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Public health guidance on active case finding of communicable diseases in prison settings

Prevention and control of communicable diseases in prison settings

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ECDC AND EMCDDA SCIENTIFIC ADVICE

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for Drugs and Drug Addiction

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Abbreviations

AGREE	Appraisal of guidelines for research and evaluation
cART	Combined antiretroviral therapy
CXR	Chest x-ray
DAA	Direct-acting antivirals
EEA	European Economic Area
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
GRADE	Grading of recommendations assessment, development and evaluation
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
IGRA	Interferon gamma release assay
LTBI	Latent tuberculosis infection
MSM	Men who have sex with men
PRISMA	Preferred reporting items for systematic reviews and meta-analyses
PWID	People who inject drugs
STI	Sexually transmitted infection
TasP	Treatment as prevention
TB	Tuberculosis
TST	Tuberculin skin test
UNODC	United Nations Office on Drugs and Crime
WHO	World Health Organization

Glossary

Acceptability	The degree to which a given intervention is acceptable to the target population in relation to the effect of the intervention
Accessibility	The degree to which a given intervention is accessible to the target population (availability of good health services within reasonable reach and when needed)
Active case finding	Interventions aimed at promoting early diagnosis by means of provider-initiated systematic offer for testing, at entrance and/or during stay (including at release)
Active TB	Active tuberculosis (TB) refers to disease that occurs in someone infected with *Mycobacterium tuberculosis*. It is characterised by signs or symptoms of active disease, or both, and is distinct from latent TB infection, which occurs without signs or symptoms of active disease
Client-initiated testing	Testing which is voluntary and performed as the result of a person's health-seeking behaviour, triggered by symptoms development or other reasons (i.e. passive case finding)
Comparative study	A study designed to compare two or more groups (e.g. types of testing offers or testing timings); a statistical measure is provided for that comparison
Descriptive study	A study concerned with, and designed only to describe, the existing distribution of variables, without regard to causal or other hypotheses
Evidence-based guideline	A guideline that is largely based on the scientific literature to generate a recommendation; good clinical practices or expert opinions could be used to supplement the scientific literature
Feasibility	The degree to which it is feasible to implement an intervention in terms of time, money, or other circumstances
Jail	Locally-operated, short-term facilities that hold adults awaiting trial or sentencing, or both, and people sentenced mostly to a term of less than one year
LTBI	LTBI is a state of persistent immune response to prior-acquired *Mycobacterium tuberculosis* antigens without evidence of clinically manifested active TB

Mandatory testing	Testing which is offered to all eligible people and cannot be refused
Opt-in testing	Testing which is voluntary and offered to all eligible people, often on the basis of identified risk factors; the person chooses whether to have the test
Opt-out testing	Testing modality where all eligible people are informed that the test will be performed unless they actively refuse; testing is voluntary.
People in prison	Adults (18 years of age or older) detained in prison for custody, remand or awaiting trial. In certain instances, the term may include people visiting correctional facilities, intervening in various capacities, or prison staff working also in various capacities. This population includes vulnerable groups, e.g. MSM, transgender people, PWID, foreign-born people, homeless people, people with mental health problems, people with substance misuse problems
Practice-based guideline	A guideline that reflects expert opinion or information derived from good clinical practice; some literature references (not systematic) may be included
Prison	All institutions where a state holds adults deprived of their liberty (e.g. prison or jail), either sentenced or on pre-trail detention (remand), excluding migrant centres, and police detention rooms, and other facilities such as juvenile prisons or secure training centres for children and young people.
Provider-initiated testing	Testing which is voluntary and offered to eligible individuals by healthcare providers. In this document we use the term 'provider-initiated' to describe both opt-in and opt-out testing offers.

Executive summary

Compared with the general public, people in prison in the EU/EEA have a higher burden of communicable diseases such as human immunodeficiency virus (HIV), hepatitis B, hepatitis C, syphilis, gonorrhoea, chlamydia and tuberculosis (TB). Increased disease prevalence in this population is recognised as a significant public health concern, both for people living and working in prisons and for the general population at large because the vast majority of people held in prisons eventually return to their communities. Yet, incarceration may represent a unique opportunity to make adequate healthcare services available to people and target groups that are usually hard to reach when in the community. Active case finding is one of the key measures for the prevention and control of communicable diseases that should be considered for broader implementation in prison settings. It supports early diagnosis, ensures that infected people can receive early treatment and care, and thus contributes to prevent onward disease transmission. The successful implementation of evidence-based interventions in prison settings requires an in-depth knowledge of structural hurdles, individual barriers, and the characteristics and behaviours of the prison population.

To this aim, the European Centre for Disease Prevention and Control (ECDC) and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) have joined forces to develop a common evidence-based guidance for the prevention and control of communicable diseases in prison settings in the EU/EEA. This document provides EU/EEA Member States with evidence-based scientific advice on active case finding options. These options can be applied to the planning and implementation of interventions that promote the early diagnosis of communicable diseases in prison settings.

Scope

This guidance focuses on high-burden communicable diseases in prison settings. It covers diseases for which evidence on active case finding interventions in prison settings could be retrieved though a systematic review of the literature, i.e. viral hepatitis (B and C), HIV, sexually transmitted infections (STIs) and TB.

This guidance focuses on adults aged 18 years or older who are detained in prison for custody, remand, or awaiting trial. In certain instances, people visiting correctional facilities or intervening in various capacities, and prison staff may be included.

Target audience

The target audiences for this guidance are national policymakers, professionals and institutions responsible for the planning of healthcare services in the national/subnational custodial system, professionals and entities responsible for the planning and provision of healthcare services in prison institutions, civil society organisations, and non-governmental organisations with an interest in prison health.

Evidence-based public health guidance

Research findings relevant to this guidance have been reviewed and assessed using evidence-based medicine (EBM) principles adapted to a public health framework. To produce this guidance, scientific evidence from peer-reviewed and grey literature was assessed. Results were combined with expert advice and considerations on harms and benefits, human rights, equity, ethics, and user preferences. Country-specific care models also contributed to the development of intervention options for national and subnational public health programmes in European prison settings.

Key conclusions

ECDC and EMCDDA assessment of active case finding for HBV, HCV and HIV

Based on the available evidence on active case finding for HBV, HCV and HIV in prison settings, and considering the high prevalence of infection and the availability of effective prevention and control measures, it is advisable to offer testing for HBV, HCV and HIV to all people in prison.

The available evidence suggests that provider-initiated strategies for viral hepatitis and HIV testing yield a higher uptake than client-initiated strategies. However, the body of evidence does not provide clear indications on the most effective timing and testing modality for HBV, HCV and HIV active case finding in prison settings.

Provider-initiated testing is also consistent with the general principle of disease prevention as it does not delay diagnosis and treatment, which, in turn, can prevent further transmission within prison settings and between the prison population and the community at large. Several interventions to increase the uptake of testing could be considered, although the level of evidence for the effectiveness of any specific ones above any other intervention is very low.

ECDC and EMCDDA assessment of active case finding for STI

Available evidence suggests that provider-initiated strategies for STIs testing yield a higher uptake than client-initiated strategies. Provider-initiated testing is also consistent with the general principle of disease prevention as it does not delay diagnosis and treatment, and thus can prevent complications and transmission within the prison setting. However, no clear indication on the most effective timing and modality for STIs active case finding in prison settings can be derived from the existing evidence. Several approaches may be considered, including risk-based, age-based or universal testing for STIs, but evidence of their effectiveness in EU/EEA prison settings is very limited.

ECDC and EMCDDA assessment on active case finding for TB and LTBI

Based on available evidence on TB active case finding in prison settings, and taking into account the public health implications of TB transmission in closed settings, it is advisable to offer universal provider-initiated testing at prison intake. Provider-initiated testing at prison entry is also consistent with the general principle of disease prevention, as this does not delay diagnosis and treatment and thus can prevent further transmission within the prison setting.

LTBI provider-initiated testing could also be considered, at least for individuals who are at high risk of disease progression, depending on local epidemiology and the availability of resources.

1 Introduction

1.1 Rationale

More than 10 million people are held in prison worldwide, most are convicted and sentenced but there is also a substantial group held in remand prison until trial or sentencing. On 1 September 2015, just above 600 000 people were being held in prisons of the European Union (EU)/European Economic Area (EEA). The imprisonment rate varied from 21.3 per 100 000 in Liechtenstein followed by 53 per 100 000 in the Netherlands to 277.7 per 100 000 in Lithuania [3]. The median age of the prison population ranged from 31 years in France to 40 years in Latvia and 41 years in Liechtenstein, while the average age ranged from 33.8 years in France to 40 years in Italy and 41.3 years in Liechtenstein. When considering all of Europe, the median length of a prison stay was seven months [3].

Compared with the general public, people in prison in the EU/EEA have a higher prevalence of infection with human immunodeficiency virus (HIV), hepatitis B, hepatitis C, syphilis, gonorrhoea, chlamydia and tuberculosis (TB) [4]. While in detention, individuals, including those who are healthy on entry, are at higher risk of exposure to communicable diseases such as TB, HIV and viral hepatitis. They are also at a higher risk to develop substance use disorders or mental illnesses than the general population [5-9].

Most of the of the people in prison in Europe are from poor communities and vulnerable social groups, with an increasing proportion of migrants and people with a minority ethnic background; there is, however, substantial variation between countries [3,10]. People with drug use disorders form a large part of the imprisoned population. A recent study estimates a prevalence of drug use disorders of 30% among men and 51% among women in detention [9].

