



Hepatitis B and C testing strategies in healthcare and community settings in the EU/EEA: a systematic review

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INTRODUCTION

Across the European Union/European Economic Area (EU/EEA) an estimated 10 million people are chronically infected with hepatitis B virus (HBV) or hepatitis C virus (HCV). HBV and HCV can both cause acute and chronic hepatitis, potentially leading to the development of cirrhosis, liver cancer or death of infected patients, however early disease and development of liver damage are often asymptomatic and many infected people remain undiagnosed (8). As highly effective treatment options have become available for HBV and HCV the WHO has formulated an action plan to eliminate viral hepatitis as a public health threat in the European region by 2030. To this end, testing programmes must be scaled up in order to reduce the undiagnosed fraction..

The scope of this systematic review was to provide an overview of different effective testing strategies for hepatitis B and C and their outcomes in the EU/EEA, covering all relevant population groups and settings. This study was conducted as part of a larger project to develop an integrated European testing guidance for HBV, HCV and HIV, coordinated by the European Centre for Disease Prevention and Control (ECDC).

METHODS

A systematic review protocol was developed following the PRISMA guidelines. A PICO questions was formulated "What approaches to increase coverage and uptake of hepatitis B/C testing have been implemented in the EU/EEA and how effective are they?". Original research articles were retrieved from PubMed and Embase databases on 1st September 2017. Search strategies combined controlled (MeSH/Emtree terms) and natural vocabulary on terms for HBV and HCV with terms for intervention and testing and geographic terms (EU/EEA). Studies published between 1st January 2008 and 1st September 2017 in all EU/EEA languages were included. Using a predefined set of inclusion/exclusion criteria, two reviewers reviewed titles and abstracts of retrieved publications, followed by full-text screening of selected records. The quality of included peer-reviewed literature was assessed using checklists developed by the Scottish Intercollegiate Guidelines Network (SIGN). Grey literature (relevant conference websites) and hand searches were conducted to complement the evidence base. Data were extracted from included studies and analyzed by study setting, target population and type of intervention.

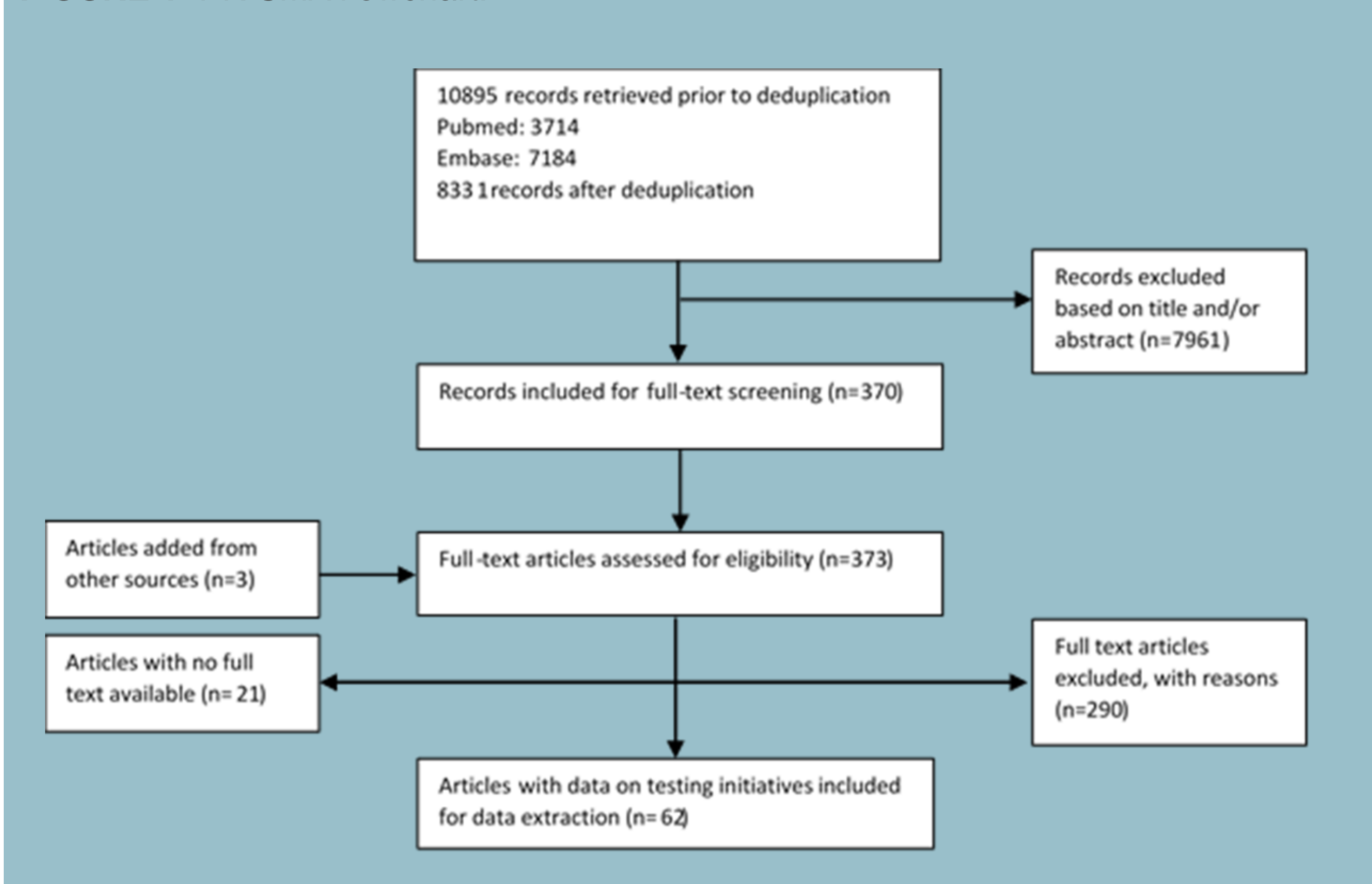
Primary healthcare was defined as healthcare provided by general practitioners. Hospital settings included all hospital departments including inpatients, outpatients, medical admissions units and infectious disease units. Other healthcare settings included any formal healthcare settings outside of primary healthcare or hospital departments, for example STI clinics, pharmacies and prisons. Community-based testing was defined as any programme or service offering HBV/HCV testing outside of formal health facilities..

