



Programme STI, HIV/AIDS and viral hepatitis

# Hepatitis B and C surveillance and epidemiology in Europe

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European Centre for Disease Prevention and Control

# A young EU agency dedicated to the control of communicable diseases



- ECDC became operational in May 2005
- Located in Stockholm, Sweden
- Director Marc Sprenger
- 27 EU Member States & 3 EEA
- Founding regulation EC/851/2004
- 49 diseases under surveillance

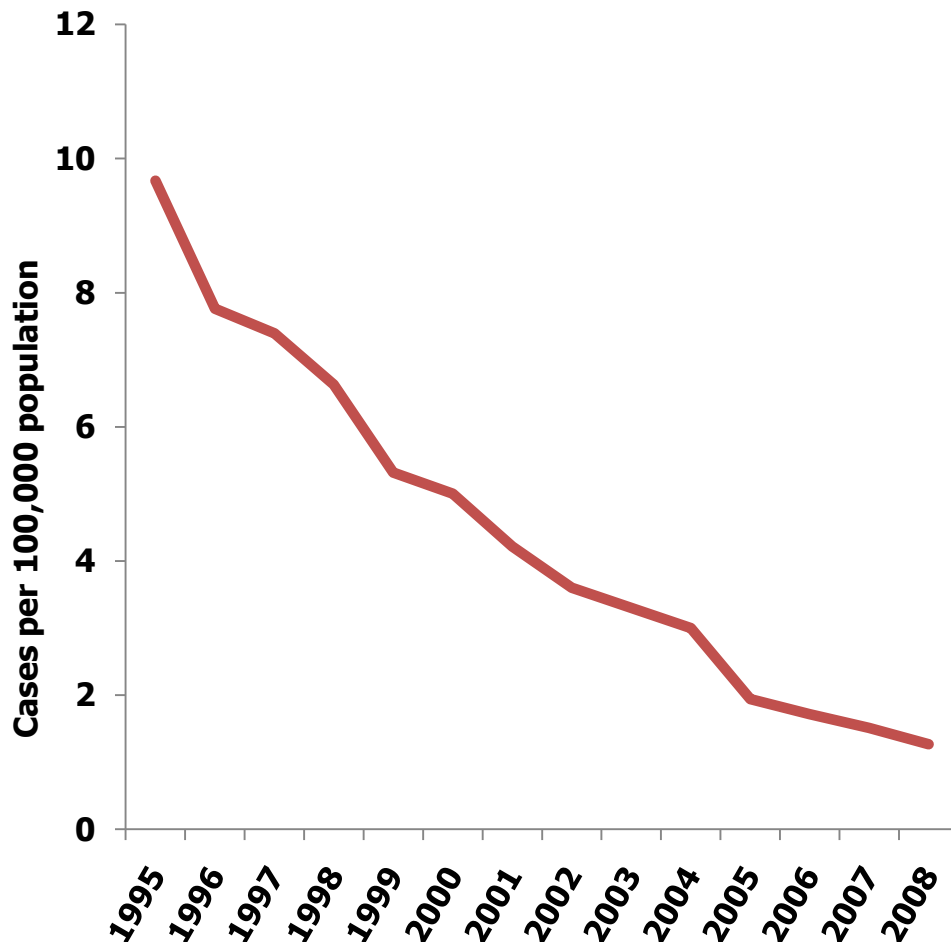


# ECDC focus on surveillance

- Enhanced surveillance of HIV/AIDS (2007-08) – two reports
- Enhanced surveillance of STI (2008-09) – 1st report forthcoming
- Implement enhanced surveillance of hepatitis B and C (2010-11)
- European Parliament in 2006 addressed the importance of harmonisation of hepatitis surveillance
- ECDC Annual Epidemiological Report – covering all 49 including hepatitis B and hepatitis C



# Epidemiology of hepatitis B



Decreasing trend of hepatitis B  
in EU/EEA countries

Interpretation is hampered:

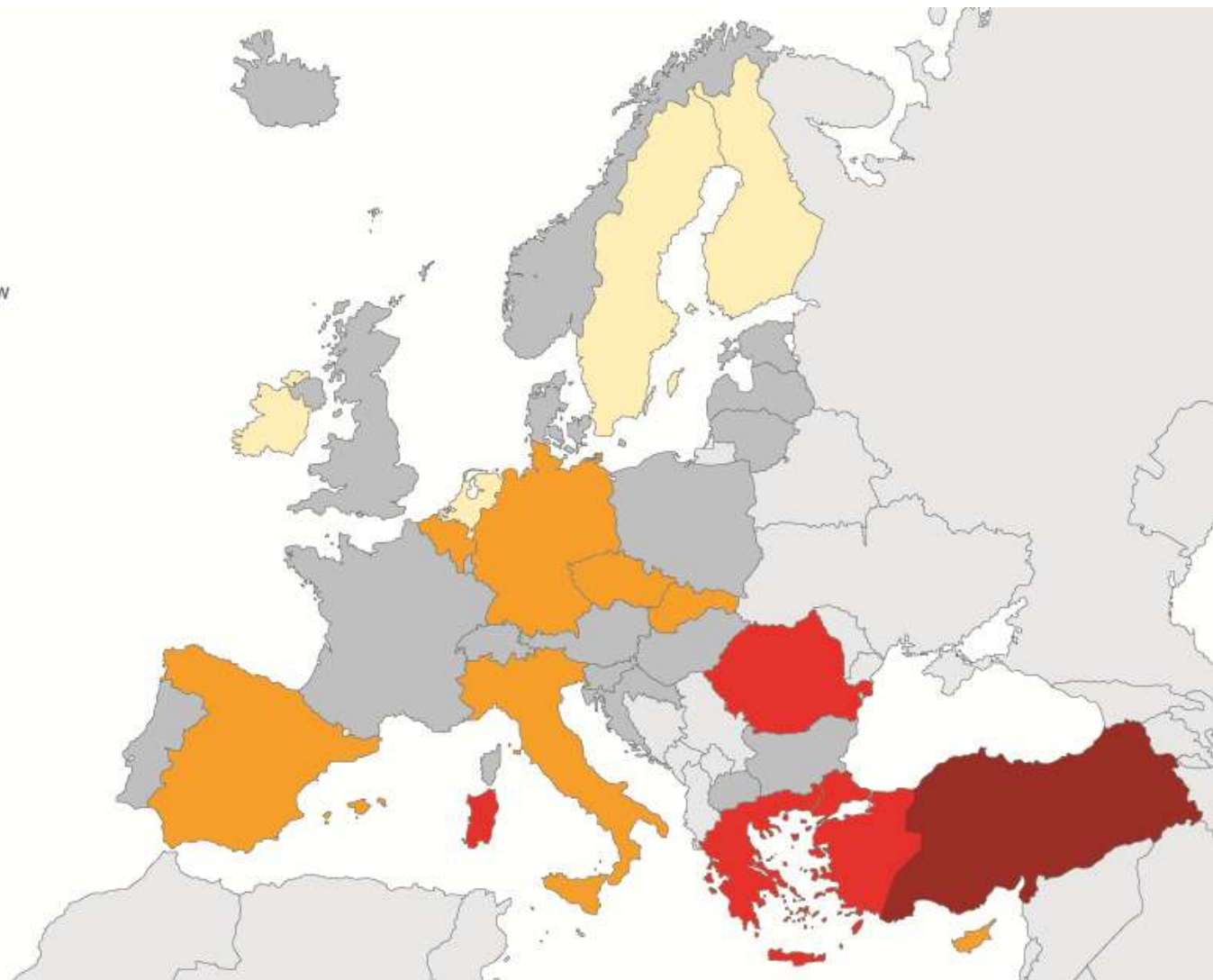
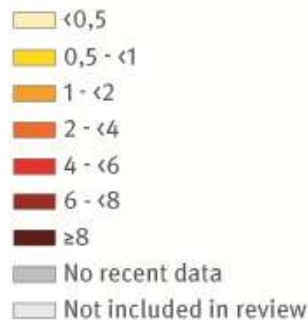
1. Incomplete reporting
2. Large heterogeneity in reporting systems
  - geographical coverage
  - mix of acute and chronic cases
  - use of different case definitions