The increased prevalence of communicable diseases among people in prison can constitute a risk for the health of people who live/work in prison settings and for the general population, as the vast majority of people in prison eventually return to their communities. There are several risk factors associated with increased transmission rates in prison settings, e.g. proximity (aggravated by overcrowding), which is common in some EU/EEA correctional facilities; high-risk sexual behaviour; injecting drug use; sharing of injecting equipment; and tattooing and piercing [10,12]. Diet and individual hygiene are also important risk factors, at least for TB. In addition, lack of awareness of infection status (often combined with substandard healthcare) appear to have substantial implications for public health. There are excellent opportunities for primary, secondary and tertiary prevention measures in prison settings, provided they are coupled with adequate linkage to care during detention and after release [5,13]. Prison settings can be used to reach vulnerable groups of the population and provide adequate care for them. However, large heterogeneity exists between EU/EEA prison settings in communicable disease prevention and care, particularly with regard to active case finding [14,15].

The 2010 Madrid Declaration emphasised that health protection in prison settings is an essential part of public health and should be based on the principle of equivalence of health for people in prison. Building on the Madrid Declaration, several international organisations, such as the United Nations Office on Drugs and Crime (UNODC) and the World Health Organization (WHO), published documents highlighting the importance of health protection in prison settings [10,16]. A recent briefing on prison conditions in the Member States by the Policy Department on Citizens' Rights and Constitutional Affairs of the European Parliament addresses the issue of healthcare in prison. It states that the 'general principle is that people in prison should enjoy an equivalent standard of care to persons outside prisons, yet their needs tend to be greater than those of free persons, as they often lead a marginalised life before entry to prison and as imprisonment may put a strain on their mental health and physical well-being' [17]. This underlines the need for up-to-date, evidence-based guidance on prison health. This report is an effort to provide such guidance. It is also the first such guidance project for the EU/EEA.

1.2 Guidance on communicable diseases in prison settings

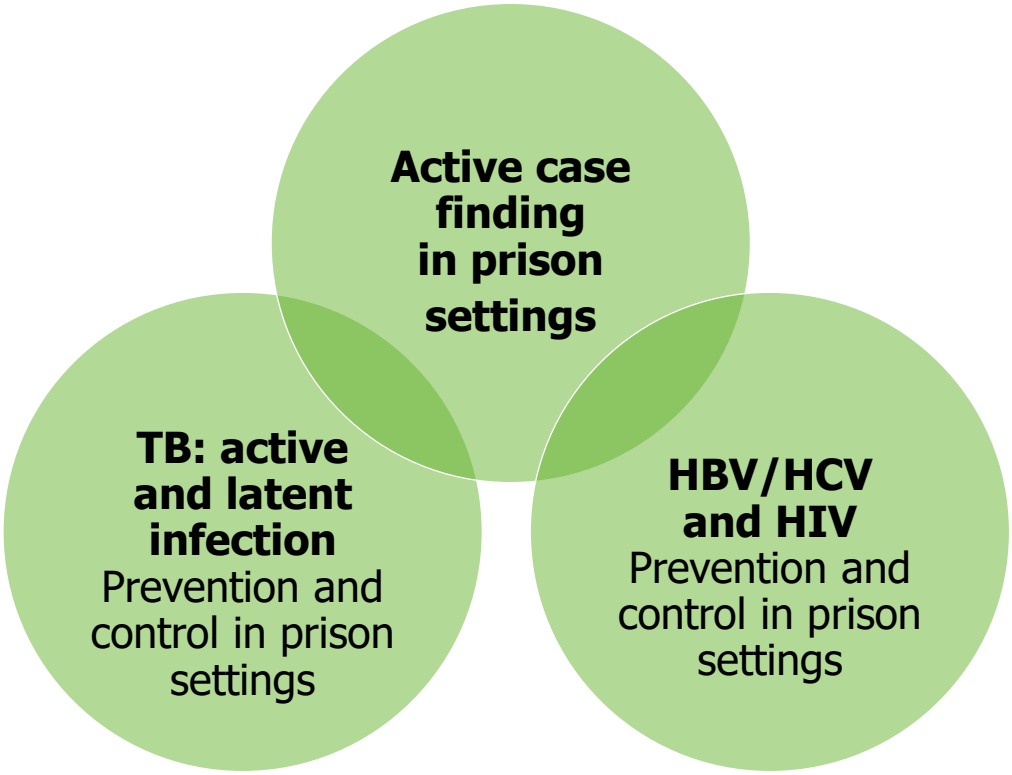
In 2015, the European Centre for Disease Prevention and Control (ECDC) launched the project 'Guidance on prevention of infectious diseases in prison settings'.

ECDC collaborated closely with the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) throughout the development of this evidence-based guidance document. This document also marks the first time that ECDC and EMCDDA to develop a common evidence-based guidance for the prevention and control of communicable diseases in prison settings in the EU. During a scoping phase, evidence on the burden of communicable diseases, preventive measures and costs in prison settings in the EU published between 2000 and 2014 was assessed, and existing knowledge gaps on prison settings and communicable diseases were identified. An evidence mapping tool was developed, and findings were complemented with information from EU/EEA experts in order to define thematic areas to be addressed by the guidance document.

The overall objective of this project was to develop an evidence-based guidance on prevention, diagnosis and control of communicable diseases in prisons and other custodial settings, with a clear focus on the situation in the EU/EEA.

The guidance follows a modular structure: thematic areas are grouped together as guidance modules (Figure 1). In addition to active case finding for selected communicable diseases, the project also addresses several thematic areas, namely vaccination strategies (including vaccination at prison entry and vaccination in outbreak situations); HIV prevention, care and treatment; viral hepatitis prevention, care and treatment; TB prevention, diagnosis, care and treatment; and prevention and control of blood-borne viruses among people who inject drugs.

Figure 1. Schematic representation of the public health guidance modules on communicable diseases in prison settings ensuing from the ECDC and EMCDDA joint project



The purpose of this guidance is to provide EU/EEA Member States with evidence-based scientific advice on options for active case finding when planning and implementing interventions aimed at the early diagnosis of selected communicable diseases in prison settings.

The target audiences for the document are national policymakers, professionals and institutions responsible for the planning of healthcare services in national/subnational custodial systems, professionals and entities responsible for the planning and provision of healthcare services in prison institutions, civil society organisations, and non-governmental organisations with an interest in prison health.

2 Background

2.1 Communicable diseases in the prison setting

Compared with the general public, people in prison in the EU/EEA have a higher burden of communicable diseases [4]. Prisons are considered a risk environment, with increased disease prevalence [5]. The prison population consists mainly of individuals from a lower socio-economic status and underserved communities. Most people in prison have a high risk of acquiring infections already before incarceration, partly due to behavioural and structural factors that are associated with increased likelihood of imprisonment [18]. The risk to acquire a communicable disease increases further during incarceration because prison settings amplify adverse health conditions due to overcrowding, poor infrastructure, and often inadequate access to healthcare services [5,10]. The incidence of behaviours associated with an increased risk of contracting and transmitting blood-borne and sexually transmitted infections [19] is higher in prison settings. This includes sharing needles for injecting drugs, tattooing and piercing with pointed objects, coercive (including violently coercive sex and rape) sexual activity, sharing razors, and episodes of violence with wounds and blood mingling.

When considering subpopulation groups, people who inject drugs (PWID) are a major risk group for HBV, HCV and HIV (blood-borne viruses [BBVs]) infection and are overrepresented in prison settings in the EU/EEA. Recent studies estimate that well above 70% of PWID had served prison terms at some point in their lives [11,20]. Foreign-born people, which constituted approximately 23% of the European prison population in 2015 [3], are also considered a group at increased risk for BBVs. In particular, the prevalence of chronic hepatitis B is higher among people originating from countries with high HBV endemicity [21], while people originating from sub-Saharan Africa and other areas characterised by generalised HIV epidemics are more likely to have a higher prevalence of HIV [22].

Several factors contribute to the challenge of diagnosing infectious diseases in the prison population: the silent nature of many chronic infections, esp. in the early stages; limited health literacy; and reticent health-seeking behaviour. The problem is further aggravated by suboptimal access to care in prison settings. Recent epidemiological data show that among people with a positive diagnostic test (serological or immunodiagnostic screening) in prison, sizeable proportions were unaware of their status: 3.4% of those who were HIV positive were unaware of their infection; even higher proportions were reported for HCV (11.6% unaware of infection), HBV (52.7%), and latent TB infection (43.7%) [23]. The high percentage of people in prison who are not aware of their health status also increases the risk for transmission [24]. Developing an accurate epidemiologic overview of infectious diseases in the prison setting is therefore crucial for public health and healthcare planning purposes.

2.1.1 Viral hepatitis (B and C)

Hepatitis B virus (HBV) and hepatitis C virus (HCV) are spread through contact with infected body fluids or blood products. These viruses can cause both acute and chronic hepatitis infection, ranging in severity from a mild illness that lasts only a few weeks to a serious, lifelong illness and death resulting in cirrhosis and predisposing to hepatocellular carcinoma (HCC). Most people with acute HBV or HCV infection do not have any symptoms. Those who develop chronic infection are often asymptomatic until decades after infection when symptoms develop secondary to serious liver damage [10,25,26].

Effective prevention measures are currently available for both infections, such as condoms and harm reduction measures for PWID. A vaccine is currently available only for HBV. With the availability of antiviral treatment that can effectively halt disease progression in chronic hepatitis B, including progression to cirrhosis and HCC, and new direct acting antivirals (DAAs) for chronic hepatitis C with cure rates above 90% [27,28], elimination of chronic viral hepatitis now seems possible.

