



SCIENTIFIC ADVICE

Systematic review on hepatitis B and C prevalence in the EU/EEA

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Abbreviations

Anti-HCV	Antibody to hepatitis C virus
EEA	European Economic Area
EFTA	European Free Trade Association
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
HBsAg	Hepatitis B surface antigen
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCC	Hepatocellular carcinoma
HCV	Hepatitis C virus
MSM	Men who have sex with men
NFP	National Focal Point
NPV	Negative predictive value
PPV	Positive predictive value
PWID	People who inject drugs
WHO	World Health Organization

Glossary

Random	Sample selection that ensures an unbiased representation of the research population
Non-random	Any other kind of sample selection than random, often convenience sampling
Exhaustive	Fully comprehensive sample of a population
Non-exhaustive	Sample of a population that does not include the entire population

Executive summary

Objectives

People with chronic HBV and/or HCV infection are at risk of serious liver disease such as liver cirrhosis and hepatocellular carcinoma (HCC) and remain infectious to others. Because chronic HBV and HCV infections are typically asymptomatic, notification data reflect national screening and testing practices and do not give accurate insights into the prevalence of infections. Thus, to adequately inform primary or secondary prevention efforts, supplementary information such as prevalence data are needed.

ECDC conducted a systematic review of the literature published between 2005–2015, with the aim to provide current estimates of the prevalence of HBV and HCV in the general population and specific population subgroups in the EU/EEA Member States, and to identify gaps in the available information. This review is an update of a previous systematic review covering the period 2000–2009.

Overview of methods

This systematic literature review was carried out to retrieve, assess and synthesise all available data published between 2005 and 2015 on the prevalence of hepatitis B and C in EU/EEA countries in the general population and the following subgroups: blood donors, pregnant women, people who inject drugs (PWID), men who have sex with men (MSM), prisoners and migrants.

A search strategy was developed and a literature search performed. Publications of interest were first screened based on title and abstract. The full text of all publications selected during the title and abstract screening was then assessed for relevance. This was followed by extracting the relevant data from the final selected publications. Data from each study were extracted using a predefined set of variables covering study characteristics, study population details, prevalence of HBV and HCV markers (HBsAg and anti-HCV antibodies), including the type of sample that was collected and the type of laboratory test that was used. Finally, the risk of bias was assessed for each study and used to categorise the included studies according to quality indicators defined in the study design.

To assess the prevalence of HBV and HCV among blood donors, PWID and migrants, alternative sources for data were used. These sources were the latest Council of Europe report on national blood donor data, data from the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) database and an ECDC systematic review entitled 'Epidemiological assessment of hepatitis B and C among migrants in the EU/EEA'.

An algorithm, which also took into account study quality, was used to develop a general population HBV and HCV prevalence estimate for each EU/EEA country, with the aim to estimate the current burden of chronic HBV and HCV in the EU/EEA.

Overview of the results

After a full-text screening, a total of 125 articles were considered for inclusion: 48 on the general population, 32 on pregnant women, 32 on prisoners, and 13 on MSM. In total, 211 prevalence data points were identified, ranging from 0 to 33 estimates per country.

For HBV, estimates that were considered representative for the **general population** in the risk of bias assessment were available for 13 countries, where the prevalence ranged from 0.1% in Ireland to 4.4% in Romania. For HCV, prevalence estimates that were considered representative for the general population were available for 13 countries, with the reported prevalence ranging from 0.1% (Belgium, Ireland and the Netherlands) to 5.9% (Italy).

High-quality estimates (according to the risk of bias assessment criteria) for HBV prevalence in **pregnant women** were available for seven countries, ranging from 0.1% in Norway and Spain to 0.8% in France and Italy. Of the 15 estimates identified for HCV prevalence among pregnant women, high-quality estimates were available for four countries with prevalence ranging from 0.1% in Slovenia to 0.9% in Norway.

Estimates from eligible studies for the HBV and HCV prevalence in **MSM** were available for four and six countries, respectively. For HBV, the prevalence in MSM ranged from 0.0% in Estonia and the United Kingdom to 1.4% in France. The prevalence of HCV among MSM ranged from 0.0% in Italy to 4.7% in Estonia.

HBV prevalence estimates that were considered representative for **prisoners** were available for 11 countries. HBV prevalence in prisoners ranged from 0.3% in Ireland to 25.2% in Bulgaria. HCV estimates that were considered representative were available for 11 countries, ranging from 4.9% in Hungary to 86.3% in Luxembourg.

The prevalence of HBV and HCV in **first-time blood donors** was available for 30 countries. The prevalence of HBV among first-time blood donors ranged from 0.0% in Finland and Luxembourg to 3.2% in Bulgaria. Most

countries (60%) had an HBV prevalence that was below or around 0.1%. The prevalence of HCV among first-time blood donors ranged from 0.0% in Iceland to 2.2% in Latvia, although the Latvian estimate is not very recent (2003). Around a third of the countries (32%) had an HCV prevalence that was higher than 1%.

National estimates on the prevalence of HBV in **PWID** were available for seven countries and ranged from 0.5% in Croatia, Hungary and Ireland to 6.3% in Portugal. National estimates for HCV in PWID were available for 16 countries and ranged from 13.8% in Malta to 84.3% in Portugal.

Estimates for the prevalence of HBV in the representative general **migrant population** were available for five countries. According to the available estimates, the prevalence of HBV in migrants varied by country or origin and ranged from 0.0% to 17.4%. The highest prevalence is reported among migrants from countries in south-east Asia, irrespective of their current country of residence. For three countries, Italy, the Netherlands and the United Kingdom, HCV estimates were available. The HCV prevalence in migrants ranged from 0.0% to 7.1%, with the highest prevalence reported among migrants from eastern Europe in Italy.

Based on general population and blood donor estimates, the HBV prevalence in the EU/EEA as a **whole** is estimated to be 0.9% (95% CI 0.7–1.2), corresponding to almost 4.7 million HBsAg-positive cases. For HCV, the estimated EU/EEA prevalence is 1.1% (95% CI 0.9–1.4), corresponding to around 5.6 million anti-HCV-positive cases.

Conclusions

This systematic literature review explores the prevalence of chronic HBV and HCV infections in EU/EEA countries. Studies with recent data on HBV/HCV prevalence in the general population are scarce and offer only data for slightly more than half of the 31 countries in the EU/EEA. Studies on pregnant women and prisoners are available for about half of the countries, and data on the prevalence of these infections among MSM are lacking for most EU/EEA countries.

The prevalence of HBV and HCV in the EU/EEA as a whole is estimated to be around 0.9 and 1.1 percent, respectively, with an estimated total of 4.7 million chronic HBV cases and 5.6 million HCV infected cases. These figures are likely to be an underestimation as a result of the inclusion of prevalence estimates among blood donors as a proxy for the general population in the absence of other evidence. However, when taking into account HBV and HCV data, the general population estimates obtained from the studies included in this review covered approximately 83% of the total European population, with the remaining 17% covered by blood donor estimates.

The lack of high-quality, recent, representative, nationwide prevalence estimates, and the overall heterogeneity of the available studies makes it challenging to gain an overview of the current epidemiological situation in the EU/EEA regarding chronic viral hepatitis. For a number of EU/EEA countries, robust HBV/HCV prevalence estimates are needed, both for the general population and specific risk groups. Increased efforts should be made to estimate the burden of hepatitis B and C, for example by developing a standardised seroprevalence survey. This would also provide robust strategic information for policymakers and help public health authorities to design appropriate secondary prevention interventions for HBV and HCV infection in the EU/EEA.

1 Background

Hepatitis B virus (HBV) and hepatitis C virus (HCV) can cause acute and chronic hepatitis and adversely affect the liver. People with chronic HBV and/or HCV infection remain infectious to others and are at risk of serious liver disease such as liver cirrhosis or hepatocellular carcinoma (HCC) later in life [1].

Transmission of HBV and HCV can occur via sexual, blood-blood contact or vertically (mother-to-child). There are several known high-risk groups for acquiring an HBV or HCV infection, these include people who require blood or blood products, people interned in prisons, people who inject drugs, people with multiple sexual partners, migrants originating from endemic regions, and new-borns from HBV or HCV chronically infected mothers (vertical transmission) [1].

The risk of developing chronic HBV infection depends on the age at infection: chronic infection results in 90% of infants infected at birth, in 30 to 50% of children infected between the age of one to four years, and in 1 to 10% of those infected at older age or as adults [2,3]. According to Schweitzer et al., an estimated 248 million people were chronically infected with hepatitis B worldwide in 2010 [4]. Approximately 780 000 persons die each year from HBV infection (650 000 from cirrhosis and liver cancer due to chronic hepatitis B infection and another 130 000 from acute hepatitis B) [5].

Initial infection with HCV is frequently asymptomatic or mild (70%–90% of cases). Of those infected, 50–80% later develop chronic infection, and those with chronic infection can eventually develop cirrhosis (up to 50%) and liver cancer (1–5%) over a period of 20 to 30 years [2]. The WHO estimates 30–150 million people globally have chronic hepatitis C infection, and 350 000 to 500 000 people are estimated to die each year from hepatitis C-related liver diseases [6].

Recently, the treatment options for HCV have greatly improved through the introduction of new drug therapies, and several new therapies are expected to be approved in the near future. As a result of advances in the treatment of chronic hepatitis B, a remission can be achieved in up to 90% of chronic hepatitis B cases [7,8]. The new direct acting antiviral therapy for HCV shows cure rates of over 90% [9].

There is a distinct geographical variation in both HBV and HCV prevalence and incidence in the EU/EEA. In parts of eastern and southern Europe, the prevalence of chronic infections is mostly high [10,11]. It has been estimated that across the EU/EFTA region almost 4.49 million people have a chronic hepatitis B virus infection [11]. In 2013, EU/EEA countries reported a total of 13 629 chronic HBV cases (7.4 cases per 100 000 population) to ECDC¹. Data indicate that the most common transmission route reported was mother-to-child transmission (43.5%). For chronic HBV cases, ECDC notes a steep rise in the number of infections and prevalence, which seems to be related to changes in reporting but may also reflect increases in local testing and screening practices among key populations [12].

Across the EU/EFTA region, an estimated 5.47 million are chronically infected with hepatitis C virus [11]. EU/EEA countries reported a total of 31 513 HCV cases to ECDC in 2013, 15.2% of which were classified as chronic (3.5 cases per 100 000 population)¹. The most common transmission route for chronic HCV was injecting drug use (77.6% of the data that included this information). For chronic HCV cases, no clear trend can be distinguished. It is likely that much of the variation in reported cases between countries reflects differences in testing and screening programmes among risk groups [13].

Rationale for the study

In 2011, ECDC started to coordinate EU-wide enhanced surveillance for hepatitis B and C based on annual data collection from EU/EEA Member States [12,13]. However, because chronic HBV and HCV infections are typically asymptomatic, notification data most likely do not reflect the real number of infections, but national screening and testing practices. It is generally felt that case-based surveillance data still do not have the robustness required to adequately inform primary or secondary prevention, resulting in the need for supplementary information in the form of prevalence data.

Information about the prevalence of HBV and HCV can help to better describe the current situation in the EU/EEA. In combination with the available surveillance data, European HBV and HCV prevalence data can also be used for benchmarking. In addition, in the wake of new treatment options, prevalence data are relevant for estimating the size of the chronically infected population and those in need of treatment. The improved options for antiviral treatment will also improve secondary prevention of both HBV and HCV. Prevalence data can help determine if

¹ Calculation based on reporting countries only.

there is a need to target and expand screening and testing for chronic HBV and HCV infection to those population subgroups with the highest prevalence.

The gold standard for assessing HBV and HCV prevalence in a population is to conduct a serosurvey on a randomised representative sample. In view of the costs and implementation challenges of such an exercise, a systematic review of existing hepatitis B and C prevalence studies is considered a robust tool to obtain up-to-date prevalence estimates for the EU/EEA.

In 2009, ECDC undertook a systematic review of the literature published between 2000–2009 to obtain insights into HBV and HCV prevalence in EU countries. The results of this review are presented in a technical report entitled *Hepatitis B and C in the EU neighbourhood: prevalence, burden of disease and screening policies* [10,14].

In 2015, ECDC conducted an update (2005–2015) of the previous systematic review, with the aim to provide estimates of the prevalence of HBV and HCV in the general population and in specific subgroups in the EU/EEA Member States, and to identify gaps in the available information.

2 Review methods

A systematic literature review was carried out to retrieve, assess and synthesise all available data on the prevalence of hepatitis B and C in the EU/EEA published between 2005 and 2015.

The study question was framed (see below) and a study protocol was developed. The search strategy built on the one used for the 2010 review [10]. After a full literature search, publications of interest were initially selected based on title and abstract. The full text of all publications selected during the title and abstract screening was then assessed for relevance. This was followed by extracting the relevant data from the selected publications and assessing the risk of bias for each study. All steps are described in detail below. The complete search strategy is described in Annex 5.

2.1 Research question

The objective of the review was captured in the following research question: What is the prevalence of HBsAg and anti-HCV in the EU/EEA countries in the general population and in the following subgroups:

- Blood donors
- Pregnant women
- People who inject drugs (PWID)
- Men who have sex with men (MSM)
- Prisoners
- Migrants

Thirty-one countries were included in the review: 28 EU Member States and three EEA countries (Norway, Iceland and Liechtenstein). HBV and HCV prevalence were defined as the presence of HBsAg and anti-HCV in serum, saliva or dry blood spot samples, respectively. The definitions of the various population subgroups are shown in Table 1.

Prevalence studies among itinerant ethnic groups, homeless people or other marginalised populations, sex workers, institutionalised patients in closed/fixed settings (for instance residential care homes for elderly people and orphanages) and returning travellers were not included in the review. The European outermost regions (Guadeloupe, French Guyana, Martinique and La Réunion, the Canary Islands, the Azores and Madeira) as well as the European overseas countries and territories (associated to Denmark, France, the Netherlands and the United Kingdom) were excluded. Review articles were not included in this review, as these typically do not present original data. However, the reference list of relevant reviews (where the disease, population, study period and setting matched the inclusion/exclusion criteria of this study) was checked for additional original articles not captured in the literature search.

Table 1. List and definition of key subgroups included in the systematic review

Population category	Definition
General population	People living in a defined geographical area (all ages or adults only), excluding specific low-risk populations such as children OR patients attending community and primary care settings, excluding hospitalised patients OR workforce or specific professional groups (e.g. workplace screening) excluding healthcare workers and specific recreational/sports-related population subgroups
Prisoners	Prison inmates and people incarcerated in custodial or prison settings including youth detention centres, excluding formerly incarcerated populations and people in other non-custodial closed/fixed institutions (such as secure psychiatric hospitals). Psychiatric prison hospital inmates (i.e. people with severe mental illness that are serving custodial sentences) are included.
MSM	Men who have sex with men
PWID	People who inject drugs, including current or past injectors, injectors of non-illicit drugs such as image or performance enhancing drugs. Excluded are non-injecting (illicit/street) drug users with drug use that can lead to blood-borne virus transmission (i.e. intra-nasal).
Pregnant women	Pregnant women undergoing antenatal care screening
Blood donors	First-time blood donors (pre-screened and non-pre-screened)
Migrants	Foreign-born migrants, not including Roma and other minorities, refugees, asylum seekers and their children

2.2 Literature search

Original research articles were retrieved from PubMed, Embase and Cochrane Library bibliographic databases in March 2015. The search strategies combined the concepts of HBV and HCV with 'prevalence'. Controlled vocabulary (i.e. MeSH and Emtree terms) and natural vocabulary (i.e. keywords) were used for representing the concepts in the search strategies. The search was limited to records published from 1 January 2005 to 12 March 2015, and no language restriction was applied. A geographical search string was used to limit the search to EU/EEA countries

and to studies with regional (i.e. European) and global scope. The geographic search strategy was developed by ECDC and underwent one testing round with the following results: negative predictive value (NPV) of 98.4% and a positive predictive value (PPV) of 66.4% in Embase and NPV of 97.6% and a PPV of 65.2% in PubMed. The geographical search strategy was not used for searching in the Cochrane Library. Search strategies are available in Annex 5.

The results of the search were transferred to an EndNote library. Duplicate records were automatically removed with EndNote tool. The Endnote library was then manually checked. The literature search was complemented by a manual search of references of relevant systematic reviews. In addition, ECDC's National Focal Points for HBV and HCV were consulted in May 2015 to review and validate the selected references on general population and high-risk group estimates for their country. They were also invited to provide additional published articles or grey literature. A total of 17 Member States responded by validating the list and/or providing additional references.

Articles in all EU/EEA languages were included because ECDC could provide translations.

To assess the prevalence of HBV and HCV among blood donors, PWID and migrants, additional sources of data were used. The Council of Europe and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) are specialised institutions collecting data on blood donors and PWID, respectively. It was assumed that these data sources were reliable and that the data were comprehensive; therefore, no estimates from the literature were used to determine HBV and HCV prevalence in PWID and blood donors. Moreover, data on blood donors are often not reported in the literature, as was shown in the previous review [10]. Data on HBV and HCV prevalence among migrants in the EU/EEA were taken from a recent ECDC review on this topic [154] to avoid duplication.

The following three additional sources of data were used:

- For first-time blood donors: Council of Europe national blood donor data, 2014 report [15]
- For PWID: European Monitoring Centre for Drugs and Drug Addiction database on HBV and HCV prevalence in PWID [16] [17]
- For migrants: ECDC systematic review 'Epidemiological assessment of hepatitis B and C among migrants in the EU/EEA' [154]

2.3 Eligibility criteria and selection process

All records identified during the search were screened by title and abstract. Inclusion and exclusion criteria (Table 2) were developed in an iterative process involving all team members from both ECDC and RIVM. Two reviewers reviewed a random selection of five percent of the retrieved articles by title and abstract – in accordance with a predefined set of inclusion criteria – which resulted in an insufficient level of concordance (>10% disagreement). Inclusion criteria definitions were perfected and during a second round of parallel screening the two reviewers achieved a high level of concordance (>95%), after which the screening was continued separately. In cases of uncertainty about inclusion or exclusion, the reviewers consulted each other for a second opinion. Disagreements were resolved by consultation with a third team member.

Table 2. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Articles published in 2005 or later reporting data from populations sampled in 2000 or later, including studies with data collection ending after 2000 (irrespective of start date)	Articles falling outside the specified sampling period or publication date range
Articles reporting data from one or more EU/EEA Member States and/or any of their regions/districts	Articles reporting data on non EU/EEA countries only
Articles reporting HBsAg/anti-HCV prevalence rates in humans	Articles not reporting data on HBsAg/anti-HCV prevalence or DNA/RNA or if virological markers tested for were not specified Article reporting only self-reported (i.e. unconfirmed) HBsAg/anti-HCV prevalence
Articles reporting data from the general population and/or key subgroups (Table 1)	Articles reporting data on specific high-risk groups only (Table 3)
	Articles reporting modelled data only Articles reporting only data from a study not conducted in humans, environmental studies, technology assessments (studies on diagnostic and/or laboratory methods) Opinion papers, editorials, guidelines or recommendations, perspectives, and correspondence articles, systematic reviews or meta-analyses Articles reporting data on the general population or pregnant women in countries with a population of >5 million inhabitants, but with a sample size <100 participants or with a sample size <50 participants for countries with a population of <5 million

After completion of the title and abstract screening, full-text publications were obtained using the libraries of RIVM, the Public Health Service Rotterdam-Rijnmond, and ECDC. Each reviewer individually screened the full texts of the selected references. Disagreement of selected full texts was resolved with mutual consent. If authors could not agree upon the issue, the reviewers consulted each other for a second opinion. Disagreements were resolved by consultation with a third team member. When a study was not considered relevant, the reason for exclusion was recorded in the data extraction file (Microsoft Excel). If more than one exclusion criteria was applicable, only one criterion was used to categorise the article.

Table 3. List and definition of high-risk groups excluded from the systematic review

Population category	Definition
Acute/chronic liver disease patients	Patients with acute or chronic liver disease
In-/outpatients	Patients in healthcare settings (as opposed to primary care), hospital care settings and emergency departments, including specific diagnosis-related populations such as <i>lichen planus</i> patients, lymphoma/leukaemia and all cancer patients, haemodialysis patients, and any other immunocompromised patients, including people living with HIV
Haemophiliacs	Haemophiliacs, recipients of blood products and organ transplant recipients
Healthcare workers	Healthcare services staff, including both healthcare professionals and support staff
Military	Military recruits
Children ²	Children aged 0–17 years

2.4 Data extraction

Data extraction was performed simultaneously with the full text screening. Relevant data were extracted from each included article and immediately recorded in the data extraction file (Microsoft Excel).

The unit for data extraction was not article, but study. A study was defined as a report of prevalence data on HBV or HCV for a defined population group, in a defined country, over a discrete period of time. According to this definition, a single article may include more than one study (e.g. comparing the same population over time; comparing different populations; reporting HBV and HCV prevalence). Studies published in more than one article were extracted only once, and the first publication was used as reference. Data from each study were extracted using a predefined set of variables covering: study characteristics, study population details, prevalence of HBV and HCV markers, including the type of sample collected and the laboratory test used. The complete list of variables is provided in Annex 6.

2.5 Assessment of quality and risk of bias

Each original article reporting the results of a prevalence study included in the analysis was evaluated for its quality based on a framework for making summary assessments of the risk of bias. The framework was developed ad hoc to assess the risk of selection bias, to determine the level of representativeness of the target population, and to judge the robustness of the estimates provided by the included studies. The framework was piloted, reassessed with the project team, and refined through a consensus-building approach. Four different frameworks were proposed to accommodate the differences between seroprevalence studies with regard to study design and sampling approaches toward different populations.

The risk of bias was not assessed for data on blood donors, PWID and migrants. Data for blood donors were obtained from the Council of Europe report, which collects annual data on national blood donations in Member States. For PWID no, or very limited, data were available to assess the risk of bias, and the study characteristics available are presented alongside the prevalence estimates.

In a review on HBV and HCV seroprevalence in migrants [154], the quality of individual studies was not assessed. This review, however, only contains those studies on migrants that were considered representative for the general migrant population. Criteria include sample size and study population. Studies on high-risk groups such as refugees, for example, were not included in the current review. The results of the assessment of the risk of bias for all included articles and populations is provided in Annex 4.

² Studies reporting seroprevalence of HBV or HCV in children only were excluded because they were not considered to be representative of the general population.

General population

The following four domains were considered as possible sources of selection bias in general population studies:

- Age
- Gender
- Sampling method and response rate
- Population coverage (i.e. the population covered by the sampling design in geographic/demographic terms)

Points were given for representativeness or a lower risk of bias in each domain (Table 4). A total score for risk of bias was calculated by adding up the scores in all four domains, resulting in a score of between 0 and 6. The highest score indicates the lowest risk of bias.

Table 4: Framework for assessing risk of bias: general population

Domain	Scores and description	
Age	0	1
	Clear age bias (towards children for example), not representative for general population; no information on age	No clear bias in age profile of respondents; representative for general population age distribution
Gender	0	1
	Clear bias in gender; no information to suggest representativeness for general population	No clear bias in gender distribution of subjects; could be considered representative if information is limited
Sampling method	0 – Non-random or non-exhaustive 1 – Exhaustive or random and <60% response rate or no info 2 – Exhaustive or random and >60% response rate	
Population coverage	0 – Single centre/local; 1 – Multi-centre/local or regional; 2 – Multi-centre/national	

Pregnant women

The following two domains were considered as potential sources of selection bias in studies on pregnant women:

- Sampling method; response rate not included due to lack of denominator data
- Population coverage (i.e. the population covered by the sampling design in geographic/demographic terms).

Points were given for representativeness or a lower risk of bias in each domain (Table 5). A score for the combined risk of bias was calculated (0 to 3), with a score of 3 indicating the lowest risk of bias.

Table 5: Framework for assessing risk of bias: pregnant women

Domain	Scores and description	
Sampling method	0	1
	Non-random or non-exhaustive	Exhaustive or random
Population coverage	0 – Single centre/local; 1 – Multi-centre/local or regional; 2 – Multi-centre/national	

MSM

Only the domain 'sampling venue coverage' was included in the framework for assessing the risk of bias in studies on MSM (Table 6). Studies that took samples from multiple venue types were rates as having a lower risk of bias than studies that only explored single venues or multiple venues of the same type. Studies were assigned zero to 2 points, with a score of 2 indicating the lowest risk of bias.

Table 6: Framework for assessing risk of bias: MSM

Domain	Scores and description
Sampling venue coverage	0 – Single venue; 1 – Multi-centre/single venue type; 2 – Multi-centre/multi-venue type

Prisoners

The following five domains were considered as potential sources of selection bias for studies in prisoners:

- Age
- Gender
- Proportion of PWID (or used as a selection criterion)
- Sampling method
- Population coverage (i.e. the population covered by the sampling design in geographic/demographic terms)

Points were given for representativeness or a lower risk of bias in each domain (Table 7). A score for the combined risk of bias was calculated (0 and 6), with a score of 6 indicating the lowest risk of bias.

Table 7: Framework for assessing risk of bias: prisoners

Domain	Scores and description	
Age	0	1
	Clear age bias (i.e. among juvenile offenders only); no information	No clear bias in age profile of subjects
Gender	0	1
	Clear bias in gender; no information	No clear bias in gender distribution of subjects; could be considered representative if information is limited
% PWID	0	1
	Exclusively among PWID/former PWID prisoners	PWID not used to select subjects; no bias toward PWID
Sampling method	0	1
	Non-random or non-exhaustive	Exhaustive or random
Population coverage	0 – Single centre/local; 1 – Multi-centre/local or regional; 2 – Multi-centre/national	

2.6 Data analyses

General approach

All available estimates were rounded to one decimal point. Weighted or standardised prevalence estimates, if available, were preferred over unweighted or crude estimates. Confidence intervals (CI) of 95% were calculated using the Fisher exact method, unless already reported.

Based on the score from the assessment of the bias risk in the four population groups, an algorithm for data inclusion in the analysis was developed. Studies with higher quality (see criteria below) were included in the comparative analysis. HBV and HCV prevalence estimates from all eligible studies (i.e. all data points) are presented in the overview tables (Annex 2) and the country profiles (Annex 3).

General population

General population estimates were reported separately for adults and children where possible, and estimates for adults were included in the analysis. Studies in the general population with a score for risk of bias greater or equal to 4 (higher quality) were pooled. When there was a difference greater than 1% between higher quality estimates, regional estimates were reported separately.

HBV and HCV prevalence maps of Europe were produced for the general population, representing data from higher quality studies. Countries for which no studies with a score of 4 or more were available were shaded grey or labelled 'no data'. Maps were produced with EMMA, the ECDC Mapping and Multi-Layer Analysis tool. Countries in the prevalence map were categorised based on the following ranges: <0.5%, 0.5–1%, 1–2%, 2–8%.

All higher quality estimates (risk of bias score ≥ 4) retrieved for each country for the general population were presented in a forest plot. Separate forest plots were prepared for HBV and HCV infections using Microsoft Excel. The parameters displayed in each forest plot are country, sampling period, prevalence estimate, and 95% CI.

Pregnant women

HBV and HCV prevalence estimates obtained from studies in pregnant women with a risk of bias score greater or equal to 2 were considered of higher quality and pooled (when possible). Higher quality estimates were presented in separate forest plots for HBV and HCV infections. The parameters displayed in each forest plot are country, sampling period, prevalence estimate, and 95% CI.

First-time blood donors

A summary table with HBV and HCV estimates for first-time blood donors was created by using data from the latest Council of Europe report (2011 data) [15]. For countries with no data reported in the latest report, data from the most recent previous Council of Europe report were used. For the following countries, older data were used: Austria (2010), Poland (2010), Slovenia (2009), Sweden (2009), Cyprus (2008), Portugal (2006), Latvia (2003). The number of first-time blood donors, the number of HBV cases, and the number of HCV cases were retrieved and shown in a table.

European HBV/HCV prevalence estimates

In order to estimate the current burden of chronic hepatitis B and C in the EU/EEA, an algorithm based on study quality was used to estimate the prevalence of HBV and HCV in the general population of each EU/EEA country. General population crude estimates and blood donor data identified in this review were combined using the following algorithm: if a pooled higher quality general population crude prevalence estimate was available for a

country, it was used to determine the HBV and HCV prevalence in that country. If there was no higher quality estimate available, general population estimates with a lower quality were pooled (when possible) and used as an estimate of a country's HBV and HCV prevalence. If no general population prevalence estimates were available, data on the prevalence of HBV and HCV in blood donors were used as a prevalence measure for the country. To determine the total number of HBV and HCV cases in each country, Eurostat 2014 data were used; the total population size was multiplied by the estimated prevalence in each country.

MSM

No prevalence estimates were pooled because the number of eligible studies among MSM was small and had a higher risk of bias. All retrieved estimates, irrespective of the risk of bias score, are presented in a forest plot. Separate forest plots were prepared for HBV and HCV prevalence using Microsoft Excel. The parameters shown in the forest plots are country, sampling period, prevalence estimate and 95% CI.

Prisoners

HBV and HCV prevalence estimates obtained from studies with a risk of bias score greater or equal to 3 and in adult populations were considered of higher quality and pooled when possible. All higher quality estimates for prisoners are presented in a forest plot. Separate forest plots were prepared for HBV and HCV infections using Microsoft Excel. The parameters displayed in each forest plot are country, sampling period, prevalence estimate, and 95% CI. Estimates for adult and juvenile populations are shown separately.

PWID

A summary table with HBV and HCV prevalence estimates among PWID was created using EMCDDA data. The most recent available data were downloaded from the EMCDDA website [16,17]. National and subnational prevalence estimates were retrieved. The summary table includes sampling period, sample size, national prevalence estimates, and 95% CI.

Migrants

Migrant data from the ECDC systematic review 'Epidemiological assessment of hepatitis B and C among migrants in the EU/EEA' were used [154]. Only HBC and HCV prevalence estimates for foreign-born first generation migrants obtained from studies with a sample size of >100 were included. When multiple estimates (by country of origin) were available from a Member State, results were pooled. A summary table of all estimates (alphabetically by Member State) was prepared. The table includes country of origin, sampling period, sample size, prevalence and CI.

Country profiles

All country-specific HBV and HCV prevalence estimates retrieved from eligible studies are presented in country profiles which include:

- Summary tables with details of all included studies and an assessment of the related risk of bias for HBV and HCV
- Forest plots summarising HBV and HCV prevalence estimates from all eligible studies for all relevant population groups, including blood donors and migrants.

HBV and HCV prevalence estimates for PWID were reported separately due to heterogeneity of the data, for example in some cases only a prevalence range was available. The country profiles are shown in Annex 3.

3 Review results

3.1 Systematic literature search

The literature search identified 9 379 articles, 142 of which were selected – based on title and abstract – for the ‘general population’ category. The title and abstract screening yielded 50 articles for the category ‘pregnant women’, 17 for ‘MSM’, and 57 for ‘prisoners’. A manual search and Member State consultation yielded additional articles for the categories ‘general population’ (9), ‘prisoners’ (7), ‘pregnant women’ (5), and ‘MSM’ (3).

Of the 284 full-text articles retrieved (three publications were unavailable), 148 were on the general population, 61 on prisoners (three articles unavailable), 55 on pregnant women, and 20 on MSM. After the full-text screening, the number of eligible articles was further reduced: 48 articles on the general population were considered eligible; 32 on pregnant women; 32 on prisoners; and 13 on MSM.

Some publications reported both HBV and HCV prevalence, and one publication reported results from multiple countries. PRISMA³ flowcharts with the results of the literature search are presented in Annex 1.

The number of prevalence estimates per country for HBV and HCV are presented in Table 8 per population group. Estimates derived from EMCDDA data (HBV and HCV in PWID), the Council of Europe report (HBV and HCV in first-time blood donors) and the ECDC epidemiological assessment of hepatitis B and C among migrants in the EU/EEA (HBV and HCV in migrants) are not included in this table.

For a total of 15 countries, no recent estimates for HBV and HCV prevalence in the general population were available. For the following subpopulations, HBV/HCV prevalence estimates were not available for a number of countries: pregnant women (HBV: 20 countries, HCV: 23 countries), MSM (HBV: 27, HCV: 24), and prisoners (HBV/HCV: 12).

Table 8. Number of identified estimates for the prevalence of hepatitis B (HBsAg) and hepatitis C (anti-HCV) in four population categories, EU/EEA countries, 2005–2015 (n=212)

Country	HBsAg				Anti-HCV				Total
	General population	Pregnant women	MSM	Prisoners	General population	Pregnant women	MSM	Prisoners	
Austria	0	0	0	0	0	1	0	0	1
Belgium	3	0	0	0	1	0	0	0	4
Bulgaria	0	0	0	1	0	0	0	3	4
Croatia	2	0	1	3	2	0	2	3	13
Republic of Cyprus	0	0	0	0	0	0	0	0	0
Czech Republic	5	0	0	0	0	0	0	0	5
Denmark	0	2	0	0	0	0	0	0	2
Estonia	0	0	2	0	0	0	2	0	4
Finland	0	0	0	1	0	0	0	1	2
France	2	2	1	1	3	0	1	7	17
Germany	3	2	0	0	3	0	0	4	12
Greece	2	6	0	0	1	1	0	0	10
Hungary	1	0	0	1	1	0	0	1	4
Iceland	0	0	0	0	0	0	0	0	0
Ireland	4	1	0	1	1	3	0	1	11
Italy	10	2	0	1	14	3	1	2	33
Latvia	0	0	0	0	1	0	0	0	1
Liechtenstein	0	0	0	0	0	0	0	0	0
Lithuania	0	0	0	0	4	0	0	0	4
Luxembourg	0	0	0	1	0	0	0	1	2
Malta	0	0	0	0	0	0	0	0	0
Netherlands	2	3	0	0	3	1	2	0	11
Norway	0	1	0	0	0	1	0	0	2
Poland	2	0	0	0	3	0	0	0	5
Portugal	0	0	0	1	0	0	0	2	3
Romania	4	0	0	1	1	0	0	0	6
Slovakia	3	2	0	0	1	0	0	0	6
Slovenia	0	0	0	0	0	4	0	0	4
Spain	6	3	0	1	4	1	0	13	28

³ <http://prisma-statement.org/>

Country	HBsAg				Anti-HCV				Total
	General population	Pregnant women	MSM	Prisoners	General population	Pregnant women	MSM	Prisoners	
Sweden	0	0	0	0	0	0	1	0	1
United Kingdom	1	3	2	2	2	0	2	5	17
Total estimates	50	27	6	15	45	15	11	43	212
Countries with estimates	16	11	4	12	16	8	7	12	27

3.2 Prevalence of chronic HBV and HCV infections

General population

Fifty estimates for the prevalence of HBV in the general population were obtained from eligible studies; for HCV, 45 estimates were retrieved. A summary of these estimates with additional information on study characteristics and population is given in Tables A5 and A6 (Annex 2). The articles used for estimating the prevalence per country in Figures 1a and 1b are marked with asterisks in Tables A5 and A6. The forest plots in Figures 2 and 3 show all higher quality, pooled or standardised estimates for the general population for HBV and HCV.

Of the 50 prevalence estimates for HBV, representative estimates for the general population (risk of bias score ≥ 4) were available for 13 countries: Belgium, Croatia, the Czech Republic, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Romania, Slovakia and Spain (Figure 1a). The number of estimates available per country ranged from one estimate for Hungary and the United Kingdom to 10 estimates for Italy. For HBV, the prevalence in the general population ranged from 0.1% in Ireland to 4.4% in Romania (Figure 2). Greece and Romania account for the highest HBV prevalence, 3.3% and 4.4% respectively, while the vast majority of countries have an HBV prevalence around or below 1%. The most recent estimate for Greece is much higher than the prevalence range of 0.0%–2.1% reported in the previous review [10]. However, the most recent estimate is completely based on population data from Crete only because no nation-wide estimate for Greek was available for this review. Several higher quality prevalence estimates were available for Italy which, when pooled, resulted in an HBV prevalence of 0.7%. However, single study prevalence estimates ranged from 0.5% in the region of Apulia, southern Italy, to 5.8% in the province of Bergamo, northern Italy, thus showing a high heterogeneity in the available estimates of HBV prevalence (Annex 2 Table A5 and Annex 3).

HCV prevalence estimates that were considered representative for the general population (risk of bias score ≥ 4) were available for 13 countries: Belgium, Croatia, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Latvia, Romania, Slovakia and Spain (Figure 1b). The number of estimates available varied between one estimate (Belgium, Greece, Hungary, Ireland, Latvia, Romania and Slovakia) and 14 estimates for Italy. The HCV prevalence in the general population reported ranged from 0.1% in Belgium, Ireland and the Netherlands to 5.9% in Italy (Figure 3). Countries with a relatively high HCV prevalence were Romania (3.2%), Greece (2.2%), Latvia (2.4%) and Slovakia (2.0%). For Greece, the present estimate is based on population data from Crete. Italy and Spain had the largest number of prevalence estimates available. Spain had one higher quality estimate, which reported an HCV prevalence of 1.1%, as shown in Figure 2. The other estimates show a range from 0.4% in Barcelona to 0.6% in the working population of Murcia and Madrid to 1.5% in multiple GP offices around Barcelona (Annex 2, Table A6; Annex 3). The highest prevalence estimate for Spain (1.5%) shows a very large confidence interval (Annex 3).

Figure 1a. HBsAg prevalence in the adult general population, EU/EEA, 2005–2015

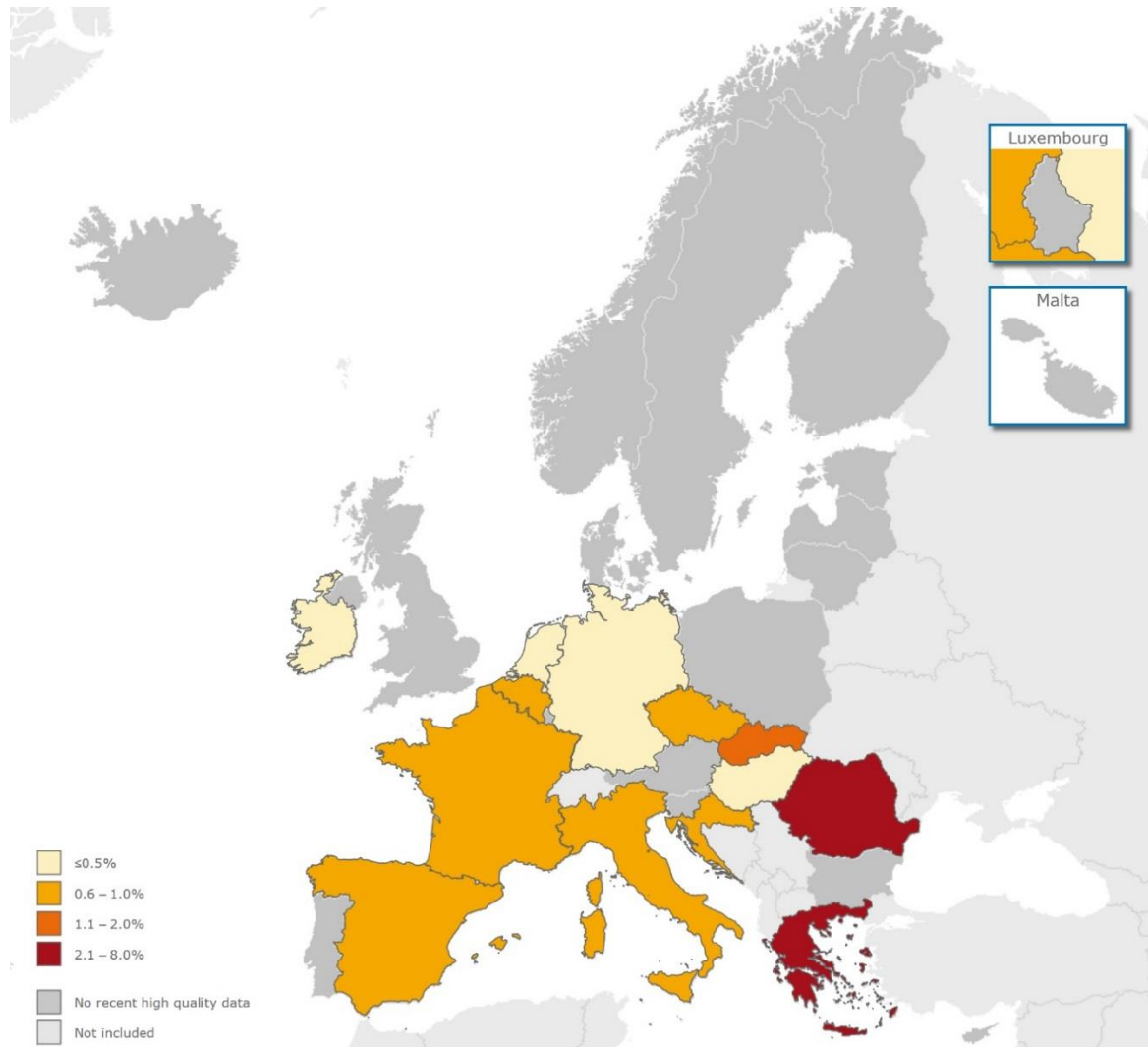


Figure 1b. Anti-HCV prevalence in the adult general population, EU/EEA, 2005–2015

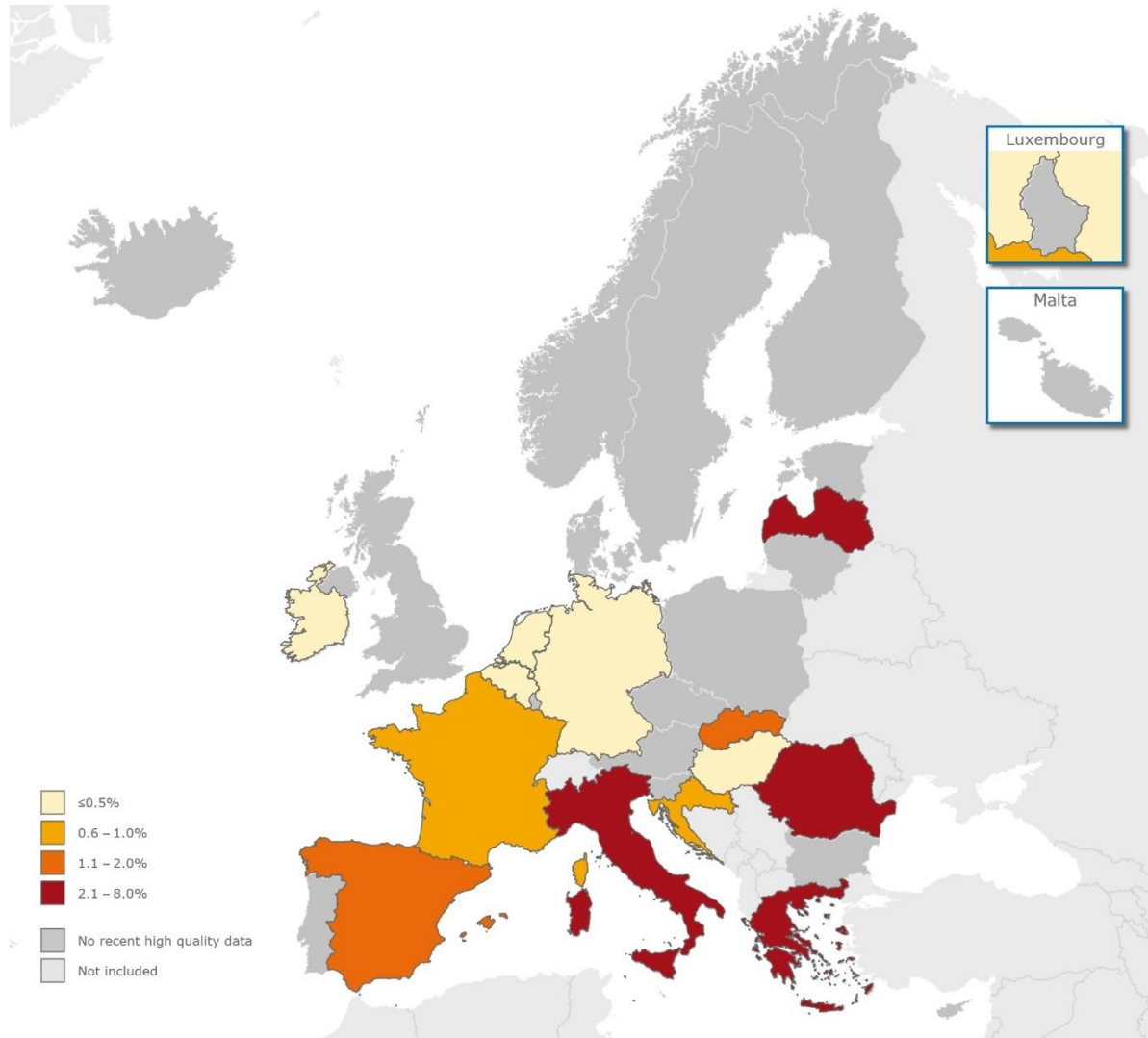
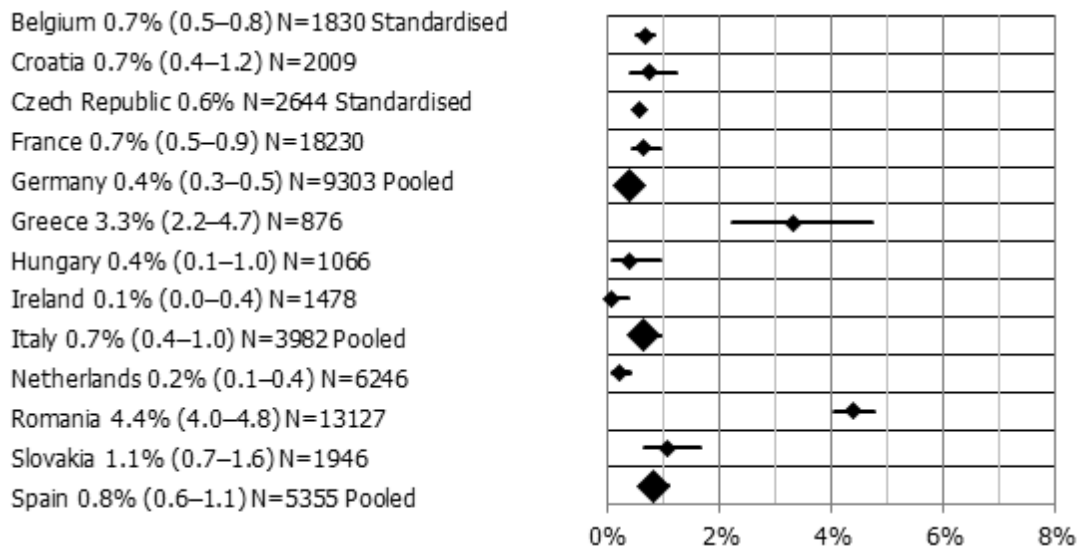
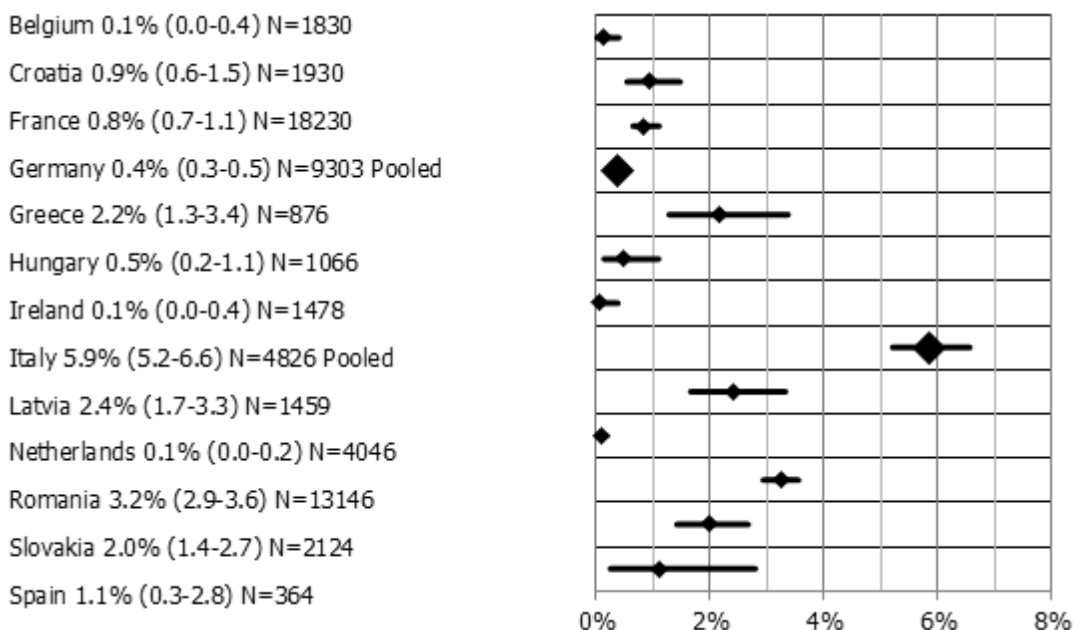


Figure 2. HBsAg in the adult general population: prevalence estimates and CIs from studies with a lower risk of bias (risk of bias score ≥ 4), EU/EEA, 2005–2015



Legend: Country, prevalence estimate (95% CI) and sample size (N)
Standardised estimates were used for Belgium and the Czech Republic
Pooled estimates were used for Germany, Italy and Spain

Figure 3. Anti-HCV in the adult general population: prevalence estimates and CIs from studies with a lower risk of bias (risk of bias score ≥ 4), EU/EEA, 2005–2015



Legend: Country, prevalence estimate (95% CI) and sample size (N)
Pooled estimates were used for Germany and Italy

Pregnant women

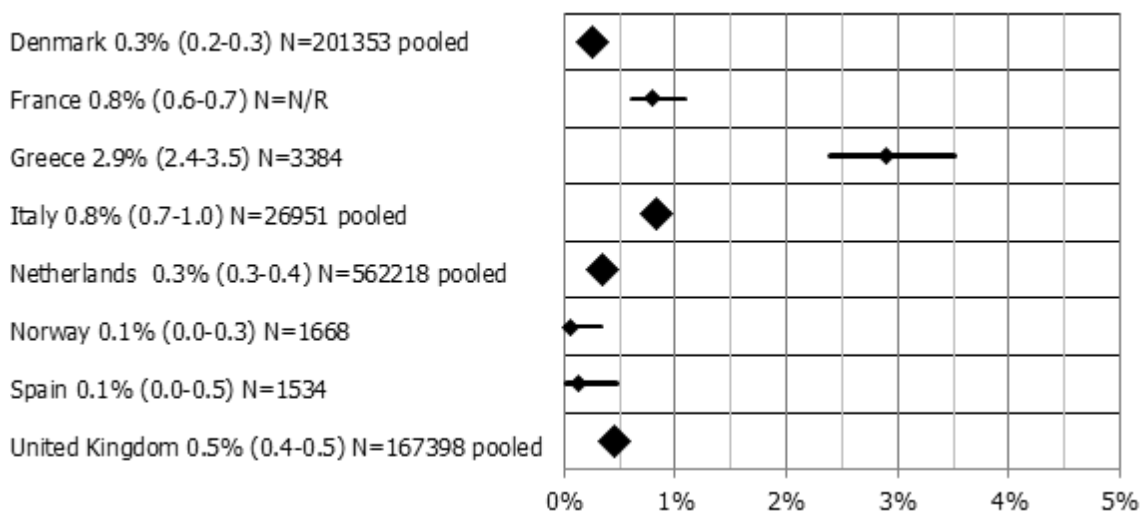
Twenty-seven estimates on HBV prevalence in pregnant women were retrieved from eligible studies; for the same group, 15 estimates on HCV prevalence could be found. A summary of these estimates with information on study characteristics and population is presented in Tables A7 and A8 (Annex 2). The forest plots in Figures 4 and 5 show all higher quality, standardised or pooled estimates with regard to pregnant women in the EU/EEA.

Higher quality estimates (risk of bias score ≥ 2) for HBV prevalence were available for seven countries, ranging from 0.1% in Norway and Spain to 0.8% in France and Italy (Figure 4). Pooled estimates were available for four countries. For nine countries, more than one estimate was available, with Greece having the highest number of estimates. For the Netherlands, three consecutive estimates for HBV in pregnant women were available (2006–

2008). HBV prevalence in these years changed from 0.3% in 2006 and 2007 to 0.4% in 2008 (Annex 2, Table A7; Annex 3).

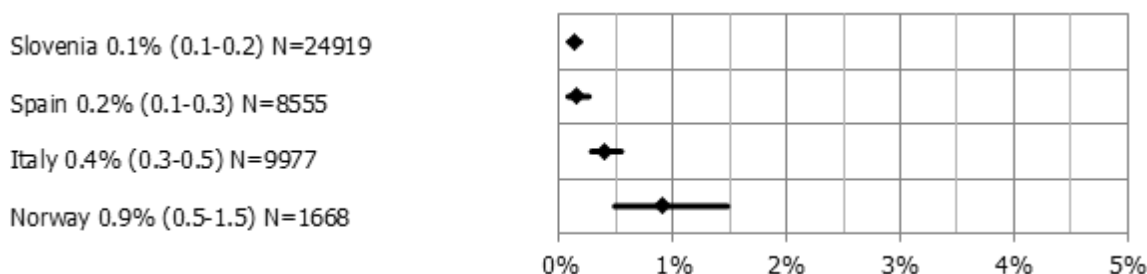
Of the 15 estimates identified for HCV prevalence among pregnant women, higher quality estimates (risk of bias score ≥ 2) were available for four countries: Slovenia, Spain, Italy and Norway, with prevalence ranging from 0.1% in Slovenia to 0.9% in Norway (Figure 5). For Slovenia, several estimates were available (2003, 2009 and 2013), which could be pooled (Figure 5). HCV prevalence among pregnant women in Slovenia in 2003 was 0.2%, while 2009 and 2013 estimates show HCV prevalence at 0.1% (Annex 2, Table A8; and Annex 3).

Figure 4. HBsAg in pregnant women: prevalence estimates and CIs from studies with a lower risk of bias (risk of bias score ≥ 2), EU/EEA, 2005–2015



Legend: Country, prevalence estimate (95% CI) and sample size (N)
Pooled estimates were used for Denmark, Italy, the Netherlands and the United Kingdom

Figure 5. Anti-HCV in pregnant women: Prevalence estimates and CIs from studies with a lower risk of bias (risk of bias score ≥ 2), EU/EEA, 2005–2015



Legend: Country, prevalence estimate (95% CI) and sample size (N)

First-time blood donors

The prevalence of HBsAg and anti-HCV in first-time blood donors by country was available for 30 countries and is presented in Table 9. A comprehensive table of the data is shown in Table A9 in Annex 2. For Latvia and Portugal, no details were available on the absolute number of positive HBV or HCV cases and first-time blood donors, and no 95% Confidence Intervals (95% CI) could be calculated.

The prevalence of HBV among first-time blood donors ranged from 0.0% in Finland and Luxembourg to 3.2% in Bulgaria. Most countries (60%) had an HBV prevalence that was below or around 0.1%.

The prevalence of HCV among first-time blood donors ranged from 0.0% in Iceland to 2.2% in Latvia, although the latter is the least recent estimate (2003), and is presented in Table 9. Most countries had an HCV prevalence below or around 0.1%.

Table 9. Prevalence of HBsAg and anti-HCV in first-time blood donors, EU/EEA, source: Council of Europe, 2011*

Country	Prevalence of HBsAg (95% CI) ^a	Prevalence of anti-HCV (95% CI) ^a	Council of Europe Report
Austria	0.099% (0.072–0.132)	0.039% (0.023–0.061)	2010
Belgium	0.077% (0.055–0.104)	0.039% (0.024–0.060)	2011
Bulgaria	3.224% (3.039–3.418)	0.342% (0.282–0.410)	2011
Croatia	0.233% (0.142–0.359)	0.140% (0.072–0.244)	2011
Cyprus	0.441% (0.270–0.681)	0.221% (0.106–0.405)	2008
Czech Republic	0.059% (0.040–0.085)	0.216% (0.177–0.261)	2011
Denmark	0.016% (0.004–0.040)	0.016% (0.004–0.040)	2011
Estonia	0.267% (0.128–0.490)	0.959% (0.673–1.326)	2011
Finland	0.000% (0.000–0.019)	0.025% (0.008–0.059)	2011
France ^b	0.070% (0.062–0.079)	0.034% (0.028–0.040)	2011
Germany	0.116% (0.107–0.126)	0.062% (0.055–0.069)	2011
Greece	1.374% (1.280–1.473)	1.202% (1.114–1.295)	2011
Hungary	0.009% (0.003–0.021)	0.159% (0.128–0.195)	2011
Iceland	0.072% (0.002–0.398)	0.000% (0.000–0.264)	2011
Ireland	0.039% (0.013–0.090)	0.008% (0.000–0.043)	2011
Italy	0.168% (0.155–0.181)	0.094% (0.085–0.104)	2011
Latvia ^c	1.127%	2.170%	2003
Liechtenstein	-	-	n/a
Lithuania	0.560% (0.468–0.665)	1.537% (1.382–1.704)	2011
Luxembourg	0.000% (0.000–0.406)	0.221% (0.027–0.794)	2011
Malta	0.174% (0.047–0.445)	0.043% (0.001–0.242)	2011
Netherlands	0.034% (0.018–0.060)	0.020% (0.008–0.041)	2011
Norway	0.028% (0.009–0.065)	0.033% (0.012–0.073)	2011
Poland	0.450% (0.425–0.476)	0.742% (0.710–0.775)	2010
Portugal	0.094%	0.165%	2006
Romania	3.078% (2.965–3.195)	0.590% (0.541–0.643)	2011
Slovakia	0.072% (0.048–0.104)	0.025% (0.012–0.046)	2011
Slovenia	0.087% (0.043–0.155)	0.016% (0.002–0.057)	2009
Spain	0.168% (0.152–0.185)	0.099% (0.086–0.112)	2011
Sweden	0.043% (0.026–0.065)	0.059% (0.040–0.085)	2009
United Kingdom	0.038% (0.030–0.047)	0.037% (0.030–0.047)	2011

* Adapted from Tables 1 and 7.1, Council of Europe Report 2011 [15]

^a Calculated using the Fisher exact method for 95% CI when data on number of cases were available

^b France: The French blood service is composed of the French National Blood Service (EFS) (17 blood centres) and the French Army Transfusion Service (CTSA) with one blood centre. Data of both organisations are reported.

^c Latvia: After 2002, only data on HIV were presented; no HBV/HCV data were available

European HBV/HCV prevalence estimates

An overview of the estimates and data used for each country can be found in Table A10 in Annex 2. Based on general population and blood donor estimates to determine the current burden of chronic HBV, the HBV prevalence in the EU/EEA as a whole is estimated to be 0.9% (95% CI 0.7–1.2), corresponding to almost 4.7 million HBV HBsAg-positive cases. The United Kingdom has the highest estimated number of HBV cases (1 093 240). This assessment, however, is based on a lower quality prevalence estimate (Table A10, Annex 2). Romania also has a high estimated number of HBV cases (877 682), and Spain, France and Italy all have around 400 000 to 500 000 HBV cases. For both Finland and Luxembourg, zero HBV cases were computed because only blood donor prevalence estimates were available.

For HCV, the estimated EU/EEA prevalence is 1.1% (95% CI 0.9–1.4), corresponding to around 5.6 million anti-HCV-positive cases. Italy has the highest estimated number of HCV cases (2 510 324), with the next highest number of cases being 771 762 for Poland (based on a lower quality estimate). France, Romania, Spain and the United Kingdom all have around 350 000 to 450 000 estimated HCV cases. For Iceland, no HCV cases were calculated; only prevalence estimates based on blood donor data were available.