# Epidemiology of hepatitis B



- About 7000 to 8000 confirmed cases per year in 27 EU Member States, Iceland, Liechtenstein and Norway (EEA)
- Most affected age group: 22-44 year, followed by 15-24 yr; men twice more affected than women
- Clustered in sub-populations: men who have sex with men, sex workers, people with HIV infection, injecting drug users, inmates, immigrants from high endemic regions

# The prevalence of HBsAg in the general population



Non-visible countries  
Liechtenstein  
Luxembourg  
Malta

# Epidemiology of hepatitis B



- Prevalence of HBV infection (HBsAg) in the general population varies widely between countries
  - Range: 0.1% in Ireland and Netherlands to >7% in Eastern Turkey
  - Prevalence is higher in South (East) and Central Europe
    - High: 4-6%: Romania
    - Medium: 1-4%: Bulgaria; Greece, Slovakia, Spain
    - Low: 0.5-1%: Belgium, France, Italy; <0.5%: DK, FI, HU, IE, NL, SE, UK
- Prevalence of HBV in low-prevalence countries may be underestimated
  - High-risk groups are often not represented in samples
  - In Netherlands and Ireland, the estimated number of infected migrants is higher than the estimated total number of infected individuals
  - Migrants are underrepresented in population prevalence studies

# Epidemiology of hepatitis B

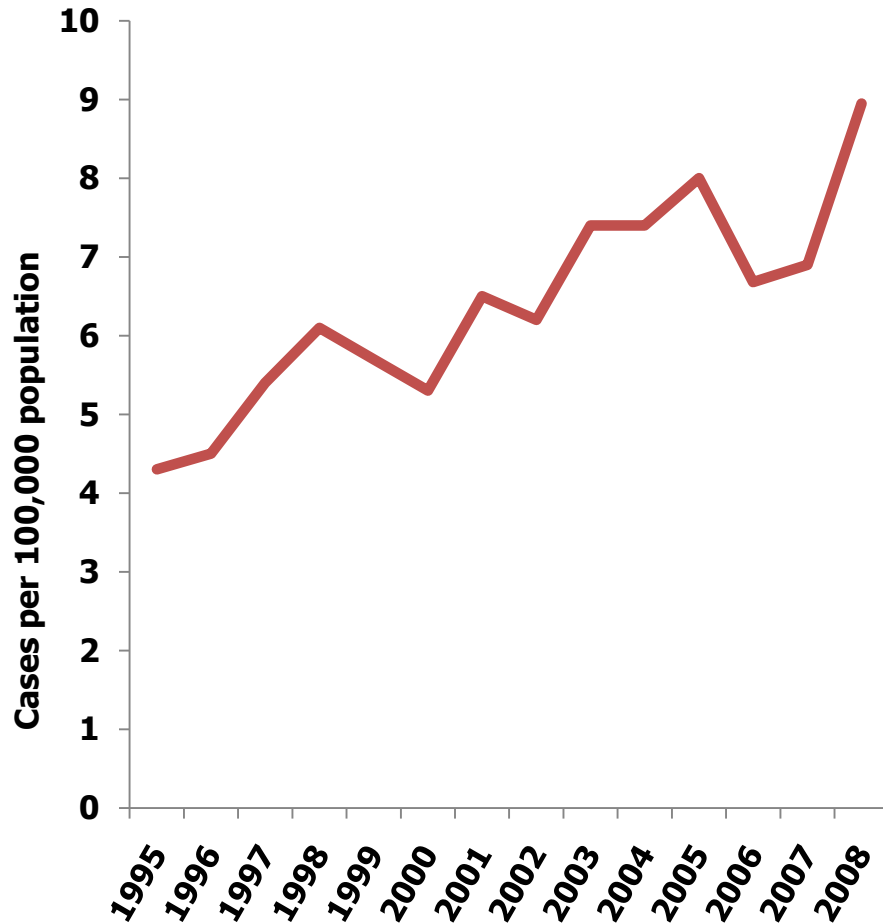


None of the regularly used proxies able to accurately represent HBV prevalence in general population