In a recent systematic review of EU/EEA literature coordinated by ECDC, representative prevalence estimates for HBV and HCV in people in prison were only available for 11 countries. Ireland (HBV prevalence 0.3%), Bulgaria (HBV prevalence 25.2%), Hungary (HCV prevalence 4.9%) and Luxembourg (HCV prevalence 86.3%) were at the extreme ends of the spectrum. Most of the reported values were higher than in the general population [29]. According to a review on the global burden of communicable diseases among people in prison, HBV and HCV prevalence in western Europe was estimated at 2.4% (95% CI 1.6–3.3) and 15.5% (12.2–19.1), respectively. When considering only PWID in prison, national HCV estimates were largely above 40% [4].

In a 2016 ECDC survey on HBV and HCV testing policies and practices in the EU/EEA, the majority of responding countries (11 countries [58%]) stated that HBV and HCV testing was offered on the basis of risk factors or medical reasons during prison stay; 21% (four countries) said testing was offered at entry. Some countries had different testing practices at different correctional facilities. The remaining countries did not offer testing (one country) or reported 'unknown' [15].

2.1.2 HIV

HIV is a virus that attacks the immune system and causes a lifelong severe illness with a long incubation period. The end-stage of the infection, acquired immunodeficiency syndrome (AIDS), results from the destruction of the immune system. HIV is transmitted through infected blood, semen, vaginal fluids or breast milk [10,30]. Numerous effective preventive measures exist to control HIV transmission, including barrier contraceptives, treatment as prevention and, most recently, pre-exposure prophylaxis. Early treatment of HIV infection with antiretroviral therapy has been associated with both individual patient clinical benefits and a dramatic decrease in the risk of transmission to sexual partners [31-33].

Prevalence estimates for HIV among the prison population are reported as part of the Dublin Declaration monitoring [14]. In 2016, 15 EU/EEA countries reported estimates ranging from 0.2% to 15.8%, with Estonia, Italy, Spain and Latvia reporting a prevalence above 5% [unpublished ECDC report]. According to a recent study assessing the global burden of HIV infection among the prison population, HIV prevalence in western Europe is estimated at 4.2% (95% CI 2.7–6.1) [4].

According to the Dublin Declaration monitoring report, governments in 28 EU/EEA countries claim that they delivered HIV testing at scale in prison settings in 2014. Twenty-two EU/EEA countries reported that voluntary testing is available in all correctional facilities, while six countries reported that voluntary testing is available in some or most correctional facilities. No EU/EEA country reported that voluntary testing was not available at all. In 2016, one country in the region reported mandatory HIV testing in prison settings (Cyprus) [unpublished ECDC report] [14]. In 2016, only six EU/EEA countries gave high priority to HIV prevention by targeting prison populations [unpublished ECDC report].

2.1.3 Sexually transmitted infections

Most of the common STIs such as chlamydia, gonorrhoea, syphilis, and trichomoniasis are currently curable [34]. Prevention measures such as barrier contraceptives and early treatment are effective in controlling STIs transmission. Chlamydia is an STI caused by the *Chlamydia trachomatis* bacterium and is often asymptomatic. It can result in complications in women, most frequently pelvic inflammatory disease (PID) and salpingitis, conditions that can lead to infertility and extra-uterine pregnancies. [10,35]. Gonorrhoea is caused by infection with the Gram-negative bacterium *Neisseria gonorrhoeae*. Symptoms reflect localised inflammation of infected mucosal surfaces in the genital tract, resulting in urethral discharge and dysuria in men and altered vaginal discharge, lower abdominal pain and dysuria in women. Among women, complications similar to chlamydia may occur while among both genders disseminated gonococcal infection may occur which can be fatal [36]. Syphilis is caused by the bacterium *Treponema pallidum*. After a three-week incubation period on average, clinical symptoms appear: first a primary lesion at the site of infection, which may remain unnoticed, followed by skin rashes or mucous membrane lesion around the time when the primary lesions is healing or several weeks afterwards (secondary syphilis). If untreated and following long periods of latency, tertiary syphilis may appear which can result in severe symptoms affecting multiple organ systems and can be fatal [35]. Trichomoniasis is caused by infection with the parasite *Trichomonas vaginalis* and the infection is largely asymptomatic [37]. Other STIs not covered in this document may be of relevance in prison settings, such as for example *Mycoplasma genitalium*. This bacterial infection is often asymptomatic, however it can cause significant morbidity in men and women. Specifically, it can cause urethritis in both men and women, and cervicitis and pelvic inflammation in women.

No data were available on the epidemiology of STIs among the incarcerated population in the EU/EEA. There are, however, data available on the notification rates for chlamydia, gonorrhoea and syphilis in the general population [192]. In a recent systematic review, the prevalence of chlamydia among sexually active young adults in the community was estimated at 3.6% [38]. According to the 2016 round of the Dublin Declaration monitoring, 15 EU/EEA countries offered STI testing and clinical services in prison settings [unpublished ECDC report].

2.1.4 Tuberculosis

Tuberculosis (TB) is an infectious disease caused by a group of *Mycobacterium* species called the *Mycobacterium tuberculosis* complex. Following the initial infection, the bacteria most often lie dormant without evidence of clinically manifested symptoms. This state of persistent immune response to prior-acquired *Mycobacterium tuberculosis* antigens is called latent tuberculosis infection (LTBI). Active TB occurs when, at any time following primary infection, the bacteria are no longer controlled by the immune system. The resulting disease most commonly affects the lungs (known as pulmonary TB) with symptoms of chronic cough, loss of weight, loss of appetite, and general malaise [39]. Extrapulmonary TB may occur, but it is usually not contagious. Transmission of TB occurs from a person with active infectious pulmonary TB by airborne droplets (produced by coughing, sneezing or talking) that are subsequently inhaled by contacts [10,39]. In this document, active TB refers to infectious pulmonary TB.

In 2015, 17 EU/EEA countries reported 647 new and relapse TB cases in prison settings, resulting in a notification rate of 158.9 cases per 100 000 people in detention, ranging from zero in Ireland, Luxembourg, Malta, and

Slovenia to 748.5 cases per 100 000 people in prison in Latvia. Overall, the relative risk of contracting TB in a prison setting compared with the general population was 10.5. TB cases in prison settings accounted for 1.6% of all new cases notified. In Latvia, this group accounted for 4.7% of all reported cases [40].

A survey evaluating TB control in pre-trial detention centres and prisons in the WHO European Region was performed in 2004. Among the respondents, 16 countries were part of the EU/EEA [41]. Active case finding for TB was performed at entry in 94% of responding EU/EEA countries; in 56% of these countries, active case finding took place during detention; no information was available from Portugal.

2.2 Public health relevance of early diagnosis

Prevention of communicable disease transmission can be directed at two pathways: 1) preventing transmission of disease from infectious individuals to their contacts, and 2) preventing the development of active disease once any contacts have become infected (specifically relevant for TB) [10]. Active case finding to promote early diagnosis is one of the key prevention measures targeted at the first pathway.

Active case finding is aimed at detecting contagious diseases, treating them and thus reducing their transmission [42]. It can be defined as the systematic identification of people with a disease (regardless of symptoms), in a predetermined target group, by using tests, examinations or other procedures that can be applied rapidly. Passive case finding, on the other hand, is dependent on a person's health seeking behaviour and may be prompted by the development of symptoms or by self-assessment, e.g. following risk-taking behaviour [10].

Active case finding is warranted when interventions are available for those testing positive, such as effective treatment regimens (e.g. for hepatitis, HIV, STIs and TB [4]) and the prevention of disease transmission, particularly active TB through isolation of infectious TB cases. Other measures include vaccination for HBV; effective therapy for STI, HIV and, more recently, HCV; use of condoms or sexual abstinence for HIV and STIs; needle exchange programmes for hepatitis and HIV; and treatment of those with LTBI to prevent active TB disease [5,33,43].

Active case finding can be offered on a mandatory or voluntary basis. This guidance focuses on voluntary case finding, which can be divided into opt-in testing (testing is offered to all, and a person chooses whether to have the test) and opt-out testing (a person is informed that the test will be performed unless they actively refuse) [44]. Testing can be offered at different points in time in a prison setting, i.e. at prison entry, during imprisonment (for instance through yearly testing rounds), or at release from prison. Entry screening and testing during a prison term aims at preventing transmission, while testing at release is a key measure to prevent the infection of community members by infected people released from prison settings [45].

2.3 Human rights in prison settings and prison health

Several guidance documents define the principles and standards of prison healthcare delivery [10,46-51]. Together with the rich international human rights case law, these documents offer a wide variety of tools, helping prison healthcare services to deliver their services in line with human rights requirements and based on the principle of equivalence of healthcare between prison and community.

The enjoyment of the highest attainable standard of physical and mental health is an internationally recognised fundamental right of every person, i.e. a human right [52,53]. As described in the documents mentioned above, people in prison are entitled to the right to health and – subject only to the deprivation of liberty itself and to the limitations that are inescapable for its effective enforcement – all other human rights.

In consideration of the recognition of people in prison as a key population in a variety of policies and strategic documents aiming at controlling infectious diseases [54-56], it may be argued that there is an opportunity to move from the principle of equivalence of standards and care to an equivalence of objectives and health outcomes [57,58]. Success in improving the health of people in prison requires adequate conditions of detention, appropriate hygiene and avoidance of overcrowding. Conversely, there is evidence that poor conditions of detention may contribute to the dissemination of communicable diseases and add an additional risk of infection; for example, increased risk taking practices in prison are often related to drug use, tattooing, and sexual activities [53,59].