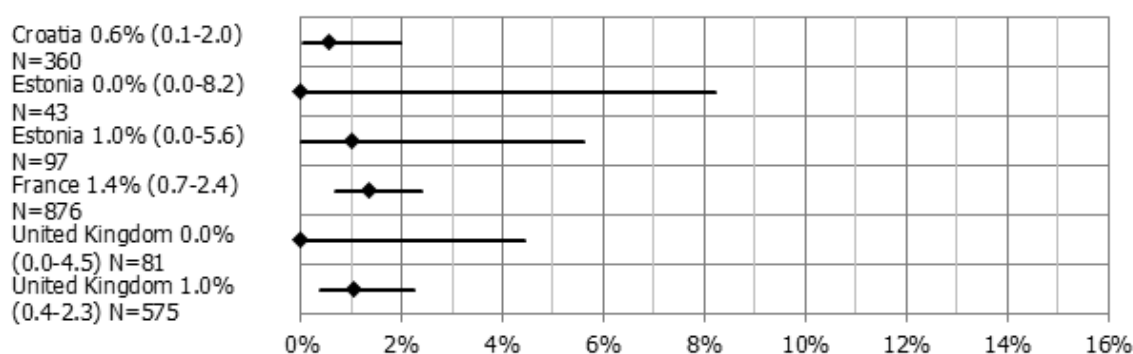
MSM

For the prevalence of HBV/HCV in MSM, 6 (HBV) and 11 (HCV) estimates were obtained from eligible studies. All estimates are included in the forest plots (Figures 6 and 7) to compensate for the low number of studies and the overall lack of good-quality studies, which are all based on convenience sampling. A summary of these estimates with information on study characteristics and population is given in Tables A11 and A12 (Annex 2).

For HBV, the prevalence in MSM ranged from 0.0% in Estonia and the United Kingdom to 1.4% in France. Multiple estimates were only available for Estonia and the United Kingdom; however, the single estimates for Croatia and France were of higher quality (Figure 6). The Estonian estimates were from different sampling periods; in 2013, the reported HBV prevalence was 0.0% and in 2014–2015, reported prevalence was at 0.1%. Both estimates, however, do have a large confidence interval, ranging from 0.0% to 8.2% for the 2013 estimate and from 0.0% to 5.6% for the 2014–2015 estimate.

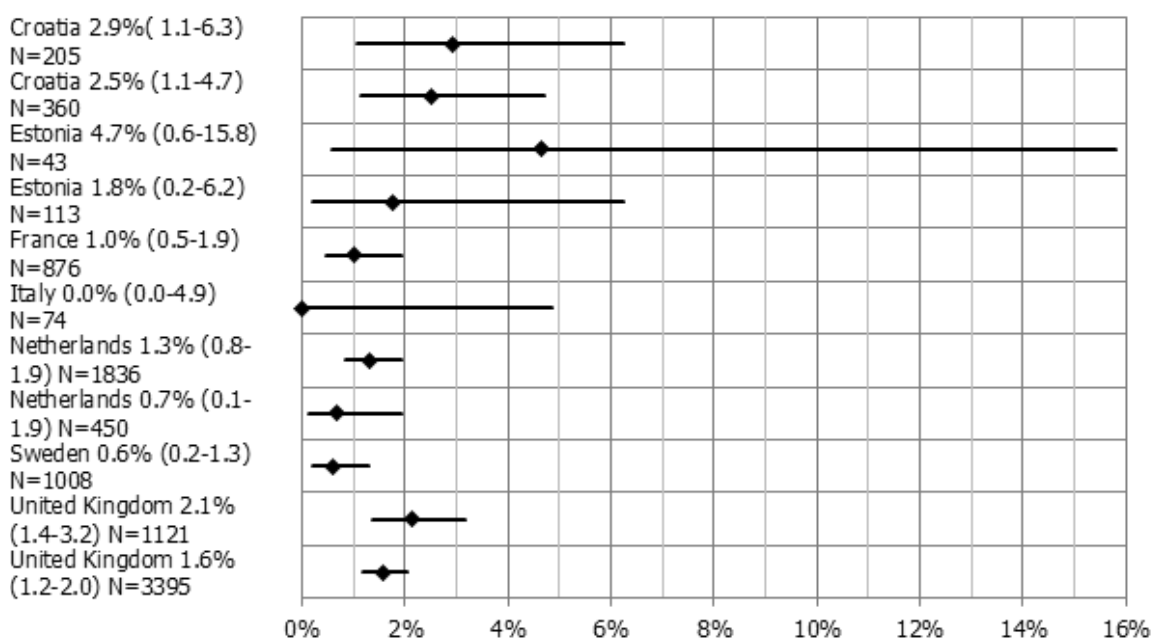
The prevalence of HCV among MSM ranged from 0.0% in Italy to 4.7% in Estonia. For Croatia, Estonia, the Netherlands and the United Kingdom multiple estimates were available (Figure 7). Most countries show an HCV prevalence below or around 2%, with the exception of Estonia and Croatia (2.9%). Estonia has two divergent estimates for HCV prevalence in MSM: one from 2013, reporting a 4.7% prevalence, and one from 2014–2015, reporting a 1.8% prevalence. The highest estimate (4.7%) also shows a very large confidence interval, ranging from 0.6% to 15.8%.

Figure 6. HBsAg in MSM: prevalence estimates and CIs from all included studies, EU/EEA, 2005–2015



Legend: Country, prevalence estimate (95% CI) and sample size (N)

Figure 7. Anti-HCV in MSM: prevalence estimates and CIs from all included studies, EU/EEA, 2005–2015



Legend: Country, prevalence estimate (95% CI) and sample size (N)

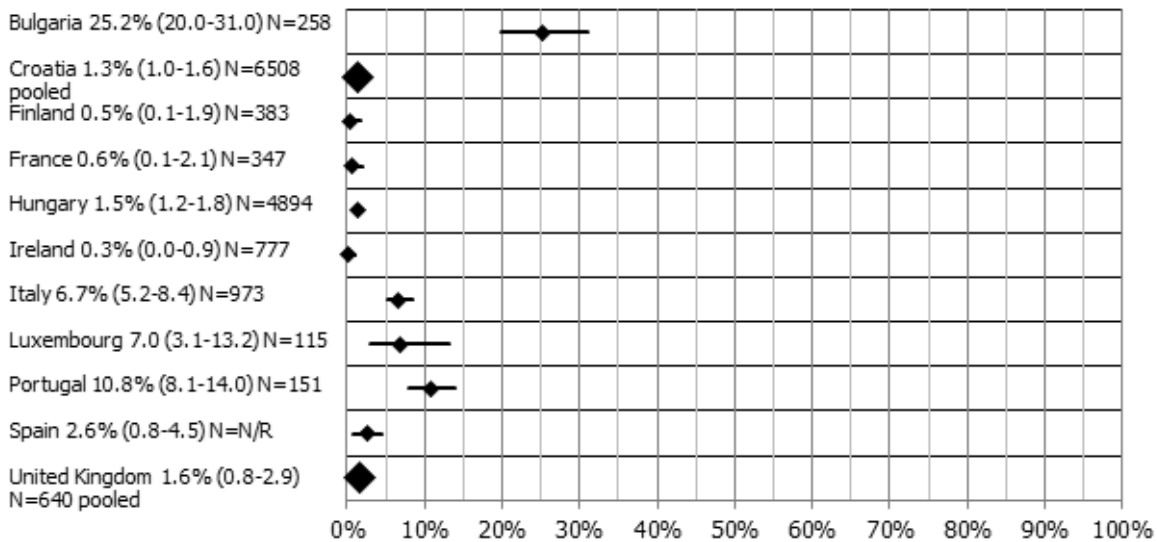
Prisoners

Eligible studies yielded 15 estimates for HBV prevalence in prisoners and 43 estimates for HCV prevalence in the same population group. HBV and HCV prevalence estimates for 11 countries based on higher quality studies (risk of bias score ≥ 3) are presented in Figures 8 and 9. A summary of all estimates with information on the study characteristics and population is given in Tables A13 and A14 (Annex 2).

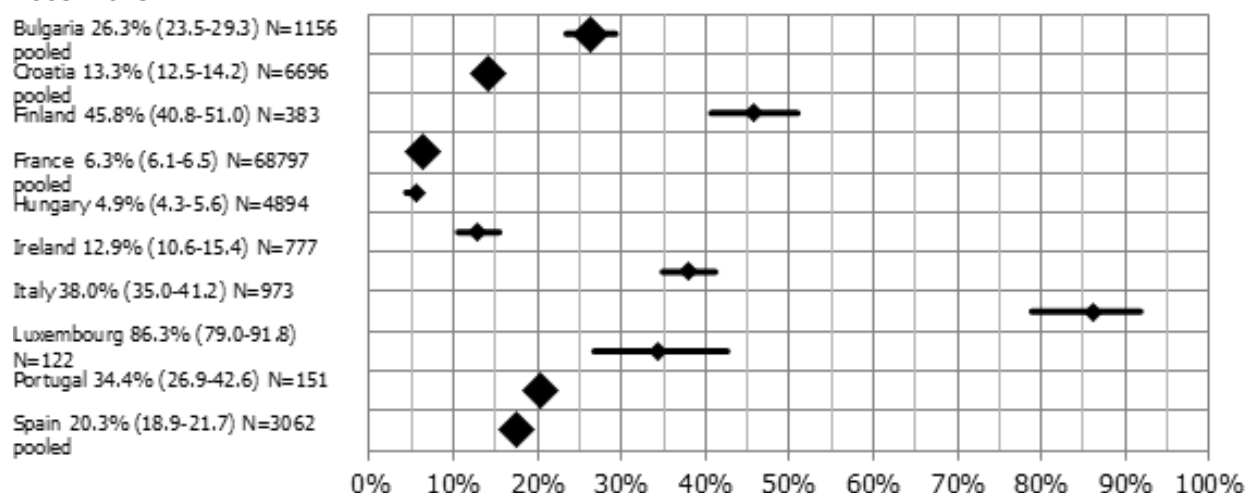
HBV prevalence estimates that were considered representative for prisoners were available for 11 countries: Bulgaria, Croatia, Finland, France, Hungary, Ireland, Italy, Luxembourg, Portugal, Spain and the United Kingdom. The only countries with multiple estimates were Croatia (3) and the United Kingdom (2), as shown in Annex 2: Table A14. For HBV, the prevalence in prisoners ranged from 0.3% in Ireland to 25.2% in Bulgaria (Figure 8). Countries with high HBV prevalence were Portugal (10.8%), Luxembourg (7.0%) and Italy (6.7%). For Croatia, estimates obtained over different sampling periods were available, consistently reporting an HBV prevalence of 1.3% in prisoners (Annex 2: Table A13, Annex 3).

HCV estimates that were considered representative were available for 11 countries, ranging from 4.9% in Hungary to 86.3% in Luxembourg (Figure 9). Pooled estimates were available for five countries. Overall, multiple estimates were available for eight countries, with Spain having the highest number of estimates (13). For Spain, consecutive estimates were available for HCV in prisoners (2000–2009). The HCV prevalence in these years changed from 44.9% in 2000 to 25.3% in 2009, showing a decrease in prevalence over time and, combined with other estimates, resulted in a pooled estimate of 20.3% (Annex 2: Table A14, Annex 3).

Figure 8. HBsAg in prisoners: prevalence estimates and CIs from all included studies, EU/EEA, 2005–2015



Legend: Country, prevalence estimate (95% CI) and sample size (N)
 * Pooled estimates were used for Croatia and the United Kingdom

Figure 9. Anti-HCV in prisoners: prevalence estimates and CIs from all included studies, EU/EEA, 2005–2015

Legend: Country, prevalence estimate (95% CI) and sample size (N)

* Pooled estimates were used for Bulgaria, Croatia, France and the United Kingdom

PWID

The prevalence of HBsAg and anti-HCV in PWID is presented in Table 10 by country. Comprehensive tables of the PWID data including regional estimates are shown in Tables A15 and A16 in Annex 2.

National estimates on HBV were available for seven countries: Croatia, Cyprus, Greece, Hungary, Ireland, Latvia and Portugal. The national prevalence estimates of HBV ranged from 0.5% in Croatia, Hungary and Ireland to 6.3% in Portugal.

National estimates for HCV were available for 16 countries: Austria, Croatia, Cyprus, the Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Italy, Latvia, Malta, Norway, Portugal, Slovenia and the United Kingdom. National prevalence estimates of HCV in PWID ranged from 13.8% in Malta to 84.3% in Portugal.

Table 10. Prevalence of HBsAg and anti-HCV in PWID, EU/EEA, 2007–2013

Country	Year	Sample size ^a	Prevalence of HBsAg (95% CI ^b)	Year	Sample size ^a	Prevalence of anti-HCV (95% CI ^b)
Austria	-	-	-	2013	48	31.3% (18.7–46.3)
Croatia	2007	200	0.5% (0.0–2.8)	2007	200	44% (37.0–51.2)
Cyprus	2013	82	6.1% (2.0–13.7)	2013	82	47.6% (36.4–58.9)
Czech Republic	-	-	-	2013	1 889	14.6% (13.1–16.3)
Denmark	-	-	-	2008	223	52.5% (45.7–59.2)
Finland	-	-	-	2009	682	60.5% (56.8–64.3)
Greece ^c	2013	1,337	3.0% (2.2–4.1)	2013	1 309	68.1% (65.5–70.6)
Hungary	2011	664	0.5% (0.1–1.3)	2011	652	24.1% (20.8–27.6)
Ireland	2010	200	0.5% (0.0–2.8)	2010	200	41.5% (34.6–48.7)
Italy ^d	-	-	-	2010	743	60.5% (56.8–64.0)
Latvia ^e	2013	562	2.1% (1.1–3.7)	2013	522	70.1% (66.0–74.0)
Malta	-	-	-	2013	109	13.8% (7.9–21.7)
Norway	-	-	-	2013	6 342	63.0% (61.8–64.2)
Portugal	2013	399	6.3% (4.1–9.1)	2013	414	84.3% (80.4–87.7)
Slovenia	-	-	-	2009	112	32.1% (23.6–41.6)
United Kingdom ^f	-	-	-	2013	3 144	49.1% (47.4–50.9)

Source: EMCDD, adapted from table INF 114 and INF-111, EMCDDA [16, 17]

^a Samples with sample size under $N = 10$ were excluded.

^b Calculated using the Fisher exact method for 95% CI.

^c Greece: Two national estimates were pooled.

^d Italy: Data collection system was changed. Up to 2011, aggregated data were collected. Detailed data became available in 2012. Data from 2012 and later are therefore not comparable with previous years.

^e Latvia: Status for 'IDUs' changed from unknown to 'ever IDUs' after 2011.

^f United Kingdom: Data collection for Scotland is not by calendar but by tax year (i.e. from April 2015 to March 2016).

Migrants

The prevalence of HBsAg and anti-HCV in the representative general migrant population is presented in Table 11. Comprehensive tables of the HBV and HCV migrant data are shown in Tables A17 and A18 in Annex 2. Estimates were available for five countries: Greece, Italy, the Netherlands, Norway and the United Kingdom. Studies from the Netherlands and the United Kingdom reported HBV prevalence estimates among several migrant groups by country of origin. According to the available estimates, the prevalence of HBV ranged from 0.0% to 17.4% in migrants. The highest prevalence is reported among migrants from countries in south-east Asia, irrespective of their current country of residence [ECDC report, in press].

For three countries, Italy, the Netherlands and the United Kingdom, HCV estimates were available. Studies from the Netherlands and the United Kingdom reported HCV prevalence estimates for a variety of migrant groups by country of origin. The anti-HCV prevalence in migrants ranged from 0.0% to 7.1%, with the highest prevalence reported among migrants from Eastern Europe in Italy [ECDC report, in press].

Table 11. Prevalence of HBsAg and anti-HCV in migrants by country/region of origin, EU/EEA, 1998–2011

Country	Country of origin	Sampling period	Prevalence of HBsAg (95% CI)	Country of birth	Sampling period	Prevalence of anti-HCV (95% CI)
Greece	Former Soviet Union	1998–2006	4.3% (2.7–6.6)	Former Soviet Union	-	-
Italy	Asia	1999–2009	0.0% (0.0–3.2)	Asia	1999–2009	3.5% (1.0–8.7)
Italy	Eastern Europe	1999–2009	3.3% (1.3–6.7)	Eastern Europe	1999–2009	7.1% (4.0–11.5)
Italy	Sub-Saharan Africa	1999–2009	8.1% (7.0–9.3)	Sub-Saharan Africa	1999–2009	2.5% (1.9–3.2)
Netherlands	Countries with >2% HBV prevalence ^a	2006–2007	2.2% (1.0–4.2)	Countries with >2% HBV prevalence ^a	-	-
Netherlands	Afghanistan	2011	2.0% (0.8–4.4)	Afghanistan	2011	1.0% (0.2–3.0)
Netherlands	Cape Verde	2004	0.0% (0.0–24.7)	Cape Verde	2004	0.0% (0.0–24.7)
Netherlands	China and Hong Kong	2009	9.7% (7.8–11.8)	China and Hong Kong	-	-
Netherlands	Dutch Antilles	2004	2.6% (0.1–13.8)	Dutch Antilles	2004	2.6% (0.1–13.8)
Netherlands	Egypt	2004	1.1% (0.4–2.5)	Egypt	2004	2.4% (1.2–4.2)
Netherlands	Former Soviet Union	2011	0.0% (0.0–5.5)	Former Soviet Union	2011	3.1% (0.4–10.7)
Netherlands	Iran	2011	0.7% (0.0–3.6)	Iran	2011	0.7% (0.0–3.6)
Netherlands	Iraq	2011	0.7% (0.1–2.5)	Iraq	2011	0.3% (0.0–1.9)
Netherlands	Morocco	2004	0.4% (0.0–2.2)	Morocco	2003–2009	0.4% (0.0–2.2)
Netherlands	Morocco	2004	0.0% (0.0–8.0)	Morocco	2006–2007	2.8% (0.1–14.5)
Netherlands	Morocco	-	-	Morocco	2004	2.5% (0.1–13.2)
Netherlands	Non-western ethnicity	-	-	Non-western ethnicity	2003–2009	0.7% (0.2–1.5)
Netherlands	Non-western ethnicity	-	-	Non-western ethnicity	2006–2007	2.3% (1.1–4.1)
Netherlands	Other non-western ethnicity	-	-	Other non-western ethnicity	2003–2009	1.8% (0.4–5.2)
Netherlands	Other non-western ethnicity	-	-	Other non-western ethnicity	2006–2007	1.9% (0.8–3.8)
Netherlands	Suriname	2004	0.0% (0.0–6.4)	Suriname	2004	1.8% (0.0–9.4)
Netherlands	Suriname	-	-	Suriname	2003–2009	3.0% (0.4–10.5)
Netherlands	Suriname	-	-	Suriname	2006–2007	2.0% (0.2–6.9)
Netherlands	Turkey	2004	4.9% (2.8–8.0)	Turkey	2003–2009	0.0% (0.0–1.2)
Netherlands	Turkey	2009	3.1% (1.8–5.0)	Turkey	2006–2007	0.0% (0.0–5.5)
Netherlands	Turkey	2004	1.9% (0.0–9.9)	Turkey	2004	0.0% (0.0–7.5)
Netherlands	Turkey	-	-	Turkey	2009	0.4% (0.0–1.3)
Netherlands	Vietnam	2011	9.5% (5.0–16.0)	Vietnam	2011	1.6% (0.2–5.6)
Norway	Pakistan	2009	1.3% (0.3–3.9)	Pakistan	-	-
United Kingdom	Bangladesh	n/s	0.5% (0.0–2.6)	Bangladesh	n/s	0.0% (0.0–1.8)
United Kingdom	Bangladesh	n/s	1.5% (0.8–2.7)	Bangladesh	n/s	0.6% (0.2–1.4)
United Kingdom	China (including Hong Kong)	n/s	8.9% (6.5–11.9)	China (including Hong Kong)	-	-
United Kingdom	India	2009–2010	0.0% (0.0–2.7)	India	n/s	0.2% (0.0–0.6)
United Kingdom	India	n/s	0.1% (0.0–0.5)	India	2009–2010	2.9% (0.8–7.3)
United Kingdom	Other south-Asian countries ^b	n/s	5.3% (0.1–26.0)	Other South Asian ^b	n/s	0.0% (0.0–17.6)
United Kingdom	Other south-Asian countries ^b	2009–2010	4.0% (1.1–9.8)	Other South Asian ^b	2009–2010	2.0% (0.2–7.0)
United Kingdom	Other south-east Asian countries ^c	n/s	5.3% (0.6–17.7)	Other South East Asian ^c	-	-

United Kingdom	Pakistan	n/s	3.2% (1.3–6.4)	Pakistan	n/s	1.8% (0.5–4.5)
United Kingdom	Pakistan	2009–2010	0.8% (0.3–1.6)	Pakistan	2009–2010	3.1% (2.0–4.4)
United Kingdom	Pakistan	n/s	1.8% (1.3–2.4)	Pakistan	n/s	2.7% (2.1–3.4)
United Kingdom	Vietnam	n/s	17.4% (5.0–38.8)	Vietnam	-	-

Source: ECDC, adapted from 'Epidemiological assessment of hepatitis B and C among migrants in the EU/EEA' [154].

^a Countries with >2% HBV prevalence: medium or high HBV-endemic countries

^b South-Asian countries other than Pakistan, India and Bangladesh

^c South-east Asian countries other than Vietnam and China

4 Discussion

This systematic literature review aims to collect, assess and collate the available evidence on the prevalence of HBV and HCV in the general population and six population subgroups in EU/EEA countries, and to identify gaps in the currently available evidence.

There was widespread heterogeneity in the identified studies, which limited comparability. In order to identify representative estimates for the general population and other target populations in each EU/EEA country, the risk of bias was assessed for each study. Preference was given to the higher quality studies; however, corresponding higher quality estimates were not available for many countries. Limited geographical coverage in studies was also a frequent issue; regional or local estimates were more regularly available than national estimates.

General population, pregnant women, and first-time blood donors

Based on the data extracted from the literature reviewed in this study, the prevalence of HBV and HCV infections in the general population varied widely between EU/EEA countries. Countries in the eastern and southern part of the EU/EEA generally had a higher HBV and HCV prevalence than countries in the northern and western parts.

HBV prevalence ranged from 0.1% in Ireland to 4.4% in Romania. Comparing these percentages with the estimates presented in the previous report [10], no clear pattern is discernible. For nine countries, HBV prevalence estimates were available in both reports. Although no statistical analysis of differences was performed, it was observed that HBV prevalence in Belgium and Ireland remained the same, while HBV prevalence has increased in Greece, Italy, Slovakia and the Netherlands. A decrease in HBV prevalence was found in Germany, Romania and Spain. A possible explanation for the increase in prevalence estimates in Greece is the limited geographical coverage of the studies included in this review: the current HBV prevalence estimate of 3.3% for Greece, which is higher than the one in the previous review (0.0%–2.1%), refers to the population of Crete only. No national estimate for Greece was available for the publication period in this review. Schweitzer et al. [4] estimated that Greece has a national HBsAg prevalence of 0.97%. Heterogeneity between studies was high between Italian studies; single-study prevalence estimates showed a wide range in HBV prevalence (0.5%–5.8%). However, the available higher quality studies from Italy reported consistent prevalence estimates. In the Netherlands, the increase in chronic HBV prevalence (from 0.1% in 1996 to 0.2% in 2007) is reportedly related to demographic changes over time resulting in an increase in the proportion of the population born in HBV-endemic countries [18].

The anti-HCV prevalence in this report ranges from 0.1% in Belgium, Ireland and the Netherlands to 5.9% in Italy. A comparison of HCV prevalence for the nine countries with higher quality HCV estimates in both reports suggests that prevalence is decreasing in half of the countries. Notable exceptions are Greece, where an increase is observed, and Belgium and Germany, where the prevalence stays the same. For Greece, however, the restricted geographical coverage (Crete) of the current estimate limits the generalisability of this finding. For Italy, the geographical coverage of the HCV estimates also influences the current findings. In the previous report [10], Italy had a geographical gradient for HCV, with higher prevalence in the southern regions, as compared to central and northern Italy. Similarly, the studies included in this review showed a high heterogeneity, although no clear north-to-south gradient was found. However, some estimates for HCV in Italy had a local geographical coverage and the investigated communities were in a region that was considered hyperendemic for HCV [19], which might have skewed the overall prevalence estimate. It is noteworthy that in this study, HCV prevalence among people older than 50 years (27.6%) was considerably higher than in younger people (3.0%) [19].

In pregnant women, the HBV and HCV prevalence estimates were higher when compared to the general population in nearly all countries. This is consistent with the results of the 2009 report [10]. A possible explanation may be found in the contribution of migrants, who are often underrepresented in general population studies but overrepresented among pregnant women. Italy and Spain are the exceptions, where the HBV and HCV prevalence estimate for pregnant women showed a lower prevalence than the estimate for the general population. This likely reflects the impact of the early start of universal HBV vaccination programmes in these countries [20] as well as the lower seroprevalence levels observed in young adults as compared to older age groups [19].

HBV and HCV prevalence in first-time blood donors can generally be regarded as the lower limit of the prevalence estimate in the general population; however, pre-selection of blood donors, where implemented, makes them an unrepresentative sample of the general population. The data in this review also show that the HBV and HCV prevalence in first-time blood donors is lower than in the general population for all countries, although some confidence intervals overlap. Nonetheless, using blood donor or pregnant women data as a proxy for HBV and HCV prevalence estimates for the general population is not optimal.

The prevalence of HBV and HCV in the EU/EEA as a whole is estimated to be around 0.9 and 1.1 percent, respectively, with an estimated total of 4.7 million chronic HBV cases and 5.6 million HCV infected cases. These

figures are likely to be an underestimation as a result of inclusion of prevalence estimates among blood donors as proxy for the general population in the absence of other evidence. However, when taking into account both HBV and HCV data, general population estimates, obtained from included studies, accounted for approximately 83% of the total European population, with the remaining 17% covered by blood donor estimates.

High-risk populations

The heterogeneity and lack of comparability between identified studies was particularly noticeable for high-risk populations.

For MSM, very few prevalence estimates were available. This lack of studies in many countries raises the question whether MSM are considered to be a key group in these countries. When comparing HBV prevalence among MSM to that of the general population in countries where both estimates were available, HBV prevalence was higher in France, and lower in Estonia and the United Kingdom. For HCV, all countries showed a higher prevalence among MSM except for France, where HCV prevalence in the general population was higher. Estonia was one of the countries with more than one prevalence estimate available for both infections, but the studies had very small sample sizes and do not necessarily report a prevalence representative of the situation in the MSM community in the country. A higher HCV prevalence among MSM is often seen in HIV-positive men [21], but studies conducted among HIV-positive people were not included in this review (Table 3).

In all countries, the prevalence estimates of HBV and HCV were higher among PWID than in the general population, and in all countries, PWID had the highest HCV prevalence. This can be expected, as intravenous drug use is one of the most important risk factors for HCV infection. The prevalence of anti-HCV among PWID was considerably higher than that of HBsAg in all countries that provided data on both types of infections among PWID. This may be explained by the relatively low risk of developing chronic HBV infection when the infection is acquired as an adolescent or adult through injecting drug use [3].

The HBV and HCV estimates among prisoners were higher than in the general population in all countries. For HCV, and to a lesser extent for HBV, this is related to overrepresentation of PWID among prisoners. Longitudinal data from Spain showed that the anti-HCV prevalence in prisoners declined from 45% in 2000 to 25% in 2009. Similar to what was observed among PWID, in countries that supplied data for both types of infections, the prevalence of HCV among prisoners was higher than that of HBV. Nevertheless, prisoners showed the highest HBV prevalence for all countries. A possible explanation for the relatively high prevalence of chronic HBV in prisoners is the overrepresentation of foreign-born people in the prison population [22].

The number of HBV and/or HCV prevalence studies in migrants is limited. Available data from the ECDC systematic review 'Epidemiological assessment of hepatitis B and C among migrants in the EU/EEA' [154] shows that in nearly all countries and ethnic groups the estimated prevalence of both HBV and HCV is higher among migrants compared with the general population. The only exception is Italy, where the estimated general population HCV prevalence is higher than the prevalence found in migrants groups, with the caveats discussed above.

Gaps in evidence at EU/EEA level

In the 2009 systematic review, estimates for the general population were identified for 13 countries, for both HBV and HCV prevalence [10]. For this review, estimates were identified for a total of 15 countries with available HBV prevalence estimates in the general population and for a total of 16 countries with available HCV estimates. For some countries that were included in the previous report no general population prevalence studies were available for inclusion in this review, namely Cyprus, the Czech Republic, Denmark, Finland and Sweden for HBV prevalence, and Bulgaria, the Czech Republic and Sweden for HCV prevalence. This is mainly due to the selected time frame (articles published between 2005 and 2015) and shows the lack of recent prevalence data for some countries.

Other than perhaps the population size of the country, no clear geographical distribution across the EU can be observed in the availability of (higher quality) estimates in any of the targeted population groups. For one country, Liechtenstein, no information about HBV and HCV prevalence was available for any of the population groups. For Cyprus, Iceland and Malta, only prevalence data on first-time blood donors were available and for five countries, only lower quality estimates were available: Austria, Estonia, Lithuania, Poland and Sweden. However, Estonia and Sweden were two of the few countries that reported HBV and HCV prevalence in MSM.

When comparing countries that have at least one higher quality estimate for HBV in the general population with countries for which no estimates are available, the countries with higher quality estimates appear to have a slightly lower prevalence (and more studies with random sampling). There are more studies on countries with higher quality estimates for HCV in the general population than for HBV. Some of the countries for which no higher quality estimates are available have well-designed studies but these studies often only cover a geographically limited region, making it difficult to extrapolate the reported prevalence. In general, research interests, existing resources

and public health priority agendas may contribute to the availability of recent and higher quality HBV and HCV estimates at the national or subnational levels.

Other gaps in the available evidence are the lack of recent data on blood donors (for seven countries no data were available in the 2011 Council of Europe report) and the large number of countries without data on the prevalence of HBV and HCV infections among PWID. In addition, the general lack of good prevalence data for MSM is problematic. The included MSM studies usually had small sample sizes, resulting in reported estimates with large confidence intervals. A few more estimates were available for HCV prevalence in MSM compared to HBV, but data were still far from comprehensive. Generally, the overall lack of available estimates, lack of comparability and poor geographical representativeness of studies show that there is still a need for further research.

Strengths and limitations

This literature review builds on and expands previous work conducted by ECDC to provide an overview of the current situation with respect to HBV and HCV prevalence in the EU/EEA, both in the general population and among high-risk groups. It was limited to studies published after 2004 to better reflect recent developments but this restriction potentially excludes relevant data. The risk of bias was assessed for each study by using a pre-defined methodology to mitigate the impact of differences in study design and conduct (e.g. study population selection and sampling, different laboratory tests, and sample types), but comparisons of the prevalence estimates across countries should still be made with caution.

Instead of focussing on trends over time and differences between genders, this review compared absolute differences between the current and previous estimates [10]. According to Schweitzer et al., western European countries showed a consistently low HBV prevalence over time, while in a few countries in eastern Europe a tendency towards an increasing HBV prevalence became noticeable [4].

This report explores anti-HCV prevalence, as opposed to HCV RNA, the marker of HCV chronic infection. Although the information on HBV DNA and HCV RNA prevalence was also extracted, nucleic acid amplification confirmatory testing was performed or reported in too few studies to warrant an analysis of this indicator: information about DNA or RNA confirmation was available for only 8% of HBV studies and 33% of HCV studies on the general population.

A round of data validation with Member States provided additional information and further supplemented the evidence base. Despite that, the use of a geographical string and single reviewer screener may still have resulted in incomplete identification of the evidence base.

For PWID, first-time blood donors and migrants, other data sources were used rather than studies identified in this systematic review. For migrants, prevalence data were derived from 'Epidemiological assessment of hepatitis B and C among migrants in the EU/EEA' [154]. For blood donors, recent national prevalence estimates were available for most countries.

Estimates were pooled using source data on the number of cases and denominators, rather than the prevalence estimates. More weight was given to the studies with a larger sample size in pooled estimates. No estimates were pooled among heterogeneous populations. The recalculation of the CIs using the conservative Fischer's exact method has standardised the data across estimates and improved transparency of calculation. Furthermore, no data from small sample studies was used.

5 Conclusions

This systematic literature review shows the diversity in the prevalence of chronic HBV and HCV infections. The availability of studies with relatively recent data on the prevalence in the general population is limited: data were available for slightly more than half of the 31 countries in the EU/EEA. For pregnant women and prisoners, studies were found for 40–50% of all EU/EEA countries. Data on the prevalence of HBV and HCV infections among MSM were lacking for most of the countries.

The lack of higher quality, recent, nationwide prevalence estimates, and the overall heterogeneity of the available studies makes it challenging to provide an EU/EEA overview of the current epidemiological situation of chronic viral hepatitis. Nevertheless, in this review, we were able to estimate the prevalence of HBV and HCV in the EU/EEA as a whole at around 1 percent, with an estimated total of 10.3 million HBV and HCV cases. More robust prevalence estimates are needed to gain further insights into the size of the populations with chronic hepatitis B or C infections, both with regard to the general population in the different EU/EEA countries and in specific risk groups. This information can then be used to better target primary and secondary prevention measures (e.g. screening and linkage to care of at-risk populations to identify patients with chronic hepatitis B and C who can benefit from new treatment options) and evaluate these measures.

Overall, countries in the eastern and southern part of the EU/EEA had a higher HBV and HCV prevalence than countries in the northern and western parts. Some countries with information based on general population studies, show evidence of a relatively low HBV/HCV prevalence in the general population, which stands in stark contrast with high prevalence in high-risk groups, mostly migrants, PWID, and prisoners. PWID remain at high risk for HCV infection, with high prevalence rates reported for most countries.

In all, prevalence in first-time blood donors was lower than that in the general population, while prevalence in pregnant women was slightly higher. The observed increase over time in the prevalence of chronic HBV in some countries indicates that it is important to maintain hepatitis B prevention and control high on the public health agenda.

Data on the prevalence of chronic viral hepatitis are unavailable for many countries; better surveillance and monitoring and further research are needed to provide reliable and comprehensive strategic information for policymakers who design and implement secondary prevention programmes for HBV and HCV infections in the EU/EEA. In the meantime, this report may provide a useful overview of what data are available with regard to screening and prevention programmes for those groups where the most benefits can be expected.

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Annex 1. PRISMA chart of identified citations

Figure A1. PRISMA flow diagram for the systematic review of prevalence of HBsAg and anti-HCV in the EU/EEA: general population

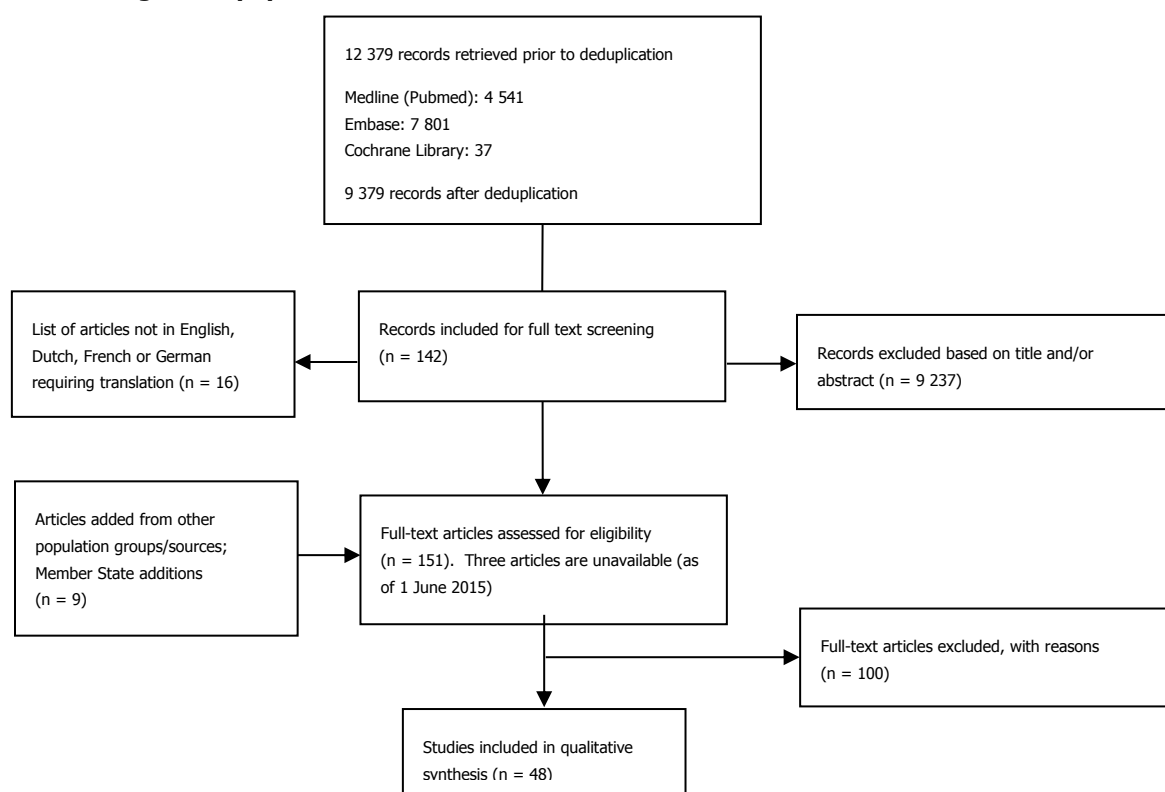
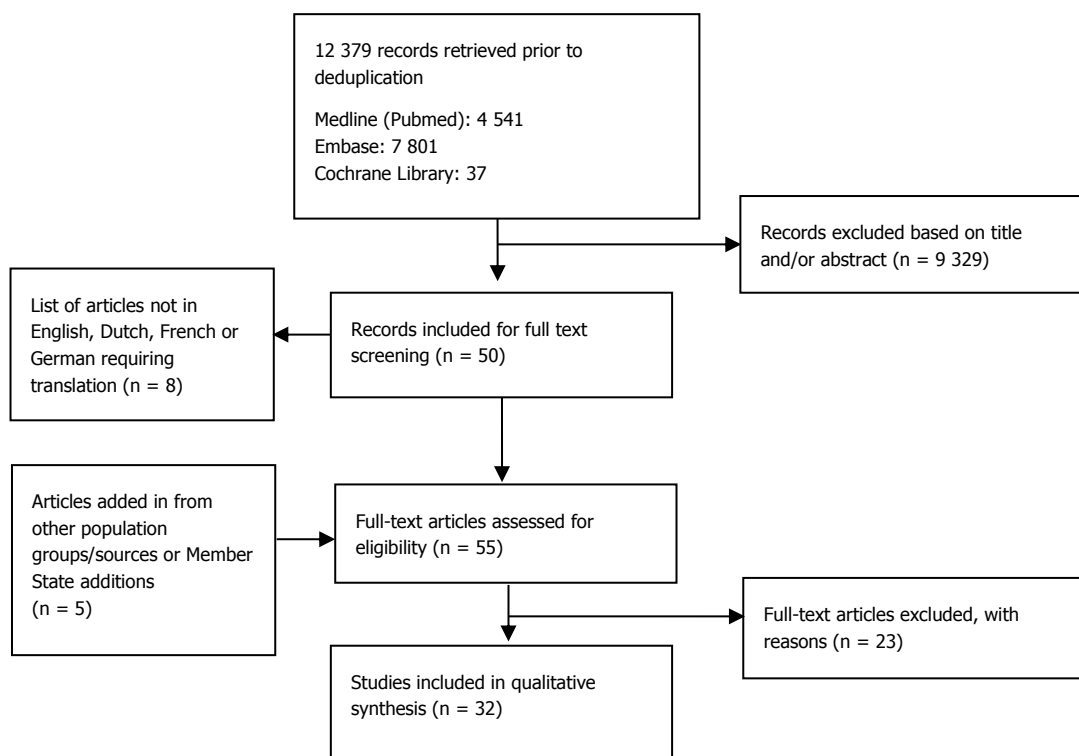


Table A1. Reasons for exclusion: publications on the general population

Reasons for exclusion	
Notification or incident data; no prevalence data	33
Irrelevant and/or unspecified virological markers	2
Self-reported serological status; unclear confirmation of serological status	6
Duplicate reference/data	2
No original data (commentary, erratum, guidelines, etc.)	7
Conference abstract but full paper has been published	6
Review article	4
Population bias; no clear general population estimate	29
Modelled data only	3
Date range	6
Sample size too small	2
Total	100

Figure A2. PRISMA flow diagram for the systematic review of prevalence of HBsAg and anti-HCV in the EU/EEA: pregnant women**Table A2. Reasons for exclusion: publications on pregnant women**

Reasons for exclusion	
Notification or incident data; no prevalence data	6
Irrelevant and/or unspecified virological markers	1
Duplicate reference/data	5
Conference abstract but full paper has been published	2
Population bias; no clear general population estimate	8
Date range	1
Total	23

Figure A3. PRISMA flow diagram for the systematic review of prevalence of HBsAg and anti-HCV in the EU/EEA: MSM

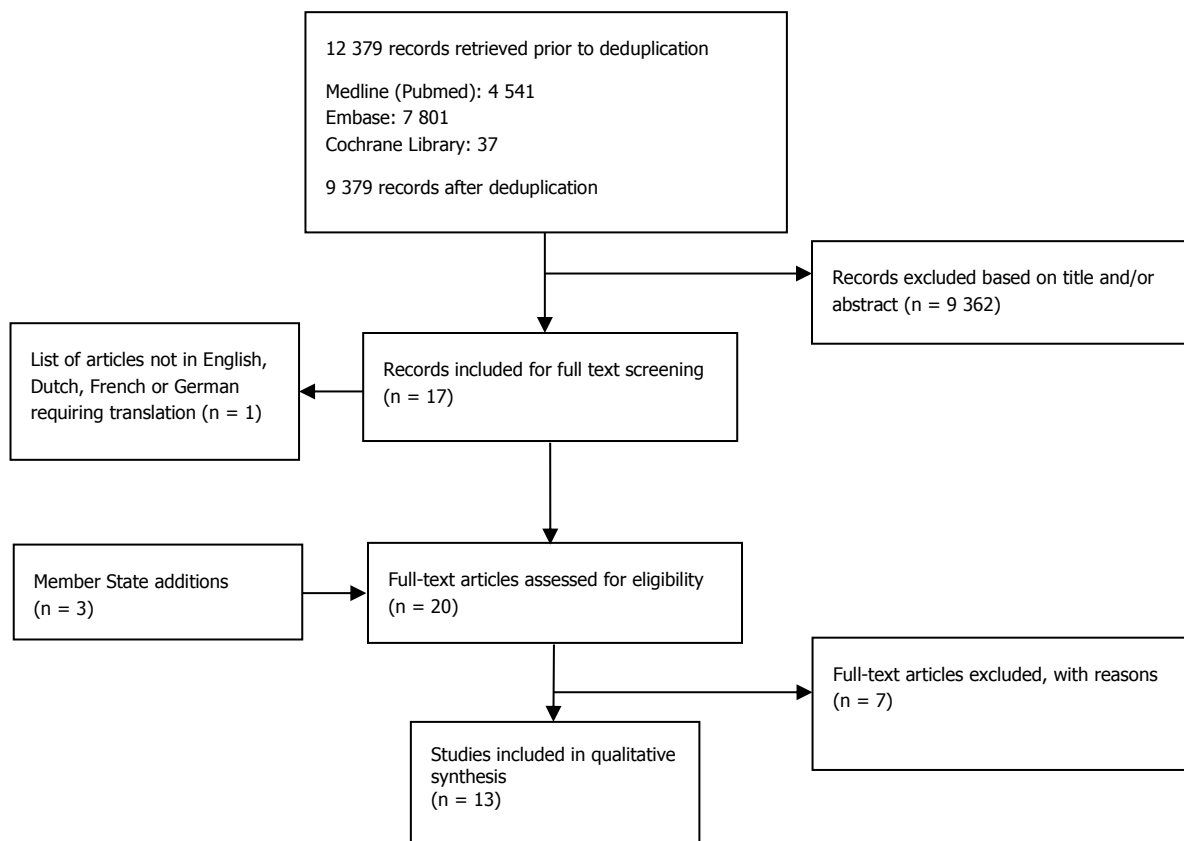
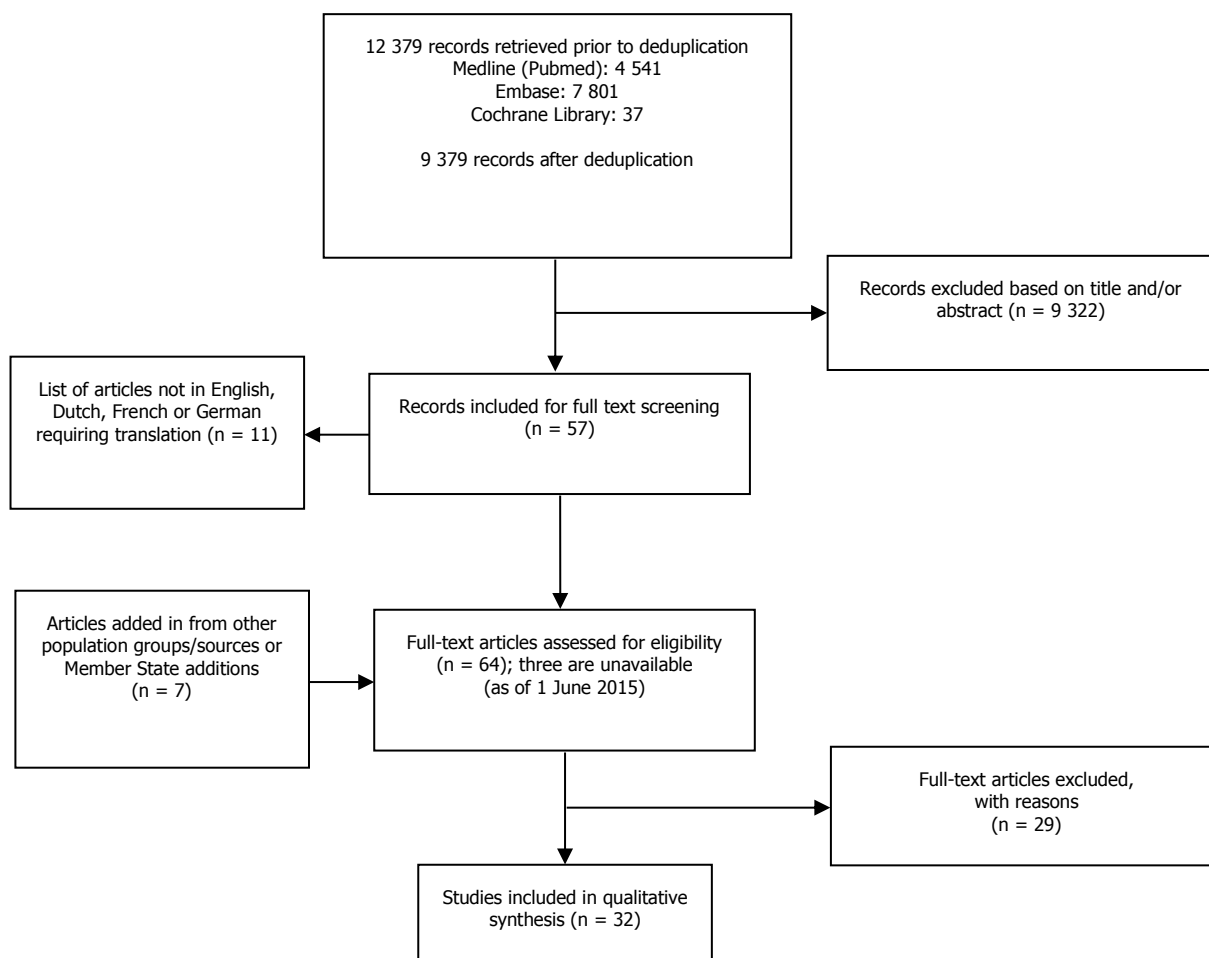


Table A3. Reasons for exclusion: publications on MSM

Reasons for Exclusion	
Notification or incident data; no prevalence data	3
Irrelevant and/or unspecified virological markers	2
Self-reported serological status	1
Duplicate reference/data	1
Total	7

Figure A4. PRISMA flow diagram for the systematic review of prevalence of HBsAg and anti-HCV in the EU/EEA: prisoners**Table A4. Reasons for exclusion: publications on prisoners**

Reasons for Exclusion	
Notification or incident data; no prevalence data	4
Irrelevant and/or unspecified virological markers	1
Self-reported serological status; unclear confirmation of serological status	3
Duplicate reference/data	6
No original data (commentary, erratum, guidelines, etc.)	4
Conference abstract but full paper has been published	1
Review article	2
Population bias; no clear general population estimate	6
Modelled data only	2
Total	29

Annex 2. Prevalence of chronic HBV and HCV infections

Table A5. Prevalence of HBsAg in the general population, EU/EEA countries

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence of HBsAg (95% CI)
Belgium*	Quoilin (2007) ⁽²³⁾	Regional	2002	Random	Region of Flanders	Standardised	Standardised	0.7% (0.5–0.8)
Belgium	Quoilin (2007) ⁽²³⁾	Regional	2002	Random	Region of Flanders	0 to >65	1,830	0.7% (0.4–1.2)
Belgium	Nardone (2009) ⁽²⁴⁾	N/R	2002–2003	Convenience	Residual lab samples representative of location and gender	1 to 15	1,175	0.7% (0.3–1.3)
Belgium	Nardone (2009) ⁽²⁴⁾	N/R	2002–2003	Convenience	Residual lab samples representative of location and gender	16 to 39	321	0.6% (0.1–2.2)
Croatia*	Vilibic-Cavlek (2014) ⁽²⁵⁾	Multi-centre	2010–2011	Convenience	Multi-centre study of patients attending a medical check-up. Covers 20% of regions	20 to 80	2,009	0.7% (0.4–1.2)
Croatia	Burek (2010) ⁽²⁶⁾	Multi-centre	2005–2007	N/R	Multi-centre study of staff in 20 prisons (10.9% of all prison staff)	N/R	259	2.3% (0.9–5.0)
Czech Republic*	Nardone (2009) ⁽²⁴⁾	N/R	2001	Random		Standardised	Standardised	0.6%
Czech Republic	Nardone (2009) ⁽²⁴⁾	N/R	2001	Random		16 to >40 years	1,669	0.4% (0.1–0.8)
Czech Republic	Nardone (2009) ⁽²⁴⁾	N/R	2001	Random		1 to 15 years	975	0.3% (0.1–0.9)
Czech Republic	Nardone (2009) ⁽²⁴⁾	N/R	2001	Random		16 to 39 years	1,148	0.2% (0.0–0.6)
Czech Republic	Nardone (2009) ⁽²⁴⁾	N/R	2001	Random		>40 years	521	0.8% (0.2–2.0)
France*	Meffre (2010) ⁽²⁷⁾	National	2004	Random	National sample obtained via primary health care insurance units	18 to 80	18,230	0.7% (0.5–0.9)
France	Bottero (2014) ⁽²⁸⁾	Multi-centre	2010–2011	Convenience	Multi-centre screening study in Paris region includes multiple risk groups such as migrants and PWID	Mean age 33	3,929	2.2% (1.7–2.7)
Germany [#]	Poethko-Müller (2013) ⁽²⁹⁾	National	2008–2011	Random	National coverage, DEGS1 study	18 to 79	7,047	0.3% (0.2–0.6)
Germany [#]	Huetter (2014) ⁽³⁰⁾	Local	2002	Random	Residents of Leutkirch, southern Germany	18 to 65, mean age 39.4	2,256	0.7% (0.4–1.1)
Germany	Wolffram (2015) ⁽³¹⁾	Regional	2012–2013	Convenience	Check-up 35+ attendees (mid-life health check) in North Rhine-Westphalia	Mean age 57.5	21,008	0.5% (0.4–0.6)
Germany*	Pooled	Pooled	2002; 2008–2011	Pooled	Pooled	Pooled	9,303	0.4% (0.3–0.5)
Greece*	Drositis (2013) ⁽³²⁾	Regional	2006–2010	Random	Adult residents of Arkalochori, a province in	Mean age 52	876	3.3% (2.2–4.7)

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence of HBsAg (95% CI)
					Crete			
Greece	Dounias (2005) ⁽³³⁾	Local	1999–2001	Convenience	Municipal solid waste workers	Mean age 42	159	7.5% (4.0–12.8)
Hungary*	Treso (2012) ⁽³⁴⁾	National	2007–2009	Convenience	Prison staff	21 to 60	1,066	0.4% (0.1–1.0)
Ireland*	Talento (2010) ⁽³⁵⁾	National	1992–2009	Exhaustive	Living and deceased solid organ donors	N/R	1,478	0.1% (0.0–0.4)
Ireland	Nardone (2009) ⁽²⁴⁾	N/R	2003	Convenience	Residual lab samples representative of location and gender	1 to 15	877	0.0% (0.0–0.9)
Ireland	Nardone (2009) ⁽²⁴⁾	N/R	2003	Convenience	Residual lab samples representative of location and gender	16 to >40	1,658	0.1% (0.0–0.4)
Ireland	Nardone (2009) ⁽²⁴⁾	N/R	2003	Convenience	Residual lab samples representative of location and gender	16 to 39	1,194	0.1% (0.0–0.5)
Ireland	Nardone (2009) ⁽²⁴⁾	N/R	2003	Convenience	Residual lab samples representative of location and gender	>40	464	0.2% (0.0–1.2)
Italy [#]	Cozzolongo (2009) ⁽³⁶⁾	Local	2005–2007	Random	GP records in Bari, Apuglia	18 to 93 Mean age 47	2,195	0.5% (0.3–1.0)
Italy [#]	Pendino (2005) ⁽³⁷⁾	Local	2002–2003	Random	Census data from Cittanova, Calabria	12 to 95	1,645	0.8% (0.4–1.3)
Italy [#]	Floreani (2006) ⁽³⁸⁾	Local	2001	Random	Residents of Arsitia (Central Italy)	>8	142	0.7% (0.0–3.9)
Italy	Boccalini (2013) ⁽³⁹⁾	Regional	2009	Convenience	Residual blood samples from 0.05% of residents in Tuscany	1 to 50	1,071	2.0% (1.2–3.0)
Italy	Fabris (2008) ⁽⁴⁰⁾	Local	2002	Exhaustive	Vicenza, north-east Italy. A broken sewer pipe prompted HAV vaccination. Subjects were also tested for HBV/HCV	Mean age 42.1	965	1.0% (0.5–1.9)
Italy	Del Corno (2006) ⁽⁴¹⁾	Local	N/R	Random	Four towns in Isola Bergamasca (northern Italy)	20 to 70	2,829	5.8% (5.0–6.7)
Italy	Dazzani (2009) ⁽⁴²⁾	Local	2008	Convenience	Survey of residents in Bagnacavallo (Emilia-Romagna)	30 to 60	3,207	0.6% (0.4–1.0)
Italy	De Paschale (2012) ⁽⁴³⁾	Local	2007–2008	Convenience	Hospital lab samples from Legnano Hospital in northern Italy	Mean age 51.4	22,758	2.1% (2.0–2.3)
Italy	Da Villa (2007) ⁽⁴⁴⁾	Local	2006	N/R	Cohort in Afragola, Naples	6 to 58	1,540	0.9% (0.5–1.5)
Italy	Squeri (2006) ⁽⁴⁵⁾	Local	2005	Convenience	Municipal solid waste workers	20 to 68	327	4.0% (2.1–6.7)
Italy*	Pooled	Pooled	2001; 2002–2003; 2005–2007	Pooled	Pooled	Pooled	3,982	0.7% (0.4–1.0)
Netherlands*	Hahné (2012) ⁽¹⁸⁾	National	2006–2007	Random	National study	>18 months	6,246	0.2% (0.1–0.4)

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence of HBsAg (95% CI)
					(PIENTER 2 ⁴)			
Netherlands	Veldhuijzen (2009) ⁽⁵³⁾	Local	2004	Random	Rotterdam municipal population register	18 to 65	284	0.7% (0.1–2.5)
Poland	Hartleb (2012) ⁽⁴⁶⁾	National	N/R	Exhaustive	Study among elderly population. Sample from national population register, 42.6% response	>65, mean age 79.4	3,826	1.1% (0.8–1.5)
Poland	Pszenny (2012) ⁽⁴⁷⁾	Regional	2000–2008	Convenience	Retrospective study among deceased potential blood donors. 75% male	N/R	4,774	0.9% (0.7–1.2)
Romania*	Gheorghe (2013) ⁽⁴⁸⁾	National	2006–2008	Random	National cross-sectional population survey	18 to 69	13,127	4.4% (4.0–4.8)
Romania	Nardone (2009) ⁽²⁴⁾	N/R	2002	Convenience	Residual lab samples representative of location and gender	1 to 15	630	5.1% (3.5–7.1)
Romania	Nardone (2009) ⁽²⁴⁾	N/R	2002	Convenience	Residual lab samples representative of location and gender	16 to >40	629	6.2% (4.4–8.4)
Romania	Nardone (2009) ⁽²⁴⁾	N/R	2002	Convenience	Residual lab samples representative of location and gender	16 to 39	276	7.6% (4.8–11.4)
Romania	Nardone (2009) ⁽²⁴⁾	N/R	2002	Convenience	Residual lab samples representative of location and gender	>40	353	5.1% (3.0–7.9)
Slovakia	Nardone (2009) ⁽²⁴⁾	National	2002	Random		1 to 15	1,623	0.1% (0.0–0.4)
Slovakia*	Nardone (2009) ⁽²⁴⁾	National	2002	Random		16 to >40	1,946	1.1% (0.7–1.6)
Slovakia	Nardone (2009) ⁽²⁴⁾	National	2002	Random		16 to 39	1,270	0.9% (0.4–1.5)
Slovakia	Nardone (2009) ⁽²⁴⁾	National	2002	Random		>40	676	1.5% (0.7–2.7)
Spain [#]	Pedraza-Flechas (2014) ⁽⁴⁹⁾	Regional	2008–2009	Random	Attendees of blood extraction centres in region of Madrid. Bi-stage, cluster stratified sampling	16 to 80	3,695	0.7% (0.5–1.0)
Spain [#]	Lopez-Izquierdo (2007) ⁽⁵⁰⁾	Regional	2003	Random	Study in Valladolid. Stratified random sampling based on health card	N/R	364	0.0% (0.0–1.0)
Spain [#]	Salleras (2007) ⁽⁵¹⁾	Regional	2002	Random	Two stage cluster sample from municipal electoral registers in Catalonia	15 to >65	1,296	1.4% (0.8–2.2)
Spain	Salleras (2007) ⁽⁵¹⁾	Regional	2002	Random	Two stage cluster sample from schools	5 to >65	2,620	0.7% (0.4–1.1)

⁴ PIENTER 2 project: second research project on the protection against infectious diseases offered by the national immunisation programme in the Netherlands

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence of HBsAg (95% CI)
					and municipal electoral registers in Catalonia			
Spain	Salleras (2007) ⁽⁵¹⁾	Regional	2002	Random	Two stage cluster sample from schools in Catalonia	5 to 14	1,324	0.0% (0.0–0.3)
Spain	Calleja-Panero (2013) ⁽⁵²⁾	Multi-centre	2007–2010	Convenience	Study in Murcia and Madrid of working population at yearly insurance check-up. 73% male.	42	5,017	0.7% (0.5–1.0)
Spain*	Pooled	Pooled	2002; 2003; 2008–2009	Pooled	Pooled	Pooled	5,355	0.8% (0.6–1.1)
United Kingdom	Pepas (2011) ⁽⁵⁴⁾	Local	2007–2009	Exhaustive	Patients undergoing assisted reproductive treatment at Guy & St Thomas Hospital, London	N/R	3,910	1.7% (1.3–2.2)