- Prevalence in **first time blood donors** has generally been regarded as the lower limit of the prevalence in the general population
  - ➔ HBV/HCV prevalence estimates in first time blood donors were lower than those for the general population
- Prevalence in **pregnant women** in nearly all countries - with available data – is higher as compared with population
  - ➔ likely to reflect the impact of adolescent HBV vaccination program implemented in this region since 1990



# Epidemiology of hepatitis C



Increasing trend of hepatitis C in EU/EEA countries

Interpretation is hampered:

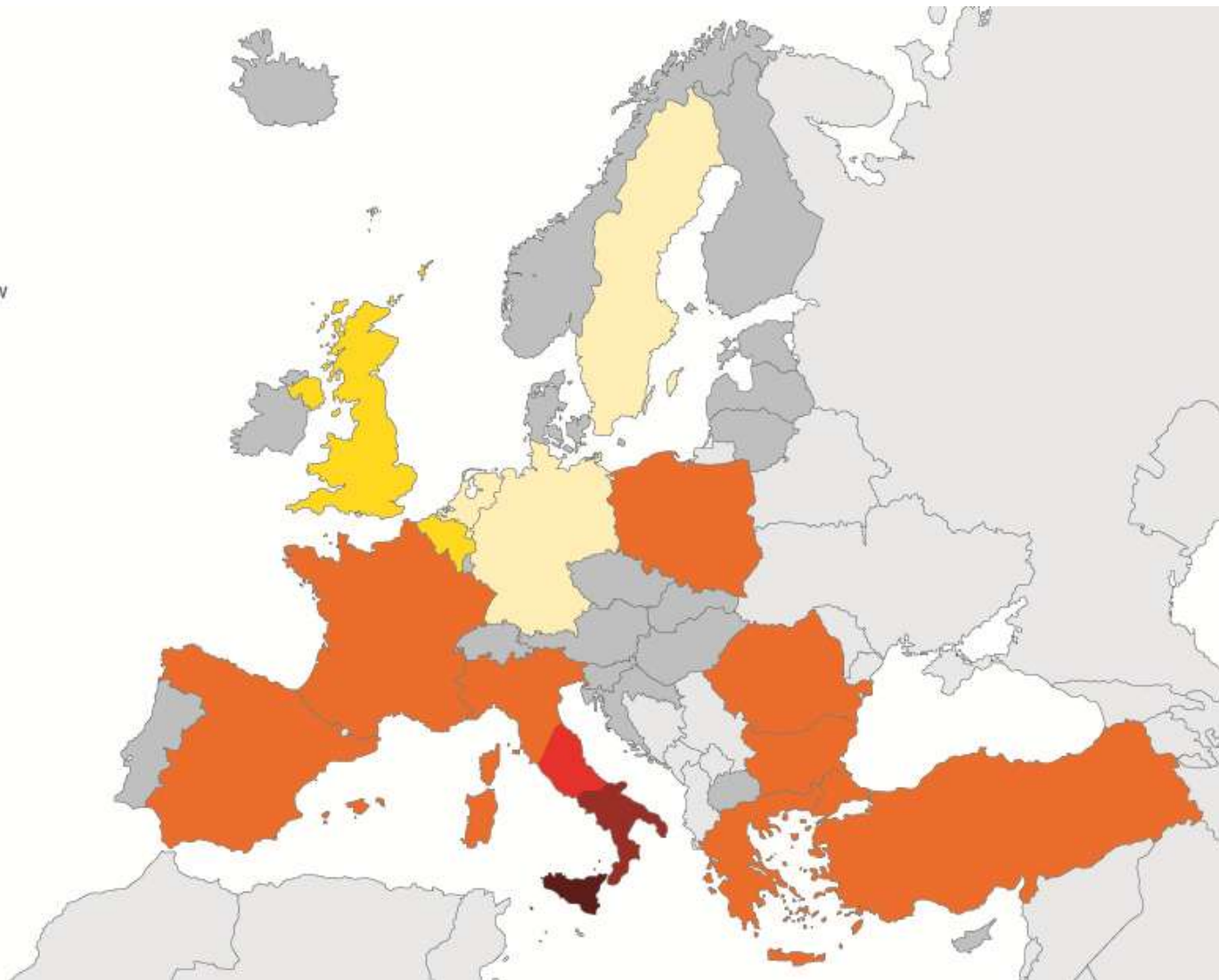
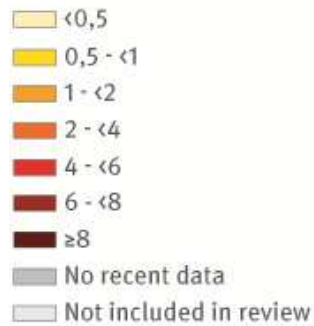
1. Reflects testing and screening practices
2. Large heterogeneity in reporting systems
  - geographical coverage
  - mix of acute and chronic cases
  - use of different case definitions

# Epidemiology of hepatitis C



- 27000 to 29000 newly diagnosed cases per year in EU/EEA\*
- Most affected age group: 22-44 year, followed by 15-24 yr; men twice more affected than women
- Clustered in sub-populations: injecting drug users, people with HIV infection, inmates, haemodialysis patients, immigrants from high endemic region
- Sexual transmission is considered to be rare, some data indicate that high risk sexual behaviour could enhance a risk for HCV transmission via per mucosal route (i.e. MSM)

# The prevalence of anti-HCV in the general population



Non-visible countries

- Liechtenstein
- Luxembourg
- Malta

# Epidemiology of hepatitis C



- Prevalence of HCV infection (HCV-Ab) in the general population varies widely between countries
  - Range: 0.4% to 22%
  - Prevalence is higher in Southern Europe
  - Variation across the countries:
    - Low:  $\leq 0.5\%$  in Belgium, Germany, Netherlands, Sweden, UK
    - Intermediate: 0,5 – 2% in Bulgaria, France, Hungary, Romania
    - High:  $\geq 2\%$  in (parts of) Italy
- Particularly Italy has a high general population prevalence of HCV, much higher than the estimated HBV prevalence
  - Epidemiologic and phylogenetic assessments suggest this is caused by a period of increased iatrogenic transmission around the 1950s

