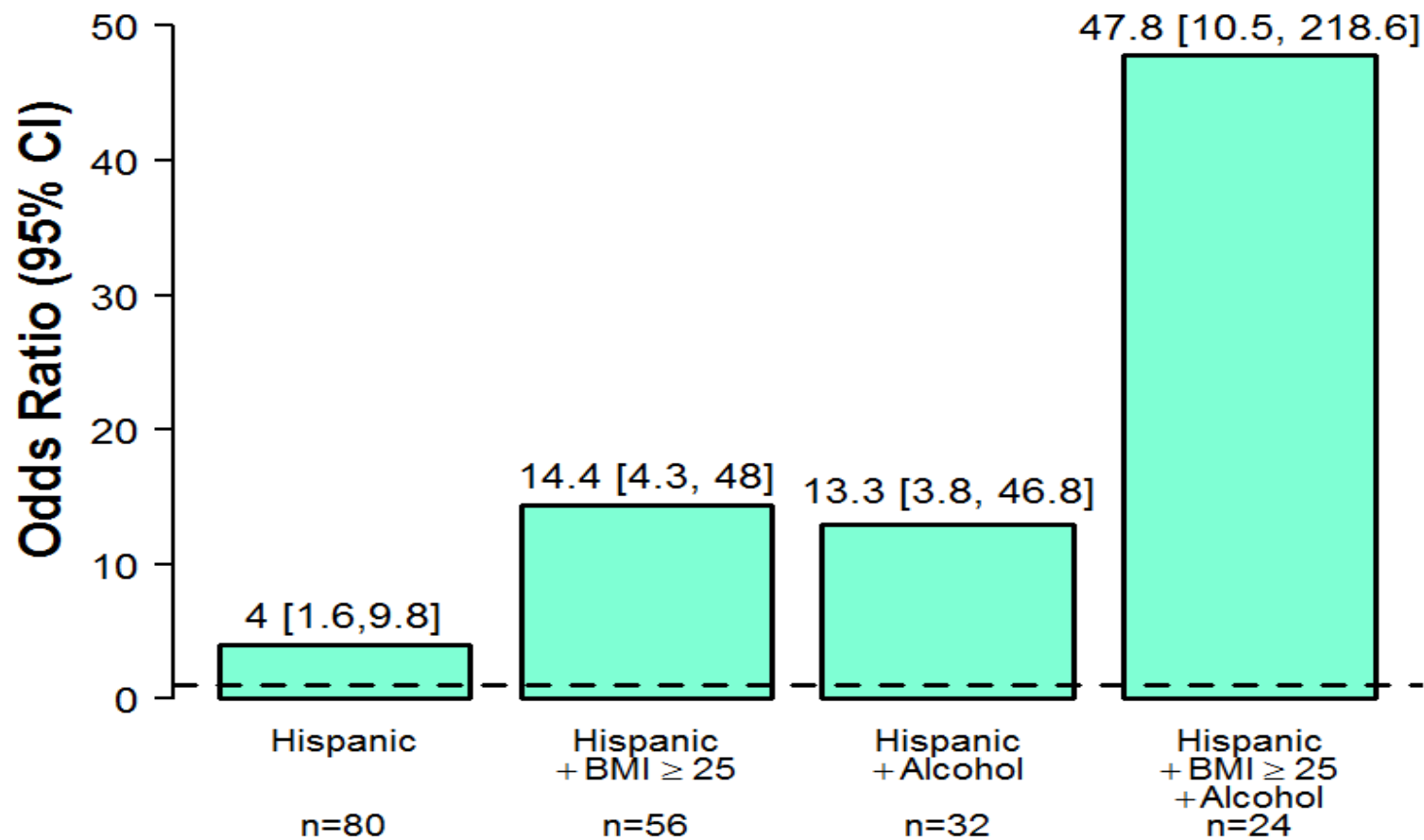
Adjusted for age, gender, race-ethnicity, insurance