Estimates used for pooled estimate

* Estimates presented in Figure 1a (prevalence map)

Table A6. Prevalence of anti-HCV in the general population, EU/EEA countries

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence of anti-HCV (95% CI)
Belgium*	Quoilin (2007) ⁽²³⁾	Regional	2002	Random	Region of Flanders	0 to >65	1,830	0.1% (0.0–0.4)
Croatia	Burek (2010) ⁽²⁶⁾	Multi-centre	2005–2007	N/R	Multi-centre study of staff in 20 prisons (10.9% of all prison staff)	N/R	259	0.0% (0.0–1.4)
Croatia*	Vilibic-Cavlek (2014) ⁽²⁵⁾	Multi-centre	2010–2011	Convenience	Multi-centre study of patients attending a medical check-up. Covers 20% of regions	20 to 80	1,930	0.9% (0.6–1.5)
France*	Meffre (2010) ⁽²⁷⁾	National	2004	Random	National sample obtained via primary health care insurance units	18 to 80	18,230	0.8% (0.7–1.1)
France	Sahajian (2007) ⁽⁵⁵⁾	Multi-centre	2003–2004	Mixed	Underprivileged populations sampled via primary care services. Includes a small number of homeless people (n=89) and former/active PWID (n=16)	18 to >60	944	4.7% (3.4–6.2)
France	Poynard (2009) ⁽⁵⁶⁾	Multi-centre	N/R	Convenience	Attendees of social security health centres	>40	7,463	0.9% (0.7–1.1)
Germany#	Poethko-Müller (2013) ⁽²⁹⁾	National	2008–2011	Random	National coverage. DEGS1 study	18 to 79	7,047	0.3% (0.1–0.5)
Germany#	Huetter (2014) ⁽³⁰⁾	Local	2002	Random	Residents of Leutkirch, southern Germany	18 to 65, mean age 39.4	2,256	0.6% (0.3–1.0)
Germany	Wolfram (2015) ⁽³¹⁾	Regional	2012–2013	Convenience	Check-up 35+ attendees (mid-life health check) in North Rhine-Westphalia	Mean age 57.5	21,008	1.0% (0.8–1.1)
Germany*	Pooled	Pooled	2002; 2008–2011	Pooled	Pooled	Pooled	9,303	0.4% (0.3–0.5)
Greece*	Drositis (2013) ⁽³²⁾	Regional	2006–2010	Random	Adult residents of Arkalochori, a province in Crete	Mean age 52	876	2.2% (1.3–3.4)
Hungary*	Treso (2012) ⁽³⁴⁾	National	2007–2009	Convenience	Prison staff	21 to 60	1,066	0.5% (0.2–1.1)
Ireland*	Talento (2010) ⁽³⁵⁾	National	1992–2009	Exhaustive	Living and deceased solid organ donors	N/R	1,478	0.1% (0.0–0.4)

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence of anti-HCV (95% CI)
Italy [#]	Cozzolongo (2009) ⁽³⁶⁾	Local	2005–2007	Random	GP records in Bari, Apuglia	18 to 93, mean age 47	2,195	2.6% (2.0–3.4)
Italy [#]	Pendino (2005) ⁽³⁷⁾	Local	2002–2003	Random	Census data from Cittanova, Calabria	12 to 95	1,645	6.5% (5.4–7.8)
Italy [#]	Floreani (2006) ⁽³⁸⁾	Local	2001	Random	Residents of Arsita (Central Italy)	>8	697	10.2% (8.0–12.7)
Italy [#]	Petti (2006) ⁽⁵⁷⁾	Local	N/R	Random	GP registration. Local coverage	>25	289	16.3% (12.2–21.0)
Italy	Petti (2006) ⁽⁵⁷⁾	Local	N/R	Random	GP registration. Local coverage	25–49	133	3.0% (0.8–7.5)
Italy	Petti (2006) ⁽⁵⁷⁾	Local	N/R	Random	GP registration. Local coverage	>50	156	27.6% (20.7–35.3)
Italy	Parisi (2014) ⁽⁵⁸⁾	Local	2011–2014	Convenience	Milan. Hospital (2 points in one location), STI clinics (n=1) and GPs (n=6)	>18	4,507	0.6% (0.4–0.9)
Italy	Guadagnino (2013) ⁽⁵⁹⁾	Local	2010	Random	Study in a small town in Calabria	>18	1,012	5.7% (4.4–7.4)
Italy	Fabris (2008) ⁽⁴⁰⁾	Local	2002	Exhaustive	Vicenza, north-east Italy. A broken sewer pipe prompted HAV vaccination. Subjects were also tested for HBV/HCV	Mean age 42.1	965	2.6% (1.7–3.8)
Italy	Montella (2005) ⁽⁶⁰⁾	Regional	2000–2002	Convenience	Naples. Residual sera from primary care tests	19 to 65	1,972	8.2% (7.0–9.5)
Italy	Del Corno (2006) ⁽⁴¹⁾	Local	N/R	Random	Four towns in Isola Bergamasca (northern Italy)	20 to 70	960	4.7% (3.4–6.2)
Italy	Dazzani (2009) ⁽⁴²⁾	Local	2008	Convenience	Survey of residents in Bagnacavallo (Emilia-Romagna)	30 to 60	3,207	1.1% (0.8–1.5)
Italy	De Paschale (2012) ⁽⁴³⁾	Local	2007–2008	Convenience	Hospital lab samples from Legnano Hospital in northern Italy	Mean age 51.4	425	4.7% (2.9–7.2)
Italy	Squeri (2006) ⁽⁴⁵⁾	Local	2005	Convenience	Municipal solid waste workers	20 to 68	327	0.9% (0.2–2.7)
Italy*	Pooled	Pooled	N/R	Pooled	Pooled	Pooled	4,826	5.9% (5.2–6.6)
Latvia*	Tolmane (2011) ⁽⁶¹⁾	National	2008	Random	GP registration	18 to 94	1,459	2.4% (1.7–3.3)
Lithuania	Liakina (2012) ⁽⁶²⁾	National (covering 75% of population)	2010	Convenience	Shopping centre attendees (62% female)	N/R	1,514	2.4% (1.7–3.4)
Lithuania	Liakina (2012) ⁽⁶²⁾	National (covering 75% of population)	2010	Convenience	Shopping centre attendees (62% female)	Mean across age ranges		2.8%
Lithuania	Liakina (2012) ⁽⁶²⁾	National (covering 75% of population)	2010	Convenience	Shopping centre attendees (62% female)	Standardised		2.8%
Lithuania	Liakina (2012) ⁽⁶²⁾	National (covering 75% of population)	2010	Convenience	Shopping centre attendees (62% female)	Standardised to European population		2.9%
Netherlands*	Vriend (2013) ⁽⁶⁶⁾	National	2006–2007	Random	National study (PIENTER 2)	15 to 79	4,046	0.1% (0.0–0.2)
Netherlands	Veldhuijzen (2009) ⁽⁵³⁾	Local	2004	Random	Rotterdam municipal population register	18 to 65	284	1.1% (0.2–3.1)
Netherlands	Slavenburg (2008) ⁽⁶⁷⁾	Regional	2006	Convenience	GP attendees in Arnhem and Nijmegen who had blood taken as part of clinical work up	N/R	2,200	0.2% (0.1–0.5)
Poland	Hartleb (2012) ⁽⁴⁶⁾	National	N/R	Exhaustive	Study among elderly population. Sample from national population register	>65, mean age 79.4	3,826	2.9% (2.4–3.5)
Poland	Flisiak (2011) ⁽⁶³⁾	Multi-centre	2009–2010	Convenience	Consecutive patients in a GP outpatient clinic. 65.4% female	Mean age 45	1,203	0.9% (0.5–1.6)
Poland	Pszenny (2012) ⁽⁴⁷⁾	Regional	2000–2008	Convenience	Retrospective study among deceased potential blood donors. Regional in scope. 75% male	N/R	4,733	2.6% (2.2–3.1)
Romania*	Gheorghe (2010) ⁽⁴⁸⁾	National	2006–2008	Random	National cross-sectional population survey	18 to 69	13,146	3.2% (2.9–3.6)
Slovakia*	Schreter (2007) ⁽⁶⁴⁾	National	2002	Random	Residual serum samples	15 to 69	2,124	2.0% (1.4–2.7)
Spain*	Lopez-Izquierdo (2007) ⁽⁵⁰⁾	Regional	2003	Random	Study in Valladolid. Stratified random sampling based on health card	N/R	364	1.1% (0.3–2.8)

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence of anti-HCV (95% CI)
Spain	Caballeria (2014) ⁽⁶⁵⁾	Multi-centre	2010–2011	Random	Multi-centre study of invitation-based screening via GP registers in Barcelona	20 to 90, mean age 50.6	238	0.4% (0.0–2.3)
Spain	Caballeria (2014) ⁽⁶⁵⁾	Multi-centre	2010–2011	Convenience	Multi-centre study of screening via flyers and posters in GP offices in Barcelona	Mean age 51.2	69	1.5% (0.0–7.8)
Spain	Calleja-Panero (2013) ⁽⁵²⁾	Multi-centre	2007–2010	Convenience	Study in Murcia and Madrid of working population at yearly insurance check-up. 73% male.	42	5,017	0.6% (0.4–0.9)
United Kingdom	Pepas (2011) ⁽⁵⁴⁾	Local	2007–2009	Exhaustive	Patients undergoing Assisted Reproductive Treatment at Guy & St Thomas Hospital, London	N/R	3,953	0.4% (0.3–0.7)
United Kingdom	Balogun (2009) ⁽⁶⁸⁾	Regional	2000	Convenience	Residual serum samples from Public Health and National Health Service Laboratories in England and Wales for routine diagnostic examination	>16	5,068	1.2% (0.9–1.5)

Estimates used for pooled estimate

* Estimates presented in Figure 1b (prevalence map)

Table A7. Prevalence of HBsAg in pregnant women, EU/EEA countries

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence estimate (95% CI)
Denmark#	Moller (2014) ⁽⁶⁹⁾	National	2013	Exhaustive	National antenatal screening programme	N/R	60,977	0.3% (0.2–0.3)
Denmark#	Harder (2011) ⁽⁷⁰⁾	National	2005–2007	Exhaustive	National antenatal screening programme	N/R	140,376	0.3% (0.2–0.3)
Denmark	Pooled	Pooled	2005–2007; 2013	Pooled	Pooled	Pooled	201,353	0.3% (0.2–0.3)
France	Richaud-Eyraud (2015) ⁽⁷¹⁾	National	2011	N/R	ELFE cohort study, national sample	25 to 34, mean age 30	N/R	0.8% (0.6–1.1)
France	Brailon (2010) ⁽⁷²⁾	Regional	2006	Random	Regional coverage. Lookback study design	Mean age 29	1,112	0.2% (0.0–0.6)
Germany	Lobstein (2011) ⁽⁷³⁾	Local	2006–2010	Exhaustive	Deliveries in one hospital	N/R	8,193	0.5% (0.3–0.7)
Germany	Alba-Alejandre (2008) ⁽⁷⁴⁾	Local	2001–2008	Exhaustive	Antenatal screening in Leutkirch hospitals, southern Germany	N/R	15,873	0.8% (0.7–1.0)
Greece	Papaevangelou (2006) ⁽⁷⁵⁾	National	2003	Exhaustive	National antenatal screening programme	N/R	3,384	2.9% (2.4–3.5)
Greece	Karatapanis (2012) ⁽⁷⁶⁾	Local	2009–2011	Exhaustive	Antenatal screening attendees	Mean age 27.2	1,304	1.2% (0.6–1.9)
Greece	Karatapanis (2012) ⁽⁷⁶⁾	Local	2009–2011	Exhaustive	Antenatal screening non-attendees screened post-partum	Mean age 26.6	1 000	5.3% (4.0–6.9)
Greece	Elefsiniotis (2010) ⁽⁷⁷⁾	Local	2008–2009	Exhaustive	Consecutive women delivering at the ObGyn department	N/R	1,826	3.8% (3.0–4.8)
Greece	Kafkoulas (2009) ⁽⁷⁸⁾	Local	2005–2007	Exhaustive	Antenatal screening at Thriassio General Hospital	N/R	2,188	0.0% (0.0–0.3)
Greece	Betsas (2006) ⁽⁷⁹⁾	Local	2004	Exhaustive	Attendees of the University of Thessaloniki antenatal clinic	Mean age 32.3 (Greek-born); 27.1 (Migrant)	544	3.5% (2.1–5.4)
Ireland	O'Connell (2010) ⁽⁸⁰⁾	Local	2004–2009	Exhaustive	Antenatal screening lab data from Galway hospital	N/R	24,008	0.2% (0.2–0.4)
Italy#	Spada (2014) ⁽⁸¹⁾	Multi-centre	2008–2009	Exhaustive	Multi-centre study in 41 hospitals across 13 regions	14 to 53	16,858	0.9% (0.7–1.0)
Italy#	Ruffini (2014) ⁽⁸²⁾	Regional	2011–2012	Exhaustive	Regional study. One-third migrant women.	>17	10,093	0.8% (0.6–1.0)
Italy	Pooled	Pooled	2008–2009; 2011–2012	Pooled	Pooled	Pooled	26,951	0.8% (0.7–1.0)
Norway	Kristiansen (2009) ⁽⁸³⁾	Regional	2003–2004	Exhaustive	Multi-centre study in all hospitals and delivery rooms in northern Norway	16 to 44, mean age 29.3	1,668	0.1% (0.0–0.3)
Slovakia	Kristian (2013) ⁽⁸⁴⁾	Regional	2008–2009	Convenience	Residual serum samples from regional departments of clinical microbiology, eastern Slovakia	N/R	13,798	2.1% (1.9–2.4)

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence estimate (95% CI)
Slovakia	Kristian (2010) ⁽⁸⁵⁾	Regional	2000–2004	Convenience	Residual serum samples from nine regional departments of clinical microbiology, eastern Slovakia	N/R	10,739	2.3% (2.1–2.6)
Spain	Salleras (2009) ⁽⁸⁶⁾	Regional	2008–2009	Random/Exhaustive	Regional antenatal screening programme	15 to 49	1,534	0.1% (0.0–0.5)
Spain	Lopez-Fabal (2013) ⁽⁸⁷⁾	Local	2007–2010	Convenience	Study in a hospital and a health centre in Madrid	19 to 49, mean age 30	6,939	0.9% (0.6–1.1)
Spain	Sampedro (2010) ⁽⁸⁸⁾	Local	2007–2008	Exhaustive	Single centre study. 8.4% migrants	N/R	4,169	0.6% (0.4–0.9)
Netherlands [#]	Op de Coul (2011) ⁽⁸⁹⁾	National	2006	Exhaustive	National antenatal screening programme	N/R	186,137	0.3% (0.3–0.4)
Netherlands [#]	Op de Coul (2011) ⁽⁸⁹⁾	National	2007	Exhaustive	National antenatal screening programme	N/R	190,140	0.3% (0.3–0.3)
Netherlands [#]	Op de Coul (2011) ⁽⁸⁹⁾	National	2008	Exhaustive	National antenatal screening programme	N/R	185,941	0.4% (0.4–0.4)
Netherlands	Pooled	Pooled	2006–2008	Pooled	Pooled	Pooled	562,218	0.3% (0.3–0.4)
United Kingdom [#]	Schnier (2014) ⁽⁹⁰⁾	National (covering 60% of population)	2009–2010	Exhaustive	Antenatal screening from four laboratories (covering 60% of Scottish population)	15 to 44	129,171	0.3% (0.3–0.3)
United Kingdom [#]	Godbole (2013) ⁽⁹¹⁾	Local	2007–2010	Exhaustive	Antenatal screening in four London hospitals	15 to 46, mean age 29	38,227	1.0% (0.9–1.2)
United Kingdom	Pepas (2011) ⁽⁵⁴⁾	Local	2003	N/R	Antenatal screening at Guy & St Thomas Hospital, London	N/R	25,082	1.4% (1.3–1.6)
United Kingdom	Pooled	Pooled	2007–2010	Pooled	Pooled	Pooled	167,398	0.5% (0.4–0.5)

[#] Estimates used for pooled estimate

Table A8. Prevalence of anti-HCV in pregnant women, EU/EEA countries

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence estimate (95% CI)
Austria	Diab-Elschahawi (2013) ⁽⁹²⁾	Local	2009–2011	Exhaustive	Universal antenatal screening at Vienna University Hospital	18 to 43	4,222	1.7% (1.4–2.2)
Greece	Kafkoura (2009) ⁽⁷⁸⁾	Local	2005–2007	Exhaustive	Antenatal screening at Thriassio General Hospital	N/R	2,188	1.3% (0.9–1.8)
Ireland	Lambert (2013) ⁽⁹³⁾	Local	2007–2008	Exhaustive	Antenatal care attendees of Rotunda hospital	N/R	8,976	0.9% (0.7–1.1)
Ireland	Martyn (2011) ⁽⁹⁴⁾	Local	2006	Exhaustive	Deliveries at a single hospital	N/R	4,666	1.4% (1.1–1.8)
Ireland	Martyn (2011) ⁽⁹⁴⁾	Local	2007	Exhaustive	Deliveries at a single hospital	N/R	9,222	0.7% (0.6–0.9)
Italy	Ruffini (2014) ⁽⁸²⁾	Regional	2011–2012	Exhaustive	Regional study. One third migrant women	>17	9,977	0.4% (0.3–0.5)
Italy	Veronesi (2007) ⁽⁹⁵⁾	Local	1996–2001	Exhaustive	All deliveries at the hospital in Palma	N/R	13,025	0.8% (0.7–1.0)
Italy	Lagana (2015) ⁽⁹⁶⁾	Local	2003–2013	Convenience	Outpatient clinic attendees, mostly migrant women	N/R	320	0.9% (0.2–2.7)
Norway	Kristiansen (2009) ⁽⁸³⁾	Regional	2003–2004	Exhaustive	Multi-centre study in all hospitals and delivery rooms in northern Norway	16 to 44, mean age 29.3	1,668	0.9% (0.5–1.5)
Slovenia	Kopilovic (2015) ⁽⁹⁷⁾	National	2013	Exhaustive	Residual sera from antenatal screening	N/R	9,574	0.1% (0.1–0.2)
Slovenia	Kopilovic (2015) ⁽⁹⁷⁾	National	2009	Exhaustive	Residual sera from antenatal screening	N/R	8,064	0.1% (0.0–0.2)
Slovenia	Kopilovic (2015) ⁽⁹⁷⁾	National	2003	Exhaustive	Residual sera from antenatal screening	N/R	7,281	0.2% (0.1–0.3)
Slovenia	Kopilovic (2015) ⁽⁹⁷⁾	National	2003, 2009 & 2013	Exhaustive	Residual sera from antenatal screening	N/R	24,919	0.1% (0.1–0.2)
Spain	Seisdedos (2011) ⁽⁹⁸⁾	Multi-centre (six regions)	2012	Random	HIV- women screened in six regions	N/R	8,555	0.2% (0.1–0.3)
Netherlands	Urbanus (2011) ⁽⁹⁹⁾	Local	2003	Random	Antenatal screening in Amsterdam, 64% non-Dutch	>15	4,563	0.3% (0.2–0.5)

Table A9. Prevalence of HBsAg and anti-HCV in first-time blood donors, EU/EEA countries [15]

Country	Number of HBsAg positive cases	Number of anti-HCV positive cases	Number of first-time blood donors	Prevalence of HBsAg (95% CI) ^a	Prevalence of anti-HCV (95% CI) ^a	Council of Europe Report
Austria	46	18	46,603	0.099% (0.072–0.132)	0.039% (0.023–0.061)	2010
Belgium	41	21	53,524	0.077% (0.055–0.104)	0.039% (0.024–0.060)	2011
Bulgaria	1,095	116	33,961	3.224% (3.039–3.418)	0.342% (0.282–0.410)	2011
Croatia	20	12	8,599	0.233% (0.142–0.359)	0.140% (0.072–0.244)	2011
Republic of Cyprus	20	10	4,532	0.441% (0.270–0.681)	0.221% (0.106–0.405)	2008
Czech Republic	29	106	49,122	0.059% (0.040–0.085)	0.216% (0.177–0.261)	2011
Denmark	4	4	25,647	0.016% (0.004–0.040)	0.016% (0.004–0.040)	2011
Estonia	10	36	3,752	0.267% (0.128–0.490)	0.959% (0.673–1.326)	2011
Finland	0	5	19,775	0.000% (0.000–0.019)	0.025% (0.008–0.059)	2011
France ^b	257	124	365,593	0.070% (0.062–0.079)	0.034% (0.028–0.040)	2011
Germany	631	336	542,542	0.116% (0.107–0.126)	0.062% (0.055–0.069)	2011
Greece	783	685	57 000	1.374% (1.280–1.473)	1.202% (1.114–1.295)	2011
Hungary	5	90	56,632	0.009% (0.003–0.021)	0.159% (0.128–0.195)	2011
Iceland	1	0	1,398	0.072% (0.002–0.398)	0.000% (0.000–0.264)	2011
Ireland	5	1	12,900	0.039% (0.013–0.090)	0.008% (0.000–0.043)	2011
Italy	663	372	394,910	0.168% (0.155–0.181)	0.094% (0.085–0.104)	2011
Latvia ^c	-	-	-	1.127%	2.170%	2003
Liechtenstein	-	-	-	-	-	N/A
Lithuania	129	354	23,034	0.560% (0.468–0.665)	1.537% (1.382–1.704)	2011
Luxembourg	0	2	907	0.000% (0.000–0.406)	0.221% (0.027–0.794)	2011
Malta	4	1	2,300	0.174% (0.047–0.445)	0.043% (0.001–0.242)	2011
Netherlands	12	7	35,166	0.034% (0.018–0.060)	0.020% (0.008–0.041)	2011
Norway	5	6	17,940	0.028% (0.009–0.065)	0.033% (0.012–0.073)	2011
Poland	1,225	2,021	272,310	0.450% (0.425–0.476)	0.742% (0.710–0.775)	2010
Portugal	-	-	-	0.094%	0.165%	2006
Romania	2,711	520	88,066	3.078% (2.965–3.195)	0.590% (0.541–0.643)	2011
Slovakia	29	10	40,140	0.072% (0.048–0.104)	0.025% (0.012–0.046)	2011
Slovenia	11	2	12,677	0.087% (0.043–0.155)	0.016% (0.002–0.057)	2009
Spain	391	230	232,893	0.168% (0.152–0.185)	0.099% (0.086–0.112)	2011
Sweden	21	29	49,071	0.043% (0.026–0.065)	0.059% (0.040–0.085)	2009
United Kingdom	82	81	216,083	0.038% (0.030–0.047)	0.037% (0.030–0.047)	2011

^a Calculated using the Fisher exact method for 95% CI, provided that case numbers were available

^b France: The French blood service is composed of the French National Blood Service (EFS) (17 blood centres) and the French Army Transfusion Service (CTSA) with one blood centre. Data of both organisations are reported.

^c Latvia: Since 2003 only data on HIV have been presented and no data are available on HBV/HCV.

Table A10. HBsAg and anti-HCV prevalence estimate for the EU/EEA

Countries	Total Population*	HBV prevalence estimate (95% CI)	Estimated number of chronic HBV cases	HCV prevalence estimate (95% CI)	Estimated number of chronic HCV cases	Source HBV prevalence estimate	Source HCV prevalence estimate
Austria	8,506,889	0.099% (0.072–0.132)	8,422	0.039% (0.023–0.061)	2,322	Blood donor data	Blood donor data
Belgium	11,203,992	0.71% (0.38–1.21)	79,548	0.1% (0.0–0.4)	7,843	Higher-quality estimates	Higher-quality estimates
Bulgaria	7,245,677	3.224% (3.039–3.418)	233,601	0.342% (0.282–0.410)	17,346	Blood donor data	Blood donor data
Croatia	4,246,809	0.7% (0.5–0.9)	29,728	0.9% (0.6–1.5)	26,755	Higher-quality estimates	Higher-quality estimates
Cyprus	858 000	0.441% (0.270–0.681)	3784	0.221% (0.106–0.405)	1,327	Blood donor data	Blood donor data
Czech Republic	10,512,419	0.36% (0.13–0.78)	37,845	0.216% (0.177–0.261)	15,895	Higher-quality estimates	Blood donor data
Denmark	5,627,235	0.016% (0.004–0.040)	900	0.016% (0.004–0.040)	630	Blood donor data	Blood donor data
Estonia	1,315,819	0.267% (0.128–0.490)	3,513	0.959% (0.673–1.326)	8,833	Blood donor data	Blood donor data
Finland	5,451,270	0.000% (0.000–0.019)	0	0.025% (0.008–0.059)	954	Blood donor data	Blood donor data

Countries	Total Population*	HBV prevalence estimate (95% CI)	Estimated number of chronic HBV cases	HCV prevalence estimate (95% CI)	Estimated number of chronic HCV cases	Source HBV prevalence estimate	Source HCV prevalence estimate
France	65,835,579	0.7% (0.5–0.9)	460,849	0.8% (0.7–1.1)	368,679	Higher-quality estimates	Higher-quality estimates
Germany	80,767,463	0.4% (0.3–0.5)	323,070	0.4% (0.3–0.5)	226,149	Higher-quality estimates	Higher-quality estimates
Greece	10,926,807	3.3% (2.2–4.7)	360,585	2.2% (1.3–3.4)	168,273	Higher-quality estimates	Higher-quality estimates
Hungary	9,877,365	0.4% (0.1–1.0)	39,509	0.5% (0.2–1.1)	34,571	Higher-quality estimates	Higher-quality estimates
Iceland	325,671	0.072% (0.002–0.398)	234	0.000% (0.000–0.264)	0	Blood donor data	Blood donor data
Ireland	4,605,501	0.1% (0.0–0.4)	4,606	0.1% (0.0–0.4)	3,224	Higher-quality estimates	Higher-quality estimates
Italy	60,782,668	0.7% (0.4–1.0)	425,479	5.9% (5.2–6.6)	2,510,324	Higher-quality estimates	Higher-quality estimates
Latvia***	2,001,468	1,127%	22,557	2.4% (1.7–3.3)	33,625	Blood donor data	Higher-quality estimates
Liechtenstein	37,129	-	-	-	-	-	-
Lithuania	2,943,472	0.560% (0.468–0.665)	16,483	2.9% (2.10–3.85)	59,752	Blood donor data	Lower-quality estimates
Luxembourg	549,680	0.000% (0.000–0.406)	0	0.221% (0.027–0.794)	850	Blood donor data	Blood donor data
Malta	425,384	0.174% (0.047–0.445)	740	0.043% (0.001–0.242)	128	Blood donor data	Blood donor data
Netherlands	16,829,289	0.2% (0.1–0.4)	33,659	0.1% (0.0–0.2)	11,781	Higher-quality estimates	Higher-quality estimates
Norway	5,107,970	0.028% (0.009–0.065)	1,430	0.033% (0.012–0.073)	1,180	Blood donor data	Blood donor data
Poland	38,017,856	0.450% (0.425–0.476)	171,080	2.9% (2.4–3.5)	771,762	Blood donor data	Lower-quality estimates
Portugal***	10,427,301	0.094%	9,802	0.165%	12,044	Blood donor data	Blood donor data
Romania	19,947,311	4.4% (4.0–4.8)	877,682	3.2% (2.9–3.6)	446,820	Higher-quality estimates	Higher-quality estimates
Slovakia	5,415,949	1.1% (0.7–1.6)	59,575	2.0% (1.4–2.7)	75,823	Higher-quality estimates	Higher-quality estimates
Slovenia	20,61,085	0.087% (0.043–0.155)	1,793	0.016% (0.002–0.057)	231	Blood donor data	Blood donor data
Spain	46,512,199	0.8% (0.6–1.1)	372,098	1.1% (0.3–2.8)	358,144	Higher-quality estimates	Higher-quality estimates
Sweden	9,644,864	0.043% (0.026–0.065)	4,147	0.059% (0.040–0.085)	3,983	Blood donor data	Blood donor data
United Kingdom	64,308,261	1.7% (1.3–2.2)	1,093,240	0.9% (0.7–1.1)	405,142	Lower-quality estimates	Lower-quality estimates
Total	512,318,382	0.9% (0.7–1.2)	4,675,959	1.1% (0.9–1.4)	5,574,391	-	-

* Eurostat 2014

** Retroactively computed 95% CI from reported prevalence and sample size

*** No sample size reported

Table A11. Prevalence of HBsAg in MSM, EU/EEA countries

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence estimate (95% CI)
Croatia	Bozicevic (2009) ⁽¹⁰⁰⁾	Local	2006	Respondent-driven	Respondent-driven sampling among MSM in Zagreb	N/R	360	0.6% (0.1–2.0)
Estonia	Rüütel (2015a) ⁽¹⁰¹⁾	N/S	2013	Convenience	Online survey with free, anonymous STI screening	18 to 67, mean age 33	43	0.0% (0.0–8.2)
Estonia	Rüütel (2015b) ⁽¹⁰²⁾	National	2014–2015	Respondent-driven	Online survey with free, anonymous STI screening	14 to 68, mean age 30	97	1.0% (0.0–5.6)
France	Sauvage (2015) ⁽¹⁰³⁾	Multi-centre	2009	Convenience	Screening offered in 14 bars, saunas and 'backrooms'	>18	876	1.4% (0.7–2.4)
United Kingdom	Roy (2008) ⁽¹⁰⁴⁾	National	2001	Convenience	STI clinic samples	N/R	81	0.0% (0.0–4.5)
United Kingdom	McMillan (2006) ⁽¹⁰⁵⁾	Local	2001–2003	Exhaustive	Retrospective analysis of samples from all new clients of Edinburgh STI clinic	15 to 64, mean age 29	575	1.0% (0.4–2.3)

Table A12. Prevalence of anti-HCV in MSM, EU/EEA countries

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence estimate (95% CI)
Croatia	Cavlek (2009) ⁽¹⁰⁶⁾	Multi-centre	2003–2006	N/R	Survey in seven cities	N/R	205	2.9% (1.1–6.3)
Croatia	Bozicevic (2009) ⁽¹⁰⁰⁾	Local	2006	Respondent-driven	Respondent-driven sampling among MSM in Zagreb	N/R	360	2.5% (1.1–4.7)
Estonia	Rüütel (2015a) ⁽¹⁰¹⁾	N/S	2013	Convenience	Online survey with free, anonymous STI screening	18 to 67, mean age 33	43	4.7% (0.6–15.8)
Estonia	Rüütel (2015b) ⁽¹⁰²⁾	National	2014–2015	Respondent-driven	Online survey with free, anonymous STI screening	14 to 68, mean age 30	113	1.8% (0.2–6.2)
France	Sauvage (2015) ⁽¹⁰³⁾	Multi-centre	2009	Convenience	Screening offered in 14 bars, saunas and 'backrooms'	>18	876	1.0% (0.5–1.9)
Italy	Di Benedetto (2012) ⁽¹⁰⁷⁾	Local	2010	Convenience	Men living in Sicily for more than six months, recruited via internet and in gay bars	18 to 56, mean age 30	74	0.0% (0.0–4.9)
Sweden	Blaxhult (2013) ⁽¹⁰⁸⁾	Local	2012–2013	Convenience	Attendees of a Stockholm STI clinic	16 to 82, mean age 33	1,008	0.6% (0.2–1.3)
Netherlands	van de Laar (2007) ⁽¹⁰⁹⁾	Local	1984–2003	Convenience	Cohort study in Amsterdam	Mean age 31.8	1,836	1.3% (0.8–1.9)
Netherlands	Van Rooijen (2013) ⁽¹¹⁰⁾	Local	2007	Convenience	STI clinic attendees opting out of HIV testing	N/R	450	0.7% (0.1–1.9)
United Kingdom	Price (2013) ⁽¹¹¹⁾	Local	2008	Convenience	Multi-centre study in gay bars, saunas and clubs	16 to 51	1,121	2.1% (1.4–3.2)
United Kingdom	Donson (2012) ⁽¹¹²⁾	Local	2009–2011	Convenience	STI clinic attendees	N/R	3,395	1.6% (1.2–2.0)

Table A13. Prevalence of HBsAg in prisoners of EU/EEA countries

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence estimate (95% CI)
Bulgaria	Popov (2012) ⁽¹¹³⁾	Multi-centre	2010	Convenience	Study in two juvenile facilities	N/R (juveniles)	258	25.2% (20.0–31.0)
Croatia [#]	Burek (2010) ⁽²⁶⁾	Multi-centre	2005–2007	Convenience	Multi-centre study in 20 prisons. Sample includes PWID	32 to 70	3,348	1.3% (0.9–1.7)
Croatia	Burek (2010) ⁽²⁶⁾		2005–2007	Convenience	Multi-centre study in 20 prisons. Sample includes PWID	16 to 18	140	1.4% (0.2–5.1)
Croatia [#]	Burek (2009) ⁽¹¹⁴⁾	Multi-centre	2004–2006	Convenience	Multi-centre study in 20 prisons. Sample of men only	N/R	3,160	1.3% (0.9–1.8)
Croatia	Pooled	Pooled	2004–2007	Pooled	Pooled	Pooled	6,508	1.3% (1.0–1.6)
Finland	Viitanen (2011) ⁽¹¹⁵⁾	National	2006	Mixed methods	National coverage	16 to 69	383	0.5% (0.1–1.9)
France	Abergel (2014) ⁽¹¹⁶⁾	Local	2012–2013	Exhaustive	Two maisons d'arret in Clermont-Ferrand and Riom. 97% male	25 to 39, mean age 30	347	0.6% (0.1–2.1)
Hungary	Treso (2012) ⁽³⁴⁾	National	2007–2009	Exhaustive	All inmates	21 to 60	4,894	1.5% (1.2–1.8)
Ireland	Drummond (2014) ⁽¹¹⁷⁾	National	2011	Random	National coverage—all adult inmates (sentenced and remand)	Mean age 31	777	0.3% (0.0–0.9)
Italy	Babudieri (2005) ⁽¹¹⁸⁾	Multi-centre	2001–2002	Convenience	Multi-centre study in eight prisons. Mixed gender, includes PWID	Mean age 36	973	6.7% (5.2–8.4)
Luxembourg	Removille (2011) ⁽¹¹⁹⁾	Multi-centre	2005	Convenience	Multi-centre study in two prisons. Population of problem drug users (not all PWID)	N/R	115	7.0% (3.1–13.2)
Portugal	Marques (2011) ⁽¹²⁰⁾	Local	2007–2008	Exhaustive	Study in regional prison of Coimbra. Includes PWID	19 to 75, mean age 34.1	151	10.8% (8.1–14.0)
Romania	Nazare (2011) ⁽¹²¹⁾	Local	2007–2010	Convenience	Single prison screening study	N/R	197	10.7% (6.7–15.8)
Spain	Garcia-Guerrero (2010) ⁽¹²²⁾	Multi-centre	2008	Random	Multi-centre study in 18 prisons across Spain	Mean age 35.7	N/R	2.6% (0.8–4.5)
United Kingdom [#]	Mortlock (2013) ⁽¹²³⁾	Local	2012	Exhaustive	Implementation of routine testing in a maximum security psychiatric hospital	N/R	129	0.0% (0.0–2.8)

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence estimate (95% CI)
United Kingdom [#]	Ferenando (2014) ⁽¹²⁴⁾	Local	2011–2013	Convenience	Study in a London prison among participants of TB screening	N/R	511	2.0% (0.9–3.6)
United Kingdom	Pooled	Pooled	2011–2013	Pooled	Pooled	Pooled	640	1.6% (0.8–2.9)

[#] Estimates used for the pooled estimate

Table A14. Prevalence of anti-HCV in prisoners of EU/EEA countries

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence estimate (95% CI)
Bulgaria [#]	Popov (2013) ⁽¹²⁵⁾	Multi-centre	N/R	Convenience	Five adult prisons and one juvenile facility	N/R	658	28.6% (25.1–32.2)
Bulgaria [#]	Popov (2010) ⁽¹²⁶⁾	Multi-centre	N/R	Convenience	Five adult prisons and one juvenile facility	N/R	498	24.7% (21.0–28.7)
Bulgaria	Popov (2012) ⁽¹¹³⁾	Multi-centre	2010	Convenience	Study in two juvenile detention facilities	N/R (juveniles)	258	20.5% (15.8–26.0)
Bulgaria	Pooled	Pooled	N/R	Pooled	Pooled	Pooled	1,156	26.3% (23.5–29.3)
Croatia [#]	Burek (2010) ⁽²⁶⁾	Multi-centre	2005–2007	Convenience	Multi-centre study in 20 prisons. Sample includes PWID	32 to 70	3,348	12.5% (11.4–13.7)
Croatia [#]	Burek (2009) ⁽¹¹⁴⁾	Multi-centre	2004–2006	Convenience	Multi-centre study in 20 prisons. Sample includes men and women. 24% PWID	N/R	3,348	14.2% (13.0–15.4)
Croatia	Burek (2010) ⁽²⁶⁾	Multi-centre	2005–2007	Convenience	Multi-centre study in 20 prisons. Sample includes PWID	16 to 18	140	4.3% (1.6–9.1)
Croatia	Pooled	Pooled	2004–2007	Pooled	Pooled	Pooled	6,696	13.3% (12.5–14.2)
Finland	Viitanen (2011) ⁽¹¹⁵⁾	National	2006	Mixed methods	National coverage	16 to 69	383	45.8% (40.8–51.0)
France [#]	Semaille (2013) ⁽¹²⁷⁾	National	2010	Random	Stratified sampling by facility characteristics. Prisoners randomly sampled	18 to >50	1,876	4.8% (3.9–5.9)
France [#]	Remy (2006) ⁽¹²⁸⁾	Multi-centre	2003	Other	Multi-centre study. Prisons asked to report screening practices, number of cases and capacity	N/R	31,215	6.8% (6.5–7.1)
France [#]	Remy (2006) ⁽¹²⁸⁾	Multi-centre	2000	Other	Multi-centre study. Prisons asked to report screening practices, number of cases and capacity	N/R	27,245	6.0% (5.8–6.3)
France [#]	Abergel (2014) ⁽¹¹⁶⁾	Local	2012–2013	Exhaustive	Two <i>maisons d'arret</i> in Clermont-Ferrand and Riom. 97% male	25 to 39, mean age 30	342	4.7% (2.7–7.5)
France [#]	Vergniol (2014) ⁽¹²⁹⁾	Multi-centre	2012–2013	Exhaustive	Multi-centre study involving all inmates. Unspecified facilities	N/R	1,720	6.5% (5.4–7.8)
France [#]	Roux (2014) ⁽¹³⁰⁾	Regional	2004–2010	Convenience	Screening study. Testing offered due to multiple risk factors or on inmates request. 93% male	Mean age 28	5,957	5.2% (4.6–5.8)
France [#]	Verneuil (2009) ⁽¹³¹⁾	Local	2000–2003	Random	Study in a remand centre in Caen	Mean age 29.7	442	3.8% (2.3–6.1)
France	Pooled	Pooled	2000–2013	Pooled	Pooled	Pooled	68,797	6.3% (6.1–6.5)
Germany	Meyer (2007) ⁽¹³²⁾	Local	2002	Exhaustive	Largest German juvenile prison. All new inmates offered screening	>16	1,125	8.6% (7.0–10.4)
Germany	Stark (2006) ⁽¹³³⁾	Multi-centre	1998–2001	Exhaustive	Multi-centre study. All new inmates who had ever used illicit drugs (nasal or IV) offered screening	N/R	173	83.2% (76.8–88.5)
Germany	Karakaya and Stark (2009) ⁽¹³⁴⁾	Local	N/R	Convenience	Single prison study (Berlin). Females only, >90% PWID	22 to 47, mean age 31	106	84.9% (76.6–91.1)
Germany	Karakaya and Stark (2009) ⁽¹³⁴⁾	Local	N/R	Convenience	Single prison study (Berlin). Males only, >90% PWID	23 to 47, mean age 31	48	77.1% (62.7–88.0)
Hungary	Treso (2012) ⁽³⁴⁾	National	2007–2009	Exhaustive	All inmates	21 to 60	4,894	4.9% (4.3–5.6)
Ireland	Drummond	National	2011	Random	National coverage—all adult	Mean age 31	777	12.9% (10.6–

Country	Author (year of publication)	Geographical coverage	Sampling period	Sampling method	Study population details	Age range	Sample size	Prevalence estimate (95% CI)
	(2014) ⁽¹¹⁷⁾				inmates (sentenced and remand)			15.4)
Italy	Babudieri (2005) ⁽¹¹⁸⁾	Multi-centre	2001–2002	Convenience	Multi-centre study in eight prisons. Mixed gender. Includes PWID	Mean age 36	973	38.0% (35.0–41.2)
Italy	Montella (2005) ⁽¹³⁵⁾	Regional	2000–2002	Convenience	Male inmates in Secondigliano prison, Naples	>19	524	37.4% (33.2–41.7)
Luxembourg	Removille (2011) ⁽¹¹⁹⁾	Multi-centre	2005	Convenience	Multi-centre study in two prisons. Population of problem drug users (not all PWID)	N/R	122	86.3% (79.0–91.8)
Portugal	Marques (2011) ⁽¹²⁰⁾	Local	2007–2008	Exhaustive	Study in regional prison of Coimbra. Includes PWID	19 to 75, mean age 34.1	151	34.4% (26.9–42.6)
Portugal	Barros (2008) ⁽¹³⁶⁾	Local	2005	N/R	Inmates of largest female prison (57% of all female inmates). 96.5% PWID	N/R	445	10.8% (8.1–14.0)
Spain [#]	Garcia-Guerrero (2010) ⁽¹²²⁾	Multi-centre	2008	Random	Multi-centre study in 18 prisons across Spain	Mean age 35.7	N/R	22.7% (18.3–27.1)
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2009	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	25.3%
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2008	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	27.0%
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2007	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	29.0%
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2006	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	30.0%
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2005	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	33.0%
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2004	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	37.2%
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2003	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	37.8%
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2002	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	38.9%
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2001	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	42.9%
Spain [#]	Hernandez-Fernandez (2010) ⁽¹³⁷⁾	National	2000	Other	Data from the National Centre for Prison Health Co-ordination	N/R	N/R	44.9%
Spain [#]	Abad-Perez (2011) ⁽¹³⁸⁾	Local	2000–2009	Convenience	Hospitalized prisoners in the province of Valencia	17 to 74	2,332	14.7% (13.3–16.2)
Spain [#]	Murcia (2009) ⁽¹³⁹⁾	Local	2001	Exhaustive	Single prison study in Alicante involving all inmates	N/R	730	38.2% (34.7–41.9)
Spain	Pooled	Pooled	2000–2009	Pooled	Pooled	Pooled	3,062	20.3% (18.9–21.7)
United Kingdom [#]	Taylor (2013) ⁽¹⁴⁰⁾	National	2010–2011	Exhaustive	Multi-centre study in all 14 prisons in Scotland including females and juvenile inmates. 32% history of IDU. 5% female	<20 to >40, mean age 32.4	4,810	19.2% (18.1–20.3)
United Kingdom [#]	Mortlock (2013) ⁽¹²³⁾	Local	2012	Exhaustive	Implementation of routine testing in a maximum security psychiatric hospital	N/R	129	2.3% (0.5–6.6)
United Kingdom [#]	Ferenando (2014) ⁽¹²⁴⁾	Local	2011–2013	Convenience	Study in a London prison among participants of TB screening	N/R	511	4.3% (2.7–6.4)
United Kingdom	Duncan (2013) ⁽¹⁴¹⁾	Local	2010–2011	Convenience	STI clinic attendees in a medium security male prison in Oxfordshire	N/R	118	11.0% (6.0–18.1)
United Kingdom	Samuel (2013) ⁽¹⁴²⁾	Local	N/R	Convenience	STI clinic attendees in a young offenders institute	16 to 21, mean age 19	79	1.3% (0.0–6.9)
United Kingdom	Pooled	Pooled	2010–2013	Pooled	Pooled	Pooled	5,450	17.4% (16.4–18.4)

Estimates used for the pooled estimate

Table A15. Prevalence of HBsAg in PWID, EU/EEA countries [16]

Country	National data				Regional data ^a			
	Year	Sample size ^b	Prevalence of HBsAg (95% CI ^c)	Study design ^d	Setting ^e	Regional area	Year	HBsAg prevalence estimate/range (%)
Austria	-	-	-	-	-	Vienna	2013	2.7%
Belgium	-	-	-	-	-	Antwerp & Flemish community	2013	0%–1.6%
Bulgaria	-	-	-	-	-	Sofia	2013	4.5%
Croatia	2007	200	0.5% (0.0–2.8)	SP	PRI	Osijek-Baranja, Zadar and Dubrovnik-Neretva County	2008	0%
Cyprus	2013	82	6.1% (2.0–13.7)	DT	DTC	-	-	-
Estonia	-	-	-	-	-	Tallinn	2013	4%
Germany	-	-	-	-	-	Berlin & Essen	2011	0.3%–1.5%
Greece^f	2013	1,337	3.0% (2.2–4.1)	DT	DTC; LTS; PHL; STR; PRI; OTH	Attica & Thessaloniki	2013	0%–8.0%
Hungary	2011	664	0.5% (0.1–1.3)	SP	DTC, NSP	Six counties	2013	2.2%
Ireland	2010	200	0.5% (0.0–2.8)	SP	PRI	-	-	-
Latvia	2013	562	2.1% (1.1–3.7)	DT	NSP	Seven cities	2013	2.9%
Netherlands	-	-	-	-	-	Amsterdam	2012	0%
Norway	-	-	-	-	-	Oslo	2012	0.9%
Poland	-	-	-	-	-	Gdansk & Krakow	2009	2.5%–3.8%
Portugal	2013	399	6.3% (4.1–9.1)	DT	DTC (drug free/detox, only Outpatient)	-	-	-
Romania	-	-	-	-	-	Bucharest	2009	4.7%
Slovakia	-	-	-	-	-	Bratislava	2013	2.6%
United Kingdom	-	-	-	-	-	Wales	2013	0.7%

^a Various study designs and settings included

^b Samples with sample size under $N = 10$ were excluded

^c Calculated using the Fisher exact method for 95% CI

^d Study design: DT = diagnostic testing; SP = specific prevalence study (UAT = unlinked anonymous testing); RDS = respondent-driven sampling; SR = prevalence study based on self-reported test results

^e Setting: ANT = antenatal clinics; ARR = arrests; DEM = drug emergencies; DTC = drug treatment centres*; GPS = general practitioners; HTC = HIV testing centres; LTS = low-threshold services; NSP = needle exchanges; ODD = overdose deaths; OHC = other hospital or clinics; OTH = other; STI = STI clinics; STR = street; PHL = public health laboratories; PRI = prisons; IDUnk = IDU status not known**

^f Greece: two national estimates were pooled

* Having health problems is one selection criterion for admission to drug treatment in some countries or cities (Greece, Portugal, and Rome); due to long waiting lists or special programmes for infected IDUs, this may result in upward bias of prevalence.

** Data sources with no information on injecting status were excluded if possible because of the possible severe underestimation of prevalence in injectors.

Some of these data sources were included if samples were large or provided trends over time, in which case it is indicated that injecting status is unknown and that prevalence among injectors may be underestimated.

Table A16. Prevalence of anti-HCV in PWID, EU/EEA countries [17]

Country	National data					Regional data ^a		
	Year	Sample size ^b	Prevalence of anti-HCV (95% CI ^c)	Study design ^d	Setting ^e	Regional area	Year	Anti-HCV prevalence estimate/range (%)
Austria	2013	48	31.3% (18.7–46.3)	DT	ODD	Graz, Styria, Vienna, Vorarlberg	2013	67.0%–69.6%
Belgium	-	-	-	-	-	Antwerp & Flemish community	2013	7.5%–73.4%
Bulgaria	-	-	-	-	-	Sofia	2013	62.7%
Croatia	2007	200	44% (37.0–51.2)	SP	PRI	Osijek-Baranja, Zadar and Dubrovnik-Neretva County	2008	27.1%
Cyprus	2013	82	47.6% (36.4–58.9)	DT	DTC	-	-	-
Czech Republic	2013	1,889	14.6% (13.1–16.3)	DT	NSP	-	-	-
Denmark	2008	223	52.5% (45.7–59.2)	SP (UAT)	ODD, 3 sites	-	-	-
Estonia	-	-	-	-	-	Tallinn	2013	90.2%
Finland	2009	682	60.5% (56.8–64.3)	SP (UAT)	NSP, 9 sites	Helsinki, Espoo, Vantaa, Tampere	2007	21.4%
Germany	-	-	-	-	-	Essen & Berlin	2011	56.0%–71.6%
Greece ^f	2013	1,309	68.1% (65.5–70.6)	DT	DTC (maintenance, drug free/detox); LTS; PHL; OHC; PRI; OTH	Thessaloniki & Attica	2013	28.4%–80.4%
Hungary	2011	652	24.1% (20.8–27.6)	SP	DTC; NSP	Eight counties	2013	31.9%
Ireland	2010	200	41.5% (34.6–48.7)	SP	PRI	-	-	-
Italy ^g	2010	743	60.5% (56.8–64.0)	DT	DTC	Emilia Romagna, Lombardia & Umbria	2013	54.1%–71.0%
Latvia ^h	2013	522	70.1% (66.0–74.0)	DT	NSP	Riga	2011	81.5%
Lithuania	-	-	-	-	-	Vilnius	2012	27.6%
Malta	2013	109	13.8% (7.9–21.7)	DT	DTC; HTC; PHL; STI; ANT; OHC	-	-	-
Netherlands	-	-	-	-	-	Amsterdam	2013	39.3%
Norway	2013	6,342	63.0% (61.8–64.2)	SP	DTC	Oslo	2012	63.8%
Poland	-	-	-	-	-	Krakow & Gdansk	2009	44.3%–72.4%
Portugal	2013	414	84.3% (80.4–87.7)	DT	DTC (drug free/detox, only Outpatient)	-	-	-
Romania	-	-	-	-	-	Bucharest	2009	82.9%
Slovakia	-	-	-	-	-	Bratislava	2013	36.2%
Slovenia	2009	112	32.1% (23.6–41.6)	DT	DTC	-	-	-
Sweden	-	-	-	-	-	Stockholm (multiple sites), Norrkoping, Kronoberg, Karlstad, Karlskrona, Kalmar, Jonkoping	2013	96.8%
United Kingdom ⁱ	2013	3,144	49.1% (47.4–50.9)	SP (UAT)	DTC; NSP; LTS; OTH	England, Wales, Scotland & Northern Ireland	2013	20.9%–57.5%

^a Various study designs and settings included

^b Samples with sample size under $N = 10$ were excluded

^c Calculated using Fisher method for 95% CI

^d Study design: DT = diagnostic testing; SP = specific prevalence study (UAT = unlinked anonymous testing); RDS = Respondent-driven Sampling; SR = prevalence study based on self-reported test results

^e Setting: ANT = antenatal clinics; ARR = arrests; DEM = drug emergencies; DTC = drug treatment centres*; GPS = general practitioners; HTC = HIV testing centres; LTS = low-threshold services; NSP = needle exchanges; ODD = overdose deaths; OHC = other hospital or clinics; OTH = other; STI = STI clinics; STR = street; PHL = public health laboratories; PRI = prisons; IDUnk = IDU status not known**

^f Greece: two national estimates were pooled

^g Italy: Data collection system was changed. Aggregated data were collected before 2012, and since then individual detailed data are available. In that sense, data are not comparable with previous years

^h Latvia: IDUs status changed from unknown to ever IDUs after 2011

ⁱ United Kingdom: Data collection for Scotland is not following calendar year, but tax year (i.e. from April 201x to March 201x)

* Having health problems is one selection criterion for admission to drug treatment in some countries or cities (Greece, Portugal, Rome), due to long waiting lists or special programmes for infected IDUs, this may result in upward bias of prevalence.

** Data sources with no information on injecting status were excluded if possible because of the possible severe underestimation of prevalence in injectors.

Some of these data sources were included if samples were large or provided trends over time, in which case it is indicated that injecting status is unknown and that prevalence among injectors may be underestimated.