The public health relevance of early diagnosis is reflected in international human rights case law: '[…] the spread of transmissible diseases should be a major public-health concern, especially in prisons […] it would be desirable if, with their consent, [people] could benefit, within a reasonable time after being committed to prison settings, from free screening' for different types of viral hepatitis, HIV and TB [60]. Testing in prison settings can be seen as an opportunity to identify communicable diseases in high-risk and underserved groups [5,61].

3 Guidance development

3.1 Systematic review

A systematic literature review was performed to assess the evidence base around the effectiveness and suitability of active case finding in correctional facilities. The best available evidence and scientific knowledge was collected, reviewed and appraised in a transparent and systematic way. The review covers peer-reviewed and grey literature and follows international standards, such as Cochrane and PRISMA ('preferred reporting items for systematic reviews and meta-analyses'). A predefined list of databases and websites was searched for relevant articles, reports, conference abstracts, guidelines or other documents. A call for papers was also used to elicit submission of relevant unpublished materials.

The systematic review was designed to answer the following questions:

- What are the diseases that should be covered by active case finding?
- Which types of active case finding methods are effective?
- Which service models of active case finding are effective?
- Which types of active case finding methods are cost-effective?
- Which service models of active case finding are cost-effective?
- What is the acceptance of active case finding?
- How can the acceptance of testing for active case finding be improved?
- Who should be targeted for active case finding, when, and how often?

Details are available from an ECDC/EMCDDA report entitled 'Systematic review on active case finding of communicable diseases in prison settings' [62].

3.1.1 Evidence synthesis and grading

The quality and risk of bias of all included studies from the peer-reviewed literature and the quality of the grey literature documents were graded as stated in the systematic review report [62]. The level of evidence of peer-reviewed studies was determined based on the study design and the risk of bias, following GRADE criteria ('grading of recommendations assessment, development and evaluation'). Since significant heterogeneity existed between the included studies, the strength of evidence was not assessed beyond individual studies.

Grey literature documents were included only if they used transparent methods for collecting and compiling data and/or provided data sources/references. Relevant conference abstracts/unpublished research reports were checked for duplicity with peer-reviewed literature. Relevant guidelines were critically appraised with a selection of criteria derived from the AGREE instrument ('appraisal of guidelines for research and evaluation') and were categorised as either evidence-based guidelines or practice-based guidelines (with the former considered as higher quality; see Glossary).

To structure the evidence, the evidence base from the systematic review was compiled by developing a specific summary for hepatitis, HIV, STIs and TB. The evidence was further analysed by:

- outcomes: uptake, positivity rate, effectiveness (change in number/percentage tested, change prevalence/incidence, other), treatment initiation, cost-effectiveness, acceptability, feasibility, accessibility, and
- intervention descriptor/modality: timing (at entry, during imprisonment, at release), offer (mandatory, opt-in, opt-out, not specified), testing promotion (e.g. education, counselling).

3.2 Role of the ad hoc scientific panel

A multi-sectoral ad hoc scientific panel on active case finding interventions was established to contribute to evidence gathering, analysis and interpretation.

The scientific panel members were selected based on their expertise in prison health, prevention and control of communicable diseases and their experience in the development of guidance documents. Experts came from a variety of constituencies, such as clinical professional associations, public health institutions, national ministries, EU-funded initiatives, international agencies, and civil society organisations from various countries, namely the Czech Republic, Estonia, France, Germany, Italy, Romania, Spain, Switzerland and the UK (Appendix 1).

The members of the scientific panel were invited based on their professional and scientific experience and do not represent the interests of any commercial body, Member State, or professional body. All panel members signed declarations of interest, which were reviewed by ECDC's compliance officer. None of the members of the panel

declared a conflict of interest. The panel was chaired by one of its members, and ECDC and EMCDDA acted as secretariat.

The scientific panel held four teleconferences and one face-to-face meeting. The first teleconference was held in November 2015 and discussed the prioritisation of topics, methodology, and evidence gathering. A Delphi process to collect panel opinions on human rights aspects and guiding principles for the guidance was performed ahead of the face-to-face meeting. The findings of the systematic review and the results of the Delphi process were discussed at a panel meeting in Stockholm on 23–25 May 2016 and during three teleconferences later that year. Members of the scientific panel provided valuable input and agreed, through a consensus building approach, on several evidence-based guidance statements and human rights considerations which were later included in the guidance document. During the face-to-face meeting, participants also identified additional peer-reviewed literature and grey literature documents with potentially relevant data, which were then assessed for inclusion in the systematic review.

The scientific panel members contributed to the production of this document and, in 2017, reviewed several draft versions.

3.2.1 Development of the guidance statement

ECDC and EMCDDA developed summary assessments of the evidence base, which are presented in Chapter four alongside the conclusions of the scientific panel. The scientific panel members formulated their conclusions based on the evidence base (peer-reviewed literature and grey literature), their expert opinion and the following criteria:

- Prison population subgroup considerations (e.g. migrants, PWID, prison staff)
- Implementation considerations
- Equity, ethics and human rights considerations
- Risks and benefits considerations
- Supplementary evidence (e.g. evidence derived from community settings)
- Existing EU/EEA service models for care delivery in prison settings

For stronger statements, the phrasing 'it is advisable' was used; 'could be considered' was used for less strong statements.

Considerations for implementation are discussed in Chapter 5, which presents an evidence base heavily indebted to expert opinions.

4 Conclusions

This project attempted to identify the most effective and cost-effective approaches for active case finding, with the ultimate objective of interrupting communicable disease transmission in prison settings and between prison settings and the community, by first testing and then treating infected persons.

The literature search and review was complemented by expert opinions and insights from country-specific service models for each disease/disease group of interest. However, it is important to note that communicable diseases for which no evidence base could be compiled are not discussed in this chapter.

4.1 Viral hepatitis (hepatitis B and C)

4.1.1 Evidence base

The evidence base on active case finding for viral hepatitis B and C in prison settings was very weak. For HBV, no comparative studies were found; evidence was confined to nine descriptive studies on uptake and positivity rates. For HCV, in addition to sixteen descriptive studies on uptake and positivity rates, three comparative studies and five cost-effectiveness studies were found. Two of the comparative studies were randomised control trials focussing on comparing testing methods rather than offer and timing modalities. Overall, the evidence base was very heterogeneous because it was derived from a wide geographical area; publications reported on different testing modalities and their combinations, with measures targeted at a range of distinct subpopulations. As a result, it was difficult to issue evidence-based conclusions regarding the most effective testing approach for viral hepatitis in prison settings. Tables 1 and 2 provide an overview of the evidence base. Further details are presented in the ECDC/EMCDDA systematic review [62].

In addition, three national guidelines [63-65] and one supranational guidelines [10] covering BBV testing in prison settings were identified. One guideline recommended performing HBV and HCV testing as part of the assessment of newly diagnosed people [10] while the remaining three recommended offering universal testing for HBV and HCV to all people entering a prison and again during their detention [63-65]. Further details are presented in the ECDC/EMCDDA systematic review [62].

Table 1. Evidence base on effectiveness of active case finding for HBV and HCV in prison settings

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
HBV					
• Provider-initiated • At entry • Universal	N=4 studies; 1 cross-sectional [66]*, sample size [702] 1 descriptive [61][a], sample size [946] 1 conference abstract [67], sample size [711] 1 unpublished research [68], sample size [~2000] EU/EEA (3)	>91.3%	0.6%-16.5%	NR	All very low
• Provider-initiated • During imprisonment • Universal	N=4 studies; 1 cross-sectional [23]*, sample size [3468] 3 conference abstracts [69-71]*, sample size [4072, 2233, 7767] EU/EEA (4)	56.3%-83.8% 55% Higher uptake after peer-education % tested increased from 10% to 42.9% after testing promotion initiatives (peer educators, leaflets, posters and staff training)	4.4%-13.2%	NR	All very low
• Provider-initiated (mandatory) • At release • Universal	N=1 study; 1 cross-sectional [72], sample size [916] EU/EEA (0)	NR	0.5%	NR	Very low
HCV					

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
• Provider-initiated • At entry • Universal	N=6 studies; 1 cross-sectional [66]*, sample size [702] 3 descriptive [61][a,b,c], sample size [946, 3034, 1618] 1 conference abstract [67], sample size [711] 1 unpublished research [73], sample size [~2000] EU/EEA (5)	9%-91.5%	4.7%-73.5%	NR	All very low
• Provider-initiated • At entry • High risk (HIV, self-reported IDU)	N=1 study; Cross-sectional [74], sample size [51562] EU/EEA (0)	NR	57%	Risk-based active case finding failed to capture 76% of predicted HCV positives	Very low
• Provider-initiated • During imprisonment • Universal	N=4 studies; 2 cross-sectional [23,75]*, sample size [3468, 957] 2 conference abstracts [69,70]*, sample size [4072, 2233] EU/EEA (3)	26%-83.8% Higher uptake after peer-education % tested increased from 20.5% to 42.0% after testing promotion initiatives (peer educators, leaflets, posters and staff training)	10%-32.8%	NR	All very low
• Provider-initiated • At entry and during imprisonment • Universal	N=1 study; Cross-sectional [76]*, sample size [2716] EU/EEA (0)	21.9%	20.5%	NR	Very low
• Provider-initiated • NR • Universal	N=1 study; 1 cross-sectional and qualitative [77]*, sample size [30] EU/EEA (1)	63.3%	36.8%	NR	All very low
• Provider-initiated • At entry • High risk vs. • Client-initiated • NR • Universal	N=1 study; Before-after [78]*, sample size [12297], follow-up [NA] EU/EEA (0)	Provider-initiated at entry for high-risk: 80.7%	Provider-initiated at entry for high-risk: 25.4% 1.9 cases/month (provider-initiated at entry, high risk) vs. 0.7 cases/month (client-initiated, universal)	NR	Very low
• Provider-initiated • At entry • Universal vs. • Routine testing (for females only) • NR • Universal	N=1 study; Stepped-wedge cluster RCT [79]*, sample size [~3600], follow-up [18 months] (focus on testing method – DBST vs. venepuncture) EU/EEA (1)	Higher HCV test rates using DBST at entry vs. venepuncture; insufficient evidence of effect of the intervention on uptake	NR	NR	Low
• Provider-initiated • NR • Universal vs. • Client-initiated • NR • Universal	N=1 study; Cluster RCT [80]*, sample size [NR], follow-up [6 months] (focus on testing method – DBST vs. venepuncture) EU/EEA (1)	Increase of HCV tested using DBST vs. client-initiated regular practice	NR	NR	Moderate