RESULTS

The literature search retrieved 8331 unique publications, of which 370 were selected based on title and abstract and were assessed in full text for eligibility. Of these, 62 articles were retrieved that formed the evidence base for the effectiveness of testing initiatives and interventions (figure 1).

The included publications comprised 93 studies in total, each detailing an intervention designed to improve coverage of HBV or HCV testing in a certain setting. A total of 78 studies were from peer-reviewed publications and 15 concerned conference abstracts. A formal quality assessment was performed for 19 peer-reviewed studies, the remainder had study designs which precluded this.

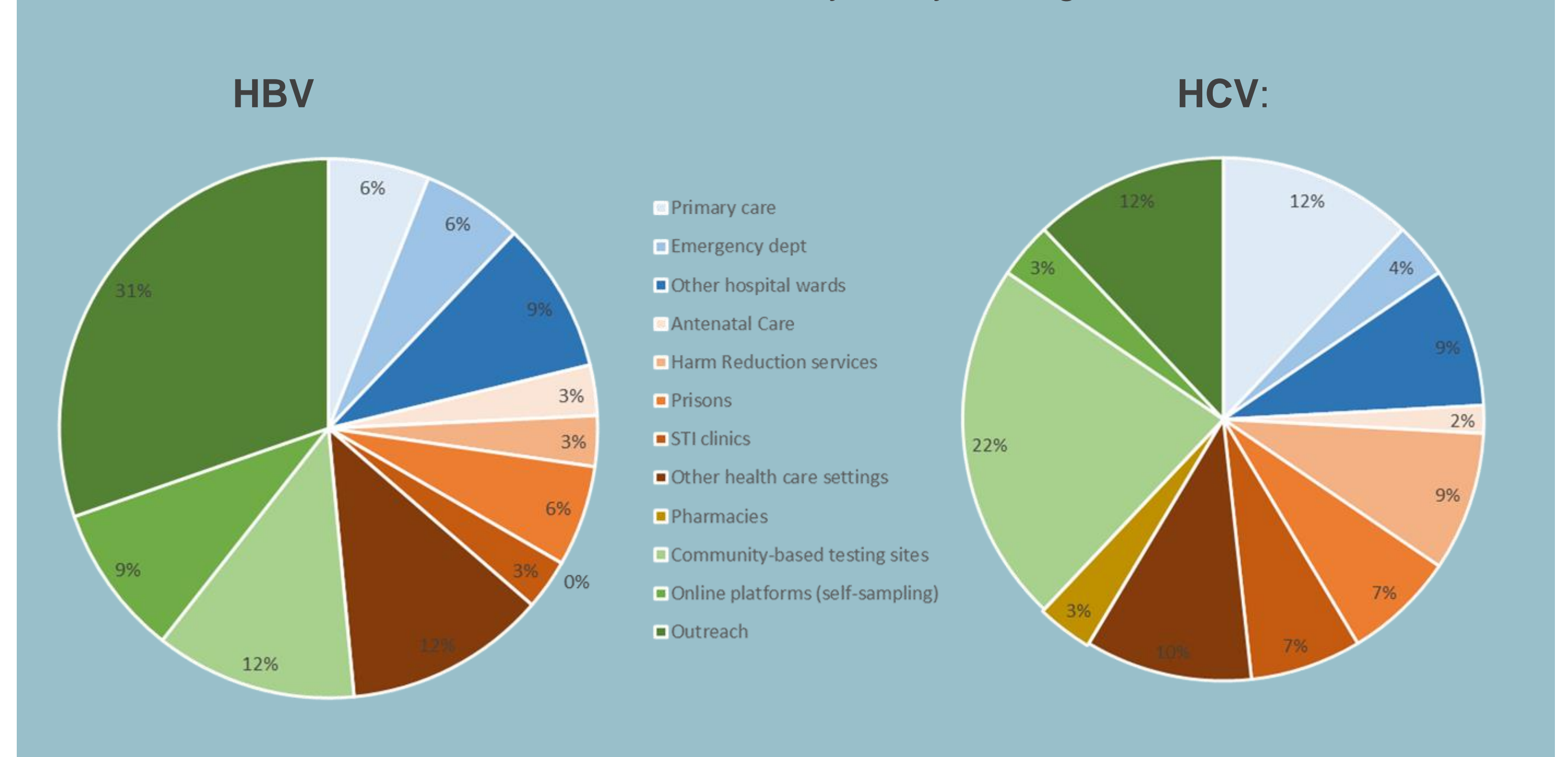
FIGURE 1. PRISMA flowchart:



