

# The Chronic Hepatitis Cohort Study (‘CHeCS’)

## A Brief Overview

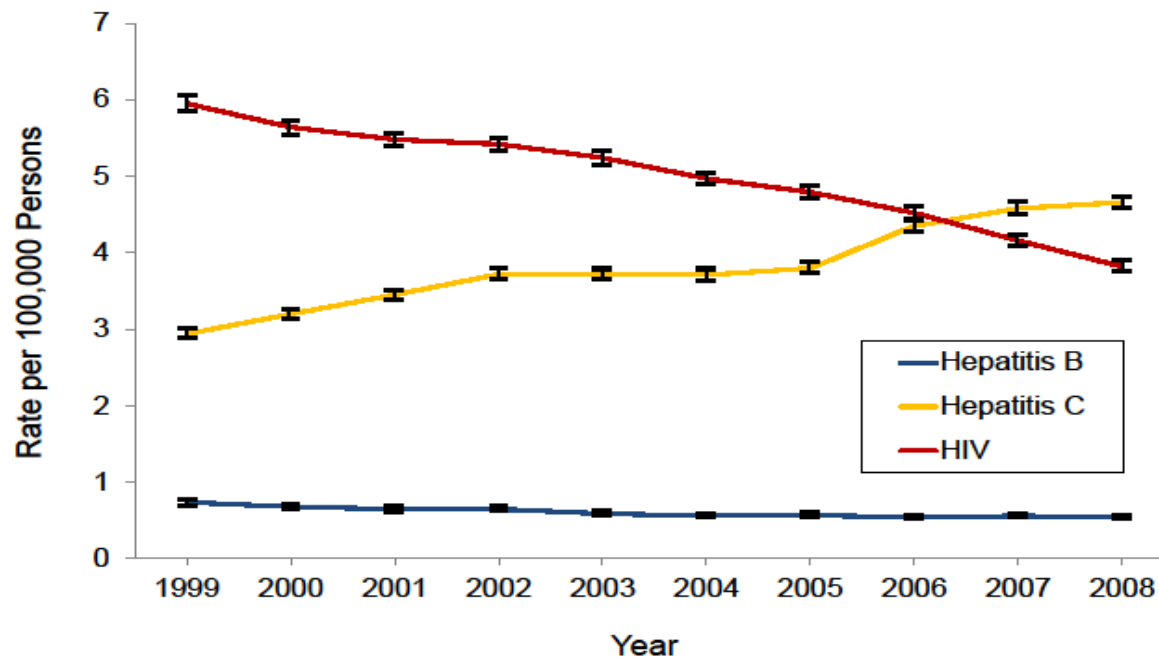
Scott D Holmberg, MD, MPH  
Epidemiology and Surveillance Branch  
Division of Viral Hepatitis, CDC  
contact: [sdh1@cdc.gov](mailto:sdh1@cdc.gov); or  
Anne Moorman [acm4@cdc.gov](mailto:acm4@cdc.gov)

# Increasing problem of chronic viral hepatitis

- CDC estimates:
  - 3.2 million Americans with chronic HCV
  - ~1 million with chronic HBV
- Others estimate more.

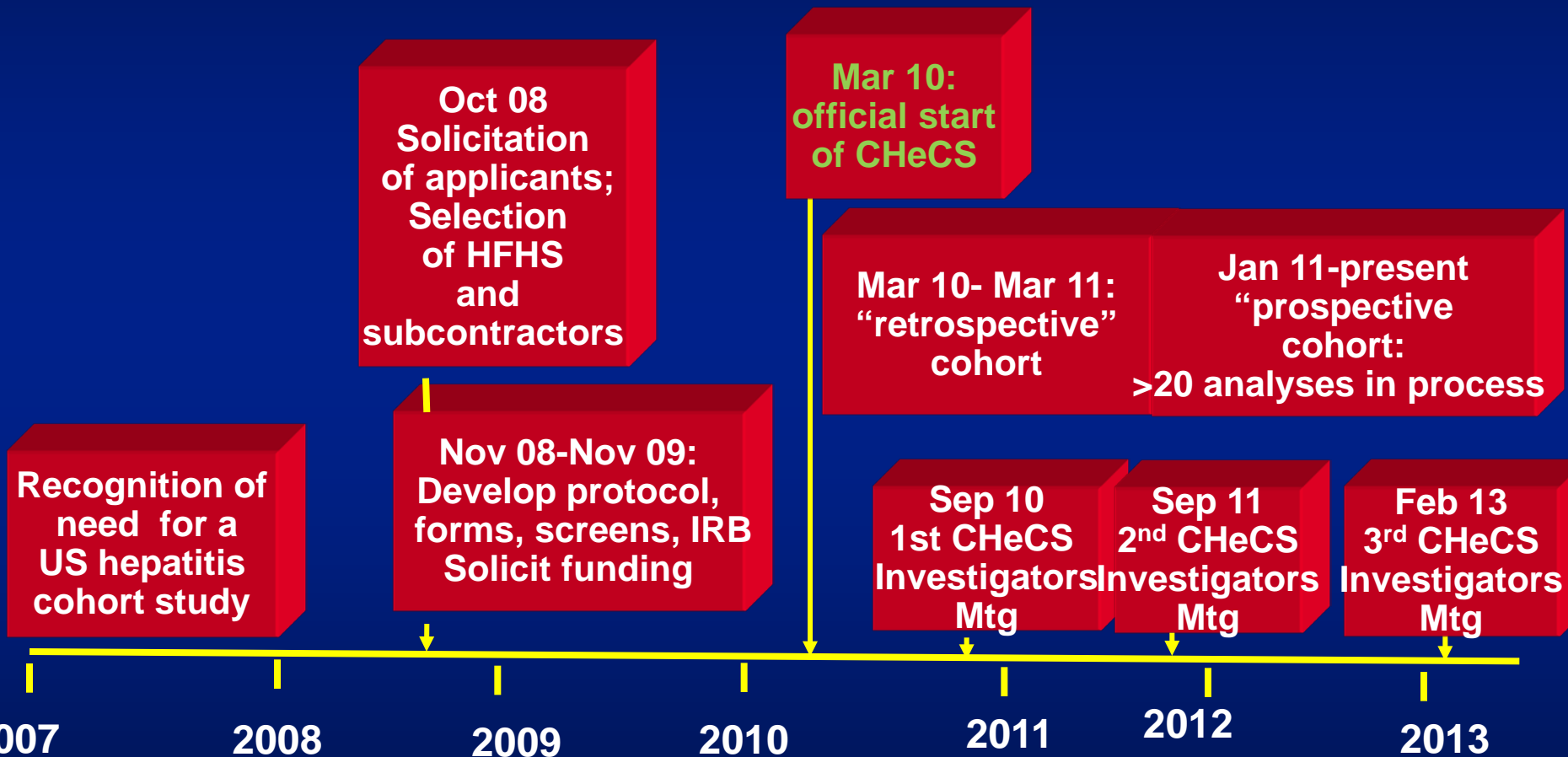
# From national mortality/death certificate data\*, updated through 2008:

Figure. Annual age-adjusted rates of mortality and 95% confidence intervals of hepatitis B, hepatitis C, and HIV listed as a cause of death\* in the United States, 1999 – 2008.



\*Cause of death is defined as the underlying cause or one of the multiple causes of death.

# CHeCS Evolution



# The Chronic Hepatitis Cohort Study (CHeCS):

## Public health/policy/burden objectives:

- Health burden and mortality;
- Spectrum and natural history of disease;
- Characteristics of persons in care;
- Modes of transmission and ongoing risk behaviors;
- Use/effectiveness of recommended screening/care practices;
- Access to testing, care and treatment

## Clinical epidemiology/treatment issues/population basis:

- Types of therapy in use, the benefits and risks/adverse effects associated with therapy, and factors influencing outcome of therapy
- Costs and potential savings of care and treatment;

## **CHeCS-- operational elements :**

- **Each site(s) has/have data manager(s) .**
- **Data collected from integrated electronic medical systems (clinic, hospital, ERs)**
- **Some data (eg liver biopsy, interviews) manually collected and entered**
- **Survey of patient behaviors important.**
- **Study is run by an Executive Committee comprised of CDC staff and PIs (Cooperative Agreement model).**

# CHeCS Cohorts: Patients retrospectively/prospectively identified\*

Site	2006-present ‡	
	HBV	HCV
Henry Ford Health System (Detroit MI)†	1 135	5 422
Geisinger Health (Danville PA)	267	2 092
Kaiser- HI (Honolulu HI)	952	1 309
Kaiser -Northwest (Portland OR)	1 090	3 447
<b>Total</b>	<b>3 444</b>	<b>12 270</b>

\* Only patients meeting inclusion criteria; drawn from 1.6m adults

† Main site

‡ “Includes “retrospective cohort” (2006-2008) and “prospective cohort” (2008-present)

In addition, we continue to fund an independent ongoing CDC-Alaska collaboration

	<i>HBV</i>	<i>HCV</i>
<i>Alaska Native Tribal Health Consortium (ANTHC) Hepatitis B and C Registries</i>	~ 1 500	~1 100

- In future analyses, we hope to integrate this special cohort with data from the 4 CHeCS sites



# CHeCS: some recent findings

- Only 2/3 of predicted HBV and 1/2 HCV tested/identified in this population of 1.6 m adults from which CHeCS is drawn.
- Only half of those with  $\geq 2$  abnormal ALT got HBV/HCV testing
- About 35-40% of those with HCV Ab+ had NAT testing (indicative of follow-up)
- Preliminary data suggest that only 15% of our deceased HCV patients have had HCV noted on their death certificate.
- Very high hospitalization and mortality rates for both HBV and HCV, even in those who are relatively young (aged 45-65)
- Antiviral therapy (lamuvidine, tenofovir) in HBV patients prevents hepatocellular carcinoma
- Serum/blood assays (ALT, AST, platelet count) and age can be calculated to reduce the need for doing liver biopsy

# Current plans:

- > 20 analyses in progress or planned
- Major cost: effectiveness analysis of different treatment strategies and timing; some initial studies first:
  - Using FIB-4 scores to ‘stage’ HCV disease progression to stratify patients in analyses
  - Excess mortality analysis
  - Excess hospitalizations (morbidity)
  - Treatment use/effectiveness/cost
  - Analysis of ETOH/cig use (to adjust rates)

# CHeCS Executive Committee

- **CDC:**

- Scott Holmberg, MD
- Anne Moorman, MPH
- Phil Spradling, MD
- Eyasu Teshale, MD

- **Henry Ford Hosp/Detroit**

- Stuart Gordon, MD
- David Nerenz, PhD
- Lora Rupp, MPH
- Mei Lu, PhD

- **Kaiser/ Hawaii**

- Vinutha Vijayadeva, PhD

- **Geisinger/ central Penn**

- Joe Boscarino, PhD

- **Kaiser NW/Portland, OR**

- Mark Schmidt, PhD

- **Alaska Native Tribal Health/  
Anchorage (ancillary site)**

- Brian McMahon, MD