# Epidemiology of hepatitis B and C



## Migrants: HBV and HCV prevalence studies are limited

- In nearly all countries the estimated prevalence of HBV and HCV is higher among migrants compared to the general population
- Large estimated numbers of chronically HBV and HCV infected migrants in Western European countries (Germany, Spain, France, Italy, UK)

## Injecting drug users: large number of HCV prevalence studies

- Representativeness of studied populations is variable
- HCV is highly prevalent among IDUs in Europe
- HBV prevalence among IDUs is much lower than that of HCV

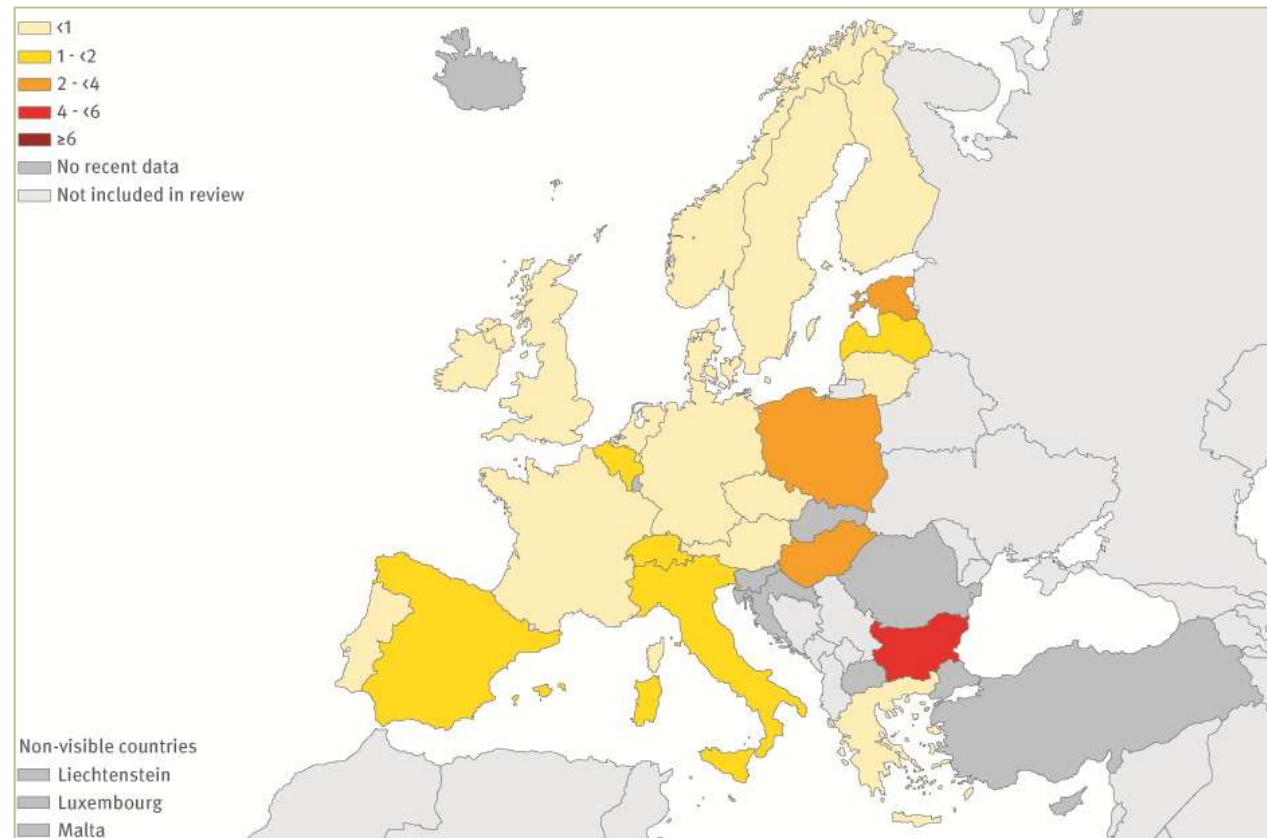
# General population: prevalence profiles



HBsAg HCV Ab	Low ( $\leq 1\%$ )	Intermediate ( $> 1\%$ and $\leq 2\%$ )	High ( $> 2\%$ )	Insufficient data
Low ( $\leq 1\%$ )	BE, DE, NL, SK, SE, UK			
Intermediate ( $> 1\%$ and $\leq 2\%$ )	FR, ES		GR, TR	BG, PL
High ( $> 2\%$ )		IT	RO	
Insufficient data	CY, CZ, DK, FI, IE			AT, CR, EE, FYROM, HU, IS, LV, LI, LT, LU, MT, NO, PT, SL