Testing initiatives in primary health care settings

Nine studies that reported outcomes on testing initiatives performed in primary healthcare settings were retrieved. HBV/HCV test offer rates, coverage and positivity rates, where reported, ranged widely between studies. The highest offer rate and coverage reported was 70% and 100% respectively, in a study targeting migrants. Very high positivity rates for HCV were reported in initiatives targeting PWID (70%) and homeless people (26%). Two initiatives targeting migrants reported HBV and HCV positivity rates of 0%.

FIGURE 2. Distribution of included studies by study setting:



Testing initiatives in hospital settings

Twelve studies were identified on the effectiveness of testing initiatives and interventions in hospital settings. Test offer rates, coverage and HBV/HCV positivity rates varied with high offer rates (83% and 100%) in testing initiatives targeted at migrants and psychiatric patients. Coverage was highest (88.4%) in a study reporting on a universal testing initiative conducted at a single emergency department. A separate universal testing initiative conducted in multiple emergency departments, however, yielded a much lower overall coverage of 27%, although with variations among testing sites. Positivity rates for HBV and HCV were higher in studies reporting on initiatives targeted at key populations (2.2%-7.8% for HBV and 0.3%-8.7% for HCV) than those aimed at the general population.

Testing initiatives in other health care settings

Thirty-one studies were included relating to other healthcare settings, which included antenatal services, clinics for people with no health insurance, drug services (embedded in health services), migrant clinics, pharmacies, prisons, public health clinics and STI clinics. Testing coverage during or after interventions were found to vary widely between and within settings, with the highest coverage levels reported by studies in migrant clinics (87% to 91.4%), clinics for people with no health insurance (71% to 98.2%) and public health clinics (90% and 98%). Four studies on novel testing initiatives yielded high coverage levels when dry blood spot sampling or rapid tests were used (up to 98.2% for rapid testing and up to 96.6% for DBS). The highest positivity rates for both diseases were reported in studies targeting drug users or PWID (up to 48% anti-HBc positive for HBV and up to 61% for HCV). No studies reported test offer rates.

Testing initiatives in community settings

Forty-one studies were retrieved that formed the evidence base for the effectiveness of testing initiatives and interventions in community settings. Coverage rates above 80% were reported by two testing initiatives conducted in community drugs services, although the other six studies conducted in this setting reported lower coverage. HCV positivity rates were high in this setting. Outreach testing activities and testing initiatives conducted in fixed community sites yielded coverage rates of up to 83.3% and 71.1% respectively. In general, online testing initiatives reported somewhat lower coverage rates relative to other settings (4.4% and 16.2%), as well as low positivity rates for HBV (0% and 0.2%). Across all settings, novel testing initiatives yielded relatively high coverage rates in general, with eight out of fourteen studies that reported coverage testing more than 50% of the targeted population.

CONCLUSIONS

Evidence on successful testing approaches for HBV/HCV was retrieved from primary healthcare, hospital and other healthcare settings and community settings. Testing approaches targeting population groups at high risk of HBV/HCV were found to be viable in various settings and there was evidence that other interventions such as awareness campaigns, education and the implementation of testing in the context of a national strategy may improve coverage.

This study had some limitations. In particular, the geographical coverage of the evidence was suboptimal, with most studies from Northern and Western Europe. Not all included studies could be assessed for quality, while the heterogeneity of outcomes definitions and reporting hampered inter-study comparability.

In conclusion, combining a diverse set of testing opportunities within national testing strategies for HBV/HCV may lead to higher impact..