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
• Provider-initiated (mandatory) • At release • Universal	N=1 study; Cross-sectional [72], sample size [916] EU/EEA (0)	NR	1.7%	NR	Very low

DBST: dried blood spot testing, HCV: hepatitis C virus, NA: not applicable, NR: not reported, PWID: people who inject drugs, vs.: versus
** Used different promotion strategies: posters and personalised information presentation [66]; direct mail about advantages of screening from peer educators and pamphlets on importance of testing [23]; peer educators, leaflets, posters and staff training [69]; informational videos, post-testing counselling, appointment reminder card [75]; mandatory education session on hepatitis [76]; information sheets about study, no reimbursements/inducements [77]; educational seminar for staff on benefits of identifying acute HCV/non-acute HCV [78]; pre- and post-test counselling [79]; staff training on counselling, pre- and post-test counselling [80]*
[a-c] The following articles from the review by Rumble et al. [61] were part of the evidence base: a. Watkins, b. Horne, c. Skipper

Table 2. Evidence base on cost-effectiveness of active case finding for HBV and HCV in prison settings

Intervention description • how • when • who	Studies included [no. of studies, perspective, reference, time horizon, no. of studies from EU/EEA]	Scenarios	Conclusions	Level of evidence
• Provider-initiated • At entry • High risk vs. • Client-initiated • NR • High risk	N=2 studies [81,82], perspective [healthcare provider], time horizon [30 years, 80 years] EU/EEA (2), UK (2)	1. HCV test following a lecture (general or IDU-focused) 2. Symptom-based HCV case finding	In one study on PWID, case-finding at entry compared to symptom-based case finding was likely cost-effective based on reported ICER below 30 000 GBP per QALY, with the scenario using an IDU-focused lecture being the most cost-effective. In the other study contradicting results were found, whereby testing at entry after a lecture for PWID is likely not cost-effective compared to client-initiated HCV case finding based on reported ICER.	All moderate
• Provider-initiated • NR • High risk	N=1 study [83]; perspective [healthcare provider], time horizon [100 years] EU/EEA (1), UK (1)	1. DBST for HCV 2. Venepuncture for HCV	Among PWID, DBST is likely not cost-effective under UK commonly used willingness-to-pay thresholds of GBP 30 000.	Moderate
• Provider-initiated • At entry • Universal or after verbal screening vs. • No active case finding	N=1 study [84]; perspective [healthcare provider], time horizon [NR] EU/EEA (1), UK (1)	1. No active case finding 2. Verbally screening for past positive HCV test and ever having injected illicit drugs, or only one of each 3. No verbal screening (lecture only)	The incremental cost-effectiveness analysis revealed that verbally screening for past positive HCV test and ever having injected illicit drugs prior to opt-in HCV testing at entry is the most cost-effective option.	Low
• Provider-initiated • One-time and at entry • High-risk or universal vs. • No active case finding	N=1 study [85]; perspective [societal], time horizon [30 years] EU/EEA (0), USA (1)	1. No active case finding 2. HCV active case finding of active/former currently incarcerated PWIDs and active/former PWIDs at entry for up to 1 year 3. HCV active case finding of all currently incarcerated persons and all entrants for up to 1, 5 or 10 years	The authors concluded that universal opt-out active case finding in prison for HCV is highly cost-effective (ICER below 50 000 USD per QALY) for at least 10 years. Scenarios for former and current PWID were also assessed.	Moderate

DBST: dried blood spot testing, HCV: hepatitis C virus, IDU: injecting drug use, NHS: National Health Service, NR: not reported, PWID: people who inject drugs, vs.: versus

4.1.2 Ad hoc scientific panel opinion

As reflected by the high positivity rate of chronic HBV and HCV infections reported by the included studies (Table 1), the prevalence of viral hepatitis in prison settings – and in particular of HCV – is considerably higher than in the general population [4,86]. The transmission risk for HBV and HCV is increased in prison settings due to a

combination of structural and behavioural risk factors. There is also a higher proportion of severe clinical outcomes due to a higher prevalence of co-infection with HBV/HCV or HIV [4,10,29].

Despite the low level of evidence and the lack of conclusive studies on active case finding modalities in prison settings, the scientific panel shared the opinion that it is advisable to actively promote HBV and HCV testing in order to offer appropriate and timely interventions, such as vaccination and treatment, and thus reduce the risk of further disease transmission.

Since chronic viral hepatitis may remain asymptomatic for many years, a large proportion of infected individuals may be unaware of their status. Reducing the number of undiagnosed cases is a major global priority and a key requirement to attain the WHO goal of viral hepatitis elimination [87]. Within this framework, the scientific panel evaluated targeted testing of subgroups with a high risk, such as former/current PWID or people from endemic countries, based on studies on selective testing [78,81-84]. Panel members expressed concerns about risk assessment approaches, especially their difficult implementation, potential discrimination, and inadequate sensitivity. The panel considered universal testing approaches aimed at all individuals in a prison setting as advisable, based on findings from more recent studies [74,85], existing recommendations from national guidelines, and evidence of their impact [2,88].

While the panel agreed that active case finding for viral hepatitis should offer adequate confidentiality, counselling, and linkage to care, it also pointed out the opportunities offered by post-test prevention and control measures, such as HBV vaccination for unvaccinated HBV-negative individuals and effective therapy for chronic viral hepatitis. Effective treatment is available for those identified as chronically infected with HBV; it can halt disease progression, including deterioration to cirrhosis and hepatocellular carcinoma [28]. For HCV, the increasing availability of the highly effective DAAs that can cure HCV [27] and the mounting evidence on the extensive benefits of expanding DAA treatment in prison settings for the individual as well as the community at large [85,89,90], provide an additional and compelling argument for promoting active case finding. Provision of treatment, at least for HCV is a valid component of viral hepatitis prevention, both in prison settings and in the community [89].

Although it was not possible to agree on the ideal timing and modality of testing for viral hepatitis in prison settings based on available evidence, the panel reached consensus on active case finding for hepatitis B and C, provided that the 7C principles[1] are guaranteed. It was considered beneficial to offer universal provider-initiated HCV and HBV testing at, or near, prison entry, followed by appropriate linkage to care in order to reduce the risk of transmission within prison settings (very low level of evidence). However, since transmission may still occur within the prison setting, for example through unsafe sex and sharing of needles/syringes and other paraphernalia (e.g. needles for tattooing), it is also advisable to offer provider-initiated testing to high-risk groups, such as imprisoned MSM and PWID, at regular intervals or after an exposure incident (very low level of evidence). Client-initiated testing was considered a valid approach to complement and enhance these efforts and thus could be continuously promoted during incarceration (very low level of evidence).

ECDC and EMCDDA assessment

Based on the available evidence on active case finding for HBV and HCV in prison settings, and considering the high prevalence of infection and the availability of effective prevention and control measures, it is advisable to offer testing for HBV and HCV to all people in prison.

The available evidence suggests that provider-initiated strategies for viral hepatitis testing yield a higher uptake than client-initiated strategies. However, the body of evidence does not provide clear indications on the most effective timing and testing modality for HBV and HCV active case finding in prison settings.

Provider-initiated testing is also consistent with the general principle of disease prevention as it does not delay diagnosis and treatment, which, in turn, can prevent further transmission within prison settings and between the prison population and the community at large. Several interventions to increase the uptake of testing could be considered, although the level of evidence for the effectiveness of any specific ones above any other intervention is very low.

[1] 7Cs principles: consent, confidentiality, counselling or communication, correct test results, connection to care and treatment, supportive culture of the prison system, and continuity of care post-release. See Chapter 5 for an explanation of these principles.

4.2 HIV

4.2.1 Evidence base

The evidence base on active case finding for HIV in prison settings was composed of 37 descriptive studies reporting on uptake, positivity rates and, to a lesser extent, on treatment initiation. Seven comparative studies and one relevant cost-effectiveness study were also retrieved. The evidence base was derived from a broad geographical area; it reported on different testing modalities and their combinations, with interventions targeted at a range of distinct subpopulations. Overall, the evidence base was of low/very low quality. As a result, it was difficult to develop evidence-based conclusions regarding the most effective testing approach for HIV in prison settings. Tables 3 and 4 provide an overview of the evidence base. Further details are presented in the ECDC/EMCDDA systematic review [62].