Table A17. Prevalence of HBsAg in migrants by country/region of origin, EU/EEA

Country	Country of origin	Author (year of publication)	Sampling period	Study design ^a	Sample size	Prevalence of HBsAg (95% CI)
Greece	Former Soviet Union	Zacharakis (2009) ⁽¹⁴³⁾	1998–2006	RS	463	4.3% (2.7–6.6)
Italy	Asia	Stornaiuolo (2014) ⁽¹⁴⁴⁾	1999–2009	OS	115	0.0% (0.0–3.2)
Italy	Eastern Europe	Stornaiuolo (2014) ⁽¹⁴⁴⁾	1999–2009	OS	211	3.3% (1.3–6.7)
Italy	Sub-Saharan Africa	Stornaiuolo (2014) ⁽¹⁴⁴⁾	1999–2009	OS	2,198	8.1% (7.0–9.3)
Netherlands	Countries with >2% HBV prevalence ^b	Hahné (2011) ⁽¹⁸⁾	2006–2007	RS	406	2.2% (1.0–4.2)
Netherlands	Afghanistan	Richter (2014) ⁽¹⁴⁵⁾	2011	IBS	293	2.0% (0.8–4.4)
Netherlands	Cape Verde	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	13	0.0% (0.0–24.7)
Netherlands	China and Hong Kong	Veldhuijzen (2012) ⁽¹⁴⁶⁾	2009	OS	849	9.7% (7.8–11.8)
Netherlands	Dutch Antilles	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	38	2.6% (0.1–13.8)
Netherlands	Egypt	Zuure (2013) ⁽¹⁴⁷⁾	2004	CBS	465	1.1% (0.4–2.5)
Netherlands	Former Soviet Union	Richter (2014) ⁽¹⁴⁵⁾	2011	IBS	65	0.0% (0.0–5.5)
Netherlands	Iran	Richter (2014) ⁽¹⁴⁵⁾	2011	IBS	153	0.7% (0.0–3.6)
Netherlands	Iraq	Richter (2014) ⁽¹⁴⁵⁾	2011	IBS	290	0.7% (0.1–2.5)
Netherlands	Morocco	Baaten (2007) ⁽¹⁴⁸⁾	2004	RS	261	0.4% (0.0–2.2)
Netherlands	Morocco	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	44	0.0% (0.0–8.0)
Netherlands	Suriname	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	56	0.0% (0.0–6.4)
Netherlands	Turkey	Baaten (2007) ⁽¹⁴⁸⁾	2004	RS	304	4.9% (2.8–8.0)
Netherlands	Turkey	Richter (2011) ⁽¹⁴⁹⁾	2009	CBS	544	3.1% (1.8–5.0)
Netherlands	Turkey	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	54	1.9% (0.0–9.9)
Netherlands	Vietnam	Richter (2014) ⁽¹⁴⁵⁾	2011	CBS	126	9.5% (5.0–16.0)
Norway	Pakistan	Bjerke (2010) ⁽¹⁵⁰⁾	2009	RS	224	1.3% (0.3–3.9)
United Kingdom	Bangladesh	McPherson (2013) ⁽¹⁵¹⁾	n/s	CBS	208	0.5% (0.0–2.6)
United Kingdom	Bangladesh	Uddin (2010) ⁽¹⁵²⁾	n/s	CBS	726	1.5% (0.8–2.7)
United Kingdom	China (including Hong Kong)	McPherson (2013) ⁽¹⁵¹⁾	n/s	CBS	470	8.9% (6.5–11.9)
United Kingdom	India	O'Leary (2010) ⁽¹⁵³⁾	2009–2010	CBS	137	0.0% (0.0–2.7)
United Kingdom	India	Uddin (2010) ⁽¹⁵²⁾	n/s	CBS	1,197	0.1% (0.0–0.5)
United Kingdom	Other south Asian countries ^c	McPherson (2013) ⁽¹⁵¹⁾	n/s	CBS	19	5.3% (0.1–26.0)
United Kingdom	Other south Asian countries ^c	O'Leary (2010) ⁽¹⁵³⁾	2009–2010	CBS	101	4.0% (1.1–9.8)
United Kingdom	Other south-east Asian countries ^d	McPherson (2013) ⁽¹⁵¹⁾	n/s	CBS	38	5.3% (0.6–17.7)
United Kingdom	Pakistan	McPherson (2013) ⁽¹⁵¹⁾	n/s	CBS	222	3.2% (1.3–6.4)
United Kingdom	Pakistan	O'Leary (2010) ⁽¹⁵³⁾	2009–2010	CBS	882	0.8% (0.3–1.6)
United Kingdom	Pakistan	Uddin (2010) ⁽¹⁵²⁾	n/s	CBS	2,458	1.8% (1.3–2.4)
United Kingdom	Vietnam	McPherson (2013) ⁽¹⁵¹⁾	n/s	CBS	23	17.4% (5.0–38.8)

Source: ECDC; adapted from 'Epidemiological assessment of hepatitis B and C among migrants in the EU/EEA' [in press]

^a Study design: RS = random sample, OS = outreach screening, CBS = community-based screening, IBS = invitation-based screening

^b Countries with >2% HBV prevalence: medium or high HBV-endemic countries

^c South Asian countries other than Pakistan, India and Bangladesh

^d South-east Asian countries other than Vietnam and China

Table A18. Prevalence of anti-HCV in migrants, by country/region of origin, EU/EEA

Country	Country of birth	Author (year of publication)	Sampling period	Study design ^a	Sample size	Prevalence of anti-HCV (95% CI)
Italy	Asia	Stornaiuolo (2014) ⁽¹⁴⁴⁾	1999–2009	OS	115	3.5% (1.0–8.7)
Italy	Eastern Europe	Stornaiuolo (2014) ⁽¹⁴⁴⁾	1999–2009	OS	211	7.1% (4.0–11.5)
Italy	Sub-Saharan Africa	Stornaiuolo (2014) ⁽¹⁴⁴⁾	1999–2009	OS	2,198	2.5% (1.9–3.2)
Netherlands	Afghanistan	Richter (2014) ⁽¹⁴⁵⁾	2011	IBS	293	1.0% (0.2–3.0)
Netherlands	Cape Verde	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	13	0.0% (0.0–24.7)
Netherlands	Dutch Antilles	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	38	2.6% (0.1–13.8)
Netherlands	Egypt	Zuure (2013) ⁽¹⁴⁷⁾	2004	CBS	465	2.4% (1.2–4.2)
Netherlands	Former Soviet Union	Richter (2014) ⁽¹⁴⁵⁾	2011	IBS	65	3.1% (0.4–10.7)
Netherlands	Iran	Richter (2014) ⁽¹⁴⁵⁾	2011	IBS	153	0.7% (0.0–3.6)
Netherlands	Iraq	Richter (2014) ⁽¹⁴⁵⁾	2011	IBS	290	0.3% (0.0–1.9)
Netherlands	Morocco	Urbanus (2011) ⁽⁹⁹⁾	2003–2009	RS	255	0.4% (0.0–2.2)
Netherlands	Morocco	Urbanus (2011) ⁽⁹⁹⁾	2006–2007	RS	36	2.8% (0.1–14.5)
Netherlands	Morocco	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	40	2.5% (0.1–13.2)
Netherlands	Non-western ethnicity	Urbanus (2011) ⁽⁹⁹⁾	2003–2009	RS	764	0.7% (0.2–1.5)
Netherlands	Non-western ethnicity	Urbanus (2011) ⁽⁹⁹⁾	2006–2007	RS	442	2.3% (1.1–4.1)
Netherlands	Other non-western ethnicity	Urbanus (2011) ⁽⁹⁹⁾	2003–2009	RS	165	1.8% (0.4–5.2)
Netherlands	Other non-western ethnicity	Urbanus (2011) ⁽⁹⁹⁾	2006–2007	RS	374	1.9% (0.8–3.8)
Netherlands	Suriname	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	57	1.8% (0.0–9.4)
Netherlands	Suriname	Urbanus (2011) ⁽⁹⁹⁾	2003–2009	RS	66	3.0% (0.4–10.5)
Netherlands	Suriname	Urbanus (2011) ⁽⁹⁹⁾	2006–2007	RS	102	2.0% (0.2–6.9)
Netherlands	Turkey	Urbanus (2011) ⁽⁹⁹⁾	2003–2009	RS	309	0.0% (0.0–1.2)
Netherlands	Turkey	Urbanus (2011) ⁽⁹⁹⁾	2006–2007	RS	65	0.0% (0.0–5.5)
Netherlands	Turkey	Veldhuijzen (2009) ⁽⁵³⁾	2004	RS	47	0.0% (0.0–7.5)
Netherlands	Turkey	Richter (2011) ⁽¹⁴⁹⁾	2009	CBS	544	0.4% (0.0–1.3)
Netherlands	Vietnam	Richter (2014) ⁽¹⁴⁵⁾	2011	CBS	126	1.6% (0.2–5.6)
United Kingdom	Bangladesh	McPherson (2013) ⁽¹⁵¹⁾	n/s	CBS	208	0.0% (0.0–1.8)
United Kingdom	Bangladesh	Uddin (2010) ⁽¹⁵²⁾	n/s	CBS	726	0.6% (0.2–1.4)
United Kingdom	India	Uddin (2010) ⁽¹⁵²⁾	n/s	CBS	1,197	0.2% (0.0–0.6)
United Kingdom	India	O'Leary (2010) ⁽¹⁵³⁾	2009–2010	CBS	137	2.9% (0.8–7.3)
United Kingdom	Other south Asian countries ^b	McPherson (2013) ⁽¹⁵¹⁾	n/s	CBS	19	0.0% (0.0–17.6)
United Kingdom	Other south Asian countries ^b	O'Leary (2010) ⁽¹⁵³⁾	2009–2010	CBS	101	2.0% (0.2–7.0)
United Kingdom	Pakistan	McPherson (2013) ⁽¹⁵¹⁾	n/s	CBS	222	1.8% (0.5–4.5)
United Kingdom	Pakistan	O'Leary (2010) ⁽¹⁵³⁾	2009–2010	CBS	882	3.1% (2.0–4.4)
United Kingdom	Pakistan	Uddin (2010) ⁽¹⁵²⁾	n/s	CBS	2,458	2.7% (2.1–3.4)

Source: ECDC. Adapted from 'Epidemiological assessment of hepatitis B and C among migrants in the EU/EEA' [in press]

^a Study design: RS = random sample, OS = outreach screening, CBS = community-based screening, IBS = invitation-based screening

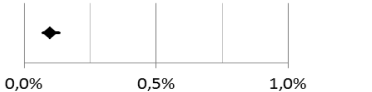
^b South Asian countries other than Pakistan, India and Bangladesh

Annex 3. Country profiles

3.1 Austria

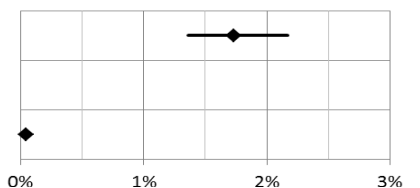
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2010	N/A	46,603	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2010	0.1% (0.07–0.13)	46,603	

Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Diab-Elschahawi et al. (2013)	Pregnant women	2009–2011	1	4,222	Exhaustive	Universal antenatal screening at Vienna University Hospital	18 to 43
Council of Europe	First-time blood donors	2010	N/A	46,603	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimate and 95% CI
<i>Pregnant women</i>				
Diab-Elschahawi et al. (2013)	2009–2011	1.7% (1.4–2.2)	4,222	
<i>First-time blood donors</i>				
Council of Europe	2010	0.0% (0.02–0.06)	46,603	

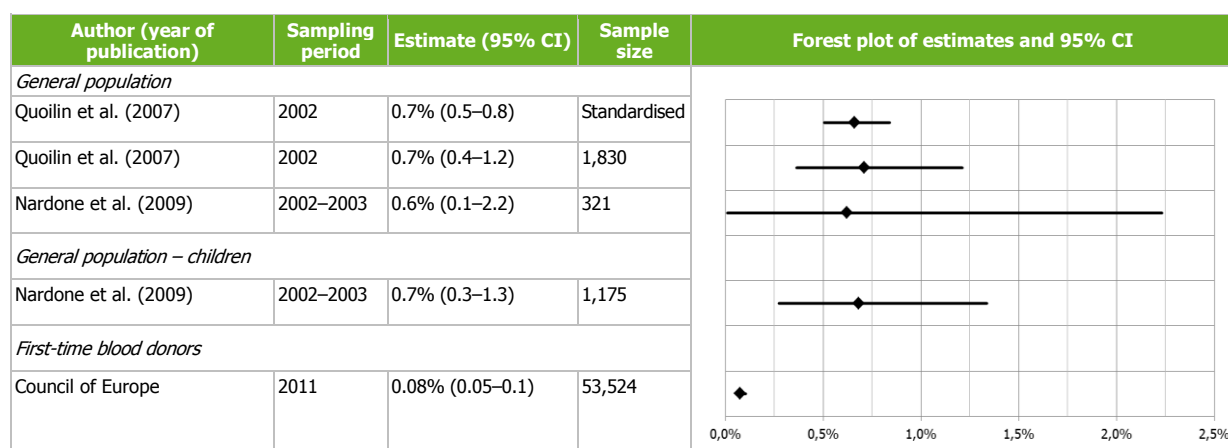
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimated prevalence range
EMCDDA	2013	HBsAg	Drug treatment, harm reduction and low-threshold services in Vienna. N=N/A	2.7% (no CI available)
EMCDDA	2013	Anti-HCV	Overdose deaths among current injectors. N=48	31.3% (18.7%–46.3%)

3.2 Belgium

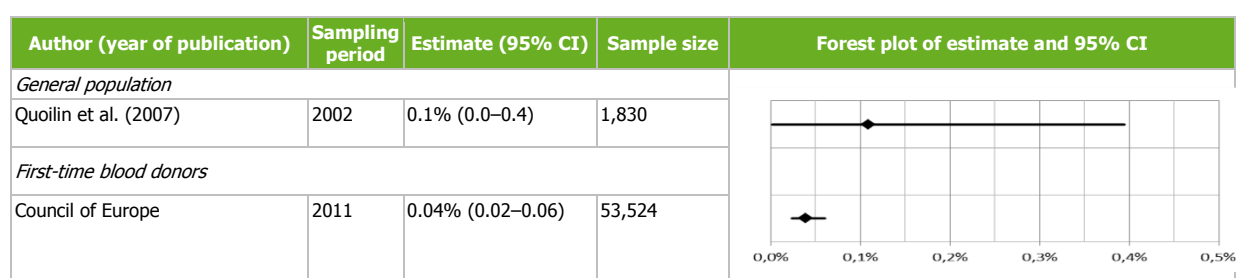
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Quoilin et al. (2007)	General population	2002	4	Standardised	Random	Region of Flanders	Standardised
Quoilin et al. (2007)	General population	2002	4	1,830	Random	Region of Flanders	0 to >65
Nardone et al. (2009)	General population	2002–2003	3	321	Convenience	Residual lab samples representative of location and gender	16 to 39
Nardone et al. (2009)	General population	2002–2003	3	1,175	Convenience	Residual lab samples representative of location and gender	1 to 15
Council of Europe	First-time blood donors	2011	N/A	53,524	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Quoilin et al. (2007)	General population	2002	4	1,830	Random	Region of Flanders	0 to >65
Council of Europe	First-time blood donors	2011	N/A	53,524	N/A	N/A	N/A



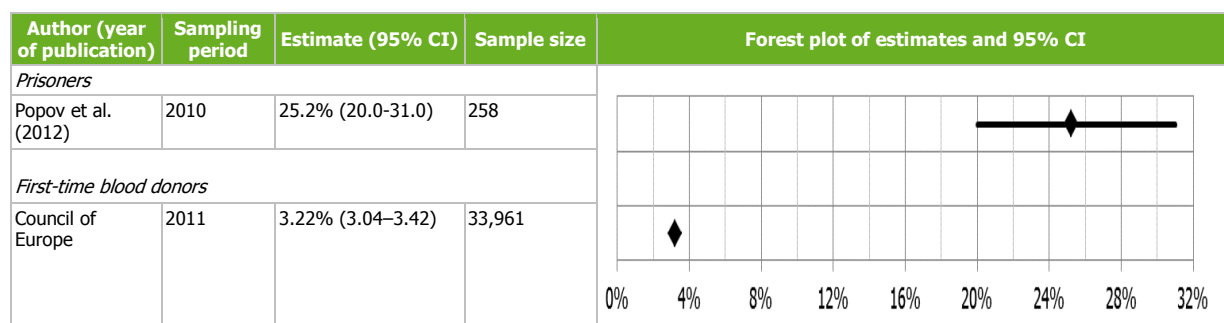
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimated prevalence range (no CI available)
EMCDDA	2013	HBsAg	Drug treatment services in Antwerp and the Flanders region. N=N/A	0.0% to 1.58%
EMCDDA	2013	Anti-HCV	Drug treatment and harm reduction services in Antwerp and the Flanders region. N=N/A	7.5% to 73.5%

3.3 Bulgaria

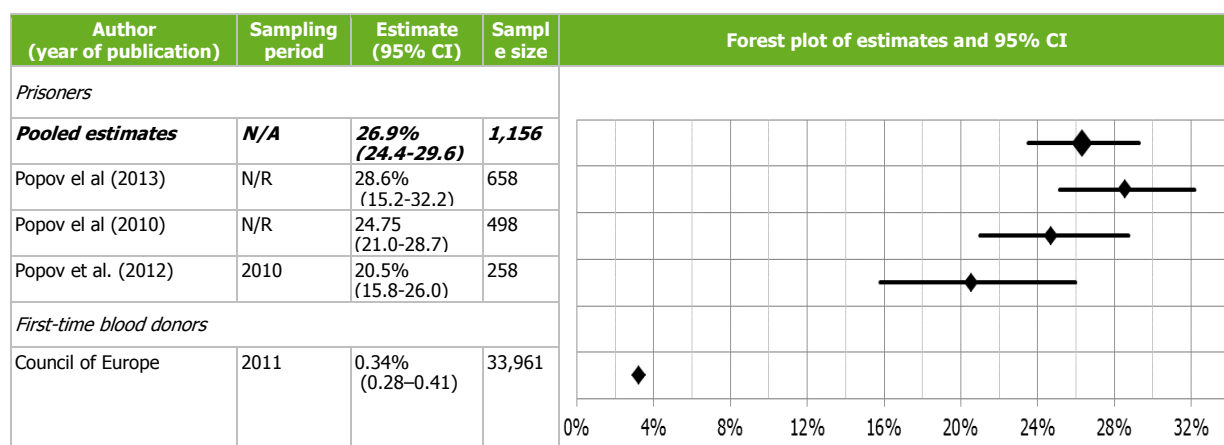
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Popov et al. (2012)	Prisoners (juveniles)	2010	3	258	Convenience	Study in two juvenile facilities	N/R
Council of Europe	First-time blood donors	2011	N/A	33,961	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
<i>Pooled estimates</i>	<i>Prisoners</i>	<i>N/A</i>	<i>N/A</i>	<i>1,156</i>	<i>Pooled</i>	<i>Pooled</i>	<i>Pooled</i>
Popov et al (2013)	Prisoners	N/R	5	658	Convenience	Four adult prisons and one juvenile facility	N/R
Popov et al (2010)	Prisoners	N/R	5	498	Convenience	Four adult prisons and one juvenile facility	N/R
Popov et al. (2012)	Prisoners	2010	3	258	Convenience	Study in two juvenile detention facilities	N/R
Council of Europe	First-time blood donors	2011	N/A	33,961	N/A	N/A	N/A



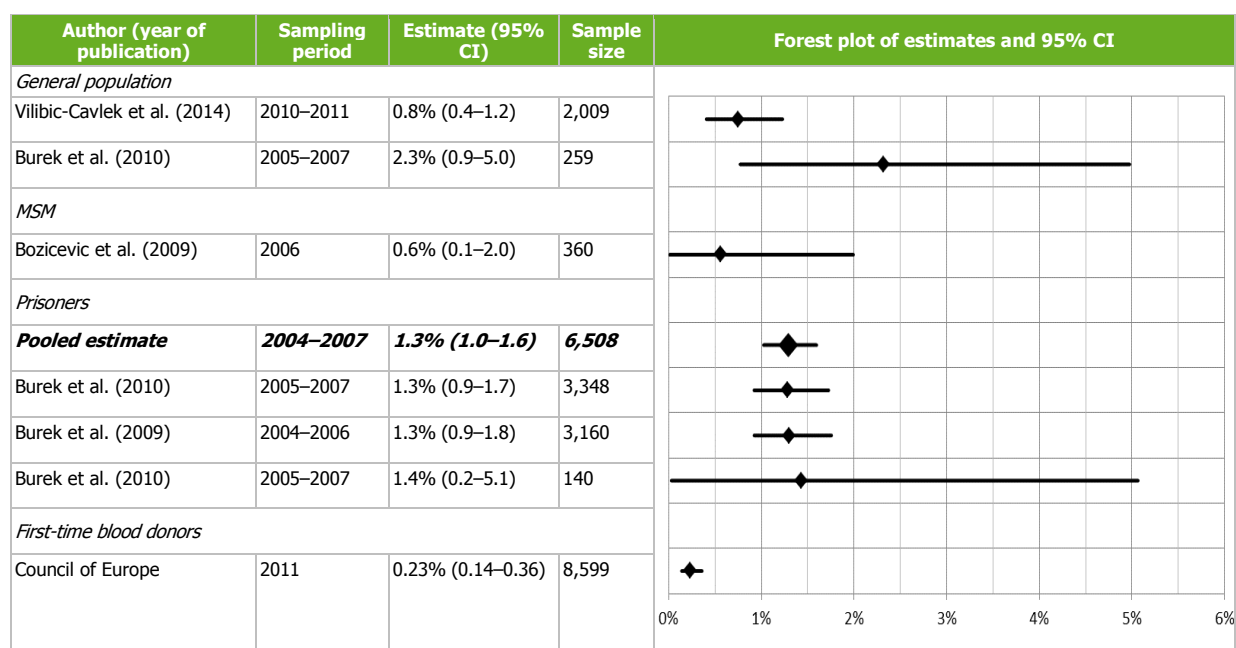
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (CI not available)
EMCDDA	2013	HBsAg	Street-based testing of ever injectors in Sofia. N=N/A	4.5%
EMCDDA	2013	Anti-HCV	Street-based testing of ever injectors in Sofia. N=N/A	62.7%

3.4 Croatia

HBsAg prevalence

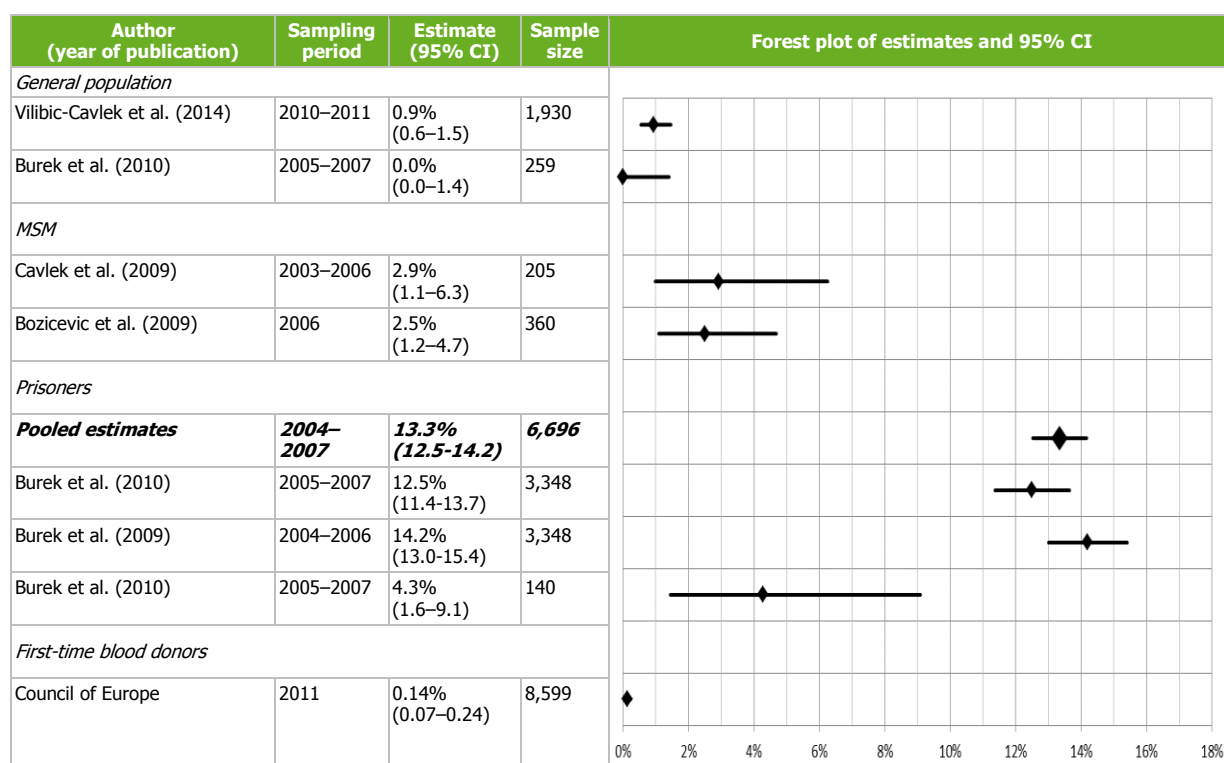
Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Vilibic-Cavlek et al. (2014)	General population	2010–2011	4	2,009	Convenience	Multi-centre study of patients attending a check-up. Covers 20% of regions	20 to 80
Burek et al. (2010)	General population	2005–2007	3	259	N/R	Multi-centre study of staff in 20 prisons (10.9% of all prison staff)	N/R
Bozicevic et al. (2009)	MSM	2006	2	360	Respondent-driven	Zagreb	N/R
Pooled estimate	Prisoners	2004–2007	N/A	6,508	Pooled	Pooled	Pooled
Burek et al. (2010)	Prisoners	2005–2007	5	3,348	Convenience	Multi-centre study in 20 prisons. Sample includes PWID	32 to 70
Burek et al. (2009)	Prisoners	2004–2006	4	3,160	Convenience	Multi-centre study in 20 prisons. Sample of men only	N/R
Burek et al. (2010)	Prisoners	2005–2007	4	140	Convenience	Multi-centre study in 20 prisons. Sample includes PWID	16 to 18
Council of Europe	First-time blood donors	2011	N/A	8,599	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Vilibic-Cavlek et al. (2014)	General population	2010–2011	4	1,930	Convenience	Multi-centre study of patients attending a check-up. Covers 20% of regions	20 to 80
Burek et al. (2010)	General population	2005–2007	3	259	N/R	Multi-centre study of staff in 20 prisons (10.9% of all prison staff)	N/R
Cavlek et al. (2009)	MSM	2003–2006	2	205	N/R	Survey in seven cities	N/R

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Bozicevic et al. (2009)	MSM	2006	2	360	Respondent-driven	Zagreb	N/R
Pooled estimates	Prisoners	2004–2007	N/A	6,696	Pooled	Pooled	Pooled
Burek et al. (2010)	Prisoners	2005–2007	5	3,348	Convenience	Multi-centre study in 20 prisons. Sample includes PWID	32 to 70
Burek et al. (2009)	Prisoners	2004–2006	5	3,348	Convenience	Multi-centre study in 20 prisons. Sample includes men and women. 24% PWID	N/R
Burek et al. (2010)	Prisoners	2005–2007	4	140	Convenience	Multi-centre study in 20 prisons. Sample includes PWID	16 to 18
Council of Europe	First-time blood donors	2011	N/A	8,599	N/A	N/A	N/A



HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2007	HBsAg	National sample of ever injectors from prisons. N=200	0.5% (0.0%–2.8%)
EMCDDA	2007	Anti-HCV	National sample of ever injectors from prisons. N=200	44.1% (37.0%–51.2%)

3.5 Cyprus

HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2008	N/A	4,532	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2008	0.44% (0.27–0.68)	4,532	

Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2008	N/A	4,532	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2011	0.23% (0.11–0.41)	4,532	

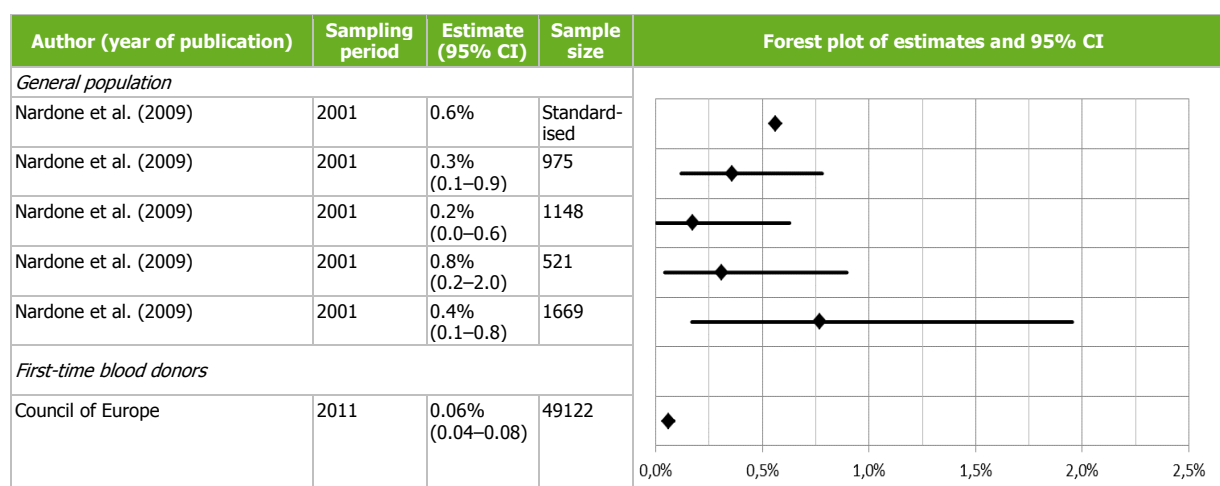
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2013	HBsAg	National sample of ever injectors from drug treatment services. N=82	6.1% (2.0%–13.7%)
EMCDDA	2013	Anti-HCV	National sample of ever injectors from drug treatment services. N=82	47.6% (36.4%–58.9%)

3.6 Czech Republic

HbsAg prevalence

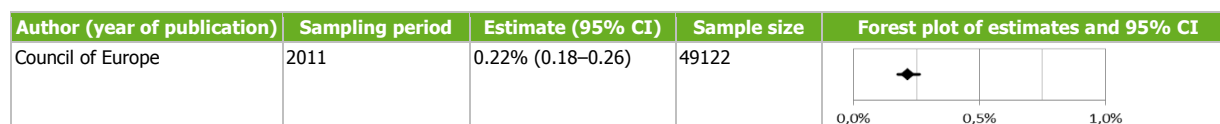
Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Nardone et al. (2009)	General population	2001	4	Standardised	N/R	N/R	Standardised
Nardone et al. (2009)	General population	2001	4	975	Random	N/R	1 to 15
Nardone et al. (2009)	General population	2001	4	1148	Random	N/R	16 to 39
Nardone et al. (2009)	General population	2001	4	521	Random	N/R	>40
Nardone et al. (2009)	General population	2001	4	1669	Random	N/R	16 to >40
Council of Europe	First-time blood donors	2011	N/A	49122	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2011	N/A	49122	N/A	N/A	N/A

HBsAg and anti-HCV prevalence: PWID



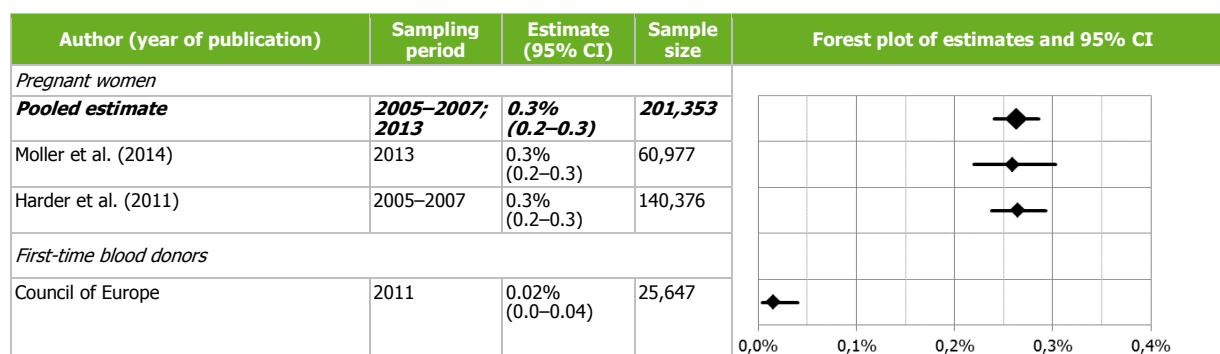
Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2013	Anti-HCV	Needle exchanges, N=1,889	14.6% (13.1%–16.3%)

*No HBsAg prevalence data available

3.7 Denmark

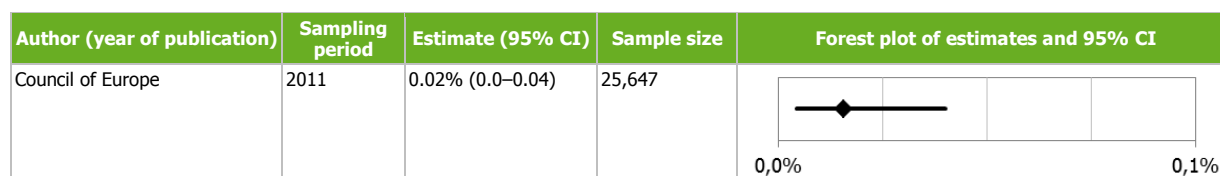
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Pooled estimate	Pregnant women	2005–2007; 2013	N/A	201,353	Pooled	Pooled	Pooled
Moller et al. (2014)	Pregnant women	2013	3	60,977	Exhaustive	National antenatal screening programme	N/R
Harder et al. (2011)	Pregnant women	2005–2007	3	140,376	Exhaustive	National antenatal screening programme	N/R
Council of Europe	First-time blood donors	2011	N/A	25,647	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2011	N/A	25,647	N/A	N/A	N/A



HBsAg and anti-HCV prevalence: PWID

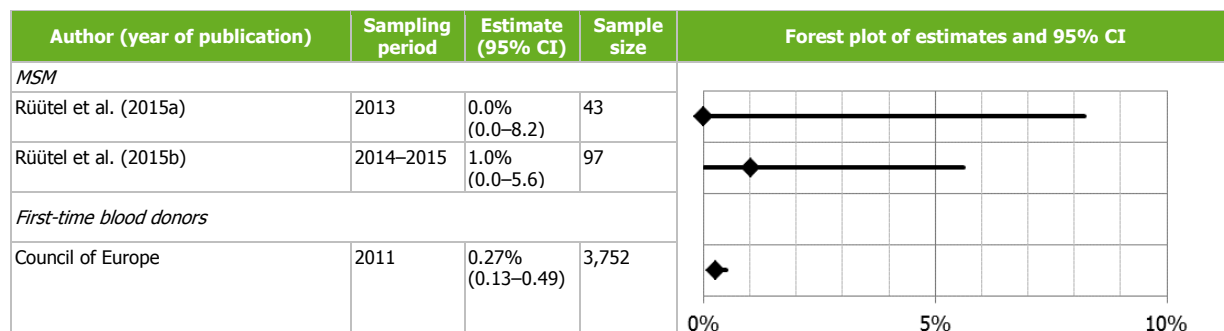
Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2008	Anti-HCV	Overdose deaths (multi-site (N=3) study of post-mortem blood). N=223	52.5% (45.7%–59.2%)

*No HBsAg prevalence data available

3.8 Estonia

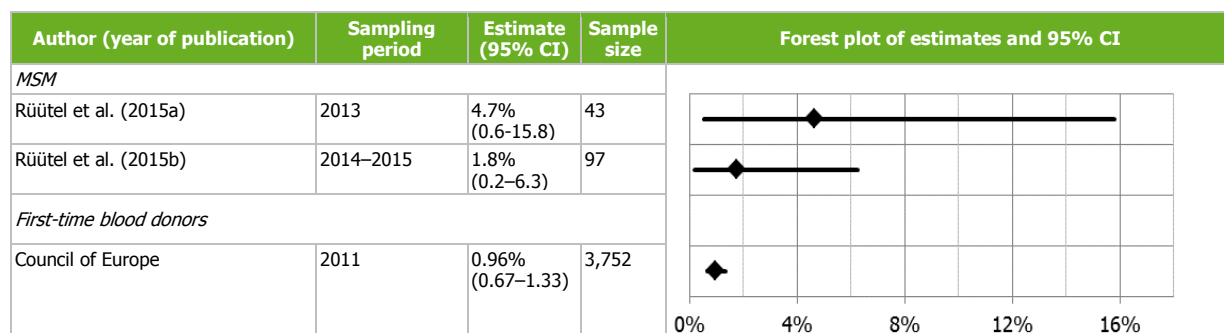
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Rüütel et al. (2015a)	MSM	2013	1	43	Convenience	Online survey with free, anonymous STI screening	18 to 67, mean age 33
Rüütel et al. (2015b)	MSM	2014–2015	1	97	Respondent-driven	Online survey with free, anonymous STI screening	14 to 68, mean age 30
Council of Europe	First-time blood donors	2011	N/A	3,752	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Rüütel et al. (2015a)	MSM	2013	1	43	Convenience	Online survey with free, anonymous STI screening	18 to 67, mean age 33
Rüütel et al. (2015b)	MSM	2014–2015	1	97	Respondent-driven	Online survey with free, anonymous STI screening	14 to 68, mean age 30
Council of Europe	First-time blood donors	2011	N/A	3,752	N/A	N/A	N/A



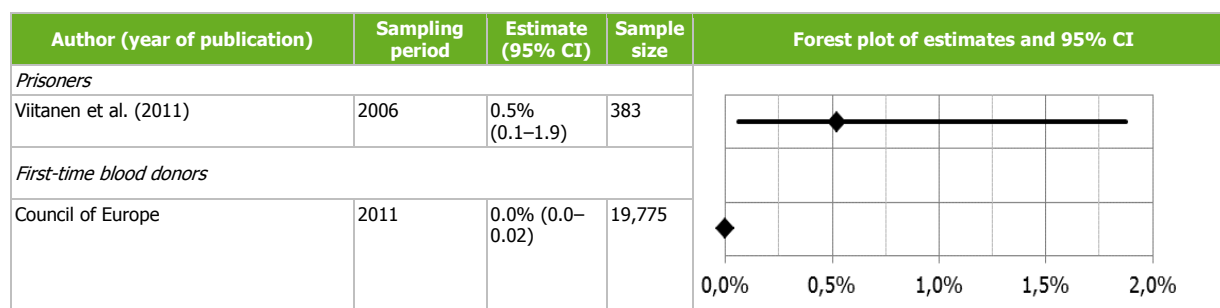
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (CI not available)
EMCDDA	2013	HBsAg	Single centre study of current injectors in a harm reduction service in Tallinn. N=N/A	4.0%
EMCDDA	2013	Anti-HCV	Single centre study of current injectors in a harm reduction service in Tallinn. N=N/A	90.2%

3.9 Finland

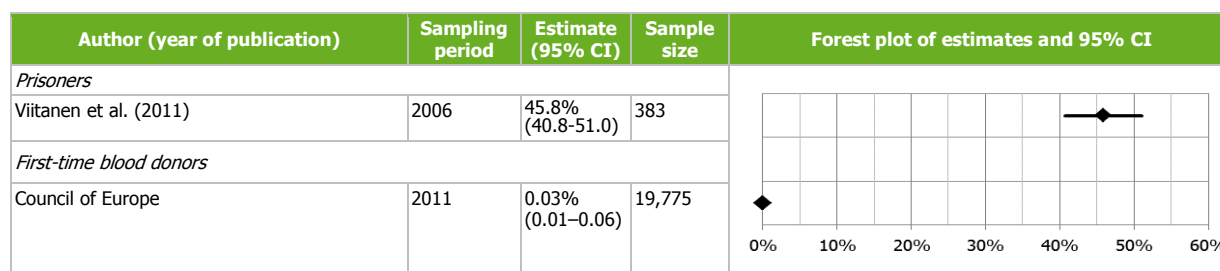
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Viitanen et al. (2011)	Prisoners	2006	6	383	Mixed methods	National coverage	16 to 69
Council of Europe	First-time blood donors	2011	N/A	19,775	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Viitanen et al. (2011)	Prisoners	2006	6	383	Mixed methods	National coverage	16 to 69
Council of Europe	First-time blood donors	2011	N/A	19,775	N/A	N/A	N/A



HBsAg and anti-HCV prevalence: PWID

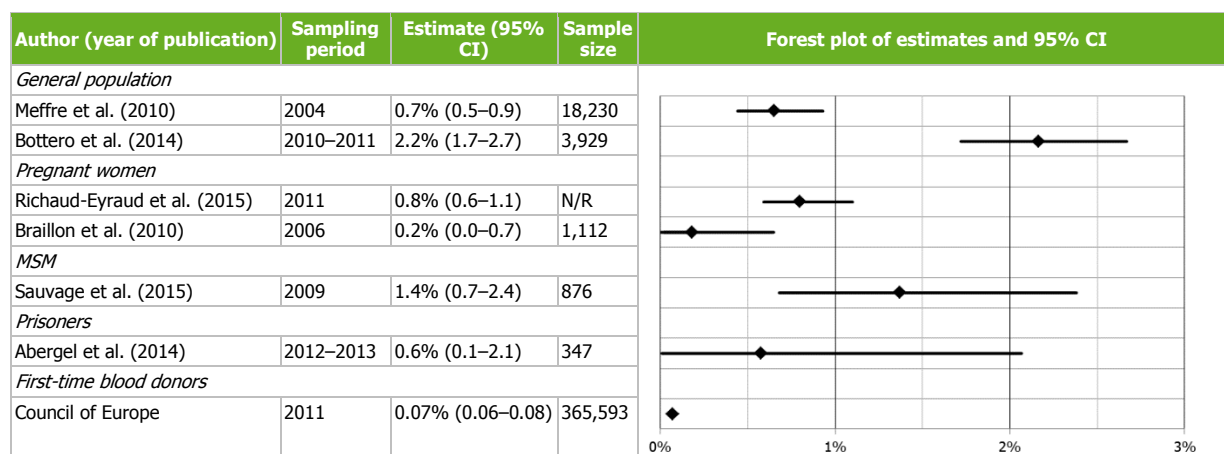
Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2009	Anti-HCV	National (multi-centre, N=9) study in harm reduction services. Sample of current injectors. N=682	60.5% (56.8%–64.3%)

* No HBsAg prevalence data available

3.10 France

HbsAg prevalence

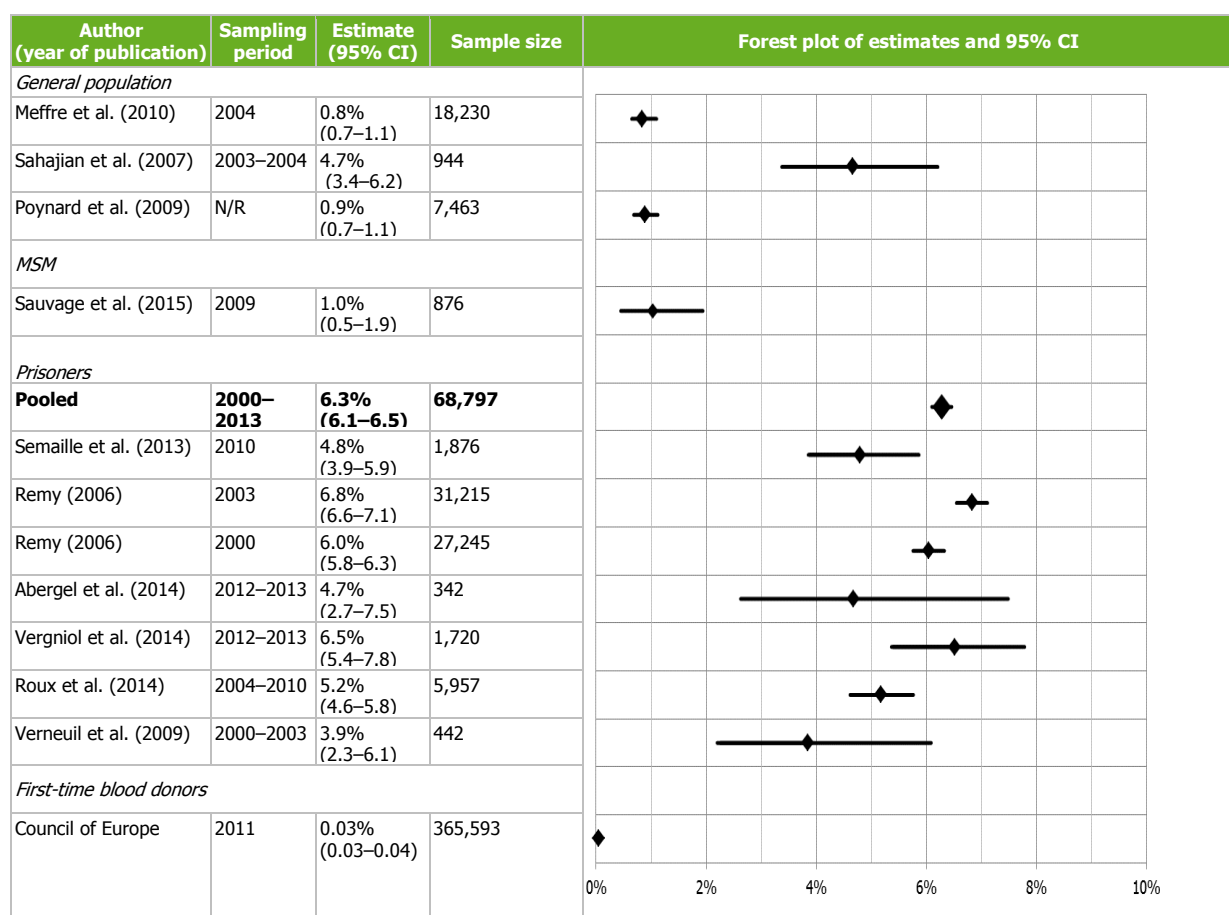
Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Meffre et al. (2010)	General population	2004	4	18,230	Random	National sample obtained via primary health care insurance units	18 to 80
Bottero et al. (2014)	General population	2010–2011	3	3,929	Convenience	Multi-centre screening study in Paris region includes multiple risk groups such as migrants and PWID	Mean age 33
Richaud-Eyraud et al. (2015)	Pregnant women	2011	2	N/R	N/R	ELFE cohort study. National sample	25 to 34, mean age 30
Braillon et al. (2010)	Pregnant women	2006	1	1,112	Random	Regional coverage. Retrospective study design	Mean age 29
Sauvage et al. (2015)	MSM	2009	2	876	Convenience	Screening offered in 14 bars, saunas and 'backrooms'	>18
Abergel et al. (2014)	Prisoners	2012–2013	5	347	Exhaustive	Two <i>maisons d'arret</i> in Clermont-Ferrand and Riom. 97% male	25 to 39, mean age 30
Council of Europe	First-time blood donors	2011	N/A	365593	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Meffre et al. (2010)	General population	2004	4	18,230	Random	National sample obtained via primary health care insurance units	18 to 80
Sahajian et al. (2007)	General population	2003–2004	3	944	Mixed	Underprivileged populations sampled via primary care services. Includes a small number of homeless people (n=89) and former/active PWID (n=16)	18 to >60
Poynard et al. (2009)	General population	N/R	2	7,463	Convenience	Attendees of social security health centres	>40
Sauvage et al. (2015)	MSM	2009	2	876	Convenience	Screening offered in 14 bars, saunas and 'backrooms'	>18
Pooled estimates	Prisoners	2000–2013	N/A	68,797	N/A	Pooled	Pooled
Semaille et al. (2013)	Prisoners	2010	6	1,876	Random	Stratified sampling by facility characteristics. Prisoners randomly sampled	18 to >50
Remy (2006)	Prisoners	2003	6	31,215	Other	Multi-centre study. Prisons asked to report screening practices, number of cases and capacity	N/R
Remy (2006)	Prisoners	2000	6	27,245	Other	Multi-centre study. Prisons asked to report screening practices, number of cases and capacity	N/R

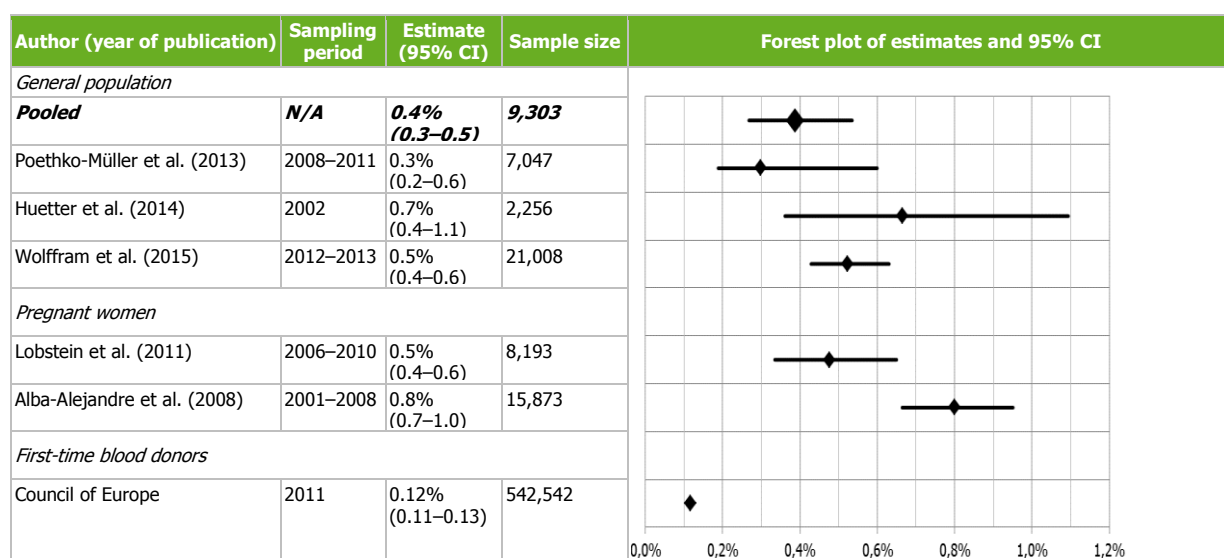
Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Abergel et al. (2014)	Prisoners	2012–2013	5	342	Exhaustive	Two maisons d'arret in Clermont-Ferrand and Riom. 97% male	25 to 39, mean age 30
Vergniol et al. (2014)	Prisoners	2012–2013	4	1,720	Exhaustive	Multi-centre study involving all inmates. Unspecified facilities	N/R
Roux et al. (2014)	Prisoners	2004–2010	4	5,957	Convenience	Screening study. Testing offered due to multiple risk factors or on inmates request. 93% male	Mean age 28
Verneuil et al. (2009)	Prisoners	2000–2003	3	442	Random	Study in a remand centre in Caen	Mean age 29.7
Council of Europe	First-time blood donors	2011	N/A	365,593	N/A	N/A	N/A



3.11 Germany

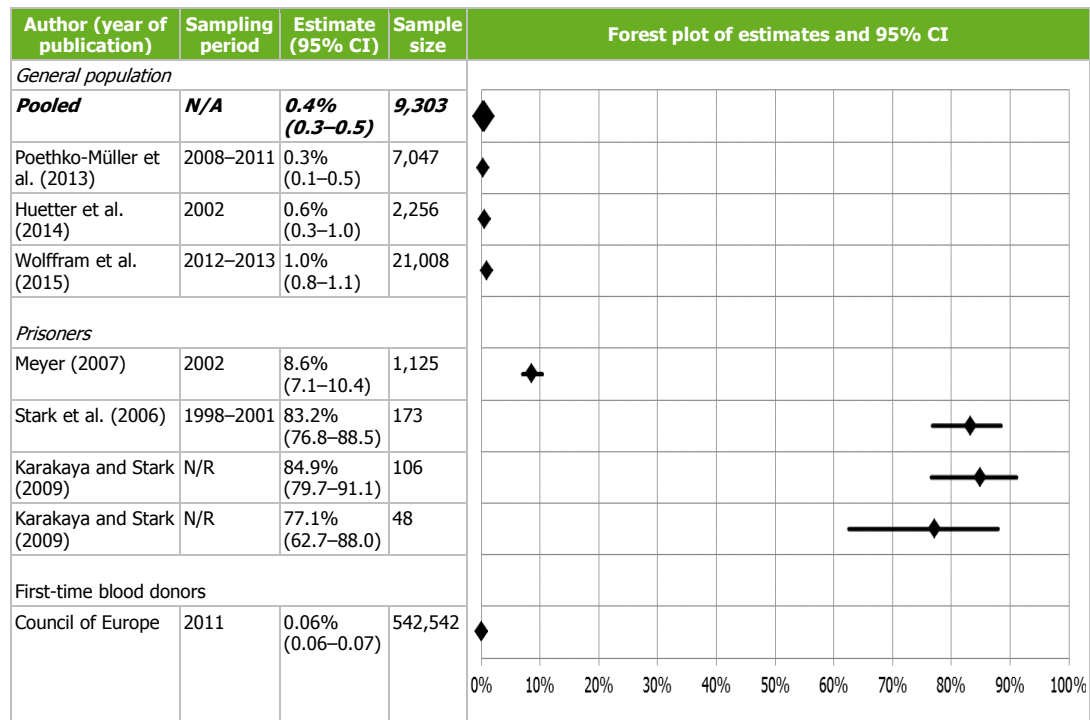
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Pooled estimates	General population	N/A	N/A	9,303	Pooled	Pooled	Pooled
Poethko-Müller et al. (2013)	General population	2008–2011	5	7,047	Random	National coverage. DEGS1 study	18 to 79
Huetter et al. (2014)	General population	2002	4	2,256	Random	Residents of Leutkirch, south Germany	18 to 65, mean 39.4
Wolffram et al. (2015)	General population	2012–2013	2	21,008	Convenience	'Check-up 35+' attendees (mid-life health check) in North Rhine-Westphalia	Mean age 57.5
Lobstein et al. (2011)	Pregnant women	2006–2010	1	8,193	Exhaustive	Deliveries in one hospital	N/R
Alba-Alejandre et al. (2008)	Pregnant women	2001–2008	1	15,873	Exhaustive	Antenatal screening in Leutkirch hospitals, south Germany	N/R
Council of Europe	First-time blood donors	2011	N/A	542,542	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Pooled estimates	General population	N/A	N/A	9,303	Pooled	Pooled	Pooled
Poethko-Müller et al. (2013)	General population	2008–2011	5	7,047	Random	National coverage. DEGS1 study	18 to 79
Huetter et al. (2014)	General population	2002	4	2,256	Random	Residents of Leutkirch, southern Germany	18 to 65, mean 39.4
Wolffram et al. (2015)	General population	2012–2013	2	21,008	Convenience	'Check-up 35+' attendees (mid-life health check) in North Rhine-Westphalia	Mean age 57.5
Meyer (2007)	Prisoners (juveniles)	2002	3	1,125	Exhaustive	Largest German juvenile prison. All new inmates offered screening	>16
Stark et al. (2006)	Prisoners	1998–2001	2	173	Exhaustive	Multi-centre study. All new inmates who had ever used illicit drugs (nasal or IV) offered screening	N/R
Karakaya and Stark (2009)	Prisoners	N/R	1	106	Convenience	Single prison study (Berlin). Females only, >90% PWID	22 to 47, mean age 31
Karakaya and Stark (2009)	Prisoners	N/R	1	48	Convenience	Single prison study (Berlin). Males only, >90% PWID	23 to 47, mean age 31
Council of Europe	First-time blood donors	2011	N/A	542,542	N/A	N/A	N/A



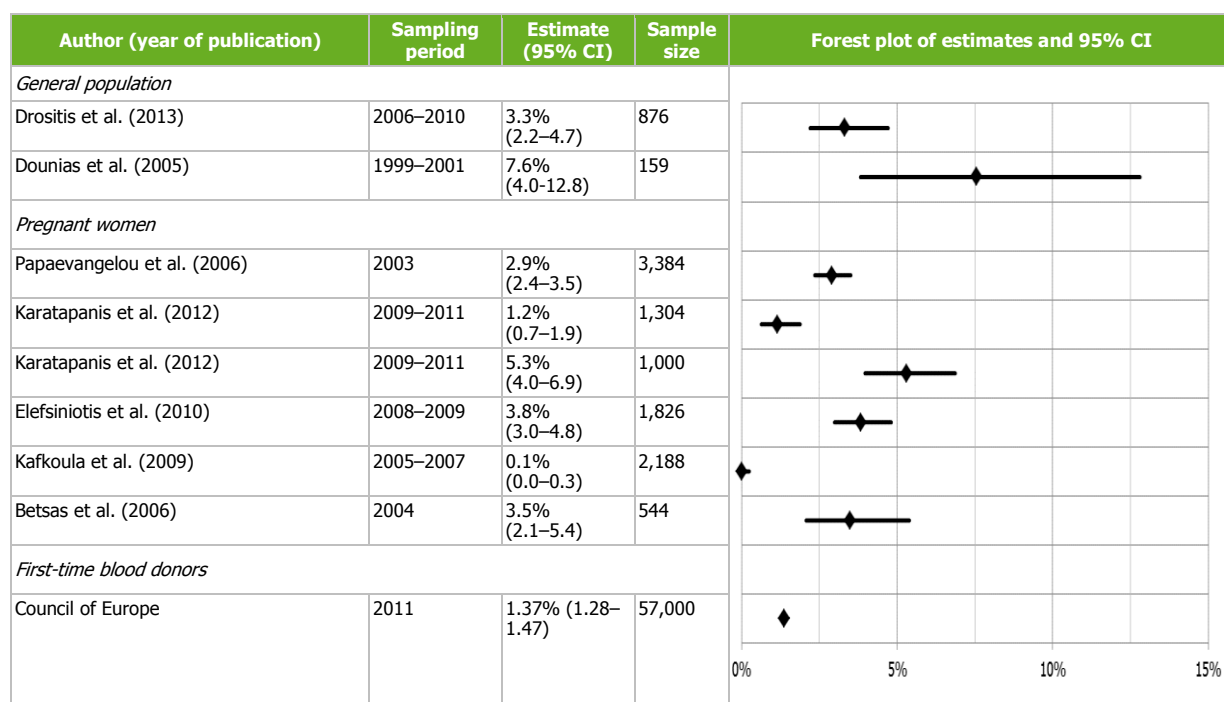
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Viological marker	Testing settings and sample size (if available)	Estimate (CI not available)
EMCDDA	2011	HBsAg	Four low-threshold services in Berlin and Essen. Sample of current injectors. N=N/A	0.3% to 1.5%
EMCDDA	2011	Anti-HCV	Four low-threshold services in Berlin and Essen. Sample of current injectors. N=N/A	56.0% to 71.6%

3.12 Greece

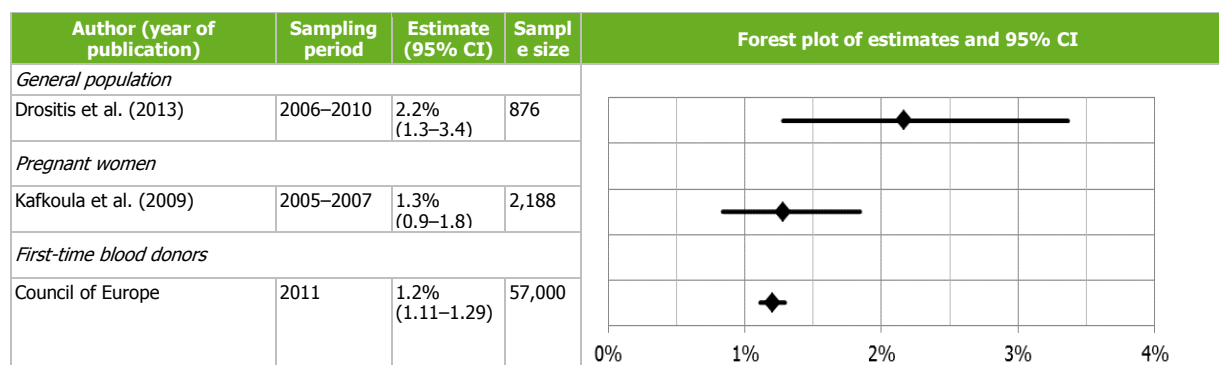
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Drositis et al. (2013)	General population	2006–2010	4	876	Random (87% response)	Adult residents of Arkalochori, Crete	Mean age 52
Dounias et al. (2005)	General population	1999–2001	1	159	Convenience	Municipal solid waste workers	Mean age 42
Papaevangelou et al. (2006)	Pregnant women	2003	3	3,384	Exhaustive	National antenatal screening programme	N/R
Karatapanis et al. (2012)	Pregnant women	2009–2011	1	1,304	Exhaustive	Antenatal screening attendees	Mean age 27.2
Karatapanis et al. (2012)	Pregnant women	2009–2011	1	1 000	Exhaustive	Antenatal screening non-attendees screened post-partum	Mean age 26.6
Elefsiniotis et al. (2010)	Pregnant women	2008–2009	1	1,826	Exhaustive	Consecutive women delivering at the Ob/Gyn dept.	N/R
Kafkoulas et al. (2009)	Pregnant women	2005–2007	1	2,188	Exhaustive	Antenatal screening at Thriassio General Hospital	N/R
Betsas et al. (2006)	Pregnant women	2004	1	544	Exhaustive	Attendees of the University of Thessaloniki antenatal clinic	Mean age 32.3 (Greek-born); 27.1 (migrant)
Council of Europe	First-time blood donors	2011	N/A	57 000	N/A	N/A	N/A



Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Drositis et al. (2013)	General population	2006–2010	4	876	Random (87% response)	Adult residents of Arkalochori, Crete	Mean age 52
Kafkoulas et al. (2009)	Pregnant women	2005–2007	1	2,188	Exhaustive	Antenatal screening at Thriassio General Hospital	N/R
Council of Europe	First-time blood donors	2011	N/A	57,000	N/A	N/A	N/A

Anti-HCV prevalence



HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2013	HBsAg	National sample from ever injectors sampled from various services and settings N=1,337	3.0% (2.2%–4.1%)
EMCDDA	2013	Anti-HCV	National sample from ever injectors sampled from various services and settings N=1,309	68.1% (65.5%–70.6%)

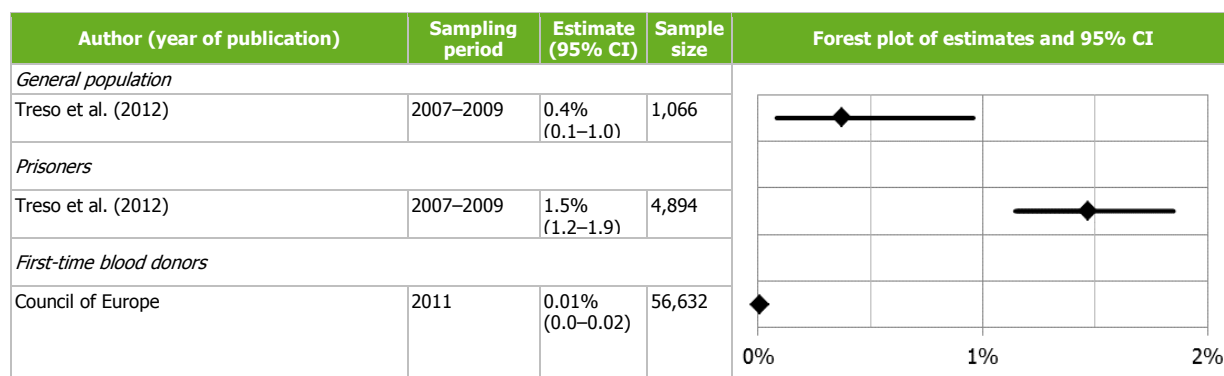
HBsAg prevalence: migrants

Country of birth	Author (year of publication)	Sampling period	Sampling method	Sample size	Estimate (95% CI)
Former Soviet Union	Zacharakis (2009)	1998–2006	Random sero-survey in Thrace via mobile units across the city	463	4.3% (2.7%–6.6%)

3.13 Hungary

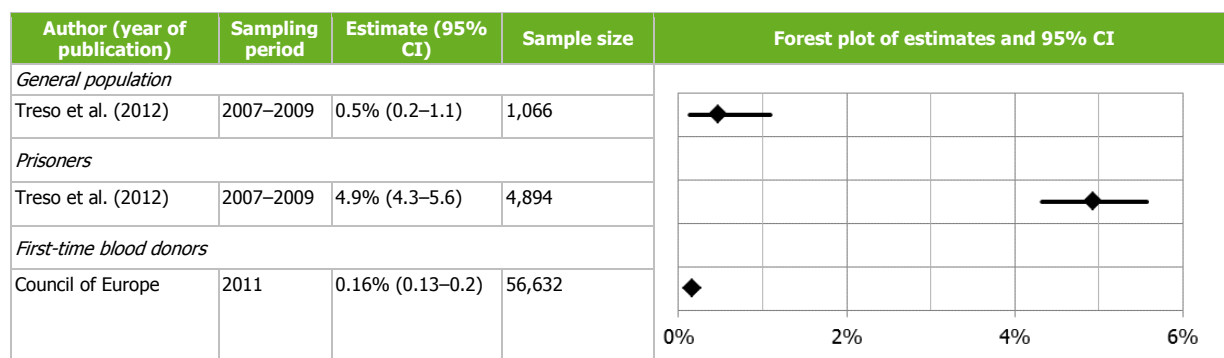
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Treso et al. (2012)	General population	2007–2009	4	1,066	Convenience	Prison staff	21 to 60
Treso et al. (2012)	Prisoners	2007–2009	6	4,894	Exhaustive	All inmates	21 to 60
Council of Europe	First-time blood donors	2011	N/A	56,632	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Treso et al. (2012)	General population	2007–2009	4	1,066	Convenience	Prison staff	21 to 60
Treso et al. (2012)	Prisoners	2007–2009	6	4,894	Exhaustive	All inmates	21 to 60
Council of Europe	First-time blood donors	2011	N/A	56,632	N/A	N/A	N/A



HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2011	HBsAg	National sample from ever injectors sampled from drug treatment and harm reduction services N=664	0.45% (0%–1.3%)
EMCDDA	2011	Anti-HCV	National sample from ever injectors sampled from drug treatment and harm reduction services N=653	24.1% (20.8%–27.6%)

3.14 Iceland

HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2011	N/A	1,398	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2011	0.07% (0.0–0.4)	1,398	