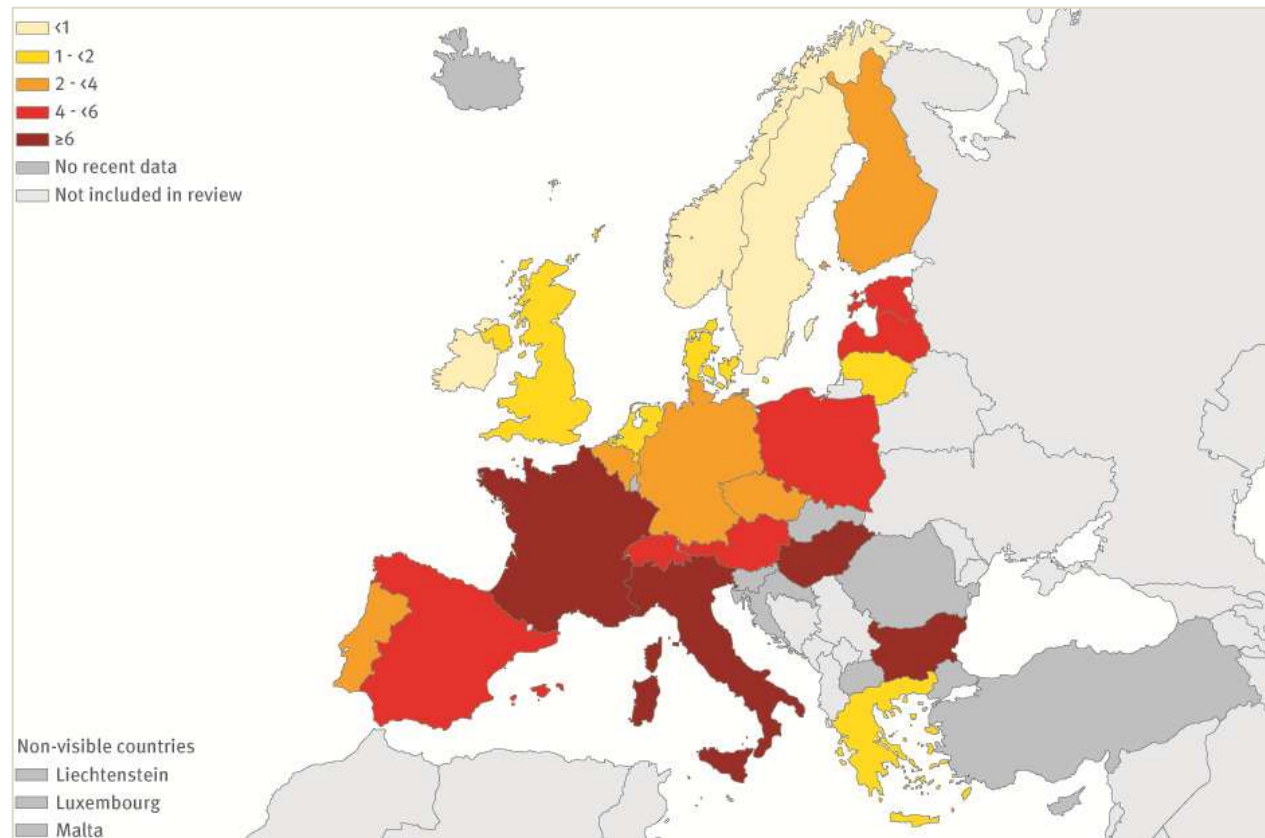
# Mortality related to HBV and HCV

Hepatocellular mortality ranges from 0.27 per 100,000 **women** in Sweden to 5.35 in Bulgaria



# Mortality related to HBV and HCV

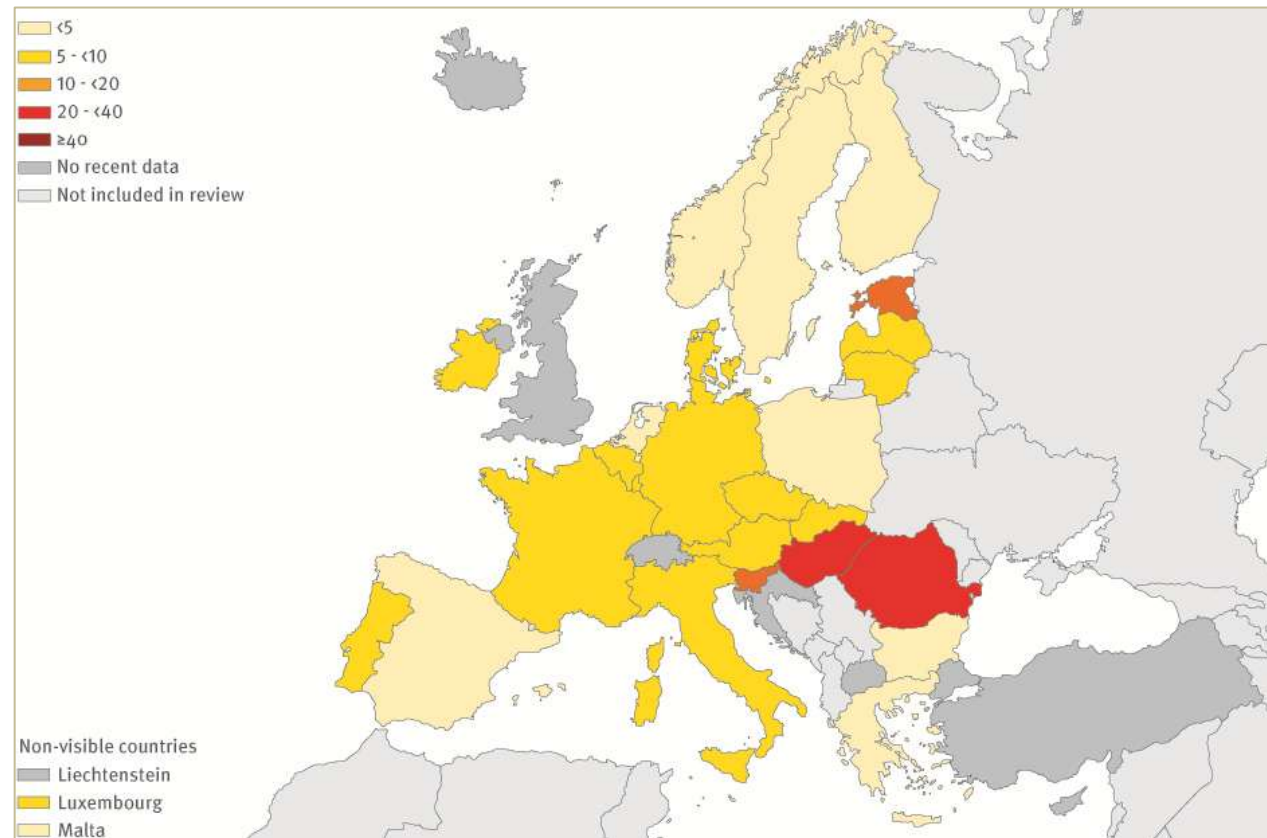
Hepatocellular mortality ranges from; 0.68 per 100,000 **men** in Sweden and 8.03 in Bulgaria