Table 3. Evidence base on effectiveness of active case finding for HIV in prison settings

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
• Provider-initiated • At entry • Universal	N=18 studies; 10 cross-sectional [61,91-95]*[a,b,c,d,e], sample size [680, 2791, ~1700, 977, 100, 9405, 550000, NR, 30799, NR] 5 descriptive [61][f,g,h,i,j], sample size [946, 39073, 140739, NR, 129084] 2 prospective controlled trials [61][k,l], sample size [323, 298], follow-up [NR] 1 conference abstract [67], sample size [711] EU/EEA (1)	6%-98%	0%-5.4%	99.9-100% of HIV positives received their test results Opt-in strategy failed to detect 28%-91% of HIV cases Acceptance increased from 43% with opt-in to 64% with opt-out	All very low
• Provider-initiated • At entry and during imprisonment (at regular intervals) • Universal	N=1 study; Cross-sectional [96]*, sample size [3289] EU/EEA (1)	97.3% at entry; 96% during imprisonment	12.5% at entry; 0.06% during imprisonment	NR	Very low
• Provider-initiated • At entry or during imprisonment • Universal	N=8 studies; 1 comparative (focusing on testing method – blood vs. oral) [97]*, sample size [1314], follow-up [NA] 2 cross-sectional [76,98]*, sample size [NR, 2716] 5 conference abstracts [69,70,99-101], sample size [4072, 2233, 19772, 1410, 6691] EU/EEA (5)	24.6%-83.8% 63% increase in testing uptake when blood or oral testing offer instead of blood only 42% increase in testing uptake testing promotion initiatives (peer educators, leaflets, posters and staff training)	0.8%-17%	Treatment initiation: 59.1%	All very low
• Provider-initiated • NR • Universal	N=4 studies; 1 cluster-randomised trial (focusing on promotion intervention) [102], sample size [3300], follow-up [NR] 1 longitudinal (focusing on promotion intervention) [103], sample size [3096], follow-up [12 & 18 months] 2 conference abstracts [104,105], sample size [10857, 320] EU/EEA (2)	82.5% Testing uptake was 48-53% after staff received HIV service training and coaching vs. 49-44% where staff only receiving the HIV service training. OR=0.16 (not significant) Significant increase in uptake of testing after peer education program vs. no intervention (at 12 months: OR=2.76; at 18 months: OR=1.78)	9.9%-26.5%	Treatment initiation: 78% Significantly more attendees indicated they planned to schedule an HIV test after peer-education	Moderate-low

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
• Provider-initiated • At entry and release • Universal	N=1 study; Cross-sectional [66]*, sample size [702] EU/EEA (1)	91.3% at entry; 4.2% on release	0.3% at entry; 0% on release	NR	Very low
• Provider-initiated • During imprisonment • Universal	N=1 study; Cross-sectional [23]*, sample size [3468] EU/EEA (1)	67.4%	3.8%	NR	Very low
• Provider-initiated • At entry • Universal vs. • Client-initiated • At entry • Universal • Universal	N=2 studies; Descriptive (comparing different offer types) [61][m], sample size [opt-in 16908, opt-out 5168] Before-after [61][n], sample size [2886], follow-up [NA] EU/EEA (0)	Increase from 5% (testing on request) to 72% (opt-in) to 90% (opt-out) Increased from 18% (client-initiated) to 73% (provider-initiated)	0.1% new (opt-in and opt-out) 0.3% (provider-initiated)	100% HIV positives received results	All very low
• Provider-initiated • At release • Universal	N=1 study; Cross-sectional [106]*, sample size [507] EU/EEA (0)	60%	0.3%	100% received test results	Very low
• Provider-initiated • At entry • Universal vs. • Client-initiated • During imprisonment • Universal	N=2 studies; Cross-sectional [44], sample size [54664] Surveillance [107], sample size [22338] EU/EEA (0)	34-39% provider-initiated at entry; 6% client-initiated during imprisonment	3.3% provider-initiated at entry; 12% client initiated during imprisonment	NR	All very low
• Provider-initiated • At entry and during imprisonment • High risk (PWID)	N=1 study; Conference abstract [108], sample size [144] EU/EEA (1)	NR	35.4%	Treatment initiation: 35.2%	
• Provider-initiated • NR • Universal	N=2 studies; 2 Surveillance [109,110], sample size [NR, NR] EU/EEA (0)	Increased by 194% from 1992 to 1998 Increased from 2009 to 2012 and decreased slightly in 2013, estimated annual percent change of 2.7%	3.4% of tests were HIV-positive. The percentage of all tests that were HIV-positive decreased nearly 50% from 1992 to 1998 From 2009 to 2013, HIV-positive cases increased significantly with an annual percent change of 4.4%	Treatment initiation: The percentage of HIV-positive people in detention linked to medical care significantly increased by 27% between 2009 and 2013	All very low
• Provider-initiated (mandatory) • At release • Universal	N=1 study; Cross-sectional [72], sample size [916] EU/EEA (0)	NR	0.1%	NR	Very low

HIV: human immunodeficiency virus, NA: not applicable, NR: not reported, OR: odds ratio, PWID: people who inject drugs, vs.: versus

** Used different promotion strategies: pre-and post-test counselling [Spaulding]; group-based HIV education while waiting for test results, post-test counselling [95]; advertising for rapid HIV tests, pre-test counselling, active follow-up and referral for positive testers [92]; counselling and active referral of positives [93]; counselling [96]; pre-test HIV counselling [97]; mandatory HIV education session before decision on whether to take test [76]; disease education, post-test counselling [98]; peer educators and infectious disease specialists [69]; posters, personalised information letters [66]; presentation on advantages of testing by peer educators, pamphlets on importance of testing [23]; educational materials, pre- and post-counselling, active referral of positive testers to community-based care [106]; presentation on BBV [44]; counselling [107]; modified process improvement model (staff receive HIV service training and are taught about the model; staff only receive HIV service training) [102]; peer*

educator (fellow prisoner) and student (fellow prisoner)or peer-education programme (intensive training for peer educators, ongoing HIV education sessions given by peer educators to people in detention [103]
[a-n] The following articles from the review by Rumble et al. [61] were part of the evidence base: a. Cotton-Oldenberg, b. Behrendt, c. Hoxie, d. Andrus, e. Beckwith 2007, f. Watkins, g. Spaulding, h. Beckwith 2010, i. Beckwith 2011, j. Beckwith 2012, k. Kavasery 2009a, l. Kavasery 2009b, m. Strick, n. Liddicoat

Table 4. Evidence base on cost-effectiveness of active case finding for HIV in prison settings

Intervention description • how • when • who	Studies included [no. of studies, perspective, reference, time horizon, no. of studies from EU/EEA]	Scenarios	Conclusions	Level of evidence
• Provider-initiated • At or near release • Universal vs. • No active case finding	N=1 study [111], perspective [societal], time horizon [NR] EU/EEA (0), USA (1)	1. HIV active case finding 2. No active case finding	Offering HIV counselling and testing to 10 000 people held in prison resulted in 50 new or previously undiagnosed infections and averts four future cases at a cost of USD 125 000 to prison systems while saving to society over USD 550 000.	Low

HIV: human immunodeficiency virus, NR: not reported, vs.: versus
Additionally, three national guidelines [88,112,113] and two supranational guidelines [10,16] covering HIV testing in prison settings were identified. National guidelines from the United Kingdom recommended provider-initiated testing at entry [88,112] and during imprisonment [88], with annual HIV testing for MSM [113]. A WHO document recommended provider-initiated testing during medical examinations to all people in detention unless an HIV test was taken within the previous 12-month [10]. Conversely, UNODC supports client-initiated testing and counselling on request [47]. In two additional guidelines, which are not specific to prison settings, it is recommended that HIV tests should be offered routinely [54] or annually [114] to all people from key populations. Further details are presented in the ECDC/EMCDDA systematic review [62].

4.2.2 Ad hoc scientific panel opinion

The evidence base confirmed previous indications [4,115] of a higher prevalence of HIV in the EU/EEA prison population than in the general population. There are, however, variations across studies and geographical areas (Table 3). UNAIDS and WHO call for global action to reduce undiagnosed HIV cases so that 90% of all people living with HIV know their HIV status [116]. These considerations alongside the notion of a heightened HIV transmission risk due to structural and behavioural factors [4,10], provide a strong argument for scaling-up testing in prison settings. Despite the overall low level of evidence, the scientific panel agreed that it is advisable to actively promote HIV case finding in prison settings in order to offer appropriate and timely treatment and thus reduce the risk of onward transmission.

The scientific panel agreed that active case finding for HIV should be provided in the context of adequate confidentiality, counselling and linkage to care. Early diagnosis coupled with prompt linkage to care are essential to ensure individual benefits from early antiretroviral treatment [32]. In addition, treatment also prevents sexual transmission of HIV [117].

The ad hoc scientific panel could not conclude, based on the available evidence, on the ideal timing and modality of testing for HIV in prison settings. The panel reached a consensus on active case finding for HIV, provided that seven principles (7Cs)[2] are guaranteed. It was considered beneficial to offer universal provider-initiated HIV testing at entry to reduce the risk of transmission within prison settings (very low level of evidence), despite the lack of evidence on economic implications. It is also advisable to offer provider-initiated testing to high-risk groups, such as MSM and PWID, at regular intervals or after an exposure incident (very low level of evidence). Client-initiated testing was considered a valid approach to complement and enhance these efforts; client-initiated testing could also be continuously promoted during incarceration (very low level of evidence).

ECDC and EMCDDA assessment

Based on the available evidence on active case finding for HIV in prison settings, and taking into account the high prevalence of infection and the availability of effective prevention and control measures, it is advisable to offer testing for HIV to all people in prison.