Anti-HCV prevalence

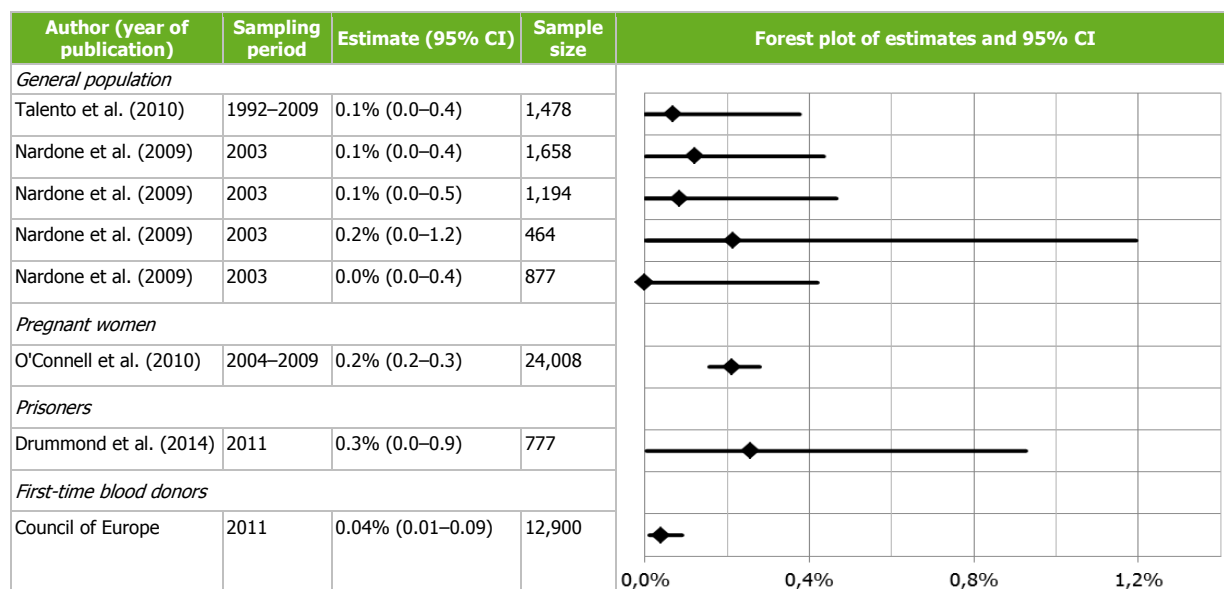
Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2011	N/A	1,398	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2011	0.0% (0.0–0.26)	1,398	

3.15 Ireland

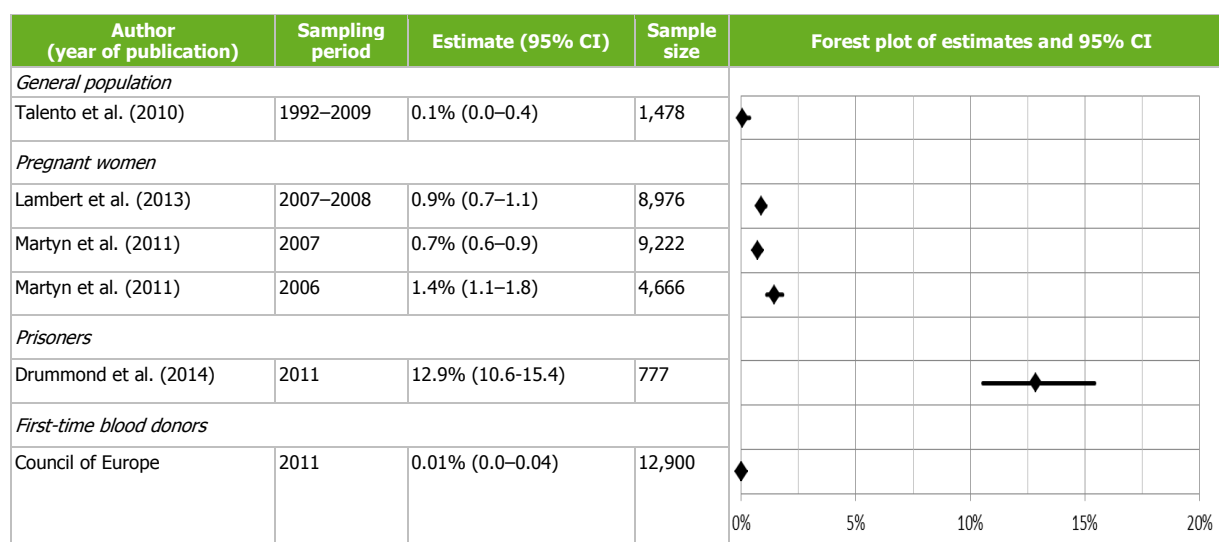
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Talento et al. (2010)	General population	1992–2009	6	1,478	Exhaustive	Living and deceased solid organ donors	N/R
Nardone et al. (2009)	General population	2003	3	1,658	Convenience	Residual lab samples representative of location and gender	16 to >40
Nardone et al. (2009)	General population	2003	3	1,194	Convenience	Residual lab samples representative of location and gender	16 to 39
Nardone et al. (2009)	General population	2003	3	464	Convenience	Residual lab samples representative of location and gender	>40
Nardone et al. (2009)	General population	2003	3	877	Convenience	Residual lab samples representative of location and gender	1 to 15
O'Connell et al. (2010)	Pregnant women	2004–2009	1	24,008	Exhaustive	Antenatal screening lab data from Galway hospital	N/R
Drummond et al. (2014)	Prisoners	2011	6	777	Random (49.5% response)	National coverage. All adult inmates (sentenced and remand)	Mean age 31
Council of Europe	First-time blood donors	2011	N/A	12,900	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Talento et al. (2010)	General population	1992–2009	6	1,478	Exhaustive	Living and deceased solid organ donors	N/R
Lambert et al. (2013)	Pregnant women	2007–2008	1	8,976	Exhaustive (98.4% coverage)	Antenatal care attendees of Rotunda hospital	N/R
Martyn et al. (2011)	Pregnant women	2006	1	4,666	Exhaustive	Deliveries at a single hospital	N/R
Martyn et al. (2011)	Pregnant women	2007	1	9,222	Exhaustive	Deliveries at a single hospital	N/R
Drummond et al. (2014)	Prisoners	2011	6	777	Random (50% response)	National coverage. All adult inmates (sentenced and remand)	Mean age 31
Council of Europe	First-time blood donors	2011	N/A	12,900	N/A	N/A	N/A



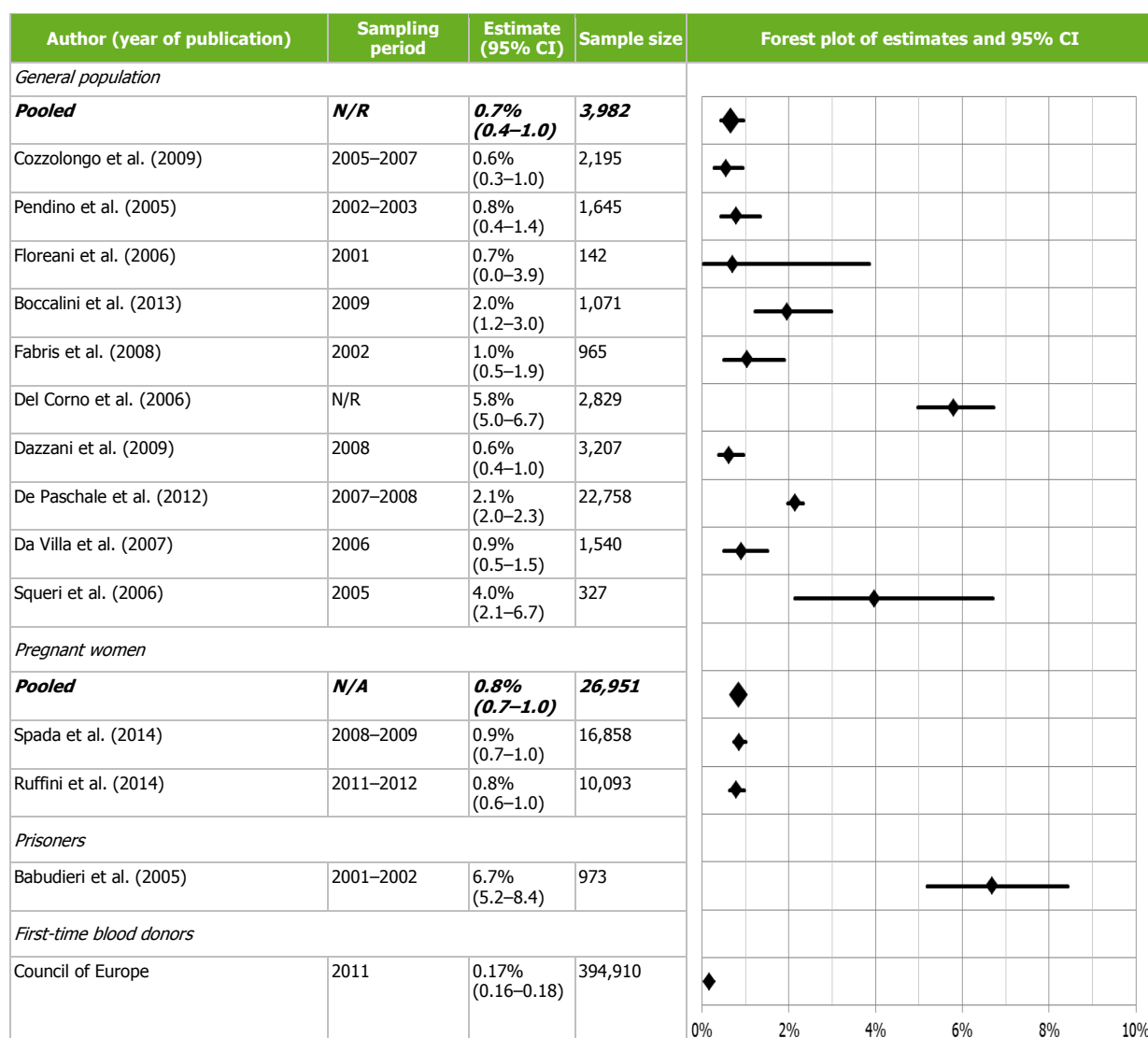
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2010	HBsAg	National sample from ever injectors sampled from the prison population N=200	0.5% (0%–2.8%)
EMCDDA	2010	Anti-HCV	National sample from ever injectors sampled from the prison population N=200	41.5% (34.6%–48.7%)

3.16 Italy

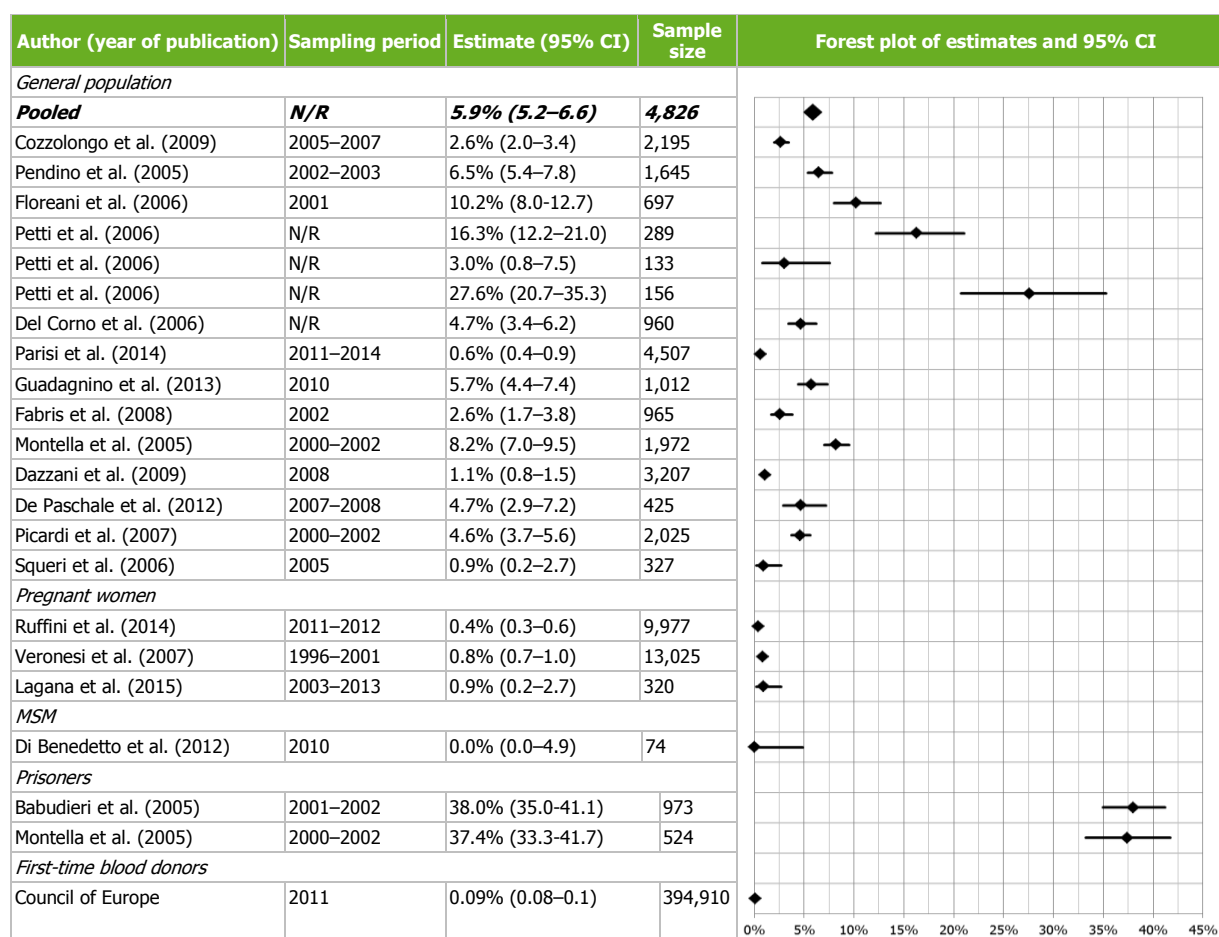
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Pooled estimate	General population	N/R	N/A	3,982	Pooled	Pooled	Pooled
Cozzolongo et al. (2009)	General population	2005–2007	5	2,195	Random	GP records in Bari, Apuglia	18 to 93, mean age 47
Pendino et al. (2005)	General population	2002–2003	4	1,645	Random	Census data from Cittanova, Calabria	12 to 95
Floreani et al. (2006)	General population	2001	4	142	Random	Residents of Arsita (central Italy)	>8
Boccalini et al. (2013)	General population	2009	3	1,071	Convenience	Residual blood samples from 0.05% of residents in Tuscany	1 to 50
Fabris et al. (2008)	General population	2002	3	965	Exhaustive	Vicenza, north east Italy. A broken sewer pipe prompted HAV vaccination. Subjects were also tested for HBV/HCV	Mean age 42.1
Del Corno et al. (2006)	General population	N/R	3	2,829	Random	Four towns in Isola Bergamasca (north Italy)	20 to 70
Dazzani et al. (2009)	General population	2008	2	3,207	Convenience	Survey of residents in Bagnacavallo (Emilia-Romagna)	30 to 60
De Paschale et al. (2012)	General population	2007–2008	2	22,758	Convenience	Hospital lab samples from Legnano Hospital in northern Italy	Mean age 51.4
Da Villa et al. (2007)	General population	2006	2	1,540	N/R	Cohort in Afragola, Naples	6 to 58
Squeri et al. (2006)	General population	2005	1	327	Convenience	Municipal solid waste workers	20 to 68
Pooled estimate	Pregnant women	N/A	N/A	26,951	Pooled	Pooled	Pooled
Spada et al. (2014)	Pregnant women	2008–2009	3	16,858	Exhaustive	Multi-centre study: 41 hospitals in 13 regions	14 to 53
Ruffini et al. (2014)	Pregnant women	2011–2012	2	10,093	Exhaustive (99% response)	Regional study. One third migrants.	>17
Babudieri et al. (2005)	Prisoners	2001–2002	4	973	Convenience	Multi-centre study in eight prisons. Mixed gender. Includes PWID	Mean age 36
Council of Europe	First-time blood donors	2011	N/A	394,910	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Pooled	General population	N/R	N/A	4,826	Pooled	Pooled	Pooled
Cozzolongo et al. (2009)	General population	2005–2007	5	2,195	Random	GP records in Bari, Apuglia	18 to 93, mean age 47
Pendino et al. (2005)	General population	2002–2003	4	1,645	Random	Census data from Cittanova, Calabria	12 to 95
Floreani et al. (2006)	General population	2001	4	697	Random	Residents of Arsitia (central Italy)	>8
Petti et al. (2006)	General population	N/R	4	289	Random	GP registration. Local coverage	>25 to >50
Petti et al. (2006)	General population	N/R	4	133	Random	GP registration. Local coverage	25–49
Petti et al. (2006)	General population	N/R	4	156	Random	GP registration. Local coverage	>50
Del Corno et al. (2006)	General population	N/R	3	960	Random	Four towns in Isola Bergamasca (Northern Italy)	20 to 70
Parisi et al. (2014)	General population	2011–2014	3	4,507	Convenience	Milan. One hospital, one STI clinic and six GPs	>18
Guadagnino et al. (2013)	General population	2010	3	1,012	Random	Study in a small town in Calabria	>18
Fabris et al. (2008)	General population	2002	3	965	Exhaustive	Vicenza, northeast Italy. A broken sewer pipe prompted HAV vaccination. Subjects were also tested for HBV/HCV	Mean age 42.1
Montella et al. (2005)	General population	2000–2002	3	1,972	Convenience	Naples. Residual sera from primary care tests	19 to 65
Dazzani et al. (2009)	General population	2008	2	3,207	Convenience	Survey of residents in Bagnacavallo (Emilia-Romagna)	30 to 60
De Paschale et al. (2012)	General population	2007–2008	2	425	Convenience	Hospital lab samples from Legnano Hospital (north Italy)	Mean age 51.4
Picardi et al. (2007)	General population	2000–2002	2	2,025	Convenience	Patients undergoing (non-liver related) surgery	4 to 100
Squeri et al. (2006)	General population	2005	1	327	Convenience	Municipal solid waste workers	20 to 68
Ruffini et al. (2014)	Pregnant women	2011–2012	2	9,977	Exhaustive	Regional study. One third migrants.	>17
Veronesi et al. (2007)	Pregnant women	1996–2001	1	13,025	Exhaustive	All deliveries at the hospital in Palma	N/R
Lagana et al. (2015)	Pregnant women	2003–2013	0	320	Convenience	Outpatient clinic attendees, mostly migrant women	N/R
Di Benedetto et al. (2012)	MSM	2010	2	74	Convenience	Men living in Sicily for more than 6 months recruited via internet and in gay bars	18 to 56, mean age 30
Babudieri et al. (2005)	Prisoners	2001–2002	4	973	Convenience	Multi-centre study in eight prisons. Mixed gender. Includes PWID	Mean age 36
Montella et al. (2005)	Prisoners	2000–2002	2	524	Convenience	Male inmates in Secondigliano prison, Naples	>19
Council of Europe	First-time blood donors	2011	N/A	394,910	N/A	N/A	N/A



Anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2010	Anti-HCV	National sample from drug treatment services N=743	60.5% (56.8%–64.0%)

* No data on HBsAg available

HBsAg prevalence: migrants

Region of birth	Author (year of publication)	Sampling period	Sampling method	Sample size	Estimate (95% CI)
Asia	Sornaiuolo (2014)	1999–2009	Outreach and opportunistic screening (convenience sampling) in Castelvoturno, Caserta	115	0.0% (0.0%–3.2%)
Eastern Europe	Sornaiuolo (2014)	1999–2009	Outreach and opportunistic screening (convenience sampling) in Castelvoturno, Caserta	211	3.3% (1.3%–6.7%)
Sub-Saharan Africa	Sornaiuolo (2014)	1999–2009	Outreach and opportunistic screening (convenience sampling) in Castelvoturno, Caserta	2,198	8.1% (7.0%–9.3%)

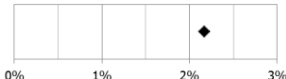
Anti-HCV prevalence: migrants

Region of Birth	Author (year of publication)	Sampling period	Sampling method	Sample size	Estimate (95% CI)
Asia	Sornaiuolo (2014)	1999–2009	Outreach and opportunistic screening (convenience sampling) in Castelvoturno, Caserta	115	3.5% (1.0%–8.7%)
Eastern Europe	Sornaiuolo (2014)	1999–2009	Outreach and opportunistic screening (convenience sampling) in Castelvoturno, Caserta	211	7.1% (4.0%–11.5%)
Sub-Saharan Africa	Sornaiuolo (2014)	1999–2009	Outreach and opportunistic screening (convenience sampling) in Castelvoturno, Caserta	2,198	2.5% (1.9%–3.2%)

3.17 Latvia

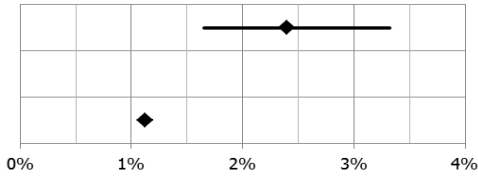
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2003	N/A	1,127	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2003	2.17%	1,127	

Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Tolmane et al. (2011)	General population	2008	6	1,459	Random	GP registration	18 to 94
Council of Europe	First-time blood donors	2005	N/A	2,170	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
<i>General population</i>				
Tolmane et al. (2011)	2008	2.4% (1.7-3.3)	1,459	
<i>First-time blood donors</i>				
Council of Europe	2005	1.13%	2,170	

HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2013	HBsAg	National sample from harm reduction services N=562	2.1% (1.1%-3.7%)
EMCDDA	2013	Anti-HCV	National sample from harm reduction services N=522	70.1% (66.0%-74.0%)

3.18 Lithuania

HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2011	N/A	23,034	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2011	0.56% (0.47–0.67)	23,034	

Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Liakina et al. (2012)	General population	2010	2	1,514	Convenience	Shopping centres covering 75% of the population (62% female)	N/R
Liakina et al. (2012)	General population	2010	2	Mean	Convenience	Shopping centres covering 75% of the population (62% female)	Mean across age ranges
Liakina et al. (2012)	General population	2010	2	Standardised (a)	Convenience	Shopping centres covering 75% of the population (62% female)	Standardised to national population
Liakina et al. (2012)	General population	2010	2	Standardised (b)	Convenience	Shopping centres covering 75% of the population (62% female)	Standardised to European population
Council of Europe	First-time blood donors	2011	N/A	23,034	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
<i>General population</i>				
Liakina et al. (2012)	2010	2.4% (1.7–3.4)	1,514	
Liakina et al. (2012)	2010	2.8%	Mean	
Liakina et al. (2012)	2010	2.8%	Standardised (a)	
Liakina et al. (2012)	2010	2.9%	Standardised (b)	
<i>First-time blood donors</i>				
Council of Europe	2011	1.54% (1.38–1.70)	23,034	

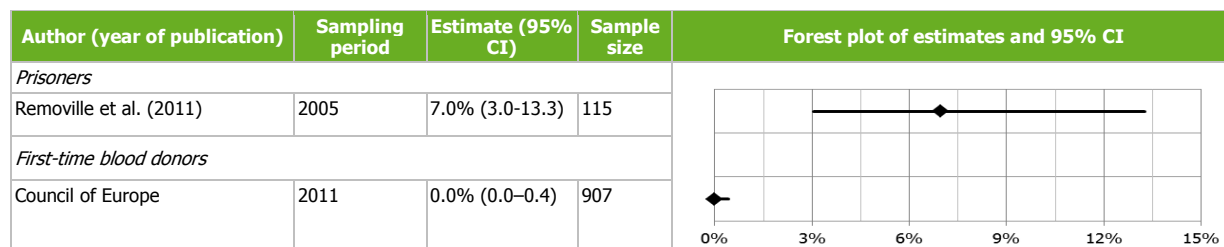
Anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (CI not available)
EMCDDA	2012	Anti-HCV	Single centre study in a harm reduction service in Vilnius N=N/A	27.6%

3.19 Luxembourg

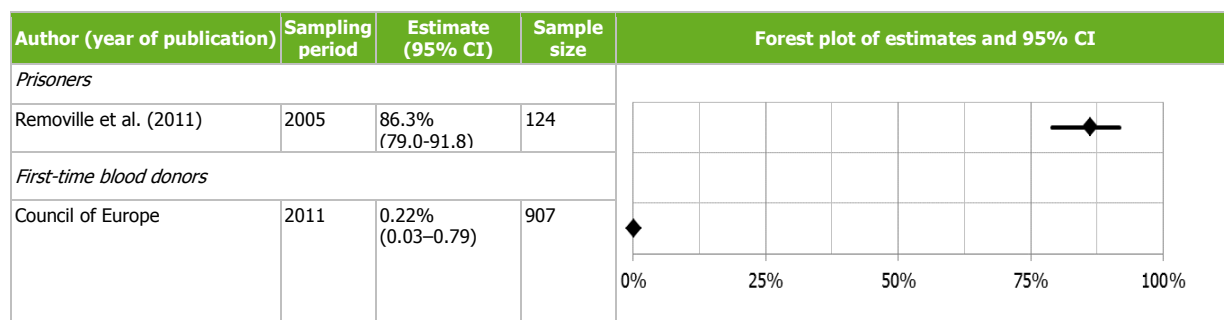
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Removille et al. (2011)	Prisoners	2005	4	115	Convenience	Multi-centre study in the two prisons. Population of problem drug users (not all PWID)	N/R
Council of Europe	First-time blood donors	2011	N/A	907	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Removille et al. (2011)	Prisoners	2005	4	124	Convenience	Multi-centre study in the two prisons. Population of problem drug users (not all PWID)	N/R
Council of Europe	First-time blood donors	2011	N/A	907	N/A	N/A	N/A



3.20 Malta

HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2011	N/A	17,940	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2011	0.03% (0.01–0.07)	17,940	

Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2011	N/A	17,940	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2011	0.03% (0.01–0.07)	17,940	

Anti-HCV prevalence: PWID

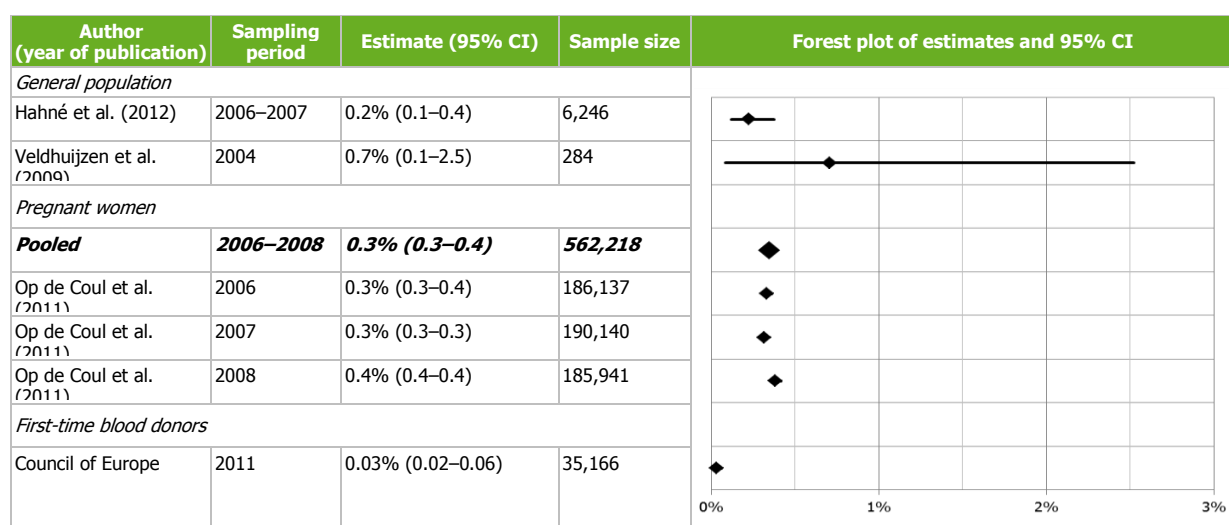
Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2013	Anti-HCV	National sample from ever injectors sampled from various settings and services, N=109	13.8% (7.9%–21.7%)

* No HBsAg prevalence data available

3.21 Netherlands

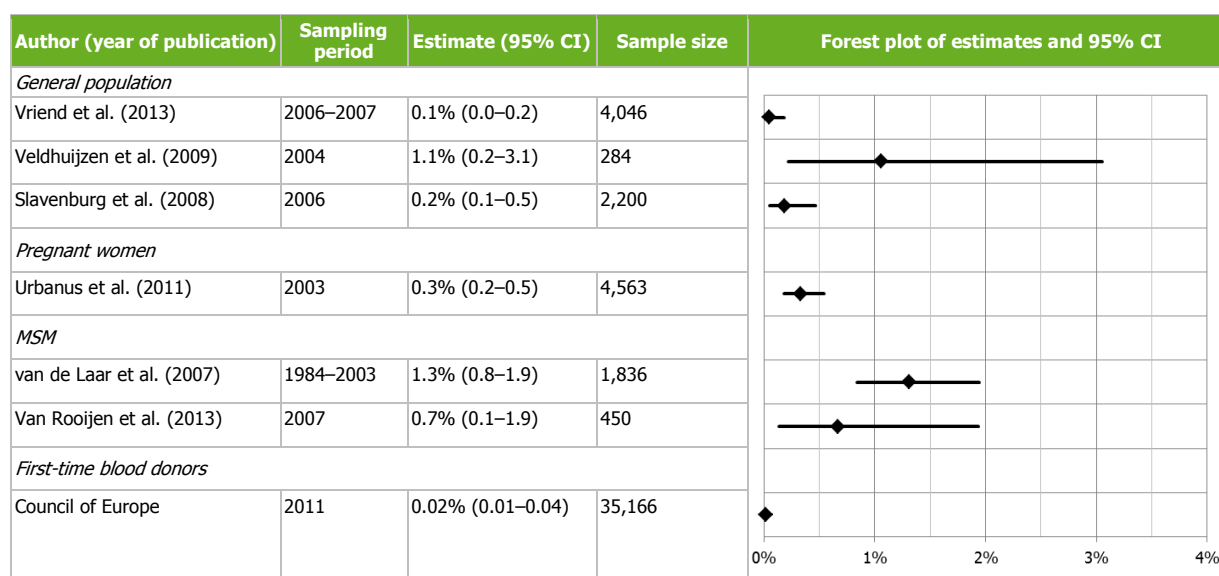
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Hahné et al. (2012)	General population	2006–2007	5	6,246	Random	National study (PIENTER 2)	>18 months
Veldhuijzen et al. (2009)	General population	2004	3	284	Random	Rotterdam municipal population register	18 to 65
Pooled estimate	Pregnant women	2006–2008	N/A	562,218	Exhaustive	National antenatal screening programme	N/R
Op de Coul et al. (2011)	Pregnant women	2006	3	186,137	Exhaustive	National antenatal screening programme	N/R
Op de Coul et al. (2011)	Pregnant women	2007	3	190,140	Exhaustive	National antenatal screening programme	N/R
Op de Coul et al. (2011)	Pregnant women	2008	3	185,941	Exhaustive	National antenatal screening programme	N/R
Council of Europe	First-time blood donors	2011	N/A	35,166	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Vriend et al. (2013)	General population	2006–2007	5	4,046	Random	National study (PIENTER 2)	15 to 79
Veldhuijzen et al. (2009)	General population	2004	3	284	Random	Rotterdam municipal population register	18 to 65
Slavenburg et al. (2008)	General population	2006	2	2,200	Convenience	GP attendees in Arnhem and Nijmegen who had blood taken as part of clinical work up	N/R
Urbanus et al. (2011)	Pregnant women	2003	1	4,563	Random	Antenatal screening in Amsterdam. 64% non-Dutch	>15
van de Laar et al. (2007)	MSM	1984–2003	2	1,836	Convenience	Cohort study in Amsterdam	Mean age 31.8
Van Rooijen et al. (2013)	MSM	2007	1	450	Convenience	STI clinic attendees opting out of HIV testing	N/R
Council of Europe	First-time blood donors	2011	N/A	35,166	N/A	N/A	N/A



HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (CI not available)
EMCDDA	2012	HBsAg	Drug treatment services (in Amsterdam) N=N/A	0%
EMCDDA	2013	Anti-HCV	Drug treatment services (in Amsterdam) N=N/A	39.3%

HBsAg prevalence: migrants

Country of birth	Author (year of publication)	Sampling period	Sampling method	Sample size	Estimate (95% CI)
>2% HBV prevalence	Hahné (2011)	2006–2007	Random national sero-prevalence study (PIENTER 2). (32% response). Adults only	406	2.2% (1.0%–4.2%)
Afghanistan	Richter (2014)	2011	Invitation-based screening via municipal register in Arnhem. Educational meeting with free onsite serological screening. (30% response)	293	2.0% (0.8%–4.4%)
Cape Verde	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	13	0% (0%–24.7%)
China (including Hong Kong)	Veldhuijzen (2012)	2009	Outreach screening in various social/civic centres in Rotterdam	849	9.7% (7.8%–11.8%)
Dutch Antilles	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	38	2.6% (0.1%–13.8%)
Egypt	Zuure (2013)	2004	Community-based screening in Amsterdam	465	1.1% (0.4%–2.5%)
Former Soviet Union	Richter (2014)	2011	Invitation-based screening via municipal register in Arnhem. Educational meeting with free onsite serological screening. (30% response)	65	0% (0%–5.5%)
Iran	Richter (2014)	2011	Invitation-based screening via municipal register in Arnhem. Educational meeting with free onsite serological screening. (30% response)	153	0.7% (0%–3.6%)
Iraq	Richter (2014)	2011	Invitation-based screening via municipal register in Arnhem. Educational meeting with free onsite serological screening. (30% response)	290	0.7% (0.1%–2.5%)
Morocco	Baaten (2007)	2004	Random sample of the general population of Amsterdam. Response N/R	261	0.4% (0%–2.2%)
Morocco	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	44	0% (0%–8.0%)
Morocco	Pooled	Pooled	Veldhuijzen (2009) and Baaten (2007)	305	0.3% (0%–1.8%)
Suriname	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	56	0% (0%–6.4%)
Turkey	Baaten (2007)	2004	Random sample of the general population of Amsterdam. Response N/R	304	4.9% (2.8%–8.0%)
Turkey	Richter (2011)	2009	Community-based screening in Arnhem (convenience sample)	544	3.1% (1.8%–5.0%)
Turkey	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	54	1.9% (0.0%–9.9%)
Turkey	Pooled	Pooled	Veldhuijzen (2009), Baaten (2007) and Richter (2011)	902	3.7% (2.5%–5.1%)

Country of birth	Author (year of publication)	Sampling period	Sampling method	Sample size	Estimate (95% CI)
Vietnam	Richter (2014)	2011	Community-based screening in Arnhem (convenience sample)	126	9.5% (5.0%–16.0%)

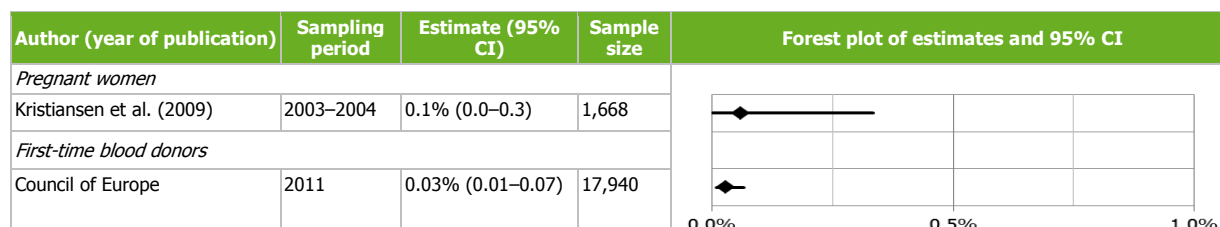
Anti-HCV prevalence: migrants

Country of birth	Author (year of publication)	Sampling period	Sampling method	Sample size	Estimate (95% CI)
Afghanistan	Richter (2014)	2011	Invitation-based screening via municipal register in Arnhem. Educational meeting with free onsite serological screening. 30% response	293	1.0% (0.2%–3.0%)
Cape Verde	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	13	0% (0%–24.7%)
Dutch Antilles	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	38	2.6% (0.1%–13.8%)
Egypt	Zuure (2013)	2004	Community-based screening in Amsterdam	465	2.4% (1.2%–4.2%)
Former Soviet Union	Richter (2014)	2011	Invitation-based screening via municipal register in Arnhem. Educational meeting with free onsite serological screening. 30% response	65	3.1% (0.4%–10.7%)
Iran	Richter (2014)	2011	Invitation-based screening via municipal register in Arnhem. Educational meeting with free onsite serological screening. 30% response	153	0.7% (0%–3.6%)
Iraq	Richter (2014)	2011	Invitation-based screening via municipal register in Arnhem. Educational meeting with free onsite serological screening. 30% response	290	0.3% (0%–1.9%)
Morocco	Urbanus (2011)	2003–2009	Random sample of health survey respondents in Amsterdam	255	0.4% (0%–2.2%)
Morocco	Urbanus (2011)	2006–2007	Selection from random national population sample (PIENTER 2). Response 36%	36	2.8% (0.1%–14.5%)
Morocco	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	40	2.5% (0.1%–13.2%)
Morocco	Pooled	Pooled	Veldhuijzen (2009) and Urbanus (2011)	331	0.9% (0.2%–2.6%)
non-western ethnicity	Urbanus (2011)	2003–2009	Random sample of health survey respondents in Amsterdam	764	0.7% (0.2%–1.5%)
non-western ethnicity	Urbanus (2011)	2006–2007	Selection from random national population sample (PIENTER 2). Response 36%	442	2.3% (1.1%–4.1%)
non-western ethnicity	Pooled	Pooled	Urbanus (2011)	1,206	1.2% (0.7%–2.0%)
Other non-Western ethnicity	Urbanus (2011)	2003–2009	Random sample of health survey respondents in Amsterdam	165	1.8% (0.4%–5.2%)
Other non-Western ethnicity	Urbanus (2011)	2006–2007	Selection from random national population sample (PIENTER 2). Response 36%	374	1.9% (0.8%–3.8%)
Other non-Western ethnicity	Pooled	Pooled	Urbanus (2011)	539	1.9% (0.9%–3.4%)
Suriname	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	57	1.8% (0%–9.4%)
Suriname	Urbanus (2011)	2003–2009	Random sample of health survey respondents in Amsterdam	66	3.0% (0.4%–10.5%)
Suriname	Urbanus (2011)	2006–2007	Selection from random national population sample (PIENTER 2). Response 36%	102	2.0% (0.2%–6.9%)
Suriname	Pooled	Pooled	Veldhuijzen (2009) and Urbanus (2011)	225	2.2% (0.7%–5.1%)
Turkey	Urbanus (2011)	2003–2009	Random sample of health survey respondents in Amsterdam	309	0% (0%–1.2%)
Turkey	Urbanus (2011)	2006–2007	Selection from random national population sample (PIENTER 2). Response 36%	65	0% (0%–5.5%)
Turkey	Veldhuijzen (2009)	2004	Random sample using municipal register (16% response)	47	0% (0%–7.5%)
Turkey	Richter (2011)	2009	Community-based screening in Arnhem (convenience sample)	544	0.4% (0%–1.3%)
Turkey	Pooled	Pooled	Veldhuijzen (2009), Richter (2011) and Urbanus (2011)	965	0.2% (0%–0.7%)
Vietnam	Richter (2014)	2011	Community-based screening in Arnhem (convenience sample)	126	1.6% (0.2%–5.6%)

3.22 Norway

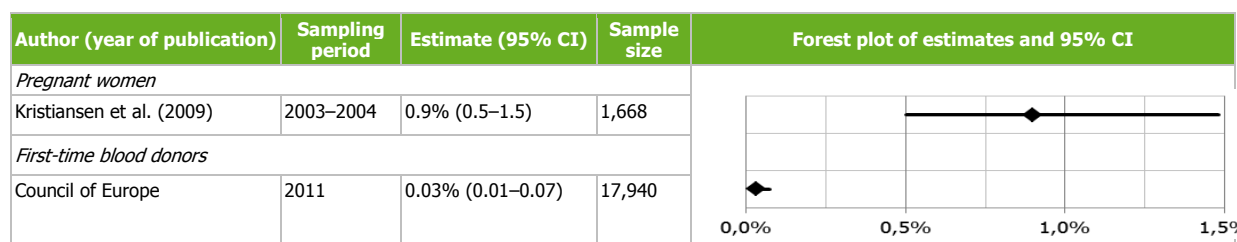
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Kristiansen et al. (2009)	Pregnant women	2003–2004	2	1,668	Exhaustive	Multi-centre study in all hospitals and delivery rooms in north Norway	16 to 44, mean age 29.3
Council of Europe	First-time blood donors	2011	N/A	17,940	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Kristiansen et al. (2009)	Pregnant women	2003–2004	2	1,668	Exhaustive	Multi-centre study in all hospitals and delivery rooms in north Norway	16 to 44, mean age 29.3
Council of Europe	First-time blood donors	2011	N/A	17,940	N/A	N/A	N/A



HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2012	HBsAg	Harm reduction and low-threshold services in Oslo. Current injectors only. N=N/A	0.91 (no CI available)
EMCDDA	2013	Anti-HCV	National sample of current injectors in drug treatment services N=6,342	63.0% (61.8%–64.2%)

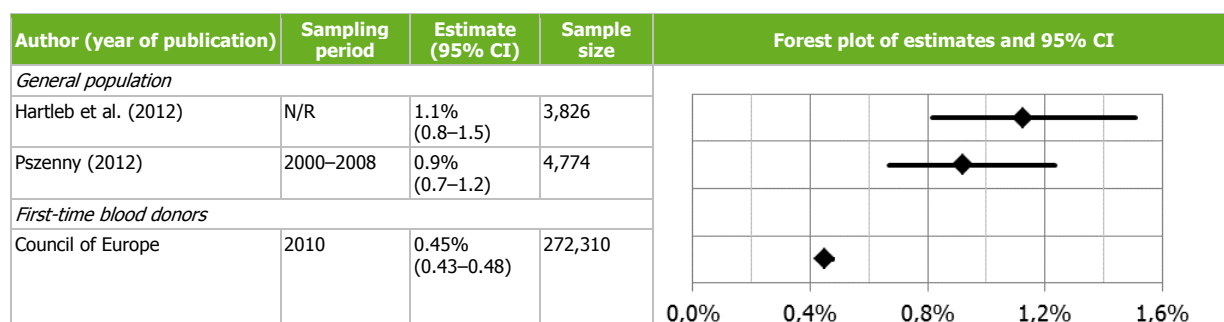
HBsAg prevalence: migrants

Country of birth	Author (year of publication)	Sampling period	Sampling method	Sample size	Estimate (95% CI)
Pakistan	Bjerke (2010)	2009	Random sample of antenatal screening attendees and husbands in Oslo	224	1.3% (0.3%–3.9%)

3.23 Poland

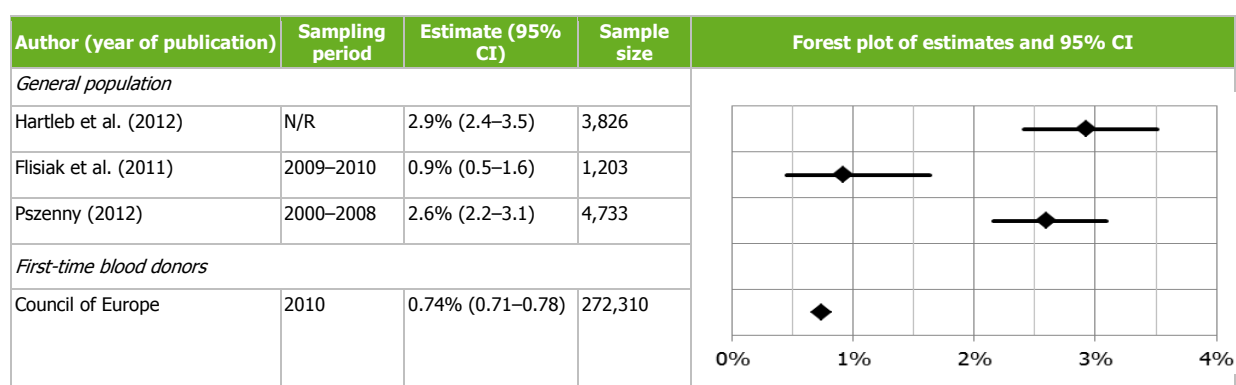
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Hartleb et al. (2012)	General population	N/R	3	3,826	Exhaustive	Study among elderly population. Sample from national population register	>65, mean age 79.4
Pszenny (2012)	General population	2000–2008	1	4,774	Convenience	Retrospective study among deceased potential blood donors. Regional in scope. 75% male	N/R
Council of Europe	First-time blood donors	2010	N/A	272,310	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Hartleb et al. (2012)	General population	N/R	3	3,826	Exhaustive	Study among elderly population. Sample from national population register	>65, mean age 79.4
Flisiak et al. (2011)	General population	2009–2010	2	1,203	Convenience	Consecutive patients in a GP outpatient clinic. 65.4% female	Mean age 45
Pszenny (2012)	General population	2000–2008	1	4,733	Convenience	Retrospective study among deceased potential blood donors. Regional in scope. 75% male	N/R
Council of Europe	First-time blood donors	2010	N/A	272,310	N/A	N/A	N/A



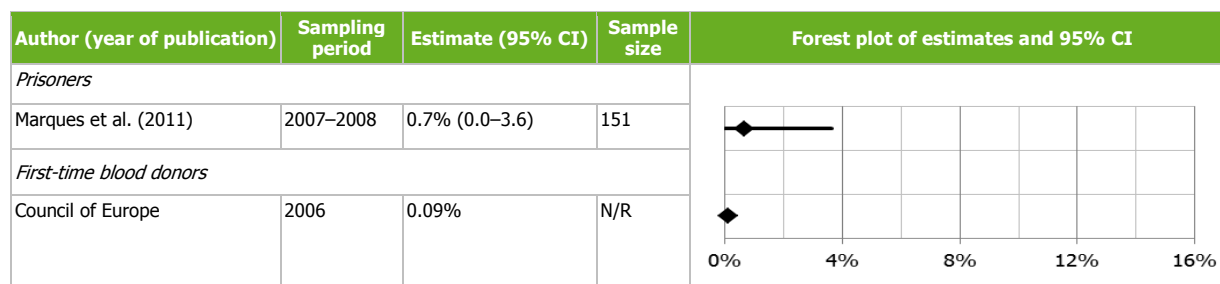
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (range)
EMCDDA	2009	HBsAg	Two low-threshold services, one in Gdansk and one in Krakow N=N/A	2.5% to 3.8%
EMCDDA	2009	Anti-HCV	Two low-threshold services, one in Gdansk and one in Krakow N=N/A	44.3% to 72.4%

3.24 Portugal

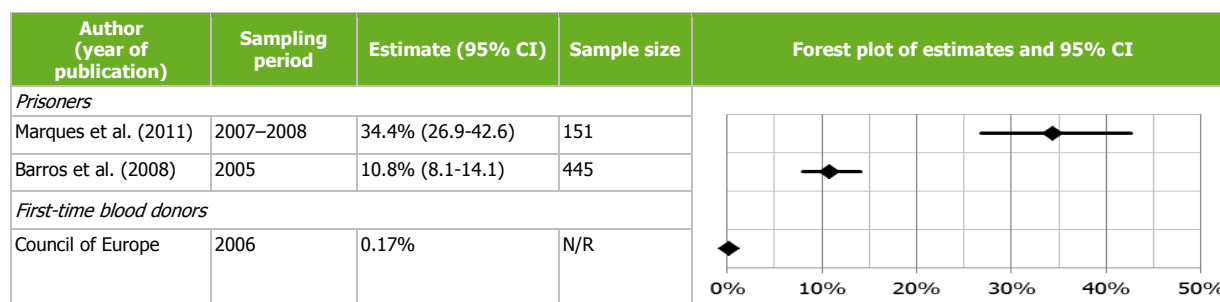
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Marques et al. (2011)	Prisoners	2007–2008	4	151	Exhaustive	Study in regional prison of Coimbra. Includes PWID	19 to 75, mean age 34.1
Council of Europe	First-time blood donors	2006	N/A	N/R	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Marques et al. (2011)	Prisoners	2007–2008	4	151	Exhaustive	Study in regional prison of Coimbra. Includes PWID	19 to 75, mean age 34.1
Barros et al. (2008)	Prisoners	2005	2	445	N/R	Inmates of largest female prison (57% of all female inmates). 97% PWID	N/R
Council of Europe	First-time blood donors	2006	N/A	N/R	N/A	N/A	N/A



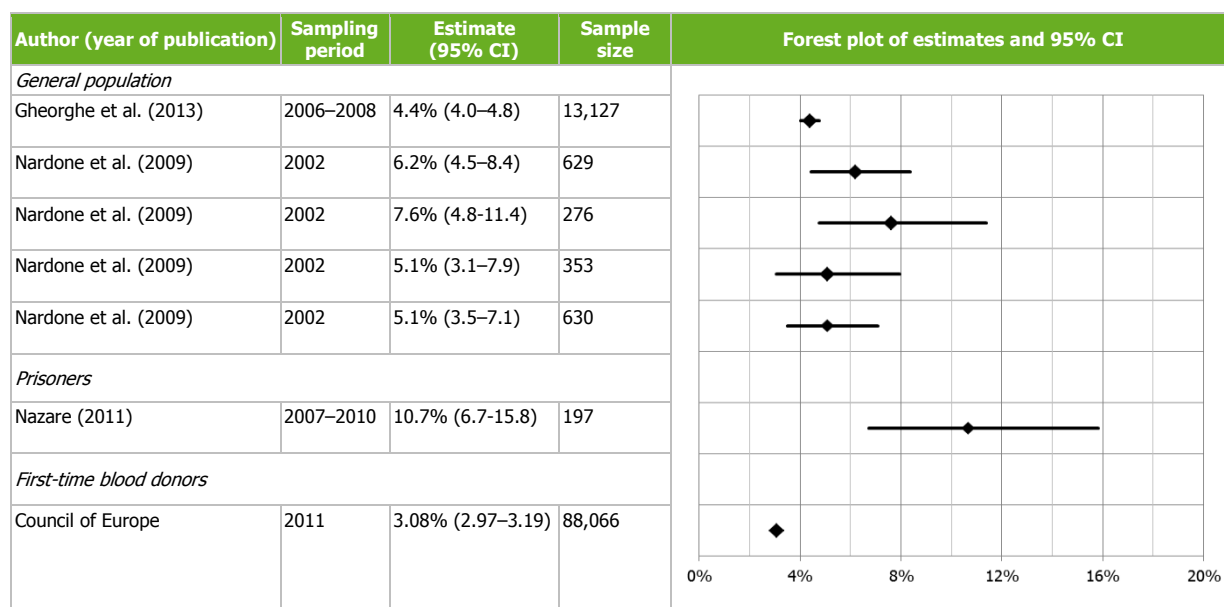
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2013	HBsAg	Drug treatment services, national coverage, N=399	6.3% (4.1%–9.1%)
EMCDDA	2013	Anti-HCV	Drug treatment services, national coverage, N=414	84.3% (80.4%–87.7%)

3.25 Romania

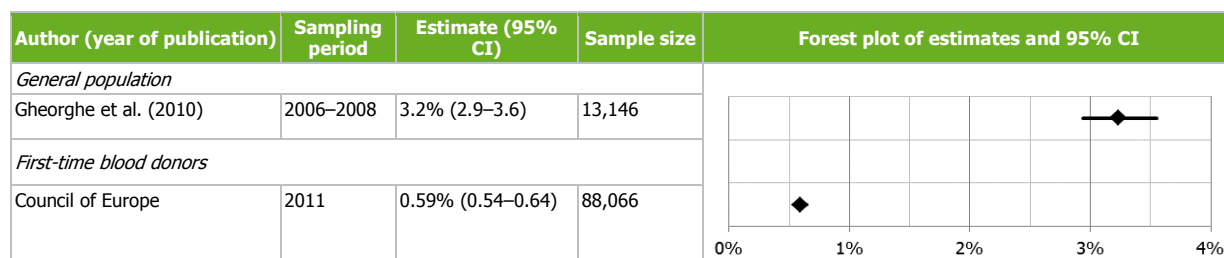
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Gheorghe et al. (2013)	General population	2006–2008	6	13,127	Random	National cross-sectional population survey	18 to 69
Nardone et al. (2009)	General population	2002	3	629	Convenience	Residual lab samples representative of location and gender	16 to >40
Nardone et al. (2009)	General population	2002	3	276	Convenience	Residual lab samples representative of location and gender	16 to 39
Nardone et al. (2009)	General population	2002	3	353	Convenience	Residual lab samples representative of location and gender	>40
Nardone et al. (2009)	General population	2002	3	630	Convenience	Residual lab samples representative of location and gender	1 to 15
Nazare (2011)	Prisoners	2007–2010	1	197	Convenience	Single prison screening study	N/R
Council of Europe	First-time blood donors	2011	N/A	88,066	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Gheorghe et al. (2010)	General population	2006–2008	6	13,146	Random (75% response)	National cross-sectional population survey	18 to 69
Council of Europe	First-time blood donors	2011	N/A	88,066	N/A	N/A	N/A



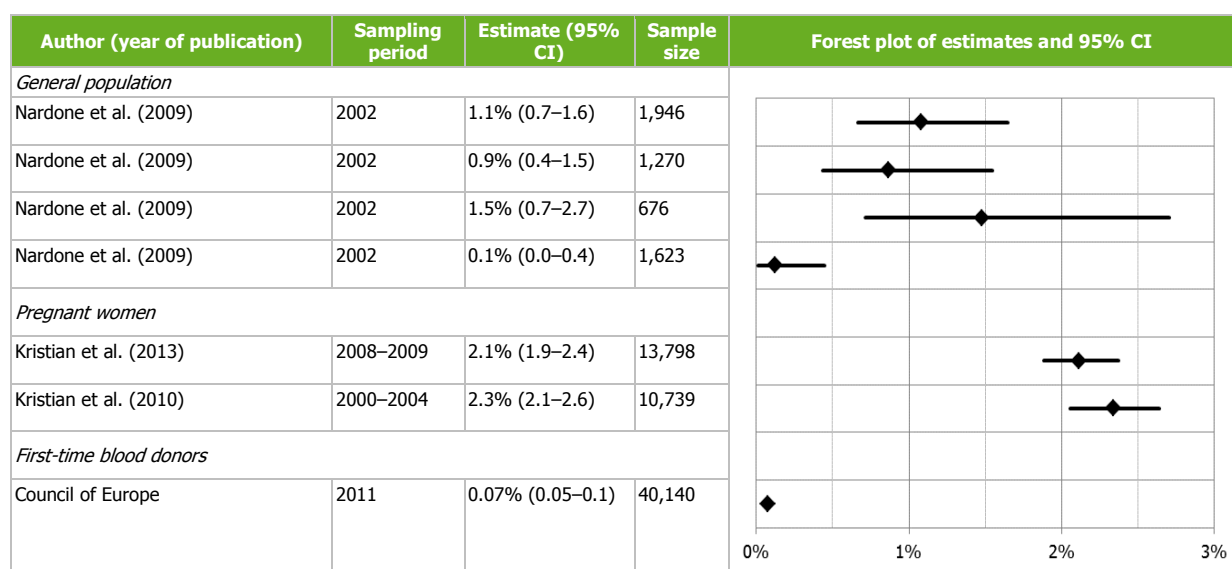
HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (CI not available)
EMCDDA	2009	HBsAg	Street-based testing (one site) in Bucharest N=N/A	4.7%
EMCDDA	2009	Anti-HCV	Street-based testing (one site) in Bucharest N=N/A	82.9%

3.26 Slovakia

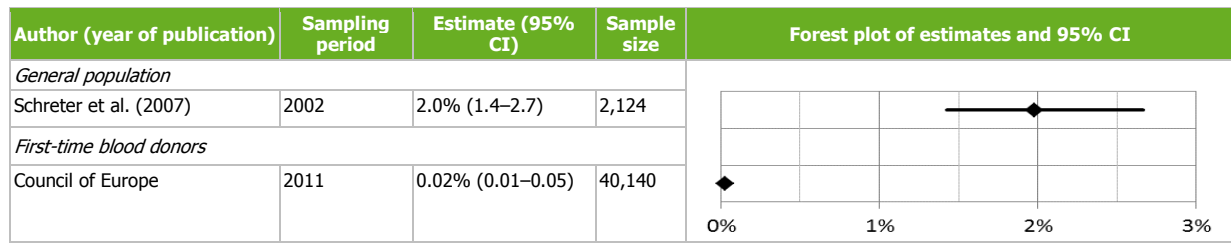
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Nardone et al. (2009)	General population	2002	4	1,946	Random	National population survey	16 to >40
Nardone et al. (2009)	General population	2002	4	1,270	Random	National population survey	16 to 39
Nardone et al. (2009)	General population	2002	4	676	Random	National population survey	>40
Nardone et al. (2009)	General population	2002	4	1,623	Random	National population survey	1 to 15
Kristian et al. (2013)	Pregnant women	2008–2009	1	13,798	Convenience	Residual serum samples from nine regional clinical microbiology departments, east Slovakia	N/R
Kristian et al. (2010)	Pregnant women	2000–2004	1	10,739	Convenience	Residual serum samples from nine regional clinical microbiology departments, east Slovakia	N/R
Council of Europe	First-time blood donors	2011	N/A	40,140	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Schreter et al. (2007)	General population	2002	6	2,124	Random	Residual serum samples	15 to 69
Council of Europe	First-time blood donors	2011	N/A	40,140	N/A	N/A	N/A




HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (CI not available)
EMCDDA	2013	HBsAg	Drug treatment services in Bratislava N=N/A	2.56%
EMCDDA	2013	Anti-HCV	Drug treatment services in Bratislava N=N/A	36.2%

3.27 Slovenia

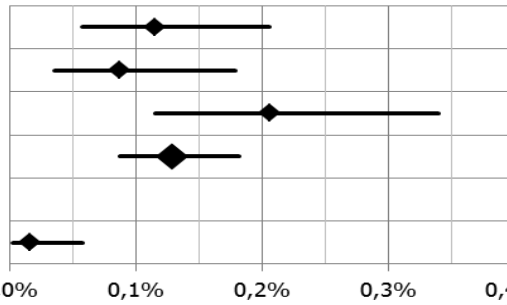
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2009	N/A	12,677	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2009	0.09% (0.04–0.16)	12,677	

Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Kopilovic et al. (2015)	Pregnant women	2013	3	9,574	Exhaustive	Residual sera from antenatal screening	N/R
Kopilovic et al. (2015)	Pregnant women	2009	3	8,064	Exhaustive	Residual sera from antenatal screening	N/R
Kopilovic et al. (2015)	Pregnant women	2003	3	7,281	Exhaustive	Residual sera from antenatal screening	N/R
Kopilovic et al. (2015)	Pregnant women	2003, 2009 & 2013	3	24,919	Exhaustive	Residual sera from antenatal screening	N/R
Council of Europe	First-time blood donors	2009	N/A	12,677	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
<i>Pregnant women</i>				
Kopilovic et al. (2015)	2013	0.1% (0.1–0.2)	9,574	
Kopilovic et al. (2015)	2009	0.1% (0.0–0.2)	8,064	
Kopilovic et al. (2015)	2003	0.2% (0.1–0.3)	7,281	
Kopilovic et al. (2015)	2003, 2009 & 2013	0.1% (0.1–0.2)	24,919	
<i>First-time blood donors</i>				
Council of Europe	2009	0.02% (0.0–0.06)	12,677	