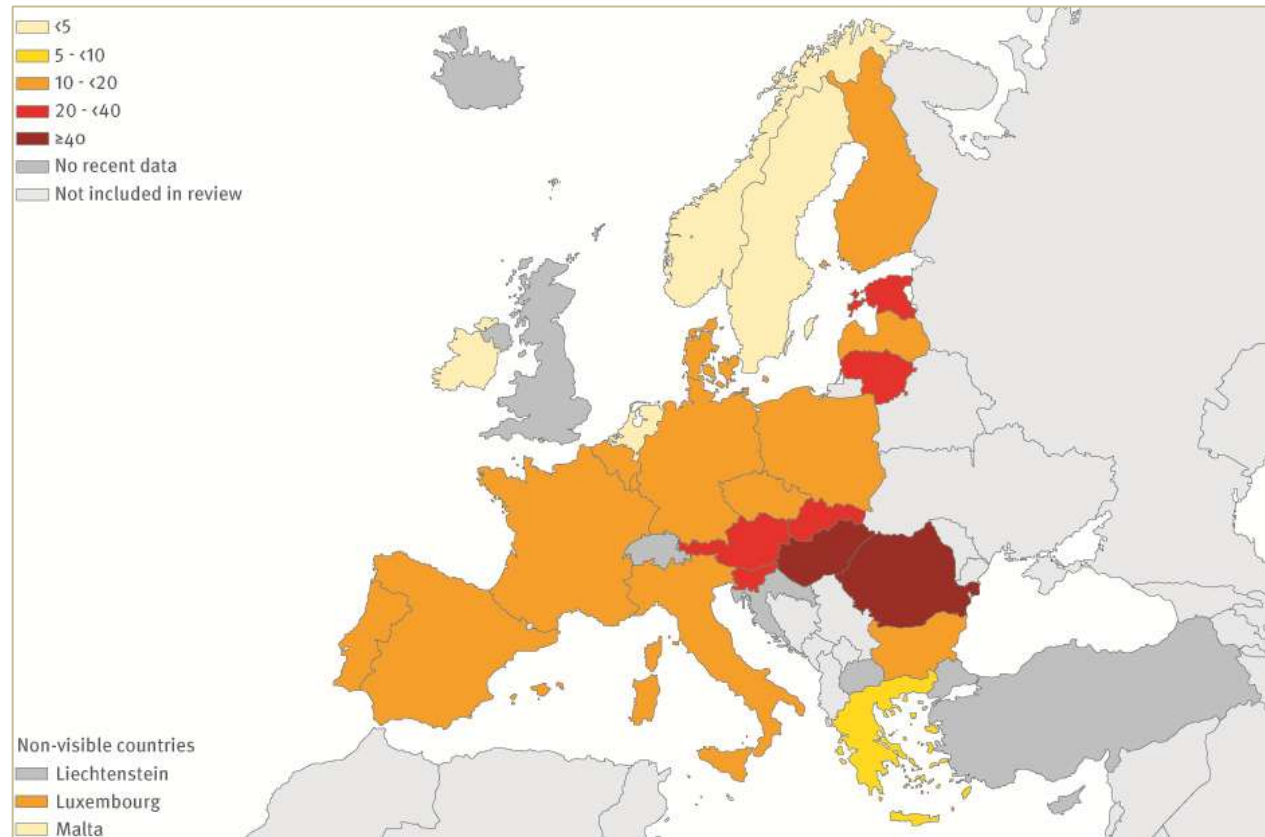
# Mortality related to HBV and HCV

Cirrhosis mortality ranges from 1.02 per 100,000 **women** in Malta to 20.91 in Hungary



# Mortality related to HBV and HCV

Cirrhosis mortality ranges from 4.4 per 100 000 **men** in the Netherlands to 68.27 in Hungary



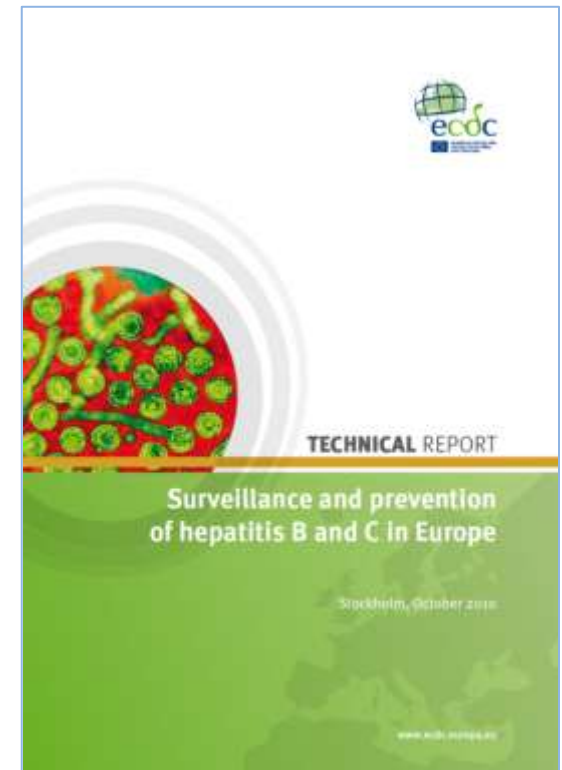
# Conclusions epidemiology



- Large diversity in prevalence across Europe for HBV and HCV
  - Data on general population prevalence is lacking for most of the countries
  - Low prevalence countries have evidence of high prevalence among risk groups, mainly migrants and IDU
  - Estimated prevalence of both HBV and HCV among migrants is higher compared to general population in all countries, except Italy
  - Other countries have mixed patterns of HBV and HCV endemicity
- High mortality related to hepatitis B and C, higher in south-east as compared with north-west
- Evidence for significant burden caused by both HBV and HCV in many, if not most, countries in EU and its neighbourhood.

# Need to strengthen surveillance HBV and HCV at EU level

- Survey in Member States
  - Collect information on surveillance systems and prevention programmes:
    - general information on surveillance systems
    - case definitions, classification, laboratory criteria, variables, data sources, etc.
  - Validation with Member States in December 2009 and June 2010
  - Report published October 2010; country-specific information
- ➔ profound basis for further work