[2] The seven principles (7Cs) are: consent, confidentiality, counselling or communication, correct test results, connection to care and treatment, supportive culture of the prison system, and continuity of care post-release. See Chapter 5 for an explanation of these principles.

The available evidence suggests that provider-initiated strategies for HIV testing yield a higher uptake than client-initiated strategies. However, the body of evidence does not provide clear indications on the most effective timing and testing modality for HIV active case finding in prison settings.

Provider-initiated testing is also consistent with the general principle of disease prevention, as it does not delay diagnosis and treatment, which, in turn, can prevent further transmission within prison settings and between the prison population and the community at large. Several interventions to increase the uptake of testing could be considered, although the level of evidence for the effectiveness of any specific ones above any other intervention is very low (see Sections 5.1.3 and 5.1.6).

4.3 Sexually transmitted infections

4.3.1 Evidence base

The evidence base on active case finding for STIs in prison settings was composed of 25 relevant publications, 15 of which reported on chlamydia and gonorrhoea, eight on syphilis and two on trichomoniasis. Seven studies on chlamydia and gonorrhoea were descriptive, five were comparative, and three were cost-effectiveness studies. Seven studies on syphilis were descriptive; one was a cost-effectiveness study. One study on trichomoniasis was descriptive and one was comparative. Descriptive studies reported mostly on uptake, positivity rates and treatment initiation. The evidence base derived largely from outside the EU/EEA, posing concerns over its applicability to EU/EEA prison settings. In addition, the included studies reported on different testing modalities and testing combinations and were targeted at a range of distinct subpopulations. Overall, the evidence base was very limited and of low/very low quality. As a result, it was challenging to develop evidence-based conclusions regarding the most effective testing approach for STIs in prison settings. Tables 5 and 6 provide an overview of the evidence base. Further details are presented in the ECDC/EMCDDA systematic review [62].

Table 5. Evidence base on effectiveness of active case finding for STIs in prison settings

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
Chlamydia and gonorrhoea					
• Provider-initiated • At entry • Universal	N=2 studies; 2 cross-sectional [98,118]*, sample size [NR, NR] EU/EEA (0)	85.1%-100%	CT 6.5%; NG 3.1%	Treatment initiation: 61%-85% (1 study); CT 79%; NG 66% (1 study)	All very low
• Provider-initiated • During imprisonment • Universal	N=3 studies; 1 case-control [119]*, sample size [NR], follow-up [NA] 1 survey (focusing on urine vs. vaginal swabs) [120], sample size [800] 1 conference abstract [121], sample size [430] EU/EEA (1)	82.1%, of which: 97% both specimens, 1.5% swab, 1.9% urine	CT 5.3%-11%; NG 0.8%	NR	Low-very low
• Provider-initiated • At release • Universal	N=1 study; Cross-sectional [72]*, sample size [916] EU/EEA (0)	37.6%	CT 0.6%; NG 0%	NR	Very low
• Provider-initiated • During imprisonment • <25 years old	N=1 study; Conference abstract [122], sample size [430] EU/EEA (1)	98.4%	CT 6%; NG 0.2%	NR	NA

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
• Provider-initiated • During imprisonment • Universal vs. • Provider-initiated • At entry • Universal	N=1 study; Cross-sectional [123]*, sample size [NR] EU/EEA (0)	NR	Opt-in during imprisonment: CT 5.6%; NG 0.9% Opt-out at entry: CT 9.7%; NG 1.3% Significantly more CT positives through opt-out at entry	NR	Low
• Provider-initiated • At entry • Universal vs. • Client-initiated • During imprisonment • Universal	N=3 studies; 1 cross-sectional [124]*, sample size [2417] 2 before-after [125,126], sample size [NR, 17065], follow-up [NA] EU/EEA (0)	At entry: 78.1%-100% Mean tests per month: 155 client-initiated vs. 455 provider-initiated	At entry: CT 6.4%-7.6%; NG 0.9%-2.5% Mean diagnoses per month: 9.3 client-initiated vs. 40.8 provider-initiated 86.8% of positives would have been missed through client-initiated testing Decrease after discontinuation provider-initiated program: CT 82.3%, NG 70.9%	Treatment initiation: 63%-69.6%	Low-very low
• Provider-initiated • At entry • ≤35 vs. • Client-initiated • During imprisonment • Universal	N=1 study; Before-after [127], sample size [NR], follow-up [NA] EU/EEA (0)	NR	Change after introduction provider-initiated program in jail: CT 1636% increase in jail, 59% increase in community; NG 885% increase in jail, 4% increase in community	NR	Very low
Syphilis					
• Provider-initiated • At entry • Universal	N=5 studies; 4 cross-sectional [98,128-130]*, sample size [NR, 12685, 50941, 26829] 1 conference abstract [67], sample size [711] EU/EEA (1)	69%-91.5%	1.4%- 6%	Treatment initiation: 56.7%-83.5%	All very low
• Provider-initiated • During imprisonment • Universal	N=2 studies; 1 cross-sectional [23], sample size [3468] 1 conference abstract [69], sample size [4072] EU/EEA (2)	55.7%- 56.3% Uptake improved by 45.7% with peer education	2.1%-2.3%	NR	Very low
• Provider-initiated Mandatory • At release • Universal	N=1 study; Cross-sectional [72]*, sample size [916] EU/EEA (0)	NR	0.1%	NR	Very low
Trichomoniasis					
• Provider-initiated • At entry • Universal vs. • Client-initiated • At entry • Universal	N=1 study; Before-after [131], sample size [833], follow-up [NA] EU/EEA (0)	NR	44% (provider-initiated); 14% (client-initiated)	NR	Very low

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
• Provider-initiated • At release • Universal	N=1 study; Cross-sectional [72]*, sample size [916] EU/EEA (0)	37.6%	5.5%	NR	Very low

CT: Chlamydia trachomatis*, NA: not applicable, NG:* Neisseria gonorrhoeae*, NR: not reported, vs.: versus*
** Used different promotion strategies: active referral for treatment when released before knowing results [118]; disease education, post-test counselling [98]; education on STIs before decision on whether to take test, post-test counselling [119]; letter describing STD testing process [72]; education on STIs [123]; STI clinic brochures, instructions to follow-up at clinic, direct mail on aftercare services [124]; presentation on advantages of testing by peer educators, pamphlets on importance of testing [23]*

Table 6. Evidence base on cost-effectiveness of active case finding for STIs in prison settings

Intervention description • how • when • who	Studies included [no. of studies, perspective, reference, time horizon, no. of studies from EU/EEA]	Scenarios	Conclusions	Level of evidence
Chlamydia and gonorrhoea				
• Provider-initiated • At entry • <30 vs. • Provider-initiated • At entry • Universal	N=1 study [132], perspective [healthcare and prison services], time horizon [NR] EU/EEA (0), USA (1)	1. Universal testing at prison entry 2. Age-based testing at prison entry <25 or 30 years; client-initiated testing for those ≥25 or ≥30 years 3. Client-initiated testing only	An age-based active case finding program for men <30 years of age for CT and NG is nearly as effective as universal active case finding (47.7 vs 49.9 cases treated respectively) and is substantially less costly than universal active case finding based on incremental cost per case treated (429USD vs 6,095 USD respectively), from the prison perspective. Similar findings were obtained when using the healthcare services perspective.	Low
• Provider-initiated • At entry • ≤35 vs. • No active case finding •	N=1 study [133], perspective [healthcare and prison services], time horizon [NR] EU/EEA (0), USA (1)	1. Universal testing for people in detention 8-14 days after entry or 2-3 days after entry 2. Age-based testing for people in detention ≤35 years 8-14 days after entry or 2-3 days after entry 3. Client-initiated testing only	Considering a hypothetical cohort of 100 000 male in detention, active case finding for men ≤35 years of age for CT and NG was nearly as effective as universal testing (995 vs 1099 infections averted respectively). Based on incremental cost per infection averted, has the least cost compared with symptom-based testing, from the perspective of correctional health services and the county department of public health.	Low
• Provider-initiated • At entry • Universal vs. • No active case finding	N=1 study [134], perspective [healthcare services], time horizon [NR] EU/EEA (0), USA (1)	1. Universal testing for CT and NG at entry 2. Universal testing for CT only at entry 3. Client-initiated testing only	Considering a hypothetical cohort of 10 000 male in detention and based on incremental cost per case averted, universal active case finding for CT at entry only is cost-saving for female detainees, while for males this is less clear, compared to universal testing for chlamydia and gonorrhoea combined o r to client-initiated testing.	Low

CT: Chlamydia trachomatis*, NG:* Neisseria gonorrhoea*, NR: not reported, vs.: versus*
In addition to the above, one supranational guideline reporting on testing for STIs in prison settings was identified. The document recommended offering voluntary testing for STIs (chlamydia, gonorrhoea and syphilis) to all people in prison with high risk behaviours [10]. Other European guidelines not specific for prison settings recommend, over and above symptom-based testing, risk-based and age-based approaches for STI testing in the general population [36,135,136]. US guidelines recommend to offer universal testing for chlamydia and gonorrhoea to young adults at prison entry and universal testing for syphilis, based on local underlying prevalence [137]. Further details are presented in the ECDC/EMCDDA systematic review [62].