Anti-HCV prevalence: PWID

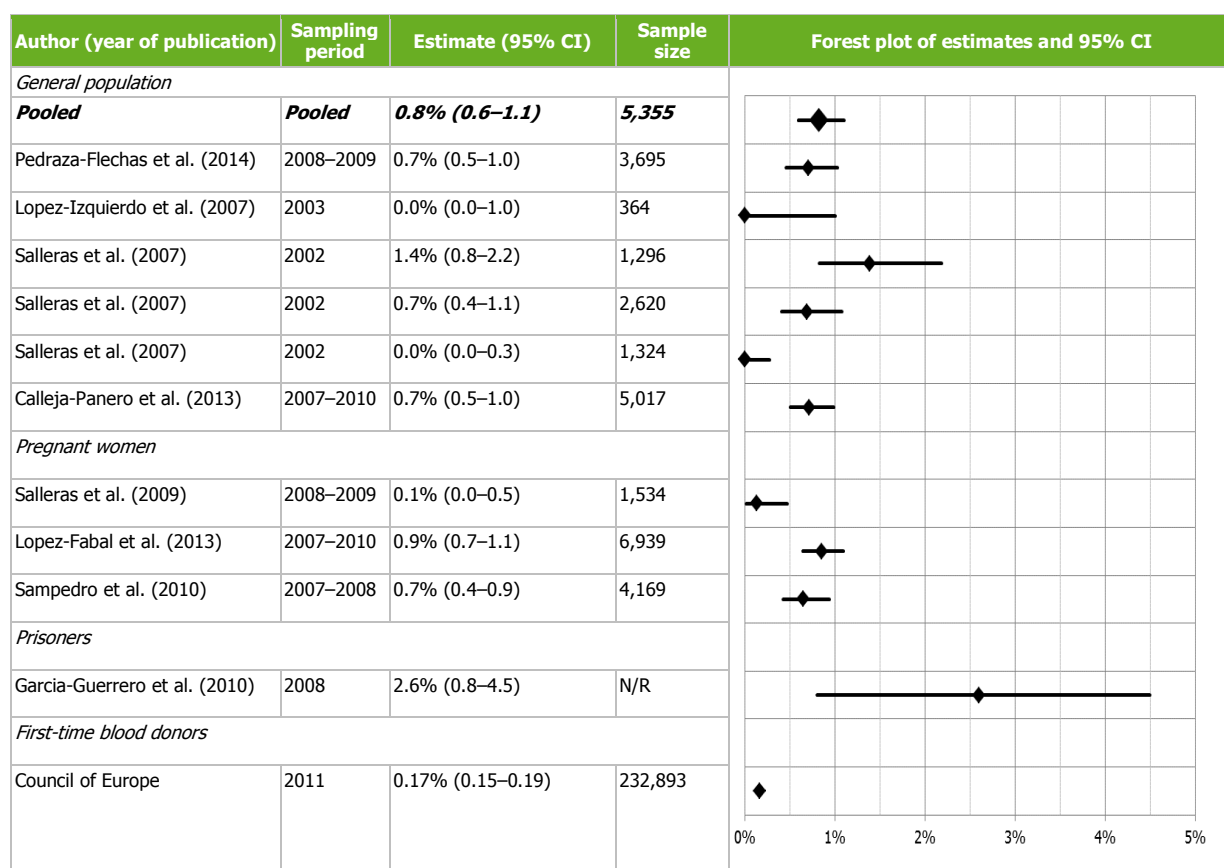
Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2013	Anti-HCV	Ever injected population sampled from drug treatment centres nationally N=112	32.1% (23.6%–41.6%)

* No data on HBsAg prevalence

3.28 Spain

HbsAg prevalence

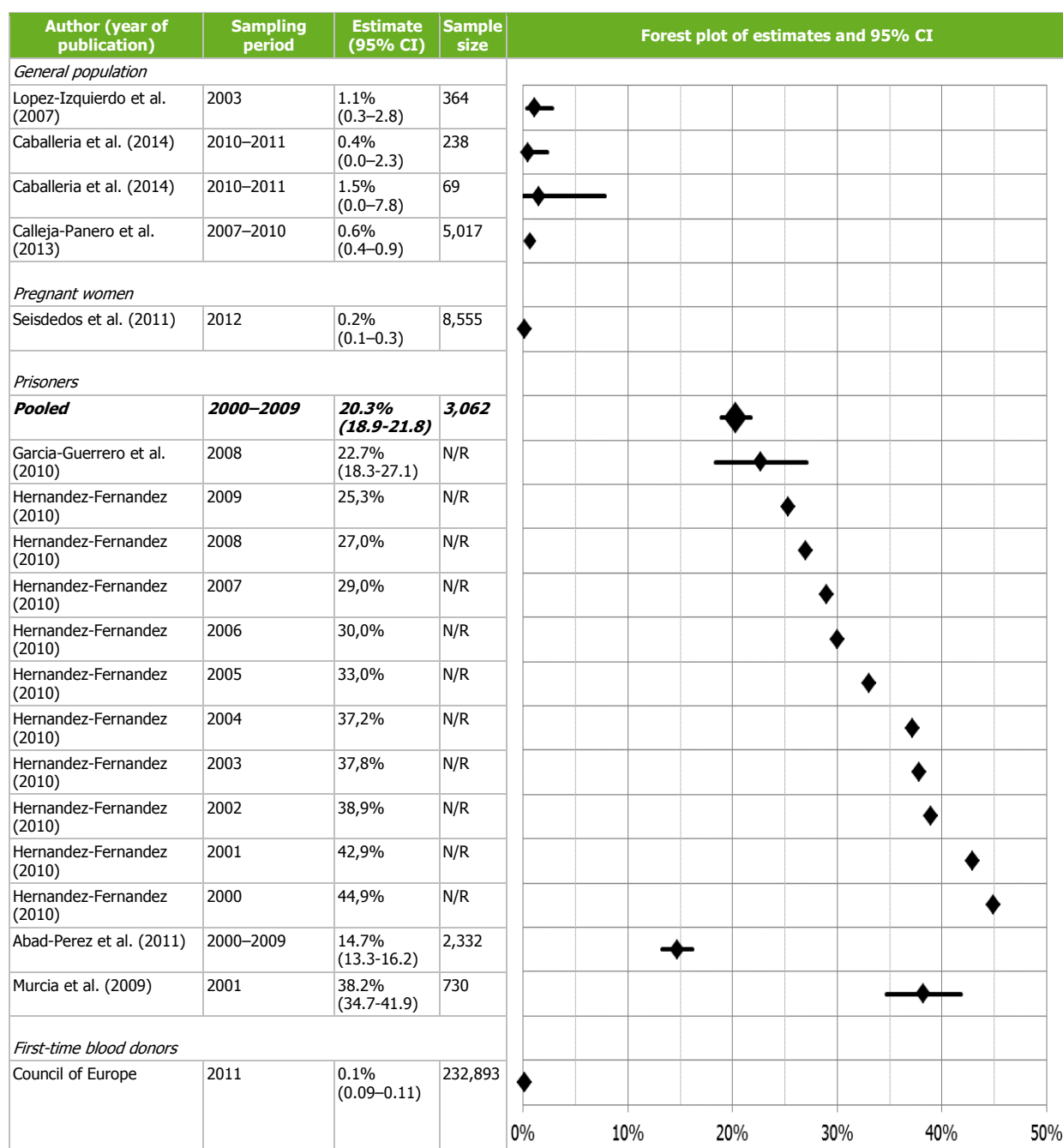
Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Pooled estimate	General population	Pooled	Pooled	5,355	Pooled	Pooled	Pooled
Pedraza-Flechas et al. (2014)	General population	2008–2009	5	3,695	Random	Attendees of blood extraction centres in region of Madrid. Bi-stage, cluster stratified sampling	16 to 80
Lopez-Izquierdo et al. (2007)	General population	2003	5	364	Random	Study in Valladolid. Stratified random sampling based on health card	N/R
Salleras et al. (2007)	General population	2002	4	1,296	Random	Two stage cluster sample from municipal electoral registers in Catalonia	15 to >65
Salleras et al. (2007)	General population	2002	3	2,620	Random	Two stage cluster sample from schools and municipal electoral registers in Catalonia	5 to >65
Salleras et al. (2007)	General population	2002	3	1,324	Random	Two stage cluster sample from schools in Catalonia	5 to 14
Calleja-Panero et al. (2013)	General population	2007–2010	2	5,017	Convenience	Study in Murcia and Madrid of working population at yearly insurance check-up. 73% male.	42
Salleras et al. (2009)	Pregnant women	2008–2009	2	1,534	Random/Exhaustive	Regional antenatal screening programme	15 to 49
Lopez-Fabal et al. (2013)	Pregnant women	2007–2010	1	6,939	Convenience	Study in a hospital and a health centre in Madrid	19 to 49, mean age 30
Sampedro et al. (2010)	Pregnant women	2007–2008	1	4,169	Exhaustive	Single centre study. 8.4% migrants	N/R
Garcia-Guerrero et al. (2010)	Prisoners	2008	6	N/R	Random	Multi-centre study in 18 prisons across Spain	Mean age 35.7
Council of Europe	First-time blood donors	2011	N/A	232,893	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Lopez-Izquierdo et al. (2007)	General population	2003	5	364	Random	Study in Valladolid. Stratified random sampling based on health card	N/R
Caballeria et al. (2014)	General population	2010–2011	3	238	Random	Multi-centre study of invitation-based screening via GP registers in Barcelona	20 to 90, mean age 50.6
Caballeria et al. (2014)	General population	2010–2011	2	69	Convenience	Multi-centre study of screening via flyers and posters in GP offices in Barcelona	Mean age 51.2
Calleja-Panero et al. (2013)	General population	2007–2010	2	5,017	Convenience	Study in Murcia and Madrid of working population at yearly insurance check-up. 73% male.	42
Seisdedos et al. (2011)	Pregnant women	2012	3	8,555	Random (response N/R)	HIV-negative women screened in six regions	N/R
Pooled estimates	Prisoners	2000–2009	N/A	3,062	Pooled	Pooled	Pooled
Garcia-Guerrero et al. (2010)	Prisoners	2008	6	N/R	Random (92% response)	Multi-centre study in 18 prisons across Spain	Mean age 35.7
Hernandez-Fernandez (2010)	Prisoners	2009	5	N/R	Other	Data from the National Centre for Prison Health Co-ordination	N/R
Hernandez-Fernandez (2010)	Prisoners	2008	5	N/R	Other	Data from the National Centre for Prison Health Co-ordination	N/R
Hernandez-Fernandez (2010)	Prisoners	2007	5	N/R	Other	Data from the National Centre for Prison Health Co-ordination	N/R
Hernandez-Fernandez (2010)	Prisoners	2006	5	N/R	Other	Data from the National Centre for Prison Health Co-ordination	N/R
Hernandez-Fernandez (2010)	Prisoners	2005	5	N/R	Other	Data from the National Centre for Prison Health Co-ordination	N/R
Hernandez-Fernandez	Prisoners	2004	5	N/R	Other	Data from the National	N/R

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
(2010)						Centre for Prison Health Co-ordination	
Hernandez-Fernandez (2010)	Prisoners	2003	5	N/R	Other	Data from the National Centre for Prison Health Co-ordination	N/R
Hernandez-Fernandez (2010)	Prisoners	2002	5	N/R	Other	Data from the National Centre for Prison Health Co-ordination	N/R
Hernandez-Fernandez (2010)	Prisoners	2001	5	N/R	Other	Data from the National Centre for Prison Health Co-ordination	N/R
Hernandez-Fernandez (2010)	Prisoners	2000	5	N/R	Other	Data from the National Centre for Prison Health Co-ordination	N/R
Abad-Perez et al. (2011)	Prisoners	2000–2009	4	2,332	Convenience	Hospitalized prisoners in the province of Valencia	17 to 74
Murcia et al. (2009)	Prisoners	2001	4	730	Exhaustive	Single prison study in Alicante involving all inmates	N/R
Council of Europe	First-time blood donors	2011	N/A	232,893	N/A	N/A	N/A



3.29 Sweden

HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Council of Europe	First-time blood donors	2009	N/A	49,071	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
Council of Europe	2009	0.04% (0.02–0.06)	49,071	

Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Blaxhult et al. (2013)	MSM	2012–2013	1	1,008	Convenience	Attendees of a Stockholm STI clinic	16 to 82, mean age 33
Council of Europe	First-time blood donors	2009	N/A	49,071	N/A	N/A	N/A

Author (year of publication)	Sampling period	Estimate (95% CI)	Sample size	Forest plot of estimates and 95% CI
<i>MSM</i>				
Blaxhult et al. (2013)	2012–2013	0.6% (0.2–1.3)	1,008	
<i>First-time blood donors</i>				
Council of Europe	2009	0.06% (0.04–0.08)	49,071	

Anti-HCV prevalence: PWID

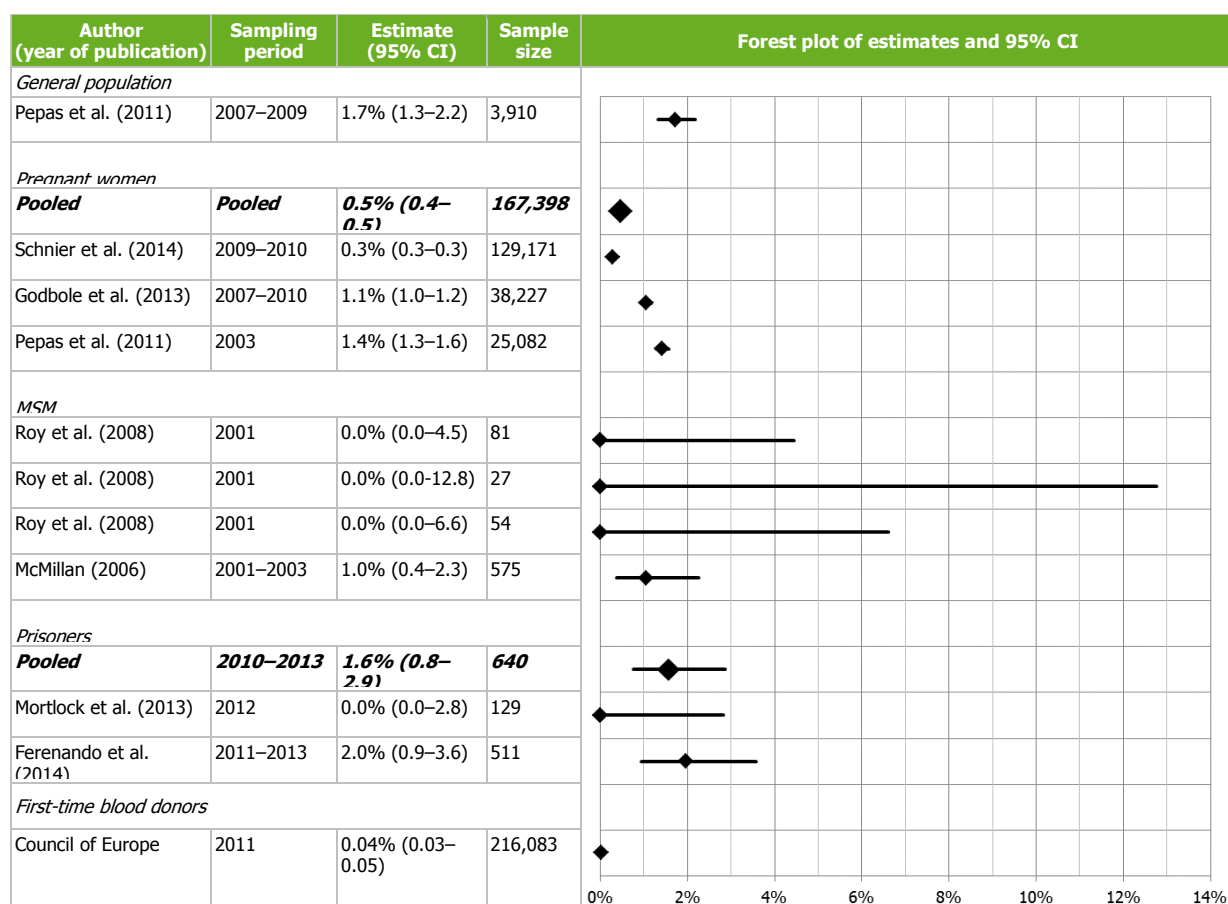
Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (CI not available)
EMCDDA	2013	Anti-HCV	Ever injected prison population (multi-venue study in Stockholm) N=N/A	96.8%

* No data on HBSAg prevalence

3.30 United Kingdom

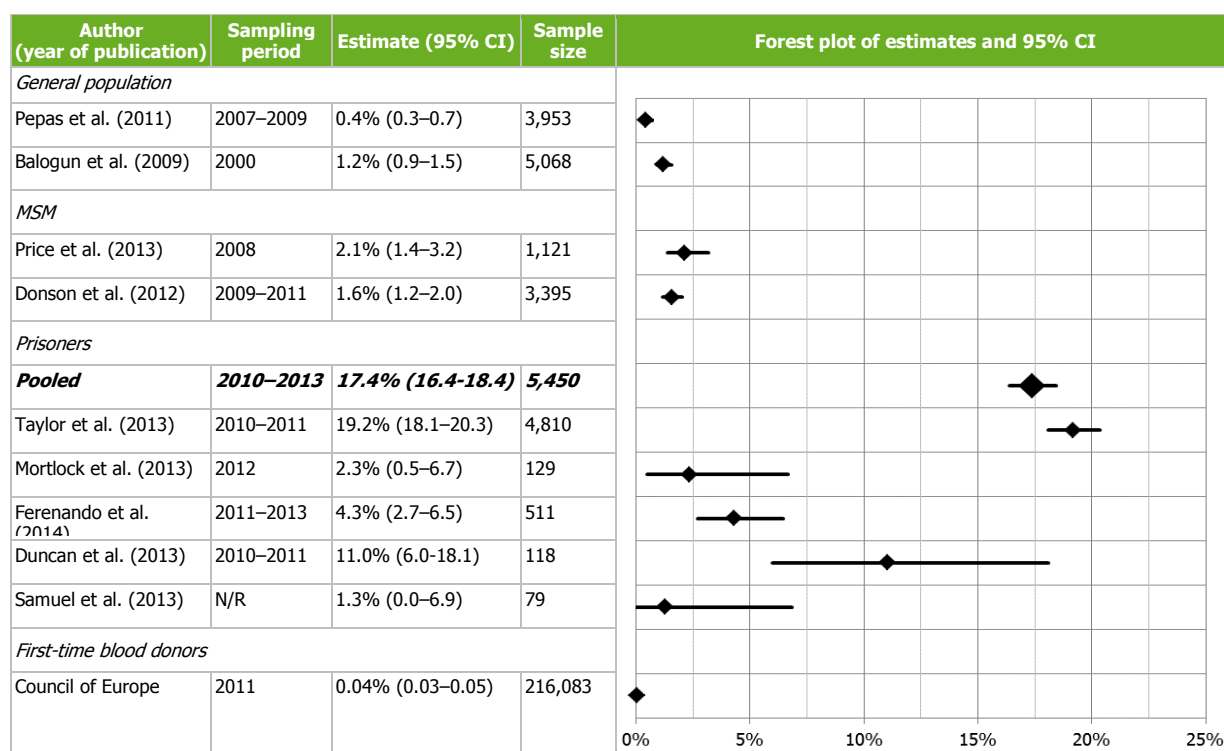
HbsAg prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Pepas et al. (2011)	General population	2007–2009	3	3,910	Exhaustive	Patients (men and women) undergoing Assisted Reproductive Treatment at Guy & St Thomas Hospital, London	N/R
Pooled estimate	Pregnant women	Pooled	Pooled	167,398	Pooled	Pooled	Pooled
Schnier et al. (2014)	Pregnant women	2009–2010	2	129,171	Exhaustive	Antenatal screening from four laboratories (covering 60% of Scottish population)	15 to 44
Godbole et al. (2013)	Pregnant women	2007–2010	2	38,227	Exhaustive	Antenatal screening in four London hospitals	15 to 46, mean age 29
Pepas et al. (2011)	Pregnant women	2003	1	25,082	N/R	Antenatal screening at Guy & St Thomas Hospital, London	N/R
Roy et al. (2008)	MSM	2001	1	81	Convenience	STI clinic samples	N/R
Roy et al. (2008)	MSM	2001	1	27	Convenience	STI clinic samples	<25 years
Roy et al. (2008)	MSM	2001	1	54	Convenience	STI clinic samples	>25 years
McMillan (2006)	MSM	2001–2003	0	575	Exhaustive	Retrospective analysis of samples from all new clients of Edinburgh STI clinic	15 to 64, mean age 29
Pooled estimate	Prisoners	2010–2013	N/A	640	Pooled	Pooled	Pooled
Mortlock et al. (2013)	Prisoners	2012	4	129	Exhaustive	Implementation of routine testing in a maximum security psychiatric hospital	N/R
Ferenando et al. (2014)	Prisoners	2011–2013	3	511	Convenience	Study in a London prison among participants of TB screening	N/R
Council of Europe	First-time blood donors	2011	N/A	216,083	N/A	N/A	N/A



Anti-HCV prevalence

Author (year of publication)	Population	Sampling period	Risk of bias score	Sample size	Sampling method	Sampling description	Age range
Pepas et al. (2011)	General population	2007–2009	3	3,953	Exhaustive	Patients undergoing Assisted Reproductive Treatment at Guy & St Thomas Hospital, London	N/R
Balogun et al. (2009)	General population	2000	3	5,068	Convenience	Residual serum samples from Public Health and National Health Service Laboratories in England and Wales for routine diagnostic examination	>16
Price et al. (2013)	MSM	2008	2	1,121	Convenience	Multi-centre study in gay bars, saunas and clubs	16 to 51
Donson et al. (2012)	MSM	2009–2011	0	3,395	Convenience	STI clinic attendees	N/R
Pooled estimate	Prisoners	2010–2013	N/A	5,450	Pooled	Pooled	Pooled
Taylor et al. (2013)	Prisoners	2010–2011	6	4,810	Exhaustive	Multi-centre study in all 14 prisons in Scotland including females and juvenile inmates. 32% history of IDU. 5% female	<20 to >40, mean age 32.4
Mortlock et al. (2013)	Prisoners	2012	4	129	Exhaustive	Implementation of routine testing in a maximum security psychiatric hospital	N/R
Ferenando et al. (2014)	Prisoners	2011–2013	3	511	Convenience	Study in a London prison among participants of TB screening	N/R
Duncan et al. (2013)	Prisoners	2010–2011	2	118	Convenience	STI clinic attendees in a medium security male prison in Oxford	N/R
Samuel et al. (2013)	Prisoners	N/R	2	79	Convenience	STI clinic attendees in a young offenders institute	16 to 21, mean age 19
Council of Europe	First-time blood donors	2011	N/A	216,083	N/A	N/A	N/A



HBsAg and anti-HCV prevalence: PWID

Source	Sampling period	Virological marker	Testing settings and sample size (if available)	Estimate (95% CI)
EMCDDA	2013	HBsAg	Low threshold drug treatment and harm reduction services (in Wales) N=N/A	0.72% (no CI available)
EMCDDA	2013	Anti-HCV	Low threshold drug treatment and harm reduction services (nationwide) N=3,144	49.1% (47.4%–50.8%)

HBsAg prevalence: migrants

Country of birth	Author (year of publication)	Sampling period	Sampling method	Sample size	Estimate (95% CI)
Bangladesh	Uddin (2010)	n/s	Community-based screening in various cities in England (convenience sample)	726	1.5% (0.8%–2.7%)
Bangladesh	Pooled	Pooled	McPherson (2013) and Uddin (2010)	934	1.3% (0.7%–2.2%)
China (including Hong Kong)	McPherson (2013)	n/s	Community-based screening in north-eastern England (convenience sample)	470	8.9% (6.5%–11.9%)
India	O'Leary (2010)	2009–2010	Community-based screening in Glasgow (convenience sample)	137	0% (0%–2.7%)
India	Uddin (2010)	n/s	Community-based screening in various cities in England (convenience sample)	1,197	0.1% (0%–0.5%)
India	Pooled	Pooled	Uddin (2010) and O'Leary (2010)	1,334	0.1% (0%–0.4%)
Other South Asian	McPherson (2013)	n/s	Community-based screening in north-eastern England (convenience sample)	19	5.3% (0.1%–26.0%)
Other South Asian	O'Leary (2010)	2009–2010	Community-based screening in Glasgow (convenience sample)	101	4.0% (1.1%–9.8%)
Other South Asian	Pooled	Pooled	McPherson (2013) and O'Leary (2010)	120	4.2% (1.4%–9.5%)
Other South East Asian	McPherson (2013)	n/s	Community-based screening in north-eastern England (convenience sample)	38	5.3% (0.6%–17.7%)
Pakistan	McPherson (2013)	n/s	Community-based screening in north-eastern England (convenience sample)	222	3.2% (1.3%–6.4%)
Pakistan	O'Leary (2010)	2009–2010	Community-based screening in Glasgow (convenience sample)	882	0.8% (0.3%–1.6%)
Pakistan	Uddin (2010)	n/s	Community-based screening in various cities in England (convenience sample)	2,458	1.8% (1.3%–2.4%)
Pakistan	Pooled	Pooled	McPherson (2013), Uddin (2010) and O'Leary (2010)	3,562	1.6% (1.2%–2.1%)
Vietnam	McPherson (2013)	n/s	Community-based screening in north-eastern England (convenience sample)	23	17.4% (5.0%–38.8%)

Anti-HCV prevalence: migrants

Country of birth	Author (year of publication)	Sampling period	Sampling method	Sample size	Estimate (95% CI)
Bangladesh	McPherson (2013)	n/s	Community-based screening in north-eastern England (convenience sample)	208	0% (0%–1.8%)
Bangladesh	Uddin (2010)	n/s	Community-based screening in various cities in England (convenience sample)	726	0.6% (0.2%–1.4%)
Bangladesh	Pooled	Pooled	McPherson (2013) and Uddin (2010)	934	0.4% (0.1%–1.1%)
India	Uddin (2010)	n/s	Community-based screening in various cities in England (convenience sample)	1,197	0.2% (0%–0.6%)
India	O'Leary (2010)	2009–2010	Community-based screening in Glasgow (convenience sample)	137	2.9% (0.8%–7.3%)
India	Pooled	Pooled	Uddin (2010) and O'Leary (2010)	1,334	0.4% (0.2%–1.0%)
Other South Asian	McPherson (2013)	n/s	Community-based screening in north-eastern England (convenience sample)	19	0% (0%–17.6%)
Other South Asian	O'Leary (2010)	2009–2010	Community-based screening in Glasgow (convenience sample)	101	2.0% (0.2%–7.0%)
Other South Asian	Pooled	Pooled	McPherson (2013) and O'Leary (2010)	120	1.7% (0.2%–5.9%)
Pakistan	McPherson (2013)	n/s	Community-based screening in north-eastern England (convenience sample)	222	1.8% (0.5%–4.5%)
Pakistan	O'Leary (2010)	2009–2010	Community-based screening in Glasgow (convenience sample)	882	3.1% (2.0%–4.4%)
Pakistan	Uddin (2010)	n/s	Community-based screening in various cities in England (convenience sample)	2,458	2.7% (2.1%–3.4%)
Pakistan	Pooled	Pooled	McPherson (2013), Uddin (2010) and O'Leary (2010)	3,562	2.8% (2.2%–3.3%)

Annex 4. Risk of bias assessment

Table A16. Results of the risk of bias assessment and characteristics of the general population studies included in the HBV and HCV prevalence analysis

Study characteristics				Risk of bias assessment				
Authors	Publication Year	Virus	Country	Age bias (0 or 1)	Gender bias (0 or 1)	Sampling method (0, 1 or 2)	Population coverage (0, 1 or 2)	Total Score (0–6)
Quoilin	2007	Both	Belgium	1	1	1	1	4
Nardone	2009	HBV	Belgium	0	1	0	2	3
Vilibic-Cavlek	2014	Both	Croatia	1	1	0	2	4
Burek	2010	Both	Croatia	1	0	1	1	3
Nardone	2009	HBV	Czech Republic	0	1	1	2	4
Meffre	2010	Both	France	1	1	1	2	5
Sahajian	2007	HCV	France	1	1	0	1	3
Bottero	2014	HBV	France	1	1	0	1	3
Poynard	2009	HCV	France	0	1	0	1	2
Huetter	2014	Both	Germany	1	1	2	0	4
Poethko-Müller	2013	Both	Germany	1	1	1	2	5
Wolffram	2015	Both	Germany	0	1	0	1	2
Dounias	2005	HBV	Greece	1	0	0	0	1
Drositis	2013	Both	Greece: Crete	1	1	2	0	4
Treso	2012	Both	Hungary	1	1	0	2	4
Nardone	2009	HBV	Ireland	0	1	0	2	3
Talento	2010	Both	Ireland	1	1	2	2	6
Floreani	2006	Both	Italy	1	1	2	0	4
Fabris	2008	Both	Italy	1	1	1	0	3
Squeri	2006	Both	Italy	1	0	0	0	1
Da Villa	2007	HBV	Italy	1	1	0	0	2
Dazzani	2009	Both	Italy	1	1	0	0	2
Boccalini	2013	HBV	Italy	1	1	0	1	3
Guadagnino	2013	HCV	Italy	1	1	1	0	3
Montella	2005	HCV	Italy	1	1	0	1	3
Pendino	2005	Both	Italy	1	1	2	0	4
Cozzolongo	2009	Both	Italy	1	1	2	1	5
De Paschale	2012	Both	Italy	1	1	0	0	2
Parisi	2014	HCV	Italy	1	1	0	1	3
Petti	2006	HCV	Italy	1	1	2	0	4
Petti	2006	HCV	Italy	1	1	2	0	4
Petti	2006	HCV	Italy	1	1	2	0	4
Giacomoni	2010	Both	Italy	0	1	0	0	1
Del Corno	2006	Both	Italy	1	1	1	0	3
Tolmane	2011	HCV	Latvia	1	1	2	2	6
Liakina	2012	HCV	Lithuania	0	0	0	2	2
Pszenny	2012	Both	Poland	0	0	0	1	1
Flisiak	2011	HCV	Poland	1	0	0	1	2
Hartleb	2012	Both	Poland	0	1	1	2	4
Nardone	2009	HBV	Romania	0	1	0	2	3
Gheorghe	2013	HBV	Romania	1	1	2	2	6
Gheorghe	2010	HCV	Romania	1	1	2	2	6
Nardone	2009	HBV	Slovakia	0	1	1	2	4
Schreter	2007	HCV	Slovakia	1	1	2	2	6
Salleras	2007	HBV	Spain	0	1	2	0	3
Salleras	2007	HBV	Spain	1	1	2	0	4
Salleras	2007	HBV	Spain	0	1	2	0	3
Lopez-Izquierdo	2007	Both	Spain	1	1	2	0	5
Calleja-Panero	2013	Both	Spain	0	1	0	1	2
Pedraza-Flechas	2014	HBV	Spain	1	1	2	1	5

Study characteristics				Risk of bias assessment				
Caballeria	2014	HCV	Spain	1	1	1	0	3
Caballeria	2014	HCV	Spain	1	1	0	0	2
Veldhuijzen	2009	Both	Netherlands	1	1	1	0	3
Slavenburg	2008	HCV	Netherlands	1	1	0	0	2
Hahné	2012	HBV	Netherlands	1	1	1	2	5
Vriend	2013	HCV	Netherlands	1	1	1	2	5
Pepas	2011	Both	UK: England	0	1	2	0	3
Balogun	2009	HCV	UK: England and Wales	1	1	0	1	3

Table A17. Results of the risk of bias assessment and characteristics of the studies in pregnant women included in the HBV and HCV prevalence analysis

Study characteristics				Risk of bias assessment		
Authors	Publication year	Virus	Country	Sampling method (0 or 1)	Population coverage (0, 1 or 2)	Total score (0–3)
Diab-Elschahawi	2013	HCV	Austria	1	0	1
Moller	2014	HBV	Denmark	1	2	3
Harder	2011	HBV	Denmark	1	2	3
Braillon	2010	HBV	France	1	0	1
Richaud-Eyraud	2015	HBV	France	1	1	2
Alba-Alejandre	2009	HBV	Germany	1	0	1
Lobstein	2011	HBV	Germany	1	0	1
Papaevangelou	2006	HBV	Greece	1	2	3
Betsas	2006	HBV	Greece	1	0	1
Kafkoula	2009	Both	Greece	1	0	1
Elefsiniotis	2010	HBV	Greece	1	0	1
Karatapanis	2012	HBV	Greece	1	0	1
Karatapanis	2012	HBV	Greece	1	0	1
Martyn	2011	HCV	Ireland	1	0	1
Martyn	2011	HCV	Ireland	1	0	1
O'Connell	2010	HBV	Ireland	1	0	1
Lambert	2013	HCV	Ireland	1	0	1
Veronesi	2007	HCV	Italy	1	0	1
Lagana	2015	Both	Italy	0	0	0
Spada	2011	HBV	Italy	1	2	3
Ruffini	2014	HBV	Italy	1	1	2
Ruffini	2014	HCV	Italy	1	1	2
Kristiansen	2009	HBV	Norway	1	1	2
Kristian	2010	HBV	Slovakia	0	1	1
Kristian	2013	HBV	Slovakia	0	1	1
Kopilovic	2015	HCV	Slovenia	1	2	3
Kopilovic	2015	HCV	Slovenia	1	2	3
Kopilovic	2015	HCV	Slovenia	1	2	3
Kopilovic	2015	HCV	Slovenia	1	2	3
Kopilovic	2015	HCV	Slovenia	1	2	3
Lopez-Fabal	2013	HBV	Spain	0	1	1
Seisdedos	2011	HCV	Spain	1	2	3
Sampedro	2010	HBV	Spain	1	0	1
Salleras	2009	HBV	Spain	1	1	2
Op de Coul	2011	HBV	Netherlands	1	2	3
Op de Coul	2011	HBV	Netherlands	1	2	3
Op de Coul	2011	HBV	Netherlands	1	2	3
Urbanus	2011	HCV	Netherlands	1	0	1
Pepas	2011	Both	UK, England	1	0	1
Godbole	2013	HBV	UK, England	1	1	2
Schnier	2014	HBV	UK, Scotland	1	1	2

Table A18. Results of the risk of bias assessment and characteristics of the MSM studies included in the HBV and HCV prevalence analysis.

Study characteristics				Risk of bias assessment	
Authors	Publication year	Virus	Country	Population coverage (0, 1 or 2)	Total score (0–2)
Bozicevic	2009	Both	Croatia	2	2
Cavlek	2009	HCV	Croatia	2	2
Rüütel	2015	Both	Estonia	1	1
Rüütel	2015	Both	Estonia	1	1
Sauvage	2015	Both	France	2	2
Di Benedetto	2012	HCV	Italy	2	2
Blaxhult	2013	HCV	Sweden	1	1
Van Rooijen	2013	HCV	Netherlands	1	1
van de Laar	2007	HCV	Netherlands	2	2
Price	2013	HCV	UK, England	2	2
Donson	2012	HCV	UK, England	0	0
Roy	2008	HBV	UK, Scotland	1	1
Roy	2008	HBV	UK, Scotland	1	1
Roy	2008	HBV	UK, Scotland	1	1
McMillan	2006	HBV	UK, Scotland	0	0

Table A19. Results of the risk of bias assessment and characteristics of the prisoner studies included in the HBV and HCV prevalence analysis

Study characteristics				Risk of bias assessment					
Authors	Publication year	Virus	Country	Age bias (0 or 1)	Gender bias (0 or 1)	PWID bias (0 or 1)	Sampling method (0 or 1)	Population coverage (0, 1 or 2)	Total Score (0–6)
Popov	2012	Both	Bulgaria	0	1	1	0	1	3
Popov	2013	Both	Bulgaria	1	1	1	0	2	5
Popov	2010	Both	Bulgaria	1	1	1	0	2	5
Burek	2009	HBV	Croatia	1	0	1	1	1	4
Burek	2009	HCV	Croatia	1	1	1	1	1	5
Burek	2010	Both	Croatia	1	1	1	0	2	5
Burek	2010	Both	Croatia	0	1	1	0	2	4
Viitanen	2011	Both	Finland	1	1	1	1	2	6
Remy	2006	HCV	France	1	1	1	1	2	6
Verneuil	2009	Both	France	1	0	1	1	0	3
Remy	2006	HCV	France	1	1	1	1	2	6
Roux	2014	HCV	France	1	1	1	0	1	4
Semaille	2013	HCV	France	1	1	1	1	2	6
Vergniol	2014	Both	France	1	0	1	1	1	4
Abergel	2014	Both	France	1	1	1	1	1	5
Stark	2006	Both	Germany	1	0	0	0	1	2
Meyer	2007	HCV	Germany	0	1	1	1	0	3
Karakaya & Stark	2009	Both	Germany	1	0	0	0	0	1
Karakaya & Stark	2009	Both	Germany	1	0	0	0	0	1
Treso	2012	Both	Hungary	1	1	1	1	2	6
Drummond	2014	Both	Ireland	1	1	1	1	2	6
Montella	2005	HCV	Italy	1	0	1	0	0	2
Babudieri	2005	Both	Italy	1	1	1	0	1	4
Removille	2011	Both	Luxembourg	1	1	0	0	2	4
Barros	2008	HCV	Portugal	1	0	0	1	0	2
Marques	2011	Both	Portugal	1	1	1	1	0	4
Narare C	2011	HBV	Romania	0	0	0	0	1	1
Murcia	2009	HCV	Spain	1	1	0	1	0	3
Garcia-Guerrero	2010	Both	Spain	1	1	1	1	2	6
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5

Study characteristics				Risk of bias assessment					
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5
Hernandez-Fernandez	2010	HCV	Spain	1	1	0	1	2	5
Abad-Perez	2011	HCV	Spain	1	1	0	1	1	4
Duncan	2013	HCV	UK, England	1	0	1	0	0	2
Ferenando	2014	Both	UK, England	1	1	1	0	0	3
Mortlock	2013	Both	UK, England	1	1	1	1	0	4
Samuel	2013	HCV	UK, England	0	1	1	0	0	2
Taylor	2013	HCV	UK, Scotland	1	1	1	1	2	6

Annex 5. Search strategy

5.1 Pubmed search

Date of the search: 16/03/2015

Language limit: no limits

Date limits: from 2005 to 2015

Number of results: 4541

Search	Query	Items found
#4	Search #1 AND #2 AND #3	10461
#5	Search #1 AND #2 AND #3 Filters: Publication date from 2005/01/01	4541
#3	Search "hepatitis B"[MeSH Terms] OR "hepatitis c"[MeSH Terms] OR "Hepatitis B virus"[Mesh] OR "hepacivirus"[Mesh] OR "hepatitis b"[TIAB] OR "hepatitis c"[TIAB] OR hepaciviru*[TIAB] OR "hbv"[TIAB] OR "hcv"[TIAB] OR "hbsag"[TIAB] OR "hbs ag"[TIAB] OR "hepatitis b surface antigens"[MeSH Terms] OR "Australia Antigen"[TIAB] OR "Australia Antigens"[TIAB] OR "hepatitis c antibodies"[MeSH Terms] OR "Hepatitis C Antigens"[Mesh] OR "Hepatitis B Antibodies"[Mesh]	135899
#2	Search "Prevalence"[Mesh] OR prevalence*[TIAB] OR "Population Surveillance"[Mesh] OR "Seroepidemiologic Studies"[Mesh:NoExp] OR prevalence*[TIAB] OR seroepidemiolog*[TIAB] OR "sero epidemiologic"[TIAB] OR "sero epidemiological"[TIAB] OR "sero epidemiology"[TIAB] OR serosurvey*[TIAB] OR serolog*[TI] OR epidemiolog*[TI] OR surveillance[TT]	643490
#1	Search (((("United kingdom"[ad] OR Britain[ad] OR British[ad] OR (England[ad] NOT ("New England"[ad])) OR English[ad] OR Scotland[ad] OR Scottish[ad] OR Wales[ad] OR Welsh[ad] OR "Northen Ireland"[ad] OR London[ad] OR "East midlands"[ad] OR "West midlands"[ad] OR Yorkshire[ad] OR "East Anglia"[ad] OR Bedfordshire[ad] OR Hertfordshire[ad] OR Essex[ad] OR Peterborough[ad] OR Cambridgeshire[ad] OR Norfolk[ad] OR Suffolk[ad] OR Luton[ad] OR Bedford[ad] OR "Southend on sea"[ad] OR Thurrock[ad] OR Derbyshire[ad] OR Nottinghamshire[ad] OR Leicestershire[ad] OR Rutland[ad] OR Northamptonshire[ad] OR Lincolnshire[ad] OR Derby[ad] OR Leicester[ad] OR Northamptonshire[ad] OR Nottingham[ad] OR Northumberland[ad] OR "Tyne and Wear"[ad] OR "Tees Valley"[ad] OR "Durham"[ad] OR Darlington[ad] OR Hartlepool[ad] OR "Stockton on tees"[ad] OR Northumberland[ad] OR Teesside[ad] OR Sunderland[ad] OR Tyneside[ad] OR Cumbria[ad] OR Cheshire[ad] OR Manchester[ad] OR Lancashire[ad] OR Merseyside[ad] OR (Blackburn[ad] AND Darwen[ad]) OR Blackpool[ad] OR Chester[ad] OR Liverpool[ad] OR Sefton[ad] OR Warrington[ad] OR Wirral[ad] OR Berkshire[ad] OR Buckinghamshire[ad] OR Oxfordshire[ad] OR Hampshire[ad] OR "Isle of Wight"[ad] OR Kent[ad] OR Surrey[ad] OR Sussex[ad] OR (Brighton[ad] AND Hove[ad]) OR Medway[ad] OR "Milton keynes"[ad] OR Portsmouth[ad] OR Southampton[ad] OR Devon[ad] OR Dorset[ad] OR Somerset[ad] OR Gloucestershire[ad] OR Wiltshire[ad] OR Bristol[ad] OR Bath[ad] OR Bournemouth[ad] OR Poole[ad] OR Bristol[ad] OR Plymouth[ad] OR Swindon[ad] OR Torbay[ad] OR Herefordshire[ad] OR Worcestershire[ad] OR Warwickshire[ad] OR Shropshire[ad] OR Staffordshire[ad] OR Birmingham[ad] OR Coventry[ad] OR Dudley[ad] OR Sandwell[ad] OR Shropshire[ad] OR Solihull[ad] OR "stoke on trent"[ad] OR Telford[ad] OR Wrekin[ad] OR Walsall[ad] OR Warwickshire[ad] OR Wolverhampton[ad] OR Worcestershire[ad] OR Barnsley[ad] OR Doncaster[ad] OR Rotherham[ad] OR Bradford[ad] OR Calderdale[ad] OR Kirklees[ad] OR Kingston[ad] OR Leeds[ad] OR Sheffield[ad] OR Wakefield[ad] OR (York[ad] NOT ("New York"[ad])) OR Antrim[ad] OR Ards[ad] OR Armagh[ad] OR Ballymena[ad] OR Ballymoney[ad] OR Banbridge[ad] OR Carrickfergus[ad] OR Castlereagh[ad] OR Coleraine[ad] OR Cookstown[ad] OR Craigavon[ad] OR Derry[ad] OR (Down[ad] AND (district[ad] OR council[ad])) OR Fermanagh[ad] OR Dungannon[ad] OR Fermanagh[ad] OR Larne[ad] OR Limavady[ad] OR Lisburn[ad] OR Magherafelt[ad] OR Moyle[ad] OR (Newry[ad] AND Mourne[ad]) OR Newtownabbey[ad] OR Omagh[ad] OR Strabane[ad] OR Londonderry[ad] OR Tyrone[ad] OR Belfast[ad] OR Aberdeen[ad] OR Aberdeenshire[ad] OR Angus[ad] OR Dundee[ad] OR (Argyll[ad] AND bute[ad]) OR Clackmannanshire[ad] OR Fife[ad] OR Ayrshire[ad] OR Dunbartonshire[ad] OR Lothian[ad] OR Renfrewshire[ad] OR Edinburgh[ad] OR Falkirk[ad] OR Glasgow[ad] OR Highland*[ad] OR Inverclyde[ad] OR Midlothian[ad] OR Moray[ad] OR Lanarkshire[ad] OR (Perth[ad] AND Kinross[ad]) OR Stirling[ad] OR "Orkney Islands"[ad] OR "Eileanan Siar"[ad] OR "Shetland Islands"[ad] OR Bridgend[ad] OR "Neath Port Talbot"[ad] OR Cardiff[ad] OR (Vale[ad] AND Glamorgan[ad]) OR "Central Valleys"[ad] OR Conwy[ad] OR Denbighshire[ad] OR Flintshire[ad] OR Wrexham[ad] OR "Gwent Valleys"[ad] OR Gwynedd[ad] OR (Isle[ad] AND Anglesey[ad]) OR "Monmouthshire"[ad] OR "Newport"[ad] OR Powys[ad] OR Swansea[ad] OR Ceredigion[ad] OR Carmarthenshire[ad] OR Pembrokeshire[ad] OR "Merthyr Tydfil"[ad] OR "Rhondda Cynon Taff"[ad] OR "Blaenau Gwent"[ad] OR Caerphilly[ad] OR Torfaen[ad] OR Caithness[ad] OR "Sutherland and Ross"[ad] OR Cromarty[ad] OR Teeside[ad] OR Tyneside[ad] OR Wearside[ad] OR "West Mercia"[ad] OR Avon[ad] OR Ulster[ad] OR Derry[ad] OR Medway[ad] OR "East Riding"[ad] OR "West Riding"[ad] OR "Lake District"[ad] OR "Peak District"[ad] OR Cumberland[ad] OR Dartmoor[ad] OR Exmoor[ad]) OR ("United kingdom"[tw] OR Britain[tw] OR British[tw] OR (England[tw] NOT ("New England"[tw])) OR English[tw] OR Scotland[tw] OR Scottish[tw] OR Wales[tw] OR Welsh[tw] OR "Northen Ireland"[tw] OR London[tw] OR "East midlands"[tw] OR "West midlands"[tw] OR Yorkshire[tw] OR "East Anglia"[tw] OR Bedfordshire[tw] OR Hertfordshire[tw] OR Essex[tw] OR Peterborough[tw] OR Cambridgeshire[tw] OR Norfolk[tw] OR Suffolk[tw] OR Luton[tw] OR Bedford[tw] OR "Southend on sea"[tw] OR Thurrock[tw] OR Derbyshire[tw] OR Nottinghamshire[tw] OR Leicestershire[tw] OR Rutland[tw] OR Northamptonshire[tw] OR Lincolnshire[tw] OR Derby[tw] OR Leicester[tw] OR Northamptonshire[tw] OR Nottingham[tw] OR Northumberland[tw] OR "Tyne and Wear"[tw] OR "Tees Valley"[tw] OR "Durham"[tw] OR Darlington[tw] OR Hartlepool[tw] OR "Stockton on tees"[tw] OR Northumberland[tw] OR Teesside[tw] OR Sunderland[tw] OR Tyneside[tw] OR Cumbria[tw] OR Cheshire[tw] OR Manchester[tw] OR Lancashire[tw] OR Merseyside[tw] OR (Blackburn[tw] AND Darwen[tw]) OR Blackpool[tw] OR Chester[tw] OR Liverpool[tw] OR Sefton[tw] OR Warrington[tw] OR Wirral[tw] OR Berkshire[tw] OR Buckinghamshire[tw] OR Oxfordshire[tw] OR Hampshire[tw] OR "Isle of Wight"[tw] OR Kent[tw] OR Surrey[tw] OR Sussex[tw] OR (Brighton[tw] AND Hove[tw]) OR Medway[tw] OR "Milton keynes"[tw] OR Portsmouth[tw] OR Southampton[tw] OR Devon[tw] OR Dorset[tw] OR Somerset[tw] OR Gloucestershire[tw] OR Wiltshire[tw] OR Bristol[tw] OR Bath[tw] OR Bournemouth[tw] OR Poole[tw] OR Bristol[tw] OR Plymouth[tw] OR Swindon[tw] OR Torbay[tw] OR Herefordshire[tw] OR Worcestershire[tw] OR Warwickshire[tw] OR Shropshire[tw] OR Staffordshire[tw] OR Birmingham[tw] OR Coventry[tw] OR Dudley[tw] OR Sandwell[tw] OR Shropshire[tw] OR Solihull[tw] OR "stoke on trent"[tw] OR Telford[tw] OR Wrekin[tw] OR Walsall[tw] OR Warwickshire[tw] OR Wolverhampton[tw] OR Worcestershire[tw] OR Barnsley[tw] OR Doncaster[tw] OR Rotherham[tw] OR Bradford[tw] OR Calderdale[tw] OR Kirklees[tw] OR Kingston[tw] OR Leeds[tw] OR Sheffield[tw] OR Wakefield[tw] OR (York[tw] NOT ("New York"[tw])) OR Antrim[tw] OR Ards[tw] OR Armagh[tw] OR Ballymena[tw] OR Ballymoney[tw] OR Banbridge[tw] OR Carrickfergus[tw] OR Castlereagh[tw] OR Coleraine[tw] OR Cookstown[tw] OR Cookstown[tw] OR Derry[tw] OR (Down[tw] AND (district[tw] OR council[tw])) OR Fermanagh[tw] OR Dungannon[tw] OR Fermanagh[tw] OR Larne[tw] OR	

Search	Query	Items found
	<p>Limavady[tw] OR Lisburn[tw] OR Magherafelt[tw] OR Moyle[tw] OR (Newry[tw] AND Mourne[tw]) OR Newtownabbey[tw] OR Omagh[tw] OR Strabane[tw] OR Londonderry[tw] OR Tyrone[tw] OR Belfast[tw] OR Aberdeen[tw] OR Aberdeenshire[tw] OR Angus[tw] OR Dundee[tw] OR (Argyll[tw] AND bute[tw]) OR Clackmannanshire[tw] OR Fife[tw] OR Ayrshire[tw] OR Dunbartonshire[tw] OR Lothian[tw] OR Renfrewshire[tw] OR Edinburgh[tw] OR Falkirk[tw] OR Glasgow[tw] OR Highland*[tw] OR Inverclyde[tw] OR Midlothian[tw] OR Moray[tw] OR Lanarkshire[tw] OR (Perth[tw] AND Kinross[tw]) OR Stirling[tw] OR "Orkney Islands"[tw] OR "Eileanan Siar"[tw] OR "Shetland Islands"[tw] OR Bridgend[tw] OR "Neath Port Talbot"[tw] OR Cardiff[tw] OR (Vale[tw] AND Glamorgan[tw]) OR "Central Valleys"[tw] OR Conwy[tw] OR Denbighshire[tw] OR Flintshire[tw] OR Wrexham[tw] OR "Gwent Valleys"[tw] OR Gwynedd[tw] OR (Isle[tw] AND Anglesey[tw]) OR "Monmouthshire"[tw] OR "Newport"[tw] OR Powys[tw] OR Swansea[tw] OR Ceredigion[tw] OR 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Varmland*[ad] OR Gotland*[ad] OR Oland[ad] OR Jonkoping*[ad] OR Kalmar*[ad] OR Kronoberg*[ad] OR Blekinge[ad] OR Skane*[ad] OR Norrbotten*[ad] OR Vasterbotten*[ad] OR Lappland[ad] OR Angermanland[ad] OR Medelpad[ad] OR Halland*[ad] OR Gotaland*[ad] OR Gothenburg[ad] OR Goteborg*[ad] OR Malmö*[ad] OR Vasteras[ad] OR Linkoping[ad] OR Helsingborg[ad] OR Helsingborg[ad] OR Norrkoping[ad] OR Gavle[ad] OR Umea[ad] OR Lulea[ad] OR Karlstad[ad] OR Kalmar[ad] OR Huddinge[ad] OR Solna[ad] OR Ostersjo*[ad] OR Malaren*[ad] OR Malardalen[ad])) OR (Sweden[tw] OR Sverige[tw] OR Swedish[tw] OR Svenska[tw] OR Stockholm*[tw] OR Norrland[tw] OR Svealand[tw] OR Mellansverige[tw] OR Smaland[tw] OR Sydsverige[tw] OR Vastverige[tw] OR Orebro[tw] OR Ostergotland*[tw] OR Vastergotland*[tw] OR Skara*[tw] OR Bohus*[tw] OR Dalsland[tw] OR Narke[tw] OR Sodermanland[tw] OR Uppsala[tw] OR Uppland[tw] OR Vastmanland*[tw] OR Jamtland*[tw] OR Harjedalen[tw] OR Vasternorrland*[tw] OR Dalarna[tw] OR Kopparberg[tw] OR 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Valencia[ad] OR Valencian[ad] OR Extremadura[ad] OR Galicia[ad] OR Balears[ad] OR "Balearic Islands"[ad] OR Baleares[ad] OR "La Rioja"[ad] OR "Pais Vasco"[ad] OR "Basque Country"[ad] OR Asturias[ad] OR Murcia[ad] OR Coruna[ad] OR Alava[ad] OR Araba[ad] OR Alaba[ad] OR Alacante[ad] OR Alicante[ad] OR Alacant[ad] OR Almeria[ad] OR Murcia[ad] OR Asturias[ad] OR Avila[ad] OR Badajoz[ad] OR Badajoz[ad] OR Barcelona[ad] OR Burgos[ad] OR Caceres[ad] OR Cadiz[ad] OR Castellon[ad] OR Castello[ad] OR "Ciudad Real"[ad] OR Cordoba[ad] OR Cuenca[ad] OR Eivissa[ad] OR Ibiza[ad] OR Formentera[ad] OR "El Hierro"[ad] OR Fuerteventura[ad] OR Girona[ad] OR Girona[ad] OR Girona[ad] OR "Gran Canaria"[ad] OR Granada[ad] OR Guadalupe[ad] OR Guipuzcoa[ad] OR Gipuzkoa[ad] OR Huelva[ad] OR Huesca[ad] OR Jaen[ad] OR "La Gomera"[ad] OR "La Palma"[ad] OR Lanzarote[ad] OR Leon[ad] OR Lleida[ad] OR Lerida[ad] OR Lugo[ad] OR Malaga[ad] OR Mallorca[ad] OR Majorca[ad] OR Menorca[ad] OR Minorca[ad] OR Murcia[ad] OR Ourense[ad] OR Ourense[ad] OR Palencia[ad] OR Pontevedra[ad] OR Salamanca[ad] OR Segovia[ad] OR Segovia[ad] OR Sevilla[ad] OR Sevilla[ad] OR Soria[ad] OR Tarragona[ad] OR Tenerife[ad] OR Teruel[ad] OR Toledo[ad] OR Valencia[ad] OR Valladolid[ad] OR Vizcaya[ad] OR Biscay[ad] OR Zamora[ad] OR Zaragoza[ad] OR Saragossa[ad] OR Bilbao[ad] OR Bilbao[ad] OR Bilbao[ad] OR Compostela[ad] OR "San Sebastian"[ad] OR Donostia[ad] OR Vitoria[ad] OR Oviedo[ad] OR Pamplona[ad] OR Logrono[ad] OR Gasteiz[ad])) OR (Spain[tw] OR Espana[tw] OR Spanish[tw] OR Espanol*[tw] OR Spaniard*[tw] OR Madrid[tw] OR Andalucia[tw] OR Andalusia[tw] OR Aragon[tw] OR Cantabria[tw] OR Canarias[tw] OR "Canary Islands"[tw] OR "Castile and leon"[tw] OR "Castilla y Leon"[tw] OR "Castile La Mancha"[tw] OR "Castilla La Mancha"[tw] OR Catalonia[tw] OR Ceuta[tw] OR Melilla[tw] OR Navarra[tw] OR Navarra[tw] OR Valencia[tw] OR Valencian[tw] OR Extremadura[tw] OR Galicia[tw] OR Balears[tw] OR "Balearic Islands"[tw] OR Baleares[tw] OR 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Szeged[ad] OR Pecs[ad] OR Gyor[ad] OR Nyiregyhaza[ad] OR Kecskemet[ad] OR Szekesfehervar[ad] OR Szombathely[ad] OR Bekescsaba[ad] OR Eger[ad] OR Tatabanya[ad] OR Salgotarjan[ad] OR Kaposvar[ad] OR Szekszard[ad])) OR (((Greece[ad] OR "Hellenic republic"[ad] OR Greek*[ad] OR Ellada[ad] OR "Elliniki Dimokratia"[ad] OR Hellas[ad] OR Hellenes[ad] OR Attica[ad] OR Attiki[ad] OR Makedonia[ad] OR Macedonia[ad] OR Thraki[ad] OR Thrace[ad] OR Crete[ad] OR Kriti[ad] OR Epirus[ad] OR Ipeiros[ad] OR "Ionia Nisia"[ad] OR "Ionion neson"[ad] OR "Ionian islands"[ad] OR "North aegean"[ad] OR "Aegean islands"[ad] OR "Nisoi Agaioi"[ad] OR "Notio Aigaio"[ad] OR Peloponnesse[ad] OR Peloponnisos[ad] OR "Voreio Aigaio"[ad] OR "South aegean"[ad] OR Thessaly[ad] OR Thessalia[ad] OR Cyclades[ad] OR Kiklades[ad] OR Dodecanese[ad] OR Dodekanisa[ad] OR "Mount athos"[ad] OR "Omicronros Alphathos"[ad] OR Athens[ad] OR Athina[ad] OR Thessaloniki[ad] OR Thessalonica[ad] OR Patras[ad] OR Patra[ad] OR Heraklion[ad] OR Heraciation[ad] OR Iraklion[ad] OR Irakleion[ad] OR Iraklio[ad] OR Larissa[ad] OR Larisa[ad] OR Volos[ad] OR Rhodes[ad] OR Rodos[ad] OR Ioannina[ad] OR Janina[ad] OR Yannena[ad] OR Chania[ad] OR Chalcis[ad] OR Chalkida[ad] OR Alexandroupoli[ad])) OR (Greece[tw] OR "Hellenic republic"[tw] OR Greek*[tw] OR Ellada[tw] OR "Elliniki Dimokratia"[tw] OR Hellas[tw] OR Hellenes[tw] OR Attica[tw] OR Attiki[tw] OR Makedonia[tw] OR Macedonia[tw] OR Thraki[tw] OR Thrace[tw] OR Crete[tw] OR Kriti[tw] OR Epirus[tw] OR Ipeiros[tw] OR "Ionia Nisia"[tw] OR "Ionion neson"[tw] OR "Ionian islands"[tw] OR "North aegean"[tw] OR "Aegean islands"[tw] OR "Nisoi Agaioi"[tw] OR "Notio Aigaio"[tw] OR Peloponnesse[tw] OR Peloponnisos[tw] OR "Voreio Aigaio"[tw] OR "South aegean"[tw] OR Thessaly[tw] OR Thessalia[tw] OR Cyclades[tw] OR Kiklades[tw] OR Dodecanese[tw] OR Dodekanisa[tw] OR "Mount athos"[tw] OR "Omicronros Alphathos"[tw] OR Athens[tw] OR Athina[ad] OR Thessaloniki[ad] OR Thessalonica[ad] OR Patras[ad] OR 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Ruhrgebiet[tw] OR Revier[tw] OR Ruhrpott[tw] OR Pott[tw] OR Ruhr[tw])) OR (((France[ad] OR French*[ad] OR Francais[ad] OR Alsace[ad] OR Aquitaine[ad] OR Auvergne[ad] OR Brittany[ad] OR Bretagne[ad] OR Bourgogne[ad] OR Burgundy[ad] OR "Champagne Ardenne"[ad] OR</p>	