# Adjusted Odds of Advanced Liver Disease



Adjusted for age, gender, race-ethnicity, BMI, diabetes, alcohol use, insurance

# Multiplicative Risks of Fibrosis or Cirrhosis or HCC (N=148)



# STOP HCC –Evidence-Based Hepatocellular Cancer Prevention Targeting Hepatitis C Virus Infection



## Objectives:

- Educate patients and general public about HCV and HCC prevention
- Educate primary care providers and staff about rationale and specific approaches to implement HCV and HCC prevention
- Implement evidence-based strategies for universal HCV screening of baby boomers in primary care practices
- Treat patients identified with chronic HCV infection and HCC

# CPRIT Project

## Texas Cancer Registry

### Age-Adjusted Invasive Cancer Incidence Rates in Texas

Liver and Intrahepatic Bile Duct, 2008 - 2012

By County

Age-Adjusted to the 2000 U.S. Standard Population

Texas Rate: 10.3 / per 100,000

0.0 - 6.0

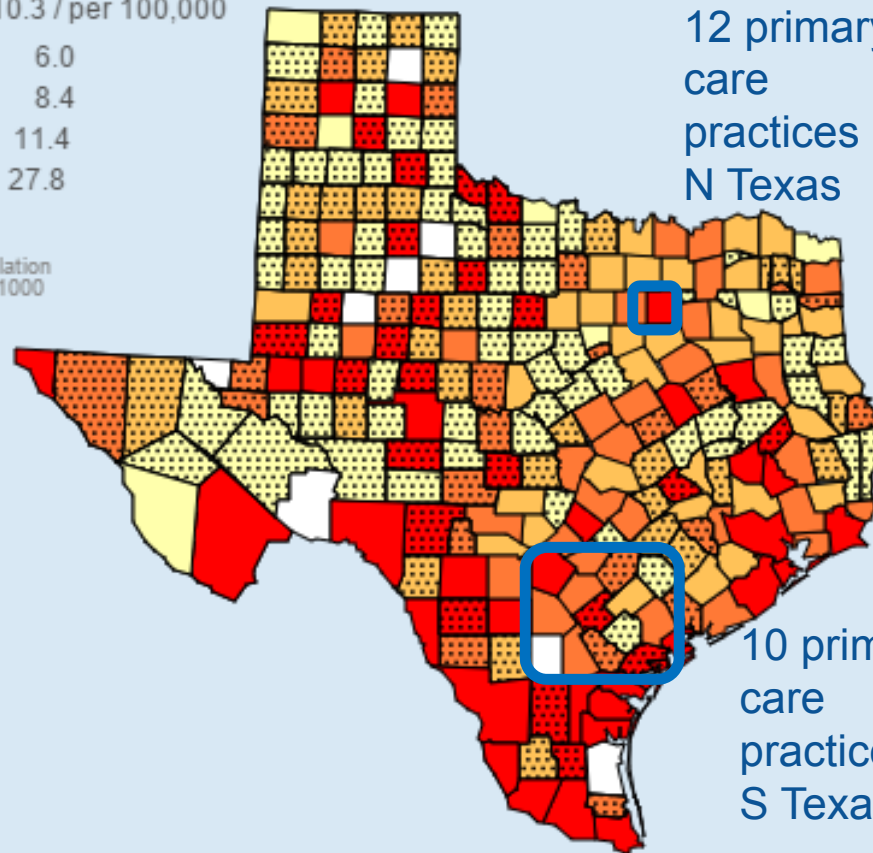
6.1 - 8.4

8.4 - 11.4

11.5 - 27.8

Unstable

Risk Population  
less than 1000



12 primary  
care  
practices in  
N Texas

10 primary  
care  
practices in  
S Texas



Source:  
<http://www.cancer-rates.info/tx/>

# Specific goals

- **Lectures primary care providers about HCV and HCC in Texas**
  - 300 clinicians, staff and administrators from 12 integrated health system practices
- **Web-based educational materials for professionals and public**
  - 5,000 persons reached
- **Culturally appropriate community presentations by peer educators**
  - 700 residents of Dallas and South Texas
- **HCV screening and treatment for HCV and HCC**
  - 22 primary care practices in Dallas and South Texas

# Endgame



- Raise awareness of the threat of HCV and HCC to Texans and nationally
- Engage the public and providers in HCV screening and linkage to care
- Decrease morbidity and mortality from HCV infection
- Prevent HCC
- Detect and treat HCC early