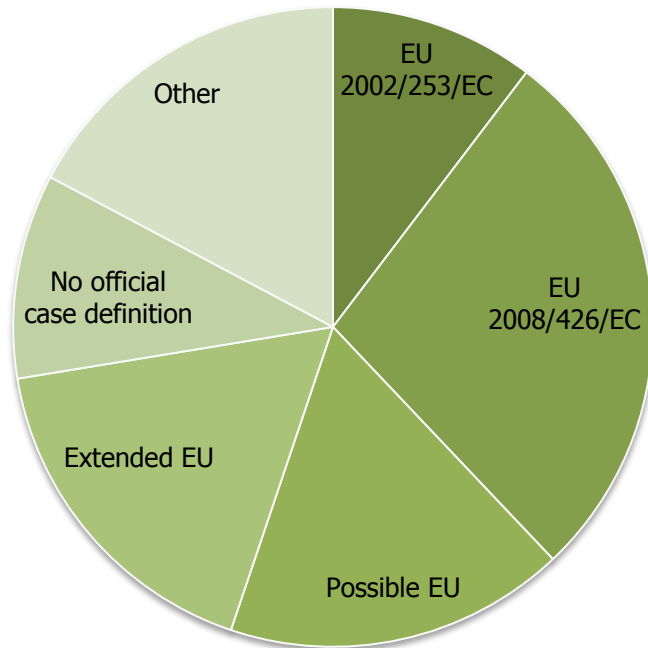


# Comparison of surveillance systems

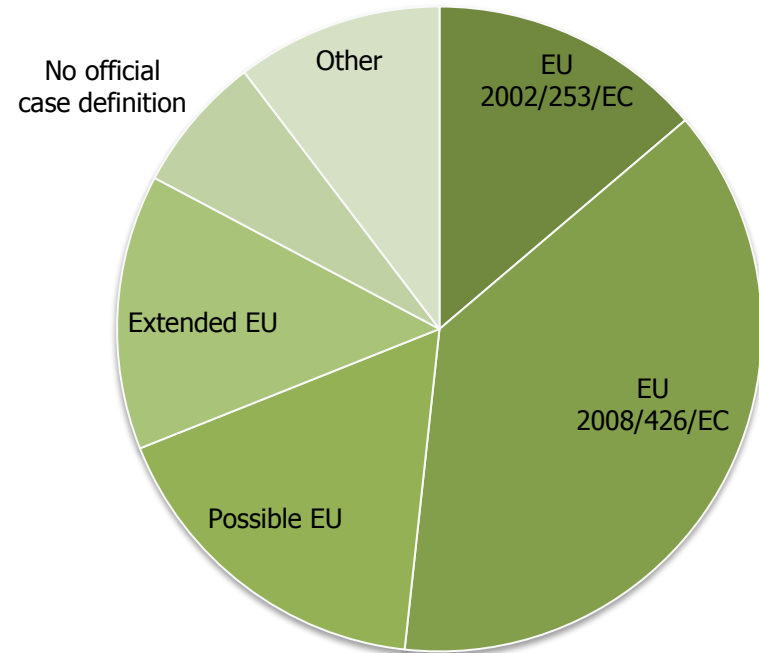
<b>Similarities</b>	<b>Differences</b>
Mandatory surveillance system exists in most MS	Structure and data sources vary widely across MS
Surveillance systems objectives are very similar	Frequency of data analysing differs between the countries
Most MS have case based data available at the national level	EU case definition (2002 or 2008) is not consistently used; some countries are changing/updating case definitions
Common data set (age/ date of birth, gender, residence, date of onset – notification) collected by most MS	Type and format of collected data vary. Epidemiological risk factors not defined
Underreporting is common but few MS were able to assess it	Possibility to link between registers differs between MS