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Search	Query	Items found
	<p>OR Olomouc*[ad] OR Pardubic*[ad] OR Pardubice[ad] OR Plzen*[ad] OR Pilsen[ad] OR Prage[ad] OR Praha[ad] OR Prag[ad] OR Jihomorav*[ad] OR Moravia[ad] OR Moravian[ad] OR Morava[ad] OR Usteck*[ad] OR Usti[ad] OR Vysocina[ad] OR Zlin[ad] OR Zlinsk*[ad] OR "Ceske Budejovice"[ad] OR Budweis[ad] OR Brno[ad] OR Ostrava[ad] OR (((Cyprus[tw] OR Cypriot*[tw] OR Kypros[tw] OR Kibris[tw] OR kypriaki*[tw] OR Nicosia[tw] OR Lefkosa[tw] OR Lefkosia[tw] OR Famagusta[tw] OR Magusa[tw] OR Ammochostos[tw] OR Gazimagusa[tw] OR Kyrenia[tw] OR Girne[tw] OR Keryneia[tw] OR Larnaca[tw] OR Larnaka[tw] OR Limassol[tw] OR Lemesos[tw] OR Limasol[tw] OR Leymosun[tw] OR Pafos[tw] OR Pafos[tw] OR Baf[tw] OR Gazibaf[tw] OR Protaras[tw] OR Pergamos[tw] OR Beyarmudu[tw] OR Morfou[tw] OR Guzelyurt[tw] OR Omorfo[tw] OR Morphou[tw] OR Aradippou[tw])) OR (Cyprus[ad] OR Cypriot*[ad] OR Kypros[ad] OR Kibris[ad] OR kypriaki*[ad] OR Nicosia[ad] OR Lefkosa[ad] OR Lefkosia[ad] OR Famagusta[ad] OR Magusa[ad] OR Ammochostos[ad] OR Gazimagusa[ad] OR Kyrenia[ad] OR Girne[ad] OR Keryneia[ad] OR Larnaca[ad] OR Larnaka[ad] OR Limassol[ad] OR Lemesos[ad] OR Limasol[ad] OR Leymosun[ad] OR Pafos[ad] OR Pafos[ad] OR Baf[ad] OR Gazibaf[ad] OR Protaras[ad] OR Pergamos[ad] OR Beyarmudu[ad] OR Morfou[ad] OR Guzelyurt[ad] OR Omorfo[ad] OR Morphou[ad] OR Aradippou[ad])) OR (((Croatia*[tw] OR Hrvatsk*[tw] OR hrvat[tw] OR Bjelovar[tw] OR "Bjelovarsko bilogorska"[tw] OR "Brod Posavina"[tw] OR "Brodsko posavska"[tw] OR "Dubrovnik Neretva"[tw] OR "dubrovacko neretvanska"[tw] OR Istria[tw] OR Istarska[tw] OR Karlovacka[tw] OR Karlovac[tw] OR "Koprivnicko krizevacka"[tw] OR Koprivnica[tw] OR Krizevci[tw] OR "Krapina Zagorje"[tw] OR "Krapinsko zagorska"[tw] OR "Lika Senj"[tw] OR "Licko senjska"[tw] OR Medimurska[tw] OR Medimurje[tw] OR Osijek[tw] OR Osjecko[tw] OR Baranja[tw] OR "Osjecko baranjska"[tw] OR "Pozega Slavonia"[tw] OR "Pozesko slavonska"[tw] OR "Primorje Gorski Kotar"[tw] OR "Primorsko goranska"[tw] OR "Sibensko kninska"[tw] OR "Sibensko kninske"[tw] OR Sibenik[tw] OR Knin[tw] OR Sisak[tw] OR "Sisacko moslavacka"[tw] OR Moslavina[tw] OR "Splitsko dalmatinska"[tw] OR Split[tw] OR Dalmatia[tw] OR Varazdin[tw] OR Varazdinska[tw] OR "Viroviticko-podravska"[tw] OR Virovitica[tw] OR Podravina[tw] OR "Vukovarsko srijemska"[tw] OR Vukovar[tw] OR Srijem[tw] OR Zadar[tw] OR Zadarska[tw] OR Zagreb[tw] OR Zagrebacka[tw] OR Rijeka[tw] OR "Velika gorica"[tw] OR "Slavonski brod"[tw] OR Pula[tw])) OR (Croatia*[ad] OR Hrvatsk*[ad] OR hrvat[ad] OR Bjelovar[ad] OR "Bjelovarsko bilogorska"[ad] OR "Brod Posavina"[ad] OR "Brodsko posavska"[ad] OR "Dubrovnik Neretva"[ad] OR "dubrovacko neretvanska"[ad] OR Istria[ad] OR Istarska[ad] OR Karlovacka[ad] OR Karlovac[ad] OR "Koprivnicko krizevacka"[ad] OR Koprivnica[ad] OR Krizevci[ad] OR "Krapina Zagorje"[ad] OR "Krapinsko zagorska"[ad] OR "Lika Senj"[ad] OR "Licko senjska"[ad] OR Medimurska[ad] OR Medimurje[ad] OR Osijek[ad] OR Osjecko[ad] OR Baranja[ad] OR "Osjecko baranjska"[ad] OR "Pozega Slavonia"[ad] OR "Pozesko slavonska"[ad] OR "Primorje Gorski Kotar"[ad] OR "Primorsko goranska"[ad] OR "Sibensko kninska"[ad] OR "Sibensko kninske"[ad] OR Sibenik[ad] OR Knin[ad] OR Sisak[ad] OR "Sisacko moslavacka"[ad] OR Moslavina[ad] OR "Splitsko dalmatinska"[ad] OR Split[ad] OR Dalmatia[ad] OR Varazdin[ad] OR Varazdinska[ad] OR "Viroviticko-podravska"[ad] OR Virovitica[ad] OR Podravina[ad] OR "Vukovarsko srijemska"[ad] OR Vukovar[ad] OR Srijem[ad] OR Zadar[ad] OR Zadarska[ad] OR Zagreb[ad] OR Zagrebacka[ad] OR Rijeka[ad] OR "Velika gorica"[ad] OR "Slavonski brod"[ad] OR Pula[ad])) OR (((Bulgaria*[tw] OR Sofia[tw] OR Gabrovo[tw] OR Blagoevgrad[tw] OR "Pirin Macedonia"[tw] OR Burgas[tw] OR Dobrich[tw] OR Haskovo[tw] OR Kardzhali[tw] OR Kurdzhali[tw] OR Kyustendil[tw] OR Lovech[tw] OR Montana[tw] OR Pazardzhik[tw] OR Pernik[tw] OR Pleven[tw] OR Plovdiv[tw] OR Razolevgrad[tw] OR Rousse[tw] OR Shumen[tw] OR Sliven[tw] OR Silistra[tw] OR Smolyan[tw] OR "Stara Zagora"[tw] OR Targovishte[tw] OR Varna[tw] OR Tarnovo[tw] OR Vidin[tw] OR Vratsa[tw] OR Vratza[tw] OR Yambol[tw])) OR (Bulgaria*[ad] OR Sofia[ad] OR Gabrovo[ad] OR Blagoevgrad[ad] OR "Pirin Macedonia"[ad] OR Burgas[ad] OR Dobrich[ad] OR Haskovo[ad] OR Kardzhali[ad] OR Kurdzhali[ad] OR Kyustendil[ad] OR Lovech[ad] OR Montana[ad] OR Pazardzhik[ad] OR Pernik[ad] OR Pleven[ad] OR Plovdiv[ad] OR Razolevgrad[ad] OR Rousse[ad] OR Ruse[ad] OR Shumen[ad] OR Sliven[ad] OR Silistra[ad] OR Smolyan[ad] OR "Stara Zagora"[ad] OR Targovishte[ad] OR Varna[ad] OR Tarnovo[ad] OR Vidin[ad] OR Vratsa[ad] OR Vratza[ad] OR Yambol[ad])) OR (((Belgi*[tw] OR Belge[tw] OR Belgisch[tw] OR Bruxelles[tw] OR Bruxelloise[tw] OR Flemish[tw] OR Flamand[tw] OR Flemisch[tw] OR Flanders[tw] OR Flandern[tw] OR Flandre[tw] OR Vlaanderen[tw] OR Vlaams[tw] OR Flamande[tw] OR Waals[tw] OR Walloon*[tw] OR Wallon*[tw] OR Antwerp[tw] OR Antwerpen[tw] OR Brabant[tw] OR Limbourg[tw] OR Limburg[tw] OR Hainaut[tw] OR Hainaut[tw] OR Henegouwen[tw] OR Hennegau[tw] OR Liege[tw] OR Luik[tw] OR Luttich[tw] OR Namur[tw] OR Namen[tw] OR Westflandern[tw] OR "Waals Brabant"[tw] OR Ghent[tw] OR Gent[tw] OR Gand[tw] OR Charleroi[tw] OR Bruges[tw] OR Brugge[tw] OR Schaarbeek[tw] OR Anderlecht[tw] OR Leuven[tw] OR Louvain[tw] OR Hasselt[tw] OR Mons[tw] OR Wavre[tw] OR Waver[tw])) OR (Belgi*[ad] OR Belge[ad] OR Belgisch[ad] OR Brussel*[ad] OR Bruxelles[ad] OR Bruxelloise[ad] OR Flemish[ad] OR Flamand[ad] OR Flemisch[ad] OR Flanders[ad] OR Flandern[ad] OR Flandre[ad] OR Vlaanderen[ad] OR Vlaams[ad] OR Flamande[ad] OR Waals[ad] OR Walloon*[ad] OR Antwerp*[ad] OR Anvers[ad] OR Ostflandern[ad] OR "Vlaams Brabant"[ad] OR Limbourg[ad] OR Limburg[ad] OR Hainaut[ad] OR Hainaut[ad] OR Henegouwen[ad] OR Hennegau[ad] OR Liege[ad] OR Luik[ad] OR Luttich[ad] OR Namur[ad] OR Namen[ad] OR Westflandern[ad] OR "Waals Brabant"[ad] OR Ghent[ad] OR Gent[ad] OR Gand[ad] OR Charleroi[ad] OR Bruges[ad] OR Brugge[ad] OR Schaarbeek[ad] OR Schaarbeek[ad] OR Anderlecht[ad] OR Leuven[ad] OR Louvain[ad] OR Hasselt[ad] OR Mons[ad] OR Wavre[ad] OR Waver[ad])) OR (((Austria*[tw] OR Vienna[tw] OR Wien[tw] OR Osterreich*[tw] OR Sudosterreich[tw] OR Westosterreich[tw] OR Burgenland[tw] OR Carinthia[tw] OR Karinthia[tw] OR Karnten[tw] OR Oberosterreich[tw] OR Styria[tw] OR Steiermark[tw] OR Salzburg[tw] OR Innsbruck[tw] OR Tyrol[tw] OR Tirol[tw] OR Becs[tw] OR Vorarlberg[tw] OR Bregenz[tw] OR Linz[tw] OR Eisenstadt[tw] OR Saizburg[tw] OR Graz[tw] OR Klagenfurt[tw] OR Polten[tw] OR Villach[tw] OR Wels[tw] OR Dornbirn[tw] OR Feldkirch[tw] OR Steyr[tw])) OR (Austria*[ad] OR Vienna[ad] OR Wien[ad] OR Osterreich*[ad] OR Sudosterreich[ad] OR Westosterreich[ad] OR Niederosterreich[ad] OR Burgenland[ad] OR Carinthia[ad] OR Karnten[ad] OR Oberosterreich[ad] OR Styria[ad] OR Steiermark[ad] OR Salzburg[ad] OR Innsbruck[ad] OR Graz[ad] OR Klagenfurt[ad] OR Polten[ad] OR Villach[ad] OR Wels[ad] OR Dornbirn[ad] OR Feldkirch[ad] OR Steyr[ad])) OR (((((((Iceland[tw] OR Icelandic*[tw] OR islenska*[tw] OR Icelander*[tw] OR islendinga*[tw] OR Reykjavik[tw] OR Reykjavikurborg[tw] OR Hofudborgarsvaedid[tw] OR Sudurnes[tw] OR Vesturland[tw] OR Vestfiridir[tw] OR Westfjords[tw] OR Nordurland[tw] OR Austurland[tw] OR Sudurland[tw] OR Kopavogur[tw] OR Hafnarfjordur[tw])) OR (Iceland[ad] OR Icelandic*[ad] OR islenska*[ad] OR Icelander*[ad] OR islendinga*[ad] OR Reykjavik[ad] OR Reykjavikurborg[ad] OR Hofudborgarsvaedid[ad] OR Sudurnes[ad] OR Vesturland[ad] OR Vestfiridir[ad] OR Westfjords[ad] OR Nordurland[ad] OR Austurland[ad] OR Sudurland[ad] OR Kopavogur[ad] OR Hafnarfjordur[ad])) OR (Switzerland[tw] OR Schweiz[tw] OR Schweizerische[tw] OR Swiss[tw] OR Suisse[tw] OR Aargau[tw] OR Argovia[tw] OR Ausserrhoden[tw] OR "Outer Rhodes"[tw] OR Innerrhoden[tw] OR "Inner Rhodes"[tw] OR Basel[tw] OR Bern[tw] OR Berne[tw] OR Fribourg[tw] OR Freiburg[tw] OR Geneva[tw] OR Geneve[tw] OR Glarus[tw] OR Graubunden[tw] OR Grisons[tw] OR Grigioni[tw] OR jura[tw] OR Lucerne[tw] OR Luzern[tw] OR Neuchate[tw] OR Zurich[tw] OR Uri[tw] AND (canton[tw] OR Kanton[tw])) OR Schweiz[tw] OR Obwalden[tw] OR Nidwalden[tw] OR Zug[tw] OR Solothurn[tw] OR Schaffhausen[tw] OR Thurgau[tw] OR Thurgovia[tw] OR Ticino[tw] OR Tessin[tw] OR Vaud[tw] OR Valais[tw] OR Wallis[tw] OR "St Gallen"[tw] OR Lausanne[tw] OR Winterthur[tw] OR Winterthour[tw] OR Lugano[tw] OR Biel[tw] OR Bienne[tw])) OR (Switzerland[ad] OR Schweiz[ad] OR Schweizerische[ad] OR Suisse[ad] OR Aargau[ad] OR Argovia[ad] OR Ausserrhoden[ad] OR "Outer Rhodes"[ad] OR Innerrhoden[ad] OR "Inner Rhodes"[ad] OR Basel[ad] OR Bern[ad] OR Berne[ad] OR Fribourg[ad] OR Freiburg[ad] OR Geneva[ad] OR Geneve[ad] OR Glarus[ad] OR Graubunden[ad] OR Grisons[ad] OR Grigioni[ad] OR jura[ad] OR Lucerne[ad] OR Luzern[ad] OR Neuchate[ad] OR Zurich[ad] OR Uri[ad] AND (canton[ad] OR Kanton[ad])) OR Schweiz[ad] OR Obwalden[ad] OR Nidwalden[ad] OR Zug[ad] OR Solothurn[ad] OR Schaffhausen[ad] OR Thurgau[ad] OR Thurgovia[ad] OR</p>	

Search	Query	Items found
	Ticino[ad] OR Tessin[ad] OR Vaud[ad] OR Valais[ad] OR Wallis[ad] OR "St Gallen"[ad] OR Lausanne[ad] OR Winterthur[ad] OR Winterthur[ad] OR Lugano[ad] OR Biel[ad] OR Bienne[ad]) OR (Norway[tw] OR Norwegian*[tw] OR Norge[tw] OR Noreg[tw] OR Norgga[tw] OR Ostfold[tw] OR Akershus[tw] OR Oslo[tw] OR Hedmark[tw] OR Oppland[tw] OR Buskerud[tw] OR Vestfold[tw] OR Telemark[tw] OR "Aust Agder"[tw] OR "Vest Agder"[tw] OR Rogaland[tw] OR Hordaland[tw] OR "Sogn og fjordane"[tw] OR "Sogn and fjordane"[tw] OR "sogn fjordane"[tw] OR "More og Romsdal"[tw] OR "More and Romsdal"[tw] OR "More Romsdal"[tw] OR Trondelag[tw] OR Nordland[tw] OR Troms[tw] OR Finnmark[tw] OR Bergen[tw] OR Stavanger[tw] OR Sandnes[tw] OR Trondheim[tw] OR Kristiansand[tw] OR Drammen[tw] OR Fredrikstad[tw] OR Sarpsborg[tw] OR Porsgrunn[tw] OR Skien[tw] OR Tonsberg[tw] OR Alesund[tw]) OR (Norway[ad] OR Norwegian*[ad] OR Norge[ad] OR Noreg[ad] OR Norgga[ad] OR Ostfold[ad] OR Akershus[ad] OR Oslo[ad] OR Hedmark[ad] OR Oppland[ad] OR Buskerud[ad] OR Vestfold[ad] OR Telemark[ad] OR "Aust Agder"[ad] OR "Vest Agder"[ad] OR Rogaland[ad] OR Hordaland[ad] OR "Sogn og fjordane"[ad] OR "Sogn and fjordane"[ad] OR "sogn fjordane"[ad] OR "More og Romsdal"[ad] OR "More and Romsdal"[ad] OR "More Romsdal"[ad] OR Trondelag[ad] OR Nordland[ad] OR Troms[ad] OR Finnmark[ad] OR Bergen[ad] OR Stavanger[ad] OR Sandnes[ad] OR Trondheim[ad] OR Kristiansand[ad] OR Drammen[ad] OR Fredrikstad[ad] OR Sarpsborg[ad] OR Porsgrunn[ad] OR Skien[ad] OR Tonsberg[ad] OR Alesund[ad]) OR (Liechtenstein[tw] OR Vaduz[tw] OR Triesenberg[tw] OR Triesen[tw] OR Schellenberg[tw] OR Schaan[tw] OR Ruggell[tw] OR Planken[tw] OR Mauren[tw] OR Gamprin[tw] OR Eschen[tw] OR Balzers[tw]) OR (Liechtenstein[ad] OR Vaduz[ad] OR Triesenberg[ad] OR Triesen[ad] OR Schellenberg[ad] OR Schaan[ad] OR Ruggell[ad] OR Planken[ad] OR Mauren[ad] OR Gamprin[ad] OR Eschen[ad] OR Balzers[ad]) OR ("European Union"[Mesh] OR "Europe"[MeSH] OR Europa[tw] OR Europe*[tw] OR Scandinavia*[tw] OR Scandinavia*[ad] OR Mediterranean[tw] OR "EEA countries"[tw] OR "EU country"[tw] OR "EU countries"[tw] OR Mediterranean[ad] OR Europe*[ad] OR Baltic[tw] OR Baltic[ad] OR Yugoslavia[tw] OR Jugoslavija[tw] OR Jugoslavija[AD] OR Yugoslavia[ad] OR "EU country"[tw] OR "Eu countries"[tw] OR global*[tw] OR world[tw] OR worldwide[tw])	

5.2 Embase search

Date of the search: 16/03/2015

Language limit: no limits

Date limits: from 2005 to 2015

Number of results: 7801

No.	Query	Results
#9	#1 AND #7 AND [2005–2015]/py	7801
#8	#1 AND #7	12837
#7	#4 OR #5 OR #6	24163
#6	(epidemiolog* NEAR/5 ('hepatitis b' OR 'hepatitis c' OR hepaciviru* OR 'hbv' OR 'hcv' OR hbsag OR 'hbs ag' OR 'australia antigen' OR 'australia antigens')):ti	1146
#5	(prevalence NEAR/5 ('hepatitis b' OR 'hepatitis c' OR hepaciviru* OR 'hbv' OR 'hcv' OR hbsag OR 'hbs ag' OR 'australia antigen' OR 'australia antigens')):ab,ti	10785
#4	#2 AND #3	20368
#3	'hepatitis b'/exp OR 'hepatitis c'/exp OR 'hepatitis b virus'/exp OR 'hepatitis c virus'/exp OR 'hepatitis b':ab,ti OR 'hepatitis c':ab,ti OR hepaciviru*:ab,ti OR 'hbv':ab,ti OR 'hcv':ab,ti OR hbsag:ab,ti OR 'hbs ag':ab,ti OR 'hepatitis b antibody'/exp OR 'hepatitis b surface antigen'/exp OR 'australia antigen':ab,ti OR 'australia antigens':ab,ti OR 'hepatitis c antigen'/exp OR 'hepatitis c antibody'/exp	201216
#2	'prevalence'/exp OR 'seroepidemiology'/exp OR 'disease surveillance'/exp OR 'sero epidemiology':ab,ti OR 'sero epidemiological':ab,ti OR 'sero epidemiologic':ab,ti OR seroepidemiolog*:ab,ti OR surveillance:ti OR serolog*:ti OR serosurvey*:ab,ti OR prevalence*:ab,ti OR 'population surveillance':ab,ti	513612
#1		11070462
	#1.8	11070462
	#1.1 OR #1.3 OR #1.4 OR #1.5 OR #1.6 OR #1.7	
#1.7	'united kingdom':ad OR britain:ad OR british:ad OR (england:ad NOT 'new england':ad) OR english:ad OR scotland:ad OR scottish:ad OR wales:ad OR welsh:ad OR 'northern ireland':ad OR london:ad OR 'east midlands':ad OR 'west midlands':ad OR yorkshire:ad OR 'east anglia':ad OR bedfordshire:ad OR hertfordshire:ad OR essex:ad OR peterborough:ad OR cambridgeshire:ad OR norfolk:ad OR suffolk:ad OR luton:ad OR bedford:ad OR 'southend on sea':ad OR thurrock:ad OR derbyshire:ad OR nottinghamshire:ad OR leicestershire:ad OR rutland:ad OR lincolnshire:ad OR derby:ad OR leicester:ad OR northamptonshire:ad OR nottingham:ad OR 'tyne and wear':ad OR 'tees valley':ad OR 'durham':ad OR darlington:ad OR hartlepool:ad OR 'stockton on tees':ad OR northumberland:ad OR teesside:ad OR sunderland:ad OR cumbria:ad OR cheshire:ad OR manchester:ad OR lancashire:ad OR merseyside:ad OR (blackburn:ad AND darwen:ad) OR blackpool:ad OR chester:ad OR liverpool:ad OR sefton:ad OR warrington:ad OR wirral:ad OR berkshire:ad OR buckinghamshire:ad OR oxfordshire:ad OR hampshire:ad OR 'isle of wight':ad OR kent:ad OR surrey:ad OR sussex:ad OR (brighton:ad AND hove:ad) OR 'milton keynes':ad OR portsmouth:ad OR southampton:ad OR devon:ad OR dorset:ad OR somerset:ad OR gloucestershire:ad OR wiltshire:ad OR bath:ad OR bournemouth:ad OR poole:ad OR bristol:ad OR plymouth:ad OR swindon:ad OR torbay:ad OR herefordshire:ad OR staffordshire:ad OR birmingham:ad OR coventry:ad OR dudley:ad OR sandwell:ad OR shropshire:ad OR solihull:ad OR 'stoke on trent':ad OR telford:ad OR wrekin:ad OR walsall:ad OR warwickshire:ad OR wolverhampton:ad OR worcestershire:ad OR barnsley:ad OR doncaster:ad OR rotherham:ad OR bradford:ad OR calderdale:ad OR kirklees:ad OR kingston:ad OR leeds:ad OR sheffield:ad OR wakefield:ad OR (york:ad NOT 'new york':ad) OR antrim:ad OR ards:ad OR armagh:ad OR ballymena:ad OR ballymoney:ad OR banbridge:ad OR carrickfergus:ad OR castlereagh:ad OR coleraine:ad OR cookstown:ad OR craigavon:ad OR (down:ad AND (district:ad OR council:ad)) OR dungannon:ad OR fermanagh:ad OR larne:ad OR llimavady:ad OR lisburn:ad OR magherafelt:ad OR moyle:ad OR (newry:ad AND mourne:ad) OR newtownabbey:ad OR omagh:ad OR strabane:ad OR londonderry:ad OR tyrone:ad OR belfast:ad OR aberdeen:ad OR aberdeenshire:ad OR angus:ad OR dundee:ad OR (argyll:ad AND bute:ad) OR clackmannanshire:ad OR fife:ad OR	

	<p>ayrshire:ad OR dunbartonshire:ad OR lothian:ad OR renfrewshire:ad OR edinburgh:ad OR falkirk:ad OR glasgow:ad OR highland*:ad OR inverclyde:ad OR midlothian:ad OR moray:ad OR lanarkshire:ad OR (perth:ad AND kinross:ad) OR stirling:ad OR 'orkney islands':ad OR 'eileanan siar':ad OR 'shetland islands':ad OR bridgend:ad OR 'neath port talbot':ad OR cardiff:ad OR (vale:ad AND glamorgan:ad) OR 'central valleys':ad OR conwy:ad OR denbighshire:ad OR flintshire:ad OR wrexham:ad OR 'gwent valleys':ad OR gwynedd:ad OR (isle:ad AND anglesey:ad) OR 'monmouthshire':ad OR 'newport':ad OR powys:ad OR swansea:ad OR ceredigion:ad OR carmarthenshire:ad OR pembrokeshire:ad OR 'merthyr tydfil':ad OR 'rhondda cynon taff':ad OR 'blaenau gwent':ad OR caerphilly:ad OR torfaen:ad OR caithness:ad OR 'sutherland and ross':ad OR cromarty:ad OR teeside:ad OR tyneside:ad OR wearside:ad OR 'west mercia':ad OR avon:ad OR ulster:ad OR derry:ad OR medway:ad OR 'east riding':ad OR 'west riding':ad OR 'lake district':ad OR 'peak district':ad OR cumberland:ad OR dartmoor:ad OR exmoor:ad OR 'united kingdom':ab,ti OR britain:ab,ti OR british:ab,ti OR (england:ab,ti NOT 'new england':ab,ti) OR english:ab,ti OR scotland:ab,ti OR scottish:ab,ti OR wales:ab,ti OR welsh:ab,ti OR 'northern ireland':ab,ti OR london:ab,ti OR 'east midlands':ab,ti OR 'west midlands':ab,ti OR yorkshire:ab,ti OR 'east anglia':ab,ti OR bedfordshire:ab,ti OR hertfordshire:ab,ti OR essex:ab,ti OR peterborough:ab,ti OR cambridgeshire:ab,ti OR norfolk:ab,ti OR suffolk:ab,ti OR luton:ab,ti OR bedford:ab,ti OR 'southend on sea':ab,ti OR thurrock:ab,ti OR derbyshire:ab,ti OR nottinghamshire:ab,ti OR leicestershire:ab,ti OR rutland:ab,ti OR lincolnshire:ab,ti OR derby:ab,ti OR leicester:ab,ti OR northamptonshire:ab,ti OR nottingham:ab,ti OR 'tyne and wear':ab,ti OR 'tees valley':ab,ti OR 'durham':ab,ti OR darlington:ab,ti OR hartlepool:ab,ti OR 'stockton on tees':ab,ti OR northumberland:ab,ti OR teesside:ab,ti OR sunderland:ab,ti OR cumbria:ab,ti OR cheshire:ab,ti OR manchester:ab,ti OR lancashire:ab,ti OR merseyside:ab,ti OR (blackburn:ab,ti AND darwen:ab,ti) OR blackpool:ab,ti OR chester:ab,ti OR liverpool:ab,ti OR sefton:ab,ti OR warrington:ab,ti OR wirral:ab,ti OR berkshire:ab,ti OR buckinghamshire:ab,ti OR oxfordshire:ab,ti OR hampshire:ab,ti OR 'isle of wight':ab,ti OR kent:ab,ti OR surrey:ab,ti OR sussex:ab,ti OR (brighton:ab,ti AND hove:ab,ti) OR 'milton keynes':ab,ti OR portsmouth:ab,ti OR southampton:ab,ti OR devon:ab,ti OR dorset:ab,ti OR somerset:ab,ti OR gloucestershire:ab,ti OR wiltshire:ab,ti OR bath:ab,ti OR bournemouth:ab,ti OR poole:ab,ti OR bristol:ab,ti OR plymouth:ab,ti OR swindon:ab,ti OR torbay:ab,ti OR herefordshire:ab,ti OR staffordshire:ab,ti OR birmingham:ab,ti OR coventry:ab,ti OR dudley:ab,ti OR sandwell:ab,ti OR shropshire:ab,ti OR solihull:ab,ti OR 'stoke on trent':ab,ti OR telford:ab,ti OR wrekin:ab,ti OR walsall:ab,ti OR warwickshire:ab,ti OR wolverhampton:ab,ti OR worcestershire:ab,ti OR barnsley:ab,ti OR doncaster:ab,ti OR rotherham:ab,ti OR bradford:ab,ti OR calderdale:ab,ti OR kirklees:ab,ti OR kingston:ab,ti OR leeds:ab,ti OR sheffield:ab,ti OR wakefield:ab,ti OR (york:ab,ti NOT 'new york':ab,ti) OR antrim:ab,ti OR ards:ab,ti OR armagh:ab,ti OR ballymena:ab,ti OR ballymoney:ab,ti OR banbridge:ab,ti OR carrickfergus:ab,ti OR castlereagh:ab,ti OR coleraine:ab,ti OR cookstown:ab,ti OR craigavon:ab,ti OR (down:ab,ti AND (district:ab,ti OR council:ab,ti)) OR dungannon:ab,ti OR fermagh:ab,ti OR larne:ab,ti OR limavady:ab,ti OR lisburn:ab,ti OR magherafelt:ab,ti OR moyle:ab,ti OR (newry:ab,ti AND mourne:ab,ti) OR newtownabbey:ab,ti OR omagh:ab,ti OR strabane:ab,ti OR londonderry:ab,ti OR tyrone:ab,ti OR belfast:ab,ti OR aberdeen:ab,ti OR aberdeenshire:ab,ti OR angus:ab,ti OR dundee:ab,ti OR (argyll:ab,ti AND bute:ab,ti) OR clackmannanshire:ab,ti OR fife:ab,ti OR ayrshire:ab,ti OR dunbartonshire:ab,ti OR lothian:ab,ti OR renfrewshire:ab,ti OR edinburgh:ab,ti OR falkirk:ab,ti OR glasgow:ab,ti OR highland*:ab,ti OR inverclyde:ab,ti OR midlothian:ab,ti OR moray:ab,ti OR lanarkshire:ab,ti OR (perth:ab,ti AND kinross:ab,ti) OR stirling:ab,ti OR 'orkney islands':ab,ti OR 'eileanan siar':ab,ti OR 'shetland islands':ab,ti OR bridgend:ab,ti OR 'neath port talbot':ab,ti OR cardiff:ab,ti OR (vale:ab,ti AND glamorgan:ab,ti) OR 'central valleys':ab,ti OR conwy:ab,ti OR denbighshire:ab,ti OR flintshire:ab,ti OR wrexham:ab,ti OR 'gwent valleys':ab,ti OR gwynedd:ab,ti OR (isle:ab,ti AND anglesey:ab,ti) OR 'monmouthshire':ab,ti OR 'newport':ab,ti OR powys:ab,ti OR swansea:ab,ti OR ceredigion:ab,ti OR carmarthenshire:ab,ti OR pembrokeshire:ab,ti OR 'merthyr tydfil':ab,ti OR 'rhondda cynon taff':ab,ti OR 'blaenau gwent':ab,ti OR caerphilly:ab,ti OR torfaen:ab,ti OR caithness:ab,ti OR 'sutherland and ross':ab,ti OR cromarty:ab,ti OR teeside:ab,ti OR tyneside:ab,ti OR wearside:ab,ti OR 'west mercia':ab,ti OR avon:ab,ti OR ulster:ab,ti OR derry:ab,ti OR medway:ab,ti OR 'east riding':ab,ti OR 'west riding':ab,ti OR 'lake district':ab,ti OR 'peak district':ab,ti OR cumberland:ab,ti OR dartmoor:ab,ti OR exmoor:ab,ti OR sweden:ad OR sverige:ad OR swedish:ad OR svenska:ad OR stockholm*:ad OR norrland:ad OR svealand:ad OR mellansverige:ad OR smaland:ad OR sydsverige:ad OR vastsverige:ad OR orebro:ad OR ostergotland*:ad OR vastergotland*:ad OR skara*:ad OR bohus*:ad OR dalsland:ad OR narke:ad OR sodermanland:ad OR uppsala:ad OR uppland:ad OR vastmanland*:ad OR jamtland*:ad OR harjedalen:ad OR vasternorrland*:ad OR dalarna:ad OR kopparberg:ad OR gavleborg*:ad OR gastrikland:ad OR halsingland:ad OR varmland*:ad OR gotland*:ad OR oland:ad OR jonkoping*:ad OR kalmar*:ad OR kronoberg*:ad OR blekinge:ad OR skane*:ad OR norrbotten*:ad OR vasterbotten*:ad OR lapland:ad OR angermanland:ad OR medelpad:ad OR halland*:ad OR gotaland*:ad OR gothenburg:ad OR goteborg*:ad OR malmo*:ad OR vasteras:ad OR linkoping:ad OR helsingborg:ad OR halsingborg:ad OR norrkoping:ad OR gavle:ad OR umea:ad OR lulea:ad OR karlstad:ad OR kalmar:ad OR huddinge:ad OR solna:ad OR ostersjo*:ad OR malaren*:ad OR malardalen:ad OR sweden:ab,ti OR sverige:ab,ti OR swedish:ab,ti OR svenska:ab,ti OR stockholm*:ab,ti OR norrland:ab,ti OR svealand:ab,ti OR mellansverige:ab,ti OR smaland:ab,ti OR sydsverige:ab,ti OR vastsverige:ab,ti OR orebro:ab,ti OR ostergotland*:ab,ti OR vastergotland*:ab,ti OR skara*:ab,ti OR bohus*:ab,ti OR dalsland:ab,ti OR narke:ab,ti OR sodermanland:ab,ti OR uppsala:ab,ti OR uppland:ab,ti OR vastmanland*:ab,ti OR jamtland*:ab,ti OR harjedalen:ab,ti OR vasternorrland*:ab,ti OR dalarna:ab,ti OR kopparberg:ab,ti OR gavleborg*:ab,ti OR gastrikland:ab,ti OR halsingland:ab,ti OR varmland*:ab,ti OR gotland*:ab,ti OR oland:ab,ti OR jonkoping*:ab,ti OR kalmar*:ab,ti OR kronoberg*:ab,ti OR blekinge:ab,ti OR skane*:ab,ti OR norrbotten*:ab,ti OR vasterbotten*:ab,ti OR lapland:ab,ti OR angermanland:ab,ti OR medelpad:ab,ti OR halland*:ab,ti OR gotaland*:ab,ti OR gothenburg:ab,ti OR goteborg*:ab,ti OR malmo*:ab,ti OR vasteras:ab,ti OR linkoping:ab,ti OR helsingborg:ab,ti OR halsingborg:ab,ti OR norrkoping:ab,ti OR gavle:ab,ti OR umea:ab,ti OR lulea:ab,ti OR karlstad:ab,ti OR kalmar:ab,ti OR huddinge:ab,ti OR solna:ab,ti OR ostersjo*:ab,ti OR malaren*:ab,ti OR malardalen:ab,ti OR spain:ad OR espana:ad OR spanish:ad OR espanol*:ad OR spaniard*:ad OR madrid:ad OR andalucia:ad OR andalusia:ad OR aragon:ad OR cantabria:ad OR canarias:ad OR 'canary islands':ad OR 'castile and leon':ad OR 'castilla y leon':ad OR 'castile la mancha':ad OR 'castilla la mancha':ad OR cataluna:ad OR catalonia:ad OR ceuta:ad OR melilla:ad OR navarra:ad OR navarre:ad OR valencian:ad OR extremadura:ad OR galicia:ad OR balears:ad OR 'balearic</p>	
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	<p>islands':ad OR balears:ad OR 'la rioja':ad OR 'pais vasco':ad OR 'basque country':ad OR coruna:ad OR alava:ad OR araba:ad OR albacete:ad OR alicante:ad OR alacant:ad OR almeria:ad OR asturias:ad OR avila:ad OR badajoz:ad OR badajos:ad OR barcelona:ad OR burgos:ad OR caceres:ad OR cadiz:ad OR castellon:ad OR castello:ad OR 'ciudad real':ad OR cordoba:ad OR cuenca:ad OR eivissa:ad OR ibiza:ad OR formentera:ad OR 'el hierro':ad OR fuerteventura:ad OR girona:ad OR gerona:ad OR 'gran canaria':ad OR granada:ad OR guadalajara:ad OR guipuzcoa:ad OR gipuzkoa:ad OR huelva:ad OR huesca:ad OR jaen:ad OR 'la gomera':ad OR 'la palma':ad OR lanzarote:ad OR leon:ad OR lleida:ad OR lerida:ad OR lugo:ad OR malaga:ad OR mallorca:ad OR majorca:ad OR menorca:ad OR minorca:ad OR murcia:ad OR ourense:ad OR orense:ad OR palencia:ad OR pontevedra:ad OR salamanca:ad OR segovia:ad OR sevilla:ad OR soria:ad OR tarragona:ad OR tenerife:ad OR teruel:ad OR toledo:ad OR valencia:ad OR valladolid:ad OR vizcaya:ad OR biscay:ad OR zamora:ad OR zaragoza:ad OR saragossa:ad OR bilbao:ad OR bilbo:ad OR compostela:ad OR 'san sebastian':ad OR donostia:ad OR vitoria:ad OR oviedo:ad OR pamplona:ad OR logrono:ad OR gasteiz:ad OR spain:ab,ti OR espana:ab,ti OR spanish:ab,ti OR espanol*:ab,ti OR spaniard*:ab,ti OR madrid:ab,ti OR andalucia:ab,ti OR andalusia:ab,ti OR aragon:ab,ti OR cantabria:ab,ti OR canarias:ab,ti OR 'canary islands':ab,ti OR 'castile and leon':ab,ti OR 'castilla y leon':ab,ti OR 'castile la mancha':ab,ti OR 'castilla la mancha':ab,ti OR cataluna:ab,ti OR catalonia:ab,ti OR ceuta:ab,ti OR melilla:ab,ti OR navarra:ab,ti OR navarre:ab,ti OR valencian:ab,ti OR extremadura:ab,ti OR galicia:ab,ti OR balears:ab,ti OR 'balearic islands':ab,ti OR balears:ab,ti OR 'la rioja':ab,ti OR 'pais vasco':ab,ti OR 'basque country':ab,ti OR coruna:ab,ti OR alava:ab,ti OR araba:ab,ti OR albacete:ab,ti OR alicante:ab,ti OR alacant:ab,ti OR asturias:ab,ti OR avila:ab,ti OR badajoz:ab,ti OR badajos:ab,ti OR barcelona:ab,ti OR burgos:ab,ti OR caceres:ab,ti OR cadiz:ab,ti OR castellon:ab,ti OR castello:ab,ti OR 'ciudad real':ab,ti OR (cordoba:ab,ti NOT argente*:ab,ti) OR cuenca:ab,ti OR eivissa:ab,ti OR ibiza:ab,ti OR formentera:ab,ti OR 'el hierro':ab,ti OR fuerteventura:ab,ti OR girona:ab,ti OR gerona:ab,ti OR 'gran canaria':ab,ti OR granada:ab,ti OR (guadalajara:ab,ti NOT mexic*:ab,ti) OR guipuzcoa:ab,ti OR gipuzkoa:ab,ti OR huelva:ab,ti OR huesca:ab,ti OR jaen:ab,ti OR 'la gomera':ab,ti OR 'la palma':ab,ti OR lanzarote:ab,ti OR leon:ab,ti OR lleida:ab,ti OR lerida:ab,ti OR lugo:ab,ti OR malaga:ab,ti OR mallorca:ab,ti OR majorca:ab,ti OR menorca:ab,ti OR minorca:ab,ti OR murcia:ab,ti OR ourense:ab,ti OR orense:ab,ti OR palencia:ab,ti OR pontevedra:ab,ti OR salamanca:ab,ti OR segovia:ab,ti OR sevilla:ab,ti OR soria:ab,ti OR tarragona:ab,ti OR tenerife:ab,ti OR teruel:ab,ti OR toledo:ab,ti OR valencia:ab,ti OR valladolid:ab,ti OR vizcaya:ab,ti OR biscay:ab,ti OR zamora:ab,ti OR zaragoza:ab,ti OR saragossa:ab,ti OR bilbao:ab,ti OR bilbo:ab,ti OR compostela:ab,ti OR 'san sebastian':ab,ti OR donostia:ab,ti OR vitoria:ab,ti OR oviedo:ab,ti OR pamplona:ab,ti OR logrono:ab,ti OR gasteiz:ab,ti OR slovenia*:ad OR slovenija:ad OR ljubljana:ad OR gorenjska:ad OR carniola:ad OR goriska:ad OR gorizia:ad OR koroska:ad OR carinthia:ad OR 'notranjsko kraska':ab,ti OR 'obalno kraska':ab,ti OR 'coastal krast':ab,ti OR podravska:ad OR pomurska:ad OR savinjska:ad OR spodnjeposavska:ad OR zasavska:ad OR osrednjeslovenska:ad OR maribor:ad OR celje:ad OR kranj:ad OR velenje:ad OR koper:ad OR capodistria:ad OR 'novo mesto':ad OR ptuj:ad OR trbovlje:ad OR kamnik:ad OR murska:ad OR sobota:ad OR 'nova gorica':ad OR slovenia*:ab,ti OR slovenija:ab,ti OR ljubljana:ab,ti OR gorenjska:ab,ti OR carniola:ab,ti OR goriska:ab,ti OR gorizia:ab,ti OR koroska:ab,ti OR carinthia:ab,ti OR 'notranjsko kraska':ab,ti OR 'obalno kraska':ab,ti OR 'coastal krast':ab,ti OR podravska:ab,ti OR pomurska:ab,ti OR savinjska:ab,ti OR spodnjeposavska:ab,ti OR zasavska:ab,ti OR osrednjeslovenska:ab,ti OR maribor:ab,ti OR celje:ab,ti OR kranj:ab,ti OR velenje:ab,ti OR koper:ab,ti OR capodistria:ab,ti OR 'novo mesto':ab,ti OR ptuj:ab,ti OR trbovlje:ab,ti OR kamnik:ab,ti OR murska:ab,ti OR sobota:ab,ti OR 'nova gorica':ab,ti OR slovakia:ab,ti OR slovensk*:ab,ti OR slovak*:ab,ti OR bratislav*:ab,ti OR nitrian*:ab,ti OR nitra:ab,ti OR trencian*:ab,ti OR trencin*:ab,ti OR banskobystri*:ab,ti OR 'banska bystrica':ab,ti OR zilina:ab,ti OR zilin*:ab,ti OR trnava:ab,ti OR trnav*:ab,ti OR presov:ab,ti OR presov*:ab,ti OR kosic*:ab,ti OR (martin:ab,ti AND (city:ab,ti OR svaty:ab,ti)) OR poprad:ab,ti OR slovakia:ad OR slovensk*:ad OR slovak*:ad OR bratislav*:ad OR nitrian*:ad OR nitra:ad OR trencian*:ad OR trencin*:ad OR banskobystri*:ad OR 'banska bystrica':ad OR zilina:ad OR zilin*:ad OR trnava:ad OR trnav*:ad OR presov*:ad OR kosic*:ad OR (martin:ad AND (city:ad OR svaty:ad)) OR poprad:ad</p>	
#1.6	<p>italy:ab,ti OR italia*:ab,ti OR rome:ab,ti OR roma:ab,ti OR abruzzo:ab,ti OR abruzi:ab,ti OR basilicata:ab,ti OR lucania:ab,ti OR calabria:ab,ti OR campania:ab,ti OR 'emilia romagna':ab,ti OR 'friuli venezia giulia':ab,ti OR lazio:ab,ti OR latium:ab,ti OR liguria*:ab,ti OR lombardy:ab,ti OR lombardia:ab,ti OR marche:ab,ti OR marches:ab,ti OR molisano:ab,ti OR molise:ab,ti OR piedmont*:ab,ti OR piemonte:ab,ti OR sardinia:ab,ti OR sardegna:ab,ti OR sicily:ab,ti OR sicilia:ab,ti OR toscana:ab,ti OR tuscany:ab,ti OR trentino:ab,ti OR trento:ab,ti OR umbria:ab,ti OR veneto:ab,ti OR triveneto:ab,ti OR puglia:ab,ti OR apulia:ab,ti OR bolzano:ab,ti OR bozen:ab,ti OR milan:ab,ti OR milano:ab,ti OR naples:ab,ti OR napoli:ab,ti OR turin:ab,ti OR torino:ab,ti OR palermo:ab,ti OR genoa:ab,ti OR genova:ab,ti OR florence:ab,ti OR firenze:ab,ti OR bari:ab,ti OR catania:ab,ti OR venezia:ab,ti OR venice:ab,ti OR padova:ab,ti OR padua:ab,ti OR siena:ab,ti OR bologna:ab,ti OR trieste:ab,ti OR urbino:ab,ti OR aosta:ab,ti OR aoste:ab,ti OR perugia:ab,ti OR brescia:ab,ti OR cagliari:ab,ti OR catanzaro:ab,ti OR 'l aquila':ab,ti OR ancona:ab,ti OR italy:ad OR italia*:ad OR rome:ad OR roma:ad OR abruzzo:ad OR abruzi:ad OR basilicata:ad OR lucania:ad OR calabria:ad OR campania:ad OR 'emilia romagna':ad OR 'friuli venezia giulia':ad OR lazio:ad OR latium:ad OR liguria*:ad OR lombardy:ad OR lombardia:ad OR marche:ad OR marches:ad OR molisano:ad OR molise:ad OR piedmont*:ad OR piemonte:ad OR sardinia:ad OR sardegna:ad OR sicily:ad OR sicilia:ad OR toscana:ad OR tuscany:ad OR trentino:ad OR trento:ad OR umbria:ad OR veneto:ad OR triveneto:ad OR puglia:ad OR apulia:ad OR bolzano:ad OR bozen:ad OR milan:ad OR milano:ad OR naples:ad OR napoli:ad OR turin:ad OR torino:ad OR palermo:ad OR genoa:ad OR genova:ad OR florence:ad OR firenze:ad OR bari:ad OR catania:ad OR venezia:ad OR venice:ad OR padova:ad OR padua:ad OR siena:ad OR bologna:ad OR trieste:ad OR urbino:ad OR aosta:ad OR aoste:ad OR perugia:ad OR brescia:ad OR cagliari:ad OR catanzaro:ad OR 'l aquila':ad OR ancona:ad OR ireland:ab,ti OR eire:ab,ti OR irish*:ab,ti OR dublin:ab,ti OR fingsal:ab,ti OR 'dun laoghaire':ab,ti OR wicklow:ab,ti OR wexford:ab,ti OR carlow:ab,ti OR kildare:ab,ti OR meath:ab,ti OR louth:ab,ti OR monaghan:ab,ti OR cavan:ab,ti OR longford:ab,ti OR westmeath:ab,ti OR offaly:ab,ti OR laois:ab,ti OR kilkenny:ab,ti OR waterford:ab,ti OR cork:ab,ti OR kerry:ab,ti OR limerick:ab,ti OR tipperary:ab,ti OR clare:ab,ti OR galway:ab,ti OR mayo:ab,ti OR roscommon:ab,ti OR sligo:ab,ti OR leitrim:ab,ti OR donegal:ab,ti OR drogheda:ab,ti OR dundalk:ab,ti OR swords:ab,ti OR bray:ab,ti OR navan:ab,ti OR leinster:ab,ti OR connacht:ab,ti OR ireland:ad OR eire:ad OR irish*:ad OR dublin:ad OR fingsal:ad OR 'dun laoghaire':ad OR wicklow:ad OR wexford:ad OR carlow:ad OR kildare:ad OR meath:ad OR louth:ad OR monaghan:ad OR cavan:ad OR longford:ad</p>	

	<p>OR westmeath:ad OR offaly:ad OR laois:ad OR kilkenny:ad OR waterford:ad OR cork:ad OR kerry:ad OR limerick:ad OR tipperary:ad OR clare:ad OR galway:ad OR mayo:ad OR roscommon:ad OR sligo:ad OR leitrim:ad OR donegal:ad OR drogheda:ad OR dundalk:ad OR swords:ad OR bray:ad OR navan:ad OR leinster:ad OR connacht:ad OR hungar*:ab,ti OR budapest:ab,ti OR transdanubia:ab,ti OR magyarorszag:ab,ti OR magyar:ab,ti OR dunantuli:ab,ti OR dunantul:ab,ti OR 'great plain':ab,ti OR 'alfold es eszak':ab,ti OR 'eszak alfold':ab,ti OR 'del alfold':ab,ti OR bacs:ab,ti OR kiskun:ab,ti OR 'northyen alfold':ab,ti OR 'sourthen alfold':ab,ti OR baranya:ab,ti OR bekes:ab,ti OR borsod:ab,ti OR abauj:ab,ti OR zemplen:ab,ti OR fovaros:ab,ti OR csongrad:ab,ti OR fejer:ab,ti OR moson:ab,ti OR sopron:ab,ti OR hajdu:ab,ti OR bihar:ab,ti OR heves:ab,ti OR 'jasz nagykun szolnok':ab,ti OR komarom:ab,ti OR esztergom:ab,ti OR nograd:ab,ti OR pest:ab,ti OR somogy:ab,ti OR szabolcs:ab,ti OR szatmar:ab,ti OR bereg:ab,ti OR tolna:ab,ti OR vas:ab,ti OR veszprem:ab,ti OR zala:ab,ti OR zalaegerszeg:ab,ti OR debrecen:ab,ti OR miskolc:ab,ti OR szeged:ab,ti OR pecs:ab,ti OR gyor:ab,ti OR nyiregyhaza:ab,ti OR kecskemet:ab,ti OR szekesfehervar:ab,ti OR szombathely:ab,ti OR bekescsaba:ab,ti OR eger:ab,ti OR tatabanya:ab,ti OR salgotarjan:ab,ti OR kaposvar:ab,ti OR szekszard:ab,ti OR hungar*:ad OR budapest:ad OR transdanubia:ad OR magyarorszag:ad OR magyar:ab,ti OR dunantuli:ad OR dunantul:ad OR 'great plain':ad OR 'alfold es eszak':ad OR 'eszak alfold':ad OR 'del alfold':ad OR bacs:ab,ti OR kiskun:ab,ti OR 'northyen alfold':ad OR 'sourthen alfold':ad OR baranya:ab,ti OR bekes:ab,ti OR borsod:ab,ti OR abauj:ab,ti OR zemplen:ab,ti OR fovaros:ab,ti OR csongrad:ab,ti OR fejer:ab,ti OR moson:ab,ti OR sopron:ab,ti OR hajdu:ab,ti OR bihar:ab,ti OR heves:ab,ti OR 'jasz nagykun szolnok':ad OR komarom:ab,ti OR esztergom:ab,ti OR nograd:ab,ti OR pest:ab,ti OR somogy:ab,ti OR szabolcs:ab,ti OR szatmar:ab,ti OR bereg:ab,ti OR tolna:ab,ti OR vas:ab,ti OR veszprem:ab,ti OR zala:ab,ti OR zalaegerszeg:ab,ti OR debrecen:ab,ti OR miskolc:ab,ti OR szeged:ab,ti OR pecs:ab,ti OR gyor:ab,ti OR nyiregyhaza:ab,ti OR kecskemet:ab,ti OR szekesfehervar:ab,ti OR szombathely:ab,ti OR bekescsaba:ab,ti OR eger:ab,ti OR tatabanya:ab,ti OR salgotarjan:ab,ti OR kaposvar:ab,ti OR szekszard:ab,ti OR greece:ad OR 'hellenic republic':ad OR greek*:ad OR ellada:ad OR 'elliniki dimokratia':ad OR hellas:ad OR hellenes:ad OR attica:ad OR attiki:ad OR makedonia:ad OR macedonia:ad OR thraki:ad OR thrace:ad OR crete:ad OR kriti:ad OR epirus:ad OR ipeiros:ad OR 'ionia nisia':ad OR 'ionion neson':ad OR 'ionian islands':ad OR 'north aegean':ad OR 'aegean islands':ad OR 'niso agaiou':ad OR 'notio aigaiou':ad OR peloponnese:ad OR peloponnisos:ad OR 'voreio aigaiou':ad OR 'south aegean':ad OR thessaly:ad OR thessalia:ad OR cyclades:ad OR kikalades:ad OR dodecanese:ad OR dodekanisa:ad OR 'mount athos':ad OR 'omiconros alphathos':ad OR athens:ad OR athina:ad OR thessaloniki:ad OR thessalonica:ad OR patras:ad OR patra:ad OR heraklion:ad OR heraclion:ad OR iraklion:ad OR irakleion:ad OR iraklio:ad OR iraklia:ad OR larissa:ad OR volos:ad OR rhodes:ad OR rodos:ad OR ioannina:ad OR janina:ad OR yannena:ad OR chania:ad OR chalcis:ad OR chalkida:ad OR alexandroupoli:ad OR greece:ab,ti OR 'hellenic republic':ab,ti OR greek*:ab,ti OR ellada:ab,ti OR 'elliniki dimokratia':ab,ti OR hellas:ab,ti OR hellenes:ab,ti OR attica:ab,ti OR attiki:ab,ti OR makedonia:ab,ti OR macedonia:ab,ti OR thraki:ab,ti OR thrace:ab,ti OR crete:ab,ti OR kriti:ab,ti OR epirus:ab,ti OR ipeiros:ab,ti OR 'ionia nisia':ab,ti OR 'ionion neson':ab,ti OR 'ionian islands':ab,ti OR 'north aegean':ab,ti OR 'aegean islands':ab,ti OR 'niso agaiou':ab,ti OR 'notio aigaiou':ab,ti OR peloponnese:ab,ti OR peloponnisos:ab,ti OR 'voreio aigaiou':ab,ti OR 'south aegean':ab,ti OR thessaly:ab,ti OR thessalia:ab,ti OR cyclades:ab,ti OR kikalades:ab,ti OR dodecanese:ab,ti OR dodekanisa:ab,ti OR 'mount athos':ab,ti OR 'omiconros alphathos':ab,ti OR athens:ab,ti OR athina:ab,ti OR heraklion:ab,ti OR heraclion:ab,ti OR iraklion:ab,ti OR irakleion:ab,ti OR iraklio:ab,ti OR iraklia:ab,ti OR larissa:ab,ti OR larisa:ab,ti OR volos:ab,ti OR rhodes:ab,ti OR rodos:ab,ti OR ioannina:ab,ti OR janina:ab,ti OR yannena:ab,ti OR chania:ab,ti OR chalcis:ab,ti OR chalkida:ab,ti OR alexandroupoli:ab,ti OR german*:ad OR deutschland:ad OR deutsch*:ad OR bundesrepublik:ad OR westdeutschland:ad OR ostdeutschland:ab,ti OR baden:ab,ti OR wuerttemberg:ab,ti OR wurttemberg:ab,ti OR bayern:ab,ti OR bavaria:ab,ti OR berlin:ab,ti OR brandenburg:ab,ti OR bremen:ab,ti OR hamburg:ab,ti OR hessen:ab,ti OR hesse:ab,ti OR hessia:ab,ti OR mecklenburg:ab,ti OR vorpommern:ab,ti OR pomerania:ab,ti OR niedersachsen:ab,ti OR neddersassen:ab,ti OR saxony:ab,ti OR niederbayern:ab,ti OR 'north rhine':ab,ti OR westphalia:ab,ti OR westfalen:ab,ti OR 'rhineland palatinate':ab,ti OR 'rheinland pfalz':ab,ti OR saarland:ab,ti OR sachsen:ab,ti OR 'schleswig holstein':ab,ti OR thuringia:ab,ti OR thuringen:ab,ti OR thueringen:ab,ti OR freiburg:ab,ti OR karlsruhe:ab,ti OR callsruhe:ab,ti OR stuttgart:ab,ti OR tuingen:ab,ti OR oberbayern:ab,ti OR 'upper palatinate':ab,ti OR oberpfalz:ab,ti OR franken:ab,ti OR franconia:ab,ti OR oberfranken:ab,ti OR mittelfranken:ab,ti OR schwaben:ab,ti OR unterfranken:ab,ti OR swabia:ab,ti OR darmstadt:ab,ti OR giessen:ab,ti OR kassel:ab,ti OR arnsberg:ab,ti OR cologne:ab,ti OR koln:ab,ti OR koeln:ab,ti OR detmold:ab,ti OR dusseldorf:ab,ti OR duesseldorf:ab,ti OR munster:ab,ti OR muenster:ab,ti OR munich:ab,ti OR munchen:ab,ti OR muenchen:ab,ti OR frankfurt:ab,ti OR dortmund:ab,ti OR essen:ab,ti OR nurnberg:ab,ti OR nuernberg:ab,ti OR nuremberg:ab,ti OR hanover:ab,ti OR hannover:ab,ti OR leipzig:ab,ti OR dresden:ab,ti OR ruhrgebiet:ab,ti OR revier:ab,ti OR ruhrpott:ab,ti OR pott:ab,ti OR ruhr:ad OR german*:ab,ti OR deutschland:ab,ti OR deutsch*:ab,ti OR bundesrepublik:ab,ti OR westdeutschland:ab,ti OR ostdeutschland:ab,ti OR baden:ab,ti OR wuerttemberg:ab,ti OR wurttemberg:ab,ti OR bayern:ab,ti OR bavaria:ab,ti OR berlin:ab,ti OR brandenburg:ab,ti OR bremen:ab,ti OR hamburg:ab,ti OR hessen:ab,ti OR hesse:ab,ti OR hessia:ab,ti OR mecklenburg:ab,ti OR vorpommern:ab,ti OR pomerania:ab,ti OR niedersachsen:ab,ti OR neddersassen:ab,ti OR saxony:ab,ti OR niederbayern:ab,ti OR 'north rhine':ab,ti OR westphalia:ab,ti OR westfalen:ab,ti OR 'rhineland palatinate':ab,ti OR 'rheinland pfalz':ab,ti OR saarland:ab,ti OR sachsen:ab,ti OR 'schleswig holstein':ab,ti OR thuringia:ab,ti OR thuringen:ab,ti OR thueringen:ab,ti OR freiburg:ab,ti OR karlsruhe:ab,ti OR callsruhe:ab,ti OR stuttgart:ab,ti OR tuingen:ab,ti OR oberbayern:ab,ti OR 'upper palatinate':ab,ti OR oberpfalz:ab,ti OR franken:ab,ti OR franconia:ab,ti OR oberfranken:ab,ti OR mittelfranken:ab,ti OR schwaben:ab,ti OR unterfranken:ab,ti OR swabia:ab,ti OR darmstadt:ab,ti OR giessen:ab,ti OR kassel:ab,ti OR arnsberg:ab,ti OR cologne:ab,ti OR koln:ab,ti OR koeln:ab,ti OR detmold:ab,ti OR dusseldorf:ab,ti OR duesseldorf:ab,ti OR munster:ab,ti OR muenster:ab,ti OR munich:ab,ti OR munchen:ab,ti OR muenchen:ab,ti OR frankfurt:ab,ti OR dortmund:ab,ti OR essen:ab,ti OR nurnberg:ab,ti OR nuernberg:ab,ti OR nuremberg:ab,ti OR hanover:ab,ti OR hannover:ab,ti OR leipzig:ab,ti OR dresden:ab,ti OR ruhrgebiet:ab,ti OR revier:ab,ti OR ruhrpott:ab,ti OR pott:ab,ti OR ruhr:ab,ti OR france:ad OR french*:ad OR francais:ad OR alsace:ad OR aquitaine:ad OR auvergne:ad OR brittany:ad OR bretagne:ad OR bourgogne:ad OR burgundy:ad OR 'champagne ardenne':ad OR 'franche comte':ad OR 'ile de france':ad OR 'languedoc roussillon':ad OR limousin:ad OR lorraine:ad OR normandie:ad OR normandy:ad OR 'midi pyrenees':ad OR 'nord pas de calais':ad OR picardie:ad OR picardy:ad OR 'poitou charentes':ad OR provence:ad OR 'rhone alpes':ad OR corse:ad OR corsica:ad OR guiana:ad OR guyane:ad OR guadeloupe:ad OR martinique:ad OR</p>	
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	<p>reunion:ad OR mayotte:ad OR ain:ad OR aïsne:ad OR allier:ad OR 'alpes de haute provence':ad OR 'haute alpes':ad OR 'alpes maritimes':ad OR ardeche:ad OR ardennes:ad OR ariège:ad OR aube:ad OR aude:ad OR aveyron:ad OR 'bas rhin':ad OR 'bouches du rhone':ad OR calvados:ad OR cantal:ad OR charente:ad OR cher:ad OR corse:ad OR 'corse du sud':ad OR 'cote d or':ad OR 'cotes d armor':ad OR 'cote d azur':ad OR creuse:ad OR 'deux sevres':ad OR dordogne:ad OR doubs:ad OR drome:ad OR essonne:ad OR eure:ad OR finistere:ad OR gard:ad OR gers:ad OR gironde:ad OR 'haute corse':ad OR 'haute garonne':ad OR 'haute marne':ad OR 'hautes alpes':ad OR 'haute saone':ad OR 'haute savoie':ad OR 'hautes pyrenees':ad OR 'haute vienne':ad OR 'haut rhin':ad OR 'hauts de seine':ad OR herault:ad OR 'ille et vilaine':ad OR indre:ad OR isere:ad OR jura:ad OR landes:ad OR loire:ad OR loiret:ad OR (lot:ad AND (departement:ad OR departement:ad)) OR 'lot et garonne':ad OR 'loir et cher':ad OR lozere:ad OR manche:ad OR marne:ad OR mayenne:ad OR 'meurthe et moselle':ad OR meuse:ad OR morbihan:ad OR moselle:ad OR (nord:ad AND (departement:ad OR departement:ad)) OR nievre:ad OR oise:ad OR orne:ad OR 'pas de calais':ad OR paris:ad OR 'puy de dome':ad OR 'pyrenees atlantiques':ad OR 'pyrenees orientales':ad OR rhone:ad OR sarthe:ad OR savoie:ad OR 'seine et marne':ad OR 'seine maritime':ad OR OR somme:ad OR tarn:ad OR 'territoire de belfort':ad OR 'val de marne':ad OR 'val d oise':ad OR var:ad OR vaucluse:ad OR vendee:ad OR vienne:ad OR vosges:ad OR yonne:ad OR yvelines:ad OR marseille:ad OR lyon:ad OR nice:ad OR nantes:ad OR strasbourg:ad OR montpellier:ad OR bordeaux:ad OR lille:ad OR toulouse:ad OR france:ab,ti OR french*:ab,ti OR francais:ab,ti OR alsace:ab,ti OR aquitaine:ab,ti OR auvergne:ab,ti OR brittany:ab,ti OR bretagne:ab,ti OR bourgogne:ab,ti OR burgundy:ab,ti OR 'champagne ardenne':ab,ti OR 'franche comte':ab,ti OR 'ile de france':ab,ti OR 'languedoc roussillon':ab,ti OR limousin:ab,ti OR lorraine:ab,ti OR normandie:ab,ti OR normandy:ab,ti OR 'midi pyrenees':ab,ti OR 'nord pas de calais':ab,ti OR picardie:ab,ti OR picardy:ab,ti OR 'poitou charentes':ab,ti OR provence:ab,ti OR 'rhone alpes':ab,ti OR corse:ab,ti OR corsica:ab,ti OR guiana:ab,ti OR guyane:ab,ti OR guadeloupe:ab,ti OR martinique:ab,ti OR reunion:ab,ti OR mayotte:ab,ti OR ain:ab,ti OR aïsne:ab,ti OR allier:ab,ti OR 'alpes de haute provence':ab,ti OR 'haute alpes':ab,ti OR 'alpes maritimes':ab,ti OR ardeche:ab,ti OR ardennes:ab,ti OR ariège:ab,ti OR aube:ab,ti OR aude:ab,ti OR aveyron:ab,ti OR 'bas rhin':ab,ti OR 'bouches du rhone':ab,ti OR calvados:ab,ti OR cantal:ab,ti OR charente:ab,ti OR cher:ab,ti OR corse:ab,ti OR 'corse du sud':ab,ti OR 'cote d or':ab,ti OR 'cotes d armor':ab,ti OR 'cote d azur':ab,ti OR creuse:ab,ti OR 'deux sevres':ab,ti OR dordogne:ab,ti OR doubs:ab,ti OR drome:ab,ti OR essonne:ab,ti OR eure:ab,ti OR finistere:ab,ti OR gard:ab,ti OR gers:ab,ti OR gironde:ab,ti OR 'haute corse':ab,ti OR 'haute garonne':ab,ti OR 'haute marne':ab,ti OR 'hautes alpes':ab,ti OR 'haute saone':ab,ti OR 'haute savoie':ab,ti OR 'hautes pyrenees':ab,ti OR 'haute vienne':ab,ti OR 'haut rhin':ab,ti OR 'hauts de seine':ab,ti OR herault:ab,ti OR 'ille et vilaine':ab,ti OR indre:ab,ti OR isere:ab,ti OR jura:ab,ti OR landes:ab,ti OR loire:ab,ti OR loiret:ab,ti OR (lot:ab,ti AND (departement:ab,ti OR departement:ab,ti)) OR 'lot et garonne':ab,ti OR 'loir et cher':ab,ti OR lozere:ab,ti OR manche:ab,ti OR marne:ab,ti OR mayenne:ab,ti OR 'meurthe et moselle':ab,ti OR meuse:ab,ti OR morbihan:ab,ti OR moselle:ab,ti OR (nord:ab,ti AND (departement:ab,ti OR departement:ab,ti)) OR nievre:ab,ti OR oise:ab,ti OR orne:ab,ti OR 'pas de calais':ab,ti OR paris:ab,ti OR 'puy de dome':ab,ti OR 'pyrenees atlantiques':ab,ti OR 'pyrenees orientales':ab,ti OR rhone:ab,ti OR sarthe:ab,ti OR savoie:ab,ti OR 'seine et marne':ab,ti OR 'seine maritime':ab,ti OR somme:ab,ti OR tarn:ab,ti OR 'territoire de belfort':ab,ti OR 'val de marne':ab,ti OR 'val d oise':ab,ti OR var:ab,ti OR vaucluse:ab,ti OR vendee:ab,ti OR vienne:ab,ti OR vosges:ab,ti OR yonne:ab,ti OR yvelines:ab,ti OR marseille:ab,ti OR lyon:ab,ti OR nice:ab,ti OR nantes:ab,ti OR strasbourg:ab,ti OR montpellier:ab,ti OR bordeaux:ab,ti OR lille:ab,ti OR toulouse:ab,ti OR finland:ab,ti OR finnish*:ab,ti OR suomi*:ab,ti OR lapland:ab,ti OR lappi:ab,ti OR lappland:ab,ti OR ostrobothnia:ab,ti OR pohjanmaa:ab,ti OR osterbotten:ab,ti OR kainuu:ab,ti OR kajanaland*:ab,ti OR karelia:ab,ti OR karjala:ab,ti OR karelen:ab,ti OR savonia:ab,ti OR savo:ab,ti OR savolax:ab,ti OR pirkanmaa:ab,ti OR birkaland:ab,ti OR satakunta:ab,ti OR satakunda:ab,ti OR tavastia:ab,ti OR tavastland:ab,ti OR 'pajjat hame':ab,ti OR 'kanta hame':ab,ti OR uusimaa:ab,ti OR nyland:ab,ti OR kymenlaakso:ab,ti OR kymmenedalen:ab,ti OR aland:ab,ti OR ahvenanmaa:ab,ti OR helsinki:ab,ti OR helsingfors:ab,ti OR espoo:ab,ti OR esbo:ab,ti OR tampere:ab,ti OR tammerfors:ab,ti OR vantaa:ab,ti OR vanda:ab,ti OR oulu:ab,ti OR uleaborg:ab,ti OR turku:ab,ti OR abo:ab,ti OR jyvaskyla:ab,ti OR kuopio:ab,ti OR lathi:ab,ti OR lahtis:ab,ti OR kouvola:ab,ti OR finland:ad OR finnish*:ad OR suomi*:ad OR lapland:ad OR lappi:ad OR lappland:ad OR ostrobothnia:ad OR pohjanmaa:ad OR osterbotten:ad OR kainuu:ad OR kajanaland*:ad OR karelia:ad OR karjala:ad OR karelen:ad OR savonia:ad OR savo:ad OR savolax:ad OR pirkanmaa:ad OR birkaland:ad OR satakunta:ad OR satakunda:ad OR tavastia:ad OR tavastland:ad OR 'pajjat hame':ad OR 'kanta hame':ad OR uusimaa:ad OR nyland:ad OR kymenlaakso:ad OR kymmenedalen:ad OR aland:ad OR ahvenanmaa:ad OR helsinki:ad OR helsingfors:ad OR espoo:ad OR esbo:ad OR tampere:ad OR tammerfors:ad OR vantaa:ad OR vanda:ad OR oulu:ad OR uleaborg:ad OR turku:ad OR abo:ad OR jyvaskyla:ad OR kuopio:ad OR lathi:ad OR lahtis:ad OR kouvola:ad OR estonia*:ab,ti OR eesti:ab,ti OR esti:ab,ti OR tallinn:ab,ti OR harju:ab,ti OR harjumaa:ab,ti OR hiiu:ab,ti OR hiiumaa:ab,ti OR 'ida viru':ab,ti OR 'ida virumaa':ab,ti OR jarvamaa:ab,ti OR jarva:ab,ti OR jogevamaa:ab,ti OR jogeva:ab,ti OR laanemaa:ab,ti OR laane:ab,ti OR parnumaa:ab,ti OR polva:ab,ti OR polvamaa:ab,ti OR rapla:ab,ti OR raplamaa:ab,ti OR saare:ab,ti OR saaremaa:ab,ti OR tartu:ab,ti OR tartumaa:ab,ti OR valga:ab,ti OR valgamaa:ab,ti OR valgamaakond:ab,ti OR viljandimaa:ab,ti OR voru:ab,ti OR vorumaa:ab,ti OR narva:ab,ti OR parnu:ab,ti OR 'kohtla jarve':ab,ti OR rakvere:ab,ti OR maardu:ab,ti OR sillamae:ab,ti OR kuressaare:ab,ti OR estonia*:ad OR eesti:ad OR esti:ad OR tallinn:ad OR harju:ad OR harjumaa:ad OR hiiu:ad OR hiiumaa:ad OR 'ida viru':ad OR 'ida virumaa':ad OR jarvamaa:ad OR jarva:ad OR jogevamaa:ad OR jogeva:ad OR laanemaa:ad OR laane:ad OR parnumaa:ad OR polva:ad OR polvamaa:ad OR rapla:ad OR raplamaa:ad OR saare:ad OR saaremaa:ad OR tartu:ad OR tartumaa:ad OR valga:ad OR valgamaa:ad OR valgamaakond:ad OR viljandimaa:ad OR voru:ad OR vorumaa:ad OR narva:ad OR parnu:ad OR 'kohtla jarve':ad OR viljandi:ad OR rakvere:ad OR maardu:ad OR sillamae:ad OR kuressaare:ad</p>	
#1.5	<p>romania:ab,ti OR rumania:ab,ti OR roumania:ab,ti OR romanian:ab,ti OR roman:ab,ti OR bucharest:ab,ti OR Bucuresti:ab,ti OR alba:ab,ti OR brasov:ab,ti OR covasna:ab,ti OR harghita:ab,ti OR mures:ab,ti OR sibiu:ab,ti OR bacau:ab,ti OR botosani:ab,ti OR iasi:ab,ti OR neamt:ab,ti OR suceava:ab,ti OR vaslui:ab,ti OR bihor:ab,ti OR 'bistrita nasaud':ab,ti OR cluj:ab,ti OR maramures:ab,ti OR salaj:ab,ti OR 'satu mare':ab,ti OR arges:ab,ti OR calarasi:ab,ti OR dambovita:ab,ti OR giurgiu:ab,ti OR ialomita:ab,ti OR prahova:ab,ti OR teleorman:ab,ti OR braila:ab,ti OR buzau:ab,ti OR galati:ab,ti OR tulcea:ab,ti OR vrancea:ab,ti OR dolj:ab,ti OR gorj:ab,ti OR mehedinți:ab,ti OR (olt:ab,ti AND (river:ab,ti OR county:ab,ti OR region:ab,ti OR judetul:ab,ti OR raul:ab,ti)) OR valcea:ab,ti OR vilcea:ab,ti OR arad:ab,ti OR 'caras-severin':ab,ti OR</p>	