# Case definitions for HBV and HCV

## HBV case definitions



## HCV case definitions



# Hepatitis B stage of infection

\* differentiate  
between stages

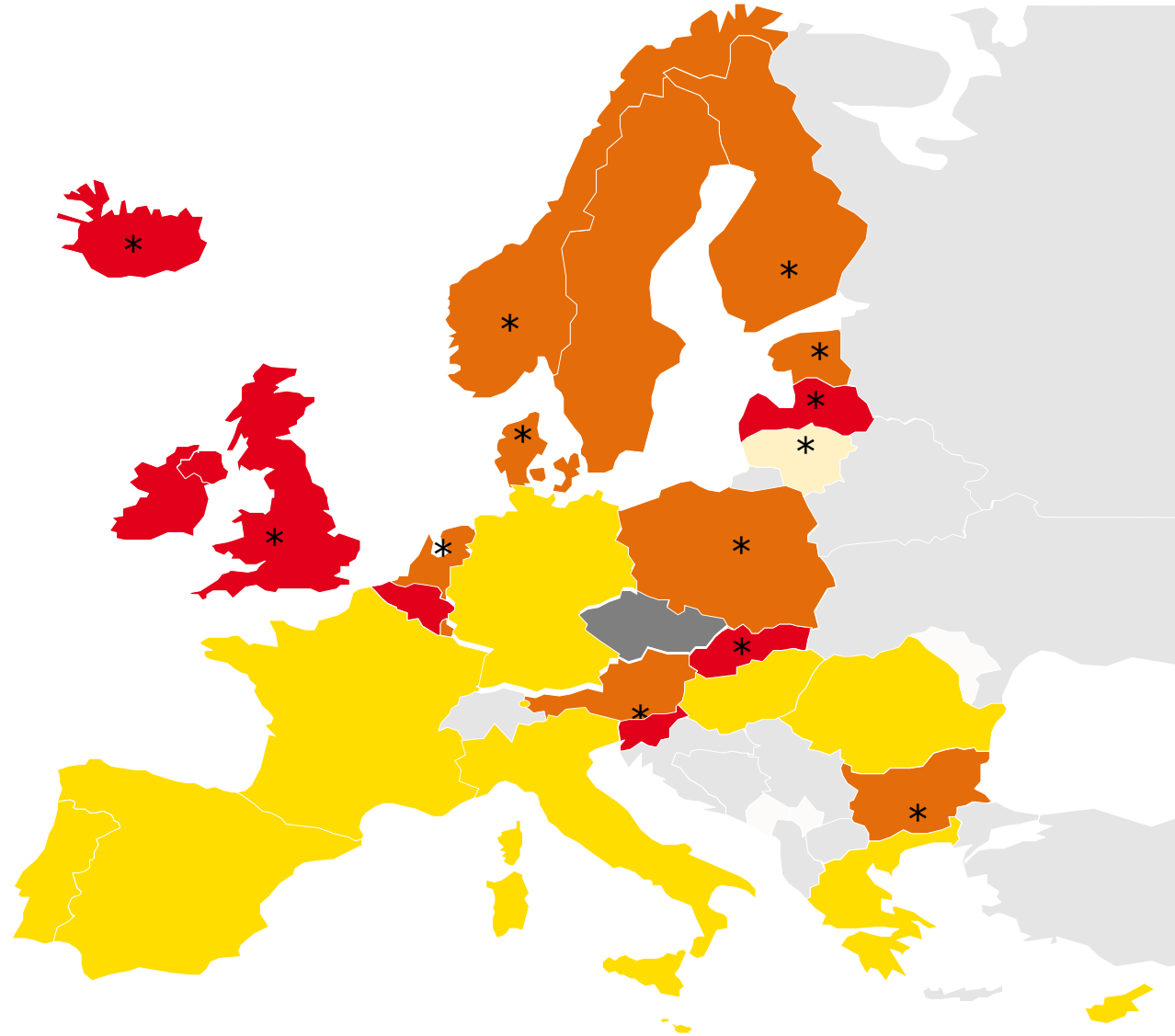
Acute only

Acute + chronic

Acute + chronic  
+ asymptom

Acute +  
asymptomatic

Unknown



# Hepatitis C stage of infection

\* differentiate  
between stages

Acute only

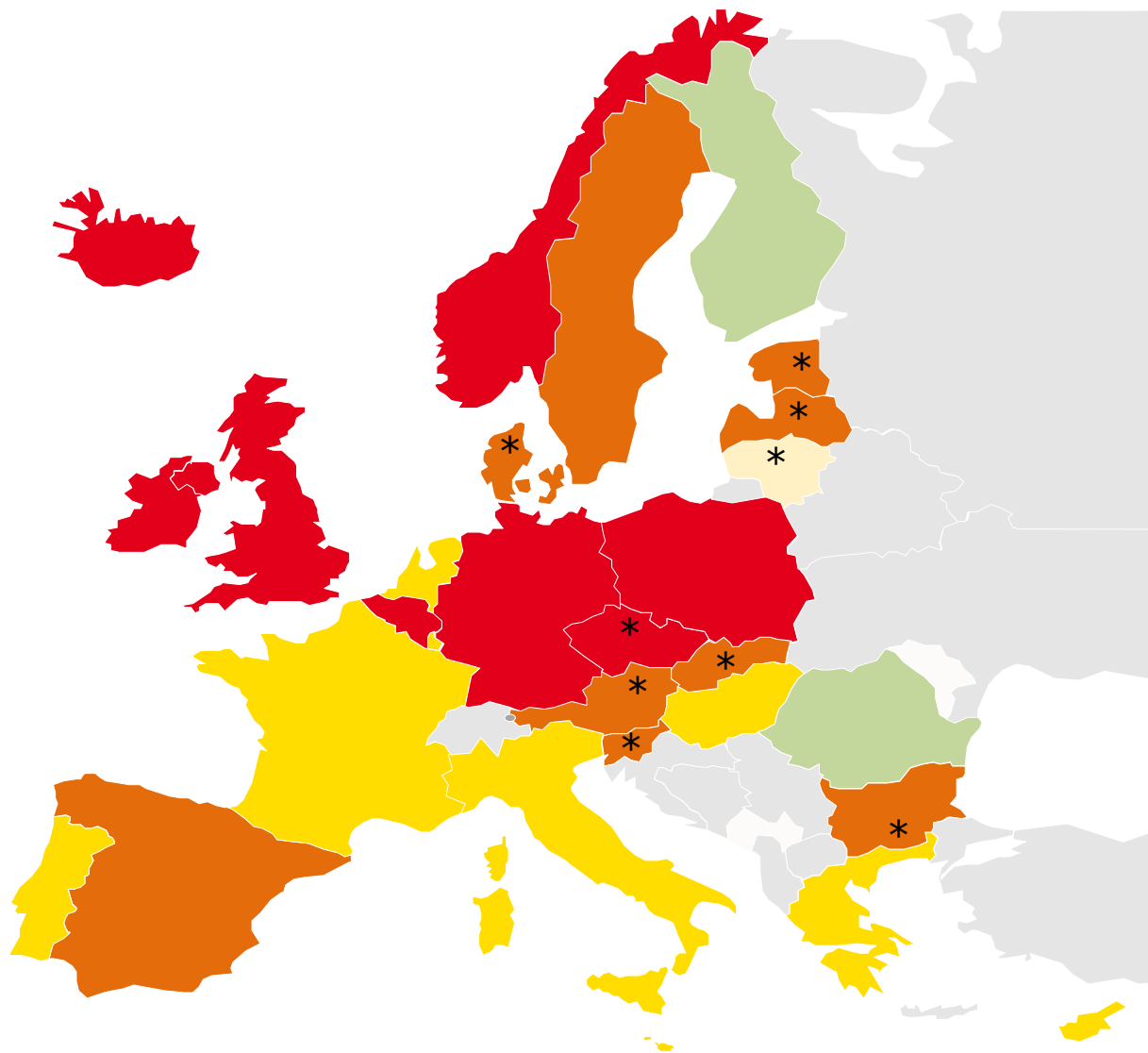
Acute + chronic

Acute + chronic  
+ asymptomatic

Acute +  
asymptomatic

Not specified

Unknown





# Hepatitis B/C surveillance



- Technical discussions on components of hepatitis surveillance
- Coordination group established
  - Competent bodies for surveillance in Member States
  - Nominated contact points
- Comprehensive framework for hepatitis surveillance
  - Case-based data (time-period; set of variables)
  - Collect and review available prevalence data
  - Outbreaks and clusters of infections
  - Results from screening programmes
- Annual meeting European hepatitis surveillance network
- Implement enhanced surveillance for hepatitis B and C

# Conclusions



- Large diversity in prevalence of HBV and HCV across Europe, with higher rates in the central-east
- Evidence for significant burden caused by both HBV and HCV in many countries in EU and its neighbourhood
- Methodology on prevalence studies to be harmonised
- Comparable, validated and reliable data on hepatitis B and C are added value for EU
- Enhanced surveillance of hepatitis B and C in EU is currently under development and will be implemented in 2011 -- a big challenge in coming years

# ECDC publications

## Literature review



## Survey in Member States