	<p>hunedoara:ab,ti OR timis:ab,ti OR ilfov:ab,ti OR timisoara:ab,ti OR constanta:ab,ti OR craiova:ab,ti OR ploiesti:ab,ti OR oradea:ab,ti OR 'cluj-napoca':ab,ti OR deva:ab,ti OR romania:ad OR rumania:ad OR roumania:ad OR romanian:ad OR roman:ad OR bucharest:ad OR Bucuresti:ad OR alba:ad OR brasov:ad OR covasna:ad OR harghita:ad OR mures:ad OR sibiu:ad OR bacau:ad OR botosani:ad OR iasi:ad OR neamt:ad OR suceava:ad OR vaslui:ad OR bihor:ad OR 'bistrita nasaud':ad OR cluj:ad OR maramures:ad OR salaj:ad OR 'satu mare':ad OR arges:ad OR calarasi:ad OR dambovita:ad OR giurgiu:ad OR ialomita:ad OR prahova:ad OR teleorman:ad OR braila:ad OR buzau:ad OR galati:ad OR tulcea:ad OR vrancea:ad OR dolj:ad OR gorj:ad OR mehedinti:ad OR (olt:ad AND (river:ad OR county:ad OR region:ad OR judetul:ad OR raul:ad)) OR valcea:ad OR vilcea:ad OR arad:ad OR 'caras-severin':ad OR hunedoara:ad OR timis:ad OR ilfov:ad OR timisoara:ad OR constanta:ad OR craiova:ad OR ploiesti:ad OR oradea:ad OR 'cluj-napoca':ad OR deva:ad OR portugal:ab,ti OR portugues*:ab,ti OR lisboa:ab,ti OR lisbon:ab,ti OR leira:ab,ti OR santarem:ab,ti OR beja:ab,ti OR faro:ab,ti OR evora:ab,ti OR portalegre:ab,ti OR 'castelo branco':ab,ti OR guarda:ab,ti OR aveiro:ab,ti OR viseu:ab,ti OR braganca:ab,ti OR 'vila real':ab,ti OR 'viana do castelo':ab,ti OR alentejo:ab,ti OR azores:ab,ti OR acores:ab,ti OR madeira:ab,ti OR 'os montes':ab,ti OR (ave:ab,ti AND (community:ab,ti OR intermunicipal:ab,ti OR comunidade:ab,ti)) OR mondego:ab,ti OR vouga:ab,ti OR beira:ab,ti OR cavado:ab,ti OR lafoes:ab,ti OR douro:ab,ti OR porto:ab,ti OR tejo:ab,ti OR minho:ab,ti OR setubal:ab,ti OR pinhal:ab,ti OR 'serra da estrela':ab,ti OR tamega:ab,ti OR algarve:ab,ti OR gaia:ab,ti OR amadora:ab,ti OR braga:ab,ti OR (agualva:ab,ti AND cacem:ab,ti) OR funchal:ab,ti OR coimbra:ab,ti OR almada:ab,ti OR portugal:ad OR portugues*:ad OR lisboa:ad OR lisbon:ad OR leira:ad OR santarem:ad OR beja:ad OR faro:ad OR evora:ad OR portalegre:ad OR 'castelo branco':ad OR guarda:ad OR aveiro:ad OR viseu:ad OR braganca:ad OR 'vila real':ad OR 'viana do castelo':ad OR alentejo:ad OR azores:ad OR acores:ad OR madeira:ad OR 'os montes':ad OR (ave:ad AND (community:ad OR intermunicipal:ad OR comunidade:ad)) OR mondego:ad OR vouga:ad OR beira:ad OR cavado:ad OR lafoes:ad OR douro:ad OR porto:ad OR tejo:ad OR minho:ad OR setubal:ad OR pinhal:ad OR 'serra da estrela':ad OR tamega:ad OR algarve:ad OR gaia:ad OR amadora:ad OR braga:ad OR (agualva:ad AND cacem:ad) OR funchal:ad OR coimbra:ad OR almada:ad OR poland:ad OR polska:ad OR polish:ad OR polski:ad OR pole:ad OR poles:ad OR polak:ad OR polka:ad OR polacy:ad OR warsaw:ad OR warszawa:ad OR wielkopolskie:ad OR pomerania*:ad OR pomorskie:ad OR kuyavian:ad OR kujawsko:ad OR malopolskie:ad OR lodz:ad OR lodzkie:ad OR silesia*:ad OR dolnoslaskie:ad OR lublin:ad OR lubelskie:ad OR lubus:ad OR lubusz:ad OR lubuskie:ad OR masovia:ad OR mazowske:ad OR masovian:ad OR mazowieckie:ad OR opole:ad OR opolskie:ad OR podlaskie:ad OR podlachia:ad OR podlasie:ad OR subcarpathian*:ad OR carpathian*:ad OR podkarpackie:ad OR swietokrzyskie:ad OR slaskie:ad OR slask:ad OR 'varmia mazuria':ad OR 'varmian mazurian':ad OR 'varmia masuria':ad OR 'varmian masurian':ad OR 'warmia mazury':ad OR 'warmisko mazurskie':ad OR zachodniopomorskie:ad OR krakow:ad OR cracow:ad OR wroclaw:ad OR poznan:ad OR gdansk:ad OR szczecin:ad OR bydgoszcz:ad OR katowice:ad OR bialystok:ad OR olsztyn:ad OR kielce:ad OR 'zielona gora':ad OR torun:ad OR 'gorzow wielkopolski':ad OR poland:ab,ti OR polska:ab,ti OR polish:ab,ti OR polski:ab,ti OR pole:ab,ti OR poles:ab,ti OR polak:ab,ti OR polka:ab,ti OR polacy:ab,ti OR warsaw:ab,ti OR warszawa:ab,ti OR wielkopolskie:ab,ti OR pomerania*:ab,ti OR pomorskie:ab,ti OR kuyavian:ab,ti OR kujawsko:ab,ti OR malopolskie:ab,ti OR lodz:ab,ti OR lodzkie:ab,ti OR silesia*:ab,ti OR dolnoslaskie:ab,ti OR lublin:ab,ti OR lubelskie:ab,ti OR lubus:ab,ti OR lubusz:ab,ti OR lubuskie:ab,ti OR masovia:ab,ti OR mazowske:ab,ti OR masovian:ab,ti OR mazowieckie:ab,ti OR opole:ab,ti OR opolskie:ab,ti OR podlaskie:ab,ti OR podlachia:ab,ti OR podlasie:ab,ti OR subcarpathian*:ab,ti OR carpathian*:ab,ti OR podkarpackie:ab,ti OR swietokrzyskie:ab,ti OR slaskie:ab,ti OR slask:ab,ti OR 'varmia mazuria':ab,ti OR 'varmian mazurian':ab,ti OR 'varmia masuria':ab,ti OR 'varmian masurian':ab,ti OR 'warmia mazury':ab,ti OR 'warmisko mazurskie':ab,ti OR zachodniopomorskie:ab,ti OR krakow:ab,ti OR cracow:ab,ti OR wroclaw:ab,ti OR poznan:ab,ti OR gdansk:ab,ti OR szczecin:ab,ti OR bydgoszcz:ab,ti OR katowice:ab,ti OR bialystok:ab,ti OR olsztyn:ab,ti OR kielce:ab,ti OR 'zielona gora':ab,ti OR torun:ab,ti OR 'gorzow wielkopolski':ab,ti OR netherlands:ad OR nederl*:ad OR dutch*:ad OR amsterdam:ad OR drenthe:ad OR flevoland:ad OR friesland:ad OR fryslan:ad OR gelderland:ad OR guelders:ad OR groningen:ad OR limburg:ad OR 'north brabant':ad OR 'noord brabant':ad OR holland:ad OR overijssel:ad OR utrecht:ad OR zeeland:ad OR rotterdam:ad OR hague:ad OR eindhoven:ad OR tilburg:ad OR almere:ad OR breda:ad OR nijmegen:ad OR nimeguen:ad OR netherlands:ab,ti OR nederland*:ab,ti OR dutch*:ab,ti OR amsterdam:ab,ti OR drenthe:ab,ti OR flevoland:ab,ti OR friesland:ab,ti OR fryslan:ab,ti OR gelderland:ab,ti OR guelders:ab,ti OR groningen:ab,ti OR limburg:ab,ti OR 'north brabant':ab,ti OR 'noord brabant':ab,ti OR holland:ab,ti OR overijssel:ab,ti OR utrecht:ab,ti OR zeeland:ab,ti OR almere:ab,ti OR breda:ab,ti OR nijmegen:ab,ti OR nimeguen:ab,ti OR malta:ab,ti OR maltese:ab,ti OR valletta:ab,ti OR gozo:ab,ti OR ghawdex:ab,ti OR malta:ad OR maltese:ad OR valletta:ad OR gozo:ad OR ghawdex:ad OR luxembourg*:ab,ti OR luxemburg:ab,ti OR letzebuerg:ab,ti OR diekirch:ab,ti OR grevenmacher:ab,ti OR luxembourg*:ad OR luxemburg:ad OR letzebuerg:ad OR diekirch:ad OR grevenmacher:ad OR lithuania*:ab,ti OR 'lietuvos respublika':ab,ti OR lietuva:ab,ti OR lietuviu:ab,ti OR vilnius:ab,ti OR vilniaus:ab,ti OR kaunas:ab,ti OR kauno:ab,ti OR klaipeda:ab,ti OR klaipedos:ab,ti OR panevezys:ab,ti OR panevezio:ab,ti OR siauliai:ab,ti OR siauliu:ab,ti OR alytus:ab,ti OR alytaus:ab,ti OR taurages:ab,ti OR taurage:ab,ti OR marijampoles:ab,ti OR marijampole:ab,ti OR telsiu:ab,ti OR telsiai:ab,ti OR utenos:ab,ti OR utena:ab,ti OR mazeikiai:ab,ti OR jonava:ab,ti OR mazeikiu:ab,ti OR jonavos:ab,ti OR lithuania*:ad OR 'lietuvos respublika':ad OR lietuva:ad OR lietuviu:ad OR vilnius:ad OR vilniaus:ad OR kaunas:ad OR kauno:ad OR klaipeda:ad OR klaipedos:ad OR panevezys:ad OR panevezio:ad OR siauliai:ad OR siauliu:ad OR alytus:ad OR alytaus:ad OR taurages:ad OR taurage:ad OR marijampoles:ad OR marijampole:ad OR telsiu:ad OR telsiai:ad OR utenos:ad OR utena:ad OR mazeikiai:ad OR jonava:ad OR mazeikiu:ad OR jonavos:ad OR latvi*:ab,ti OR latvija*:ab,ti OR riga:ab,ti OR courland:ab,ti OR kurzeme:ab,ti OR kurland:ab,ti OR latgale:ab,ti OR lettgallia:ab,ti OR latgola:ab,ti OR vidzeme:ab,ti OR vidumo:ab,ti OR semigallia:ab,ti OR semigalia:ab,ti OR zemgale:ab,ti OR pieriga:ab,ti OR daugavpils:ab,ti OR dinaburg:ab,ti OR liepaja:ab,ti OR libau:ab,ti OR jelgava:ab,ti OR jurmala:ab,ti OR jekabpils:ab,ti OR jakobstadt:ab,ti OR rezekne:ab,ti OR rezne:ab,ti OR rositten:ab,ti OR valmiera:ab,ti OR wolmar:ab,ti OR ventspils:ab,ti OR windau:ab,ti OR latvi*:ad OR latvija*:ad OR riga:ad OR courland:ad OR kurzeme:ad OR kurland:ad OR latgale:ad OR lettgallia:ad OR latgola:ad OR vidzeme:ad OR vidumo:ad OR semigallia:ad OR semigalia:ad OR zemgale:ad OR pieriga:ad OR daugavpils:ad OR dinaburg:ad OR liepaja:ad OR libau:ad OR jelgava:ad OR jurmala:ad OR jekabpils:ad OR jakobstadt:ad OR rezekne:ad OR rezne:ad OR rositten:ad OR valmiera:ad OR</p>	
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	wolmar:ad OR ventspils:ad OR windau:ad	
#1.4	denmark:ab,ti OR danish*:ab,ti OR danmark:ab,ti OR dansk*:ab,ti OR hovedstaden:ab,ti OR midtjylland:ab,ti OR sjælland:ab,ti OR sealand:ab,ti OR syddanmark:ab,ti OR jutland:ab,ti OR jylland:ab,ti OR nordjylland:ab,ti OR sonderjyllands:ab,ti OR 'zealand region':ab,ti OR 'region zealand':ab,ti OR hillerod:ab,ti OR viborg:ab,ti OR aalborg:ab,ti OR alborg:ab,ti OR soro:ab,ti OR vejle:ab,ti OR copenhagen:ab,ti OR københavn:ab,ti OR arhus:ab,ti OR aarhus:ab,ti OR roskilde:ab,ti OR odense:ab,ti OR frederiksberg:ab,ti OR esbjerg:ab,ti OR gentofte:ab,ti OR gladsaxe:ab,ti OR randers:ab,ti OR kolding:ab,ti OR danmark:ad OR danish*:ad OR danmark:ad OR dansk*:ad OR hovedstaden:ad OR midtjylland:ad OR sjælland:ad OR sealand:ad OR syddanmark:ad OR jutland:ad OR jylland:ad OR nordjylland:ad OR sonderjyllands:ad OR 'zealand region':ad OR 'region zealand':ad OR hillerod:ad OR viborg:ad OR aalborg:ad OR alborg:ad OR soro:ad OR vejle:ad OR copenhagen:ad OR københavn:ad OR arhus:ad OR aarhus:ad OR roskilde:ad OR odense:ad OR frederiksberg:ad OR esbjerg:ad OR gentofte:ad OR gladsaxe:ad OR randers:ad OR kolding:ad OR czech*:ab,ti OR cesk*:ab,ti OR stredoces*:ab,ti OR jihoces*:ab,ti OR bohemia:ab,ti OR 'bohemian region':ab,ti OR kralovehradec*:ab,ti OR 'hradec kralove':ab,ti OR karlovars*:ab,ti OR 'karlovy vary':ab,ti OR liberec*:ab,ti OR moravskoslezsk*:ab,ti OR 'moravian silesian':ab,ti OR olomouc*:ab,ti OR pardubic*:ab,ti OR plzen*:ab,ti OR pilsen:ab,ti OR prage:ab,ti OR praha:ab,ti OR prag:ab,ti OR jihomorav*:ab,ti OR moravia:ab,ti OR moravian:ab,ti OR morava:ab,ti OR uesteck*:ab,ti OR uesti:ab,ti OR vysocina:ab,ti OR zlin:ab,ti OR zlinsk*:ab,ti OR 'ceske budejovice':ab,ti OR budweis:ab,ti OR brno:ab,ti OR ostrava:ab,ti OR czech*:ad OR cesk*:ad OR stredoces*:ad OR jihoce*:ad OR bohemia:ad OR 'bohemian region':ad OR kralovehradec*:ad OR 'hradec kralove':ad OR karlovars*:ad OR 'karlovy vary':ad OR liberec*:ad OR moravskoslezsk*:ad OR 'moravian silesian':ad OR olomouc*:ad OR pardubic*:ad OR pardubice:ad OR plzen*:ad OR pilsen:ad OR prage:ad OR praha:ad OR prag:ad OR jihomorav*:ad OR moravia:ad OR moravian:ad OR morava:ad OR uesteck*:ad OR uesti:ad OR vysocina:ad OR zlin:ad OR zlinsk*:ad OR 'ceske budejovice':ad OR budweis:ad OR brno:ad OR ostrava:ad OR cyprus:ab,ti OR cyprriot*:ab,ti OR kypros:ab,ti OR kibris:ab,ti OR kypriaki*:ab,ti OR nicosia:ab,ti OR lefkosa:ab,ti OR lefkosia:ab,ti OR famagusta:ab,ti OR magusa:ab,ti OR ammochostos:ab,ti OR gazimagusa:ab,ti OR kyrenia:ab,ti OR girne:ab,ti OR kerynea:ab,ti OR larnaca:ab,ti OR larnaka:ab,ti OR limassol:ab,ti OR lemosos:ab,ti OR limasol:ab,ti OR leymosun:ab,ti OR paphos:ab,ti OR pafos:ab,ti OR baf:ab,ti OR gazibaf:ab,ti OR protaras:ab,ti OR pergamos:ab,ti OR beyarmudu:ab,ti OR morfou:ab,ti OR guzelyurt:ab,ti OR omorfo:ab,ti OR morphou:ab,ti OR aradippou:ab,ti OR cyprus:ad OR cyprriot*:ad OR kypros:ad OR kibris:ad OR kypriaki*:ad OR nicosia:ad OR lefkosa:ad OR lefkosia:ad OR famagusta:ad OR magusa:ad OR ammochostos:ad OR gazimagusa:ad OR kyrenia:ad OR girne:ad OR kerynea:ad OR larnaca:ad OR larnaka:ad OR limassol:ad OR lemosos:ad OR limasol:ad OR leymosun:ad OR paphos:ad OR pafos:ad OR baf:ad OR gazibaf:ad OR protaras:ad OR pergamos:ad OR beyarmudu:ad OR morfou:ad OR guzelyurt:ad OR omorfo:ad OR morphou:ad OR aradippou:ad OR croatia*:ab,ti OR hrvatsk*:ab,ti OR hrvat:ab,ti OR bjelovar:ab,ti OR 'bjelovarsko bilogorska':ab,ti OR 'brod posavina':ab,ti OR 'brodsko posavska':ab,ti OR 'dubrovnik neretva':ab,ti OR 'dubrovačko neretvanska':ab,ti OR istria:ab,ti OR istarska:ab,ti OR karlovačka:ab,ti OR karlovac:ab,ti OR 'kopriivnicko krizevačka':ab,ti OR kopriivnica:ab,ti OR krizevci:ab,ti OR 'krapina zagorje':ab,ti OR 'krapinsko zagorska':ab,ti OR 'lika senj':ab,ti OR 'licko senjska':ab,ti OR medimurska:ab,ti OR medimurje:ab,ti OR osijek:ab,ti OR osjecko:ab,ti OR baranja:ab,ti OR 'osječko baranjska':ab,ti OR 'požega slavonska':ab,ti OR 'požeško slavonska':ab,ti OR 'primorje gorski kotar':ab,ti OR 'primorsko goranska':ab,ti OR 'sibensko kninska':ab,ti OR 'sibensko kninske':ab,ti OR sibenik:ab,ti OR knin:ab,ti OR sisak:ab,ti OR 'sisacko moslavačka':ab,ti OR moslavina:ab,ti OR 'splitsko dalmatinska':ab,ti OR split:ab,ti OR dalmatia:ab,ti OR varazdin:ab,ti OR varazdinska:ab,ti OR 'virovitičko-podravska':ab,ti OR virovitica:ab,ti OR podravina:ab,ti OR 'vukovarsko srijemska':ab,ti OR vukovar:ab,ti OR srijem:ab,ti OR zadar:ab,ti OR zadarska:ab,ti OR zagreb:ab,ti OR zagrebacka:ab,ti OR rijeka:ab,ti OR 'velika gorica':ab,ti OR 'slavonski brod':ab,ti OR pula:ab,ti OR croatia*:ad OR hrvatsk*:ad OR hrvat:ad OR bjelovar:ad OR 'bjelovarsko bilogorska':ad OR 'brod posavina':ad OR 'brodsko posavska':ad OR 'dubrovnik neretva':ad OR 'dubrovačko neretvanska':ad OR istria:ad OR istarska:ad OR karlovačka:ad OR karlovac:ad OR 'kopriivnicko krizevačka':ad OR kopriivnica:ad OR krizevci:ad OR 'krapina zagorje':ad OR 'krapinsko zagorska':ad OR 'lika senj':ad OR 'licko senjska':ad OR medimurska:ad OR medimurje:ad OR osijek:ad OR osjecko:ad OR baranja:ad OR 'osječko baranjska':ad OR 'požega slavonska':ad OR 'požeško slavonska':ad OR 'primorje gorski kotar':ad OR 'primorsko goranska':ad OR 'sibensko kninska':ad OR 'sibensko kninske':ad OR sibenik:ad OR knin:ad OR sisak:ad OR 'sisacko moslavačka':ad OR moslavina:ad OR 'splitsko dalmatinska':ad OR split:ad OR dalmatia:ad OR varazdin:ad OR varazdinska:ad OR 'virovitičko-podravska':ad OR virovitica:ad OR podravina:ad OR 'vukovarsko srijemska':ad OR vukovar:ad OR srijem:ad OR zadar:ad OR zadarska:ad OR zagreb:ad OR zagrebacka:ad OR rijeka:ad OR 'velika gorica':ad OR 'slavonski brod':ad OR pula:ad OR bulgaria*:ab,ti OR sofia:ab,ti OR gabrovo:ab,ti OR blagoevgrad:ab,ti OR 'pirin macedonia':ab,ti OR burgas:ab,ti OR dobrich:ab,ti OR haskovo:ab,ti OR kardzhali:ab,ti OR kurdzhali:ab,ti OR kyustendil:ab,ti OR lovech:ab,ti OR montana:ab,ti OR pazardzhik:ab,ti OR pernik:ab,ti OR pleven:ab,ti OR plovdiv:ab,ti OR razgrad:ab,ti OR Rousse:ab,ti OR ruse:ab,ti OR shumen:ab,ti OR sliven:ab,ti OR silistra:ab,ti OR smolyan:ab,ti OR 'stara zagora':ab,ti OR targovishte:ab,ti OR varna:ab,ti OR tarnovo:ab,ti OR vidin:ab,ti OR vratsa:ab,ti OR vrata:ab,ti OR yambol:ab,ti OR bulgaria*:ad OR sofia:ad OR gabrovo:ad OR blagoevgrad:ad OR 'pirin macedonia':ad OR burgas:ad OR dobrich:ad OR haskovo:ad OR kardzhali:ad OR kurdzhali:ad OR kyustendil:ad OR lovech:ad OR montana:ad OR pazardzhik:ad OR pernik:ad OR pleven:ad OR plovdiv:ad OR razgrad:ad OR Rousse:ad OR ruse:ad OR shumen:ad OR sliven:ad OR silistra:ad OR smolyan:ad OR 'stara zagora':ad OR targovishte:ad OR varna:ad OR tarnovo:ad OR vidin:ad OR vratsa:ad OR vrata:ad OR yambol:ad OR belgi*:ab,ti OR belge:ab,ti OR belgisch:ab,ti OR brussel*:ab,ti OR bruxelles:ab,ti OR bruxelloise:ab,ti OR flemish:ab,ti OR flamand:ab,ti OR flemisch:ab,ti OR flanders:ab,ti OR flandern:ab,ti OR flamandre:ab,ti OR vlaanderen:ab,ti OR vlaams:ab,ti OR flamande:ab,ti OR waals:ab,ti OR walloon*:ab,ti OR wallon*:ab,ti OR antwerp*:ab,ti OR anvers:ab,ti OR ostflandern:ab,ti OR 'vlaams brabant':ab,ti OR limburg:ab,ti OR limburg:ab,ti OR hainaut:ab,ti OR hainaut:ab,ti OR henegouwen:ab,ti OR hennegau:ab,ti OR liege:ab,ti OR luik:ab,ti OR luttich:ab,ti OR namur:ab,ti OR namen:ab,ti OR westflandern:ab,ti OR 'waals brabant':ab,ti OR ghent:ab,ti OR gent:ab,ti OR gand:ab,ti OR charleroi:ab,ti OR bruges:ab,ti OR brugge:ab,ti OR schaarbeek:ab,ti OR schaarbeek:ab,ti OR anderlecht:ab,ti OR leuven:ab,ti OR louvain:ab,ti OR hasselt:ab,ti OR mons:ab,ti OR wavre:ab,ti OR waver:ab,ti OR belgi*:ad OR belge:ad OR belgisch:ad OR brussel*:ad OR bruxelles:ad OR bruxelloise:ad OR flemish:ad OR flamand:ad OR flemisch:ad OR flanders:ad OR flandern:ad OR flamandre:ad OR vlaanderen:ad OR	

	<p>vlaams:ad OR flamande:ad OR waals:ad OR walloon*:ad OR wallon*:ad OR antwerp*:ad OR anvers:ad OR ostflandern:ad OR 'vlaams brabant':ad OR limburg:ad OR limburg:ad OR hainaut:ad OR hainaut:ad OR henegouwen:ad OR hennegau:ad OR liege:ad OR luik:ad OR luttich:ad OR namur:ad OR namen:ad OR westflandern:ad OR 'waals brabant':ad OR ghent:ad OR gent:ad OR gand:ad OR charleroi:ad OR bruges:ad OR brugge:ad OR schaarbeek:ad OR schaarbeek:ad OR anderlecht:ad OR leuven:ad OR louvain:ad OR hasselt:ad OR mons:ad OR waver:ad OR waver:ad OR austria*:ab,ti OR vienna:ab,ti OR wien:ab,ti OR osterreich*:ab,ti OR sudosterreich:ab,ti OR westosterreich:ab,ti OR niederosterreich:ab,ti OR burgenland:ab,ti OR carinthia:ab,ti OR karinthia:ab,ti OR karnten:ab,ti OR oberosterreich:ab,ti OR styria:ab,ti OR steiermark:ab,ti OR salzburg:ab,ti OR saizburg:ab,ti OR tyrol:ab,ti OR tirol:ab,ti OR becs:ab,ti OR vorarlberg:ab,ti OR bregenz:ab,ti OR linz:ab,ti OR eisenstadt:ab,ti OR innsbruck:ab,ti OR graz:ab,ti OR klagenfurt:ab,ti OR polten:ab,ti OR villach:ab,ti OR wels:ab,ti OR dornbirn:ab,ti OR feldkirch:ab,ti OR steyr:ab,ti OR austria*:ad OR vienna:ad OR wien:ad OR osterreich*:ad OR sudosterreich:ad OR westosterreich:ad OR niederosterreich:ad OR burgenland:ad OR carinthia:ad OR karnten:ad OR oberosterreich:ad OR styria:ad OR steiermark:ad OR salzburg:ad OR saizburg:ad OR tyrol:ad OR tirol:ad OR becs:ad OR vorarlberg:ad OR bregenz:ad OR linz:ad OR eisenstadt:ad OR innsbruck:ad OR graz:ad OR klagenfurt:ad OR polten:ad OR villach:ad OR wels:ad OR dornbirn:ad OR feldkirch:ad OR steyr:ad</p>	
#1.3	<p>iceland:ab,ti OR icelandic*:ab,ti OR islenska*:ab,ti OR icelander*:ab,ti OR islendinga*:ab,ti OR reykjavik:ab,ti OR reykjavikurborg:ab,ti OR hofudborgarsvaedid:ab,ti OR sudurnes:ab,ti OR vesturland:ab,ti OR vestfiridir:ab,ti OR westfjords:ab,ti OR nordurland:ab,ti OR austurland:ab,ti OR sudurland:ab,ti OR kopavogur:ab,ti OR hafnarfjordur:ab,ti OR iceland:ad OR icelandic*:ad OR islenska*:ad OR icelander*:ad OR islendinga*:ad OR reykjavik:ad OR reykjavikurborg:ad OR hofudborgarsvaedid:ad OR sudurnes:ad OR vesturland:ad OR vestfiridir:ad OR westfjords:ad OR nordurland:ad OR austurland:ad OR sudurland:ad OR kopavogur:ad OR hafnarfjordur:ad OR switzerland:ab,ti OR schweiz:ab,ti OR schweizerische:ab,ti OR swiss:ab,ti OR suisse:ab,ti OR aargau:ab,ti OR argovia:ab,ti OR ausserrhoden:ab,ti OR 'outer rhodes':ab,ti OR innerrhoden:ab,ti OR 'inner rhodes':ab,ti OR basel:ab,ti OR bern:ab,ti OR berne:ab,ti OR fribourg:ab,ti OR freiburg:ab,ti OR geneva:ab,ti OR geneve:ab,ti OR glarus:ab,ti OR graubunden:ab,ti OR grisons:ab,ti OR grigioni:ab,ti OR jura:ab,ti OR lucerne:ab,ti OR luzern:ab,ti OR neuchatel:ab,ti OR zurich:ab,ti OR (uri:ab,ti AND (canton:ab,ti OR kanton:ab,ti)) OR schwyz:ab,ti OR obwalden:ab,ti OR nidwalden:ab,ti OR zug:ab,ti OR solothurn:ab,ti OR schaffhausen:ab,ti OR thurgau:ab,ti OR thurgovia:ab,ti OR ticino:ab,ti OR tessin:ab,ti OR vaud:ab,ti OR valais:ab,ti OR wallis:ab,ti OR 'st gallen':ab,ti OR lausanne:ab,ti OR winterthur:ab,ti OR winterthour:ab,ti OR lugano:ab,ti OR biel:ab,ti OR bienne:ab,ti OR switzerland:ad OR schweiz:ad OR schweizerische:ad OR swiss:ad OR suisse:ad OR aargau:ad OR argovia:ad OR ausserrhoden:ad OR 'outer rhodes':ad OR innerrhoden:ad OR 'inner rhodes':ad OR basel:ad OR bern:ad OR berne:ad OR fribourg:ad OR freiburg:ad OR geneva:ad OR geneve:ad OR glarus:ad OR graubunden:ad OR grisons:ad OR grigioni:ad OR jura:ad OR lucerne:ad OR luzern:ad OR neuchatel:ad OR zurich:ad OR (uri:ad AND (canton:ad OR kanton:ad)) OR schwyz:ad OR obwalden:ad OR nidwalden:ad OR zug:ad OR solothurn:ad OR schaffhausen:ad OR thurgau:ad OR thurgovia:ad OR ticino:ad OR tessin:ad OR vaud:ad OR valais:ad OR wallis:ad OR 'st gallen':ad OR lausanne:ad OR winterthur:ad OR winterthour:ad OR lugano:ad OR biel:ad OR bienne:ad OR norway:ab,ti OR norwegian*:ab,ti OR norge:ab,ti OR noreg:ab,ti OR norgga:ab,ti OR ostfold:ab,ti OR akershus:ab,ti OR oslo:ab,ti OR hedmark:ab,ti OR oppland:ab,ti OR buskerud:ab,ti OR vestfold:ab,ti OR telemark:ab,ti OR 'aust agder':ab,ti OR 'vest agder':ab,ti OR rogaland:ab,ti OR hordaland:ab,ti OR 'sogn og fjordane':ab,ti OR 'sogn and fjordane':ab,ti OR 'sogn fjordane':ab,ti OR 'more og romsdal':ab,ti OR 'more and romsdal':ab,ti OR 'more romsdal':ab,ti OR trondelag:ab,ti OR nordland:ab,ti OR troms:ab,ti OR finnmark:ab,ti OR bergens:ab,ti OR stavanger:ab,ti OR sandnes:ab,ti OR trondheim:ab,ti OR kristiansand:ab,ti OR drammen:ab,ti OR fredrikstad:ab,ti OR sarpsborg:ab,ti OR porsgrunn:ab,ti OR skien:ab,ti OR tonsberg:ab,ti OR alesund:ab,ti OR norway:ad OR norwegian*:ad OR norge:ad OR noreg:ad OR norgga:ad OR ostfold:ad OR akershus:ad OR oslo:ad OR hedmark:ad OR oppland:ad OR buskerud:ad OR vestfold:ad OR telemark:ad OR 'aust agder':ad OR 'vest agder':ad OR rogaland:ad OR hordaland:ad OR 'sogn og fjordane':ad OR 'sogn and fjordane':ad OR 'sogn fjordane':ad OR 'more og romsdal':ad OR 'more and romsdal':ad OR 'more romsdal':ad OR trondelag:ad OR nordland:ad OR troms:ad OR finnmark:ad OR bergens:ad OR stavanger:ad OR sandnes:ad OR trondheim:ad OR kristiansand:ad OR drammen:ad OR fredrikstad:ad OR sarpsborg:ad OR porsgrunn:ad OR skien:ad OR tonsberg:ad OR alesund:ad OR liechtenstein:ab,ti OR vaduz:ab,ti OR triesenberg:ab,ti OR triesen:ab,ti OR schellenberg:ab,ti OR schaan:ab,ti OR ruggell:ab,ti OR planken:ab,ti OR mauren:ab,ti OR gamprin:ab,ti OR eschen:ab,ti OR balzers:ab,ti OR liechtenstein:ad OR vaduz:ad OR triesenberg:ad OR triesen:ad OR schellenberg:ad OR schaan:ad OR ruggell:ad OR planken:ad OR mauren:ad OR gamprin:ad OR eschen:ad OR balzers:ad</p>	
#1.2	<p>'turkey (republic)'/exp OR turkey:ab,ti OR turkiye:ab,ti OR turkish:ab,ti OR istanbul:ab,ti OR marmara:ab,ti OR aegean:ab,ti OR anatolia:ab,ti OR 'black sea':ab,ti OR tekirdag:ab,ti OR balikesir:ab,ti OR izmir:ab,ti OR aydin:ab,ti OR manisa:ab,ti OR bursa:ab,ti OR kocaali:ab,ti OR ankara:ab,ti OR konya:ab,ti OR antalya:ab,ti OR adana:ab,ti OR hatay:ab,ti OR kirikkale:ab,ti OR kayseri:ab,ti OR zonguldak:ab,ti OR kastamonu:ab,ti OR samsun:ab,ti OR trabzon:ab,ti OR erzurum:ab,ti OR agri:ab,ti OR malatya:ab,ti OR (van:ab,ti AND (region:ab,ti OR subregion:ab,ti OR bolgesi:ab,ti)) OR gaziantep:ab,ti OR sanliurfa:ab,ti OR mardin:ab,ti OR mersin:ab,ti OR turkey:ad OR turkiye:ad OR turkish:ad OR istanbul:ad OR marmara:ad OR aegean:ad OR anatolia:ad OR 'black sea':ad OR tekirdag:ad OR balikesir:ad OR izmir:ad OR aydin:ad OR manisa:ad OR bursa:ad OR kocaali:ad OR ankara:ad OR konya:ad OR antalya:ad OR adana:ad OR hatay:ad OR kirikkale:ad OR kayseri:ad OR zonguldak:ad OR kastamonu:ad OR samsun:ad OR trabzon:ad OR erzurum:ad OR agri:ad OR malatya:ad OR (van:ad AND (region:ad OR subregion:ad OR bolgesi:ad)) OR gaziantep:ad OR sanliurfa:ad OR mardin:ad OR mersin:ad</p>	292777
#1.1	<p>'europe'/exp OR 'european union'/exp OR europa:ab,ti OR europe*:ab,ti OR scandinavia*:ab,ti OR scandinavia*:ad OR mediterranean:ab,ti OR 'eea countries':ab,ti OR mediterranean:ad OR europe*:ad OR baltic:ab,ti OR baltic:ad OR yugoslavia:ab,ti OR jugoslavija:ab,ti OR jugoslavija:ad OR yugoslavia:ad OR 'eu country':ab,ti OR 'eu countries':ab,ti OR global*:ab,ti OR world:ab,ti OR worldwide:ab,ti</p>	2166

5.3 Cochrane library (CDSR, DARE, HTA, EED)

Date of search: 12/03/2015

Language limits: no limits

Date limits: 2005–2015

Number of results: CDSR: 3; DARE: 7; HTA: 2; EED: 25

ID	Search	Hits
#1	MeSH descriptor: [Prevalence] explode all trees	3943
#2	MeSH descriptor: [Population Surveillance] explode all trees	585
#3	MeSH descriptor: [Seroepidemiologic Studies] explode all trees	134
#4	prevalence* or seroepidemiolog* or "sero epidemiologic" or "sero epidemiological" or "sero epidemiology" or serosurvey* or serolog* or epidemiolog* or surveillance:ti,ab,kw	15921
#5	#1 or #2 or #3 or #4	19532
#6	MeSH descriptor: [Hepatitis B] explode all trees	1939
#7	MeSH descriptor: [Hepatitis B Antibodies] explode all trees	555
#8	MeSH descriptor: [Hepatitis B Antigens] explode all trees	940
#9	MeSH descriptor: [Hepatitis B virus] explode all trees	671
#10	MeSH descriptor: [Hepatitis C] explode all trees	2287
#11	MeSH descriptor: [Hepatitis C Antigens] explode all trees	15
#12	MeSH descriptor: [Hepatitis C Antibodies] explode all trees	112
#13	MeSH descriptor: [Hepacivirus] explode all trees	1001
#14	"hepatitis b" or "hepatitis c" or hepaciviru* or "hbv" or "hcv" or "hbsag" or "hbs ag" or "Australia Antigen" or "Australia Antigens":ti,ab,kw Publication	6994
#15	#6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14	8380
#16	#15 and #5	517

Annex 6. Data extraction

Table A20. Variables: data extraction

Variable	Description	Values
PMID	PubMed identifier, accession number	Numerical
Study ID	The ID links each study to the source article	Alphanumerical (PMID plus a, b, c.... for each study)
First author	Surname of first author of the article	
Year of publication	Year of publication of the article	Year: yyyy
Type of publication	Type of publication	Original article; review; report; abstract; commentary; erratum
Exclusion	If required, reason for exclusion	
Disease	Disease for which the study report prevalence estimates	HBV; HCV; both
Country	Country for which the study report prevalence estimates	Country name
Period of sampling	Year/s during which study sampling was conducted	Year: yyyy
Population coverage	Coverage of the population by the sampling design in geographic/demographic terms	National; regional; multicentre; single centre/local
Population	Target population sampled in the study	General population; pregnant women; MSM; prisoner
Study population details	Narrative field for any further relevant information on the study population	
Sampling approach	Description of sampling approach	Random sampling; convenience sampling; respondent-driven (i.e. snowballing); exhaustive (screening); not specified; other
Sample size	Total sample size (for all estimates)	Numerical
Response rate	Percentage of respondents	%
Type of sample	Description of sample type	Serum, saliva; dry blood spot
Type of test	Description of laboratory test used	HBsAg; HBV DNA; HBV rapid test; Anti-HCV; anti-HCV immunoblot; HCV RNA; HCV rapid test
Age group	Description of age group	0-17 (children); >17 (adults); all
Mean/median age	Mean or median age of study population	Numerical
Age range	Minimum and maximum age of study population	Numerical
Prevalence number per estimate	Number screened and number positive (HBsAg, HBV DNA, anti-HCV, HCV RNA)	Numerical
Prevalence % per estimate	Prevalence estimate (HBsAg, HBV DNA, anti-HCV, HCV)	%
95% CI per estimate	Calculated using Fisher method for 95% CI	%
Standardized	Weighted/standardised prevalence estimate available	Yes/No
Comments		

Annex 7. Excluded references

Table A21. Overview of excluded references after full text screening

Authors	Publication year	Scientific journal	Study population
Alazawi et al.	2014	Br J Gen Pract	General population
Allstaff et al.	2014	HIV Med	MSM
Almasio et al.	2011	Dig Liver Dis	Prisoners
Anderson et al.	2009	Scott Med J	General population
Aniszewska et al.	2009	Przegl Epidemiol	Pregnant women
Aniszewska et al.	2009	Przegl Epidemiol	Pregnant women
Ansaldi et al.	2005	J Med Virol	General population
Armstrong et al.	2010	Gut	General population
Armstrong et al.	2010	Hepatology	General population
Aurich et al.	2014	Transfus Med Hemother	Pregnant women
Barclay et al.	2010	Scott Med J	General population
Blystad et al.	2005	Euro Surveill	General population
Bottero et al.	2012	J Hepatol	General population
Bottero et al.	2014	PloS One	General population
Caley et al.	2012	Euro Surveill	Pregnant women
Carbonara et al.	2005	Eur Respir J	Prisoners
Cesa et al.	2006	Arch Pediatr	Pregnant women
Chlibek et al.	2006	Epidemiol Mikrobiol Imunol	General population
Christensen et al.	2012	BMC Infect Dis	General population
Cowan et al.	2006	Euro Surveill	Pregnant women
Cozzolongo et al.	2009	J Hepatol	General population
Craine et al.	2014	Eur J Public Health	Prisoners
Czarkowski et al.	2005	Przegl Epidemiol	General population
Czarkowski et al.	2008	Przegl Epidemiol	General population
Czerwinski et al.	2007	Refaat Hapeh Vehashinayim	General population
daCosta DiBonaventura et al.	2012	Eur J Gastroenterol Hepatol	General population
Dall'Aglio et al.	2012	Dig Liver Dis	General population
D'Amelio et al.	2006	Dig Liver Dis	General population
Datta et al.	2014	Br J Gen Pract	General population
De Angelis et al.	2009	Stat Methods Med Res	General population
de Jong et al.	2008	Neth J Med	General population
de Ory Manchon et al.	2009	Rev Esp Salud Publica	General population
Delarocque-Astagneau et al.	2010	J Viral Hepat	General population
Dhairyan et al.	2011	HIV Med	General population
Dibonaventura et al.	2014	PloS One	General population
Dibonaventura et al.	2011	J Med Econ	General population
Dibonaventura et al.	2012	Value Health	General population
Dopico et al.	2013	Trop Med Int Health.	Pregnant women
Duberg et al.	2008	J Viral Hepat	General population
Duffell et al.	2014	J Viral Hepat	General population
Duncan et al.	2013	Int J STD AIDS	Prisoners
Elefsiniotis et al.	2005	J Clin Virol	General population
Elefsiniotis et al.	2007	Eur J Obstet Gynecol Reprod Bio	General population
Elefsiniotis et al.	2010	Int J Gynaecol Obstet	Pregnant women
Elefsiniotis et al.	2010	Hepatol Int	Pregnant women
Elefsiniotis et al.	2009	Euro Surveill	Pregnant women
Faustini et al.	2010	BMC Infect Dis	General population
Fiore et al.	2006	Eur J Inflamm	General population
FitzSimons et al.	2013	Int J Circumpolar Health	General population
Fitzsimons et al.	2011	Vaccine	General population
Flisiak et al.	2015	Eur J Gastroenterol Hepatol	General population
Folch et al.	2014	Med Clin (Barc).	MSM
Folch et al.	2015	Med Clin (Barc).	MSM
Ganczak	2011	Clin Microbiol Infect	General population
Geckova et al.	2014	Cent Eur J Public Health	General population
Giacomoni et al.	2010	J Hepatol	General population
Giraudon et al.	2009	Euro Surveill	Pregnant women
Glogowska-Ligus et al.	2011	Pol Merkur Lekarski	General population

Authors	Publication year	Scientific journal	Study population
Godzik et al.	2012	Przegl Epidemiol	General population
Goldberg et al.	2008	Euro Surveill	General population
Grgic-Vitek et al.	2006	Croat Med J	General population
Guadagnino et al.	2012	J Hepatol	General population
Hansen et al.	2013	Euro Surveill	General population
Harris et al.	2012	Eur J Public Health	General population
Hope et al.	2007	J Viral Hepat	Prisoners
Hutchinson et al.	2006	Scott Med J	General population
Iliescu	2013	J Gastroenterol Hepatol	General population
Janicko et al.	2014	Cent Eur J Public Health	General population
Julkunen et al.	2009	Clin Microbiol Infect	Pregnant women
Kaic et al.	2013	Acta Med Croatica	General population
Kirwan et al.	2011	J Public Health (Oxf)	Prisoners
Knorr et al.	2008	J Clin Virol	Pregnant women
Kolaric et al.	2010	Cent Eur J Public Health	Prisoners
Lambert et al.	2010	HIV Med	Pregnant women
Lavanchy	2012	Hepat Mon	General population
Lesnikar	2005	Acta Med Croatica	General population
Magdzik et al.	2006	Przegl Epidemiol	General population
Mariolis et al.	2006	Public Health	General population
Marques et al.	2009	Clin Microbiol Infect	Prisoners
Martin et al.	2013	BMJ Open	Prisoners
Matthews et al.	2012	Gut	Pregnant women
Mazuelas et al.	2010	J Matern Fetal Neonatal Med	Pregnant women
McDonald et al.	2010	Euro Surveill	General population
Meara et al.	2007	Ir Med J	General population
Mena et al.	2014	PloS One	General population
Mena et al.	2013	Hepatology	General population
Merkinaite et al.	2008	Cent Eur J Public Health	General population
Michel et al.	2008	Harm Reduct J	Prisoners
Monnet et al.	2006	J Hepatol	General population
Montella et al. (erratum)	2005	Infection	General population
Montenegro et al.	2013	Am J Gastroenterol	General population
Mossner et al.	2010	J Med Virol	General population
Mossong et al.	2006	Epidemiol Infect	General population
Mukhopadhyaya	2014	Gut	General population
Mulic et al.	2006	Lijec Vjesn	General population
Niederau et al.	2006	Med Klin (Munich)	General population
Oakes	2014	Nurs Times	General population
O'Grady et al.	2011	The Lancet	Prisoners
Op de Coul et al.	2010	Ned Tijdschr Geneesk	Pregnant women
Ortigosa Gomez et al.	2011	Medicina Clinica	Pregnant women
Paat et al.	2009	Cent Eur J Public Health	General population
Paat et al.	2009	Cent Eur J Public Health	Prisoners
Papatheodoridis et al.	2015	J Viral Hepat	General population
Parada et al.	2014	Przegl Epidemiol	General population
Pawlowska et al.	2011	Hepatol Int	General population
Payne-James et al.	2005	J Clin Forensic Med	Prisoners
Picardi et al.	2007	J Clin Virol	General population
Pitigoi et al.	2008	Euro Surveill	General population
Popov et al.	2011	Clin Microbiol Infect	Prisoners
Popovic	2014	MS ppt presentation	General population
Portman et al.	2014	HIV Med	MSM
Rautanen	2010	Schizophr Res	Prisoners
Remy	2007	Gastroenterologie Clinique et Biologique	Prisoners
Rimseliene et al.	2011	BMC Infect Dis	General population
Rosinska et al.	2013	Przegl Epidemiol	General population
Roudot-Thoraval et al.	2015	Hepatology	General population
Roux et al.	2014	BMJ Open	General population
Ruf et al.	2008	Euro Surveill	MSM
Ruffini et al.	2014	Infez Med	Pregnant women
Saiz de la Hoya et al.	2005	Enferm Infecc Microbiol Clin	Prisoners
Santiago et al.	2012	Enferm Infecc Microbiol Clin	Pregnant women

Authors	Publication year	Scientific journal	Study population
Sarmati et al.	2007	J Med Virol	Prisoners
Sauvage et al.	2015	Bull Epidemiol Hebd (Paris	Prisoners
Schlosser et al.	2009	J Hepatol	General population
Schnier et al.	2014	Epidemiol Infect	General population
Schulte et al.	2009	Int J Prison Health	Prisoners
Semaille et al.	2013	Euro Surveill	Prisoners
Shalabi et al.	2013	Gut	Prisoners
Shalabi et al.	2013	Hepatol Int	Prisoners
Shanmugaratnam et al.	2012	Int J STD AIDS	General population
Sillanpaa et al.	2013	J Viral Hepat	General population
Soriano et al.	2005	Enferm Infecc Microbiol Clin	Prisoners
Staneikova et al.	2006	Cent Eur J Public Health	Pregnant women
Sutton et al.	2008	J Viral Hepat	Prisoners
Sweeting et al.	2008	Biostatistics	General population
Swiderek et al.	2008	Clin Exp Med Lett	General population
Taylor et al.	2013	Addiction	Prisoners
Thornton et al.	2012	Epidemiol Infect	General population
Tolmane et al.	2009	Hepatol Int	General population
Tsovili et al.	2014	Infez Med	General population
Urbanus et al.	2011	PloS One	General population
Urbanus et al.	2011	J Hepatol	General population
Urbanus et al.	2013	PloS One	Pregnant women
Urbanus et al.	2011	Hepatology	MSM
van Vlierberghe	2008	Neth J Med	General population
Voiculescu et al.	2010	J Gastrointestin Liver Dis	General population
Vriend et al.	2012	Eur J Public Health	General population
Wainwright et al.	2013	Sex Transm Infect	MSM
Wiegand et al.	2014	J Hepatol	General population
Wiessing et al.	2008	Euro Surveill	General population
Williams et al.	2012	Sex Transm Infect	Prisoners
Yates et al.	2012	Thorax	Prisoners
Zani et al.	2009	Hepatology	General population
Zani et al.	2011	Dig Liver Dis	General population
Zavitsanou et al.	2007	J Med Virol	General population
Zielinski et al.	2009	Przegl Epidemiol	General population
Znyk et al.	2010	Przegl Epidemiol	General population

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