4.3.2 Ad hoc scientific panel opinion

Despite the overall low level of evidence, the scientific panel shared the opinion that it is advisable to actively promote STIs case finding in order to offer appropriate and timely treatment and thus reduce the risk of complications and disease transmission. While limited evidence was available on prevalence of STIs among people in detention in the EU/EEA, studies from the US reported high prevalence, particularly among young adults in prison (Table 5 and 6). STIs transmission within prison settings may be increased by high risk behaviours such as sex between men and coercive sexual intercourses. Sex is often regarded as taboo in prison settings and is either tolerated or illegal in a number of EU/EEA countries [4,10]. Some groups at high risk for STIs may be overrepresented in prison settings, such as male and female sex workers and persons who engage in transactional sex. Moreover, the limited coverage of, and access to, preventive measures such as condoms and health promotion activities in prison settings in several EU/EEA countries may further increase the risk of disease transmission [115].

In addition to the high risk of transmission and high prevalence in prison populations, some STI increase the risk of acquisition of HIV, which supports the rationale for early diagnosis and treatment.

STIs often go unnoticed, and although symptom-driven testing is the most commonly implemented approach, it may be insufficient [124-127,131]. Effective and short-course treatment options are available and existing evidence suggest post-diagnosis treatment uptake is satisfactory (Table 5). Together with the evidence of increased uptake and positivity rate following the introduction of provider-initiated testing compared with client-initiated (or symptom-based) approaches, these arguments support the implementation of active case finding initiatives in prison settings. Limited evidence exists on identifying target populations for active case finding initiatives; different approaches are considered, e.g. age-based or risk-based testing for chlamydia, gonorrhoea or trichomoniasis, and risk-based or universal testing for syphilis.

Although it was not possible to agree on the ideal timing and modality of testing for STIs in prison settings based on the available evidence, the scientific panel reached a consensus on active case finding for STIs, provided that the 7C principles[3] are guaranteed. It was considered beneficial to assess the risk for STIs at prison entry, and subsequently offer provider-initiated testing for STIs (chlamydia, gonorrhoea, trichomoniasis and syphilis) to those found to be at increased risk (including persons with multiple sexual partners in the past year, MSM, sex workers and persons engaging in transactional sex) (very low level of evidence). However, since transmission may still occur within the prison setting, it is also advisable to continue assessing the risk for STIs periodically during incarceration and offer STI testing accordingly (very low level of evidence). Client-initiated testing was considered a valid approach to complement and enhance these efforts and thus could be continuously promoted during prison stays (very low level of evidence).

ECDC and EMCDDA assessment

The available evidence suggests that provider-initiated strategies for STIs testing yield a higher uptake than client-initiated strategies. Provider-initiated testing is also consistent with the general principle of disease prevention to not delay diagnosis, in order to offer appropriate treatment, and prevent, as much as possible, complications and transmission within prison settings. However, no clear indication on the most effective timing and modality for STIs active case finding in prison settings may be derived from the existing evidence. Several approaches may be considered, including risk-based, age-based or universal testing for STIs, though evidence of their effectiveness in EU/EEA prison settings is very limited (see Sections 5.1.3 and 5.1.7).

4.4 Tuberculosis

4.4.1 Evidence base

The evidence base on active case finding for TB in prison setting was composed of twenty-eight relevant publications, 11 of which focussed on active TB and 17 on LTBI. Nine of the TB studies were descriptive studies that reported mostly on uptake, positivity rates and treatment initiation, and two were cost-effectiveness studies. All the included LTBI studies were descriptive, reporting mostly on uptake, positivity rates and treatment initiation. The evidence base was derived from a wide range of geographical areas within and beyond the EU/EEA, and different testing modalities and testing combinations were reported. Overall, the evidence base was limited and of low/very low quality. As a result, it was difficult to issue evidence-based conclusions regarding the most effective testing approach for active TB and LTBI in prison settings. Tables 7 and 8 provide an overview of the evidence base. Further details are presented in the ECDC/EMCDDA systematic review [62].

Table 7. Evidence base on effectiveness of active case finding for TB in prison settings

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
Chlamydia and gonorrhoea					

[3] The seven principles (7Cs) are: consent, confidentiality, counselling or communication, correct test results, connection to care and treatment, supportive culture of the prison system, and continuity of care post-release. See Chapter 5 for an explanation of these principles.

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
• Provider-initiated • At entry • Universal	N=4 studies; 1 cross-sectional [138], sample size [4890] 1 surveillance (focused on testing methods) [139], sample size [NR] 1 before-after (focused on testing methods) [140], sample size [62281], follow-up [NA] 1 unpublished research [141], sample size [NR] EU/EEA (1)	75%-77.3% (TST) 67.1% (CXR (of TST-positives)) 100% (CXR)	11.9%-46.9% TST-positive; 0.05-2.3% confirmed TB	Treatment initiation: 87.1%	All very low
• Provider-initiated • During imprisonment • Universal	N=1 study; Longitudinal [142]*, sample size [NR], follow-up [NR] EU/EEA (0)	99.8%	0.4% confirmed TB	Treatment initiation: 100%	Very low
• Provider-initiated • At entry and during imprisonment • Universal	N=2 studies; 1 longitudinal [143], sample size [3081], follow-up [NR] 1 conference abstract [144], sample size [600] EU/EEA (2)	82.5% at entry	0.24% at entry, 2.2% during imprisonment (1 study); 0.3% overall (1 study)	Treatment initiation: 100%	Very low
• Provider-initiated • At entry and during imprisonment • Universal	N=1 study; Survey [41], sample size [22 countries] EU/EEA (1)	At entry: 94% of responding EU/EEA countries, uptake ranged from 63% in Latvia to 100% in Slovakia and Spain During imprisonment: 56% of responding EU/EEA countries, uptake ranged from 5.5% in Cyprus to 100% in Malta	At entry: TB detection rates ranged from 41.7 per 100 000 in Spain to 1,255 per 100 000 people in detention screened in Latvia During imprisonment: TB detection rates ranged from 0 per 100 000 in Cyprus, Malta and Romania to 918.5 per 100 000 screened in Latvia	In the WHO European region, prison staff were screened annually for TB or latent TB infection in 50% of the countries, occasionally in 22.7% countries, and not at all in 13.6% countries	Very low
• Provider-initiated (mandatory) • NR • Universal	N=1 study; Cross-sectional [145], sample size [22920] EU/EEA (0)	NR	1.3% TST-positive; 0.03% confirmed TB	Treatment initiation: 100%	Very low
LTBI					
• Provider-initiated • At entry • Universal	N=5 studies; 1 longitudinal [146], sample size [NR], follow-up [NR] 1 cross-sectional [147], sample size [3081] 3 conference abstracts [67,148,149], sample size [711, 378, 24101] EU/EEA (4)	11.6%-90.2% (TST)	7.2%-50.4% (TST); 48.3% (TST+IGRA) at 2nd TST: 11.7%	NR	Very low
• Provider-initiated • During imprisonment • Universal	N=6 studies; 1 cross-sectional [23]*, sample size [3468] 5 conference abstracts [69,150-153], sample size [4072, 2871, 7500, 197, 378] EU/EEA (6)	15.4%-100% 15% increase in percentage of individuals tested after peer educators and specialist on communicable diseases intervention 31.5% increase in acceptance after peer educators presentation and pamphlets on importance of screening	17.2%- 50.4%	NR	Very low

Intervention description • how • when • who	Studies included [no. of studies, design, reference, sample size, no. of studies from EU/EEA]	Outcome 1: Uptake	Outcome 2: Positivity rate	Other outcomes	Level of evidence
• Provider-initiated • At entry and during imprisonment • Universal	N=3 studies; 1 longitudinal [143], sample size [478], follow-up [NR] 2 conference abstracts [154,155], sample size [158, NR] EU/EEA (3)	82.5%-100% (TST)	41.3%-44.9%	Treatment initiation: 23%	Very low
• Provider-initiated • At entry • Migrants in prison	N=1 study; Conference abstract [156], sample size [134] EU/EEA (1)	100%	49.3%	NR	NA
• Provider-initiated • NR • Universal	N=1 study; Cross-sectional [157], sample size [NR] EU/EEA (0)	NR	18% (TST)	Treatment initiation: 58%	Very low
• Provider-initiated (mandatory) • NR • Universal	N=1 study; Cross-sectional [145], sample size [22920] EU/EEA (0)	NR	0.9%	Treatment initiation: 58%	Very low
• Provider-initiated • NR • Correctional officers	N=1 study; Survey [158], sample size [1174] EU/EEA (0)	NR	NR	Testing officers at employment start occurred in 61.9% of responding jails, and 74.5% tested officers after exposure to active TB Of all officers tested, 0.39% had LTBI test conversions, 0.38% among jails that test once or more a year, and 0.43% among jails that do not test once or more a year	Very low

CXR: chest X-ray, IGRA: interferon gamma release assay, LTBI: latent tuberculosis infection, NA: not applicable, NR: not reported, PCR: polymerase chain reaction, TB: tuberculosis, TST: tuberculin skin test
$ Active TB refers to pulmonary TB
** Used different promotion strategies: informed about TB and its control, reluctant people in prison are encouraged by other people in detention/staff [142]; presentation on advantages of testing by peer educators, pamphlets on importance of testing [23]*

Table 8. Evidence base on cost-effectiveness of active case finding for TB in prison settings

Intervention description • how • when • who	Studies included [no. of studies, perspective, reference, time horizon, no. of studies from EU/EEA]	Scenarios	Conclusions	Level of evidence
Chlamydia and gonorrhoea				
• Provider-initiated • NR • Universal vs. • No active case finding	N=1 study [159], perspective [healthcare system], time horizon [10 years] EU/EEA (1), multicountry	1. No active case finding 2. MMR screening 3. Symptom screening 4. Sputum PCR screening 5. Combinations of two or all of the three screening methods	Annual screening of the general prison population with sputum PCR was the most cost-effective method based on incremental cost per QALY. Adding sputum PCR to the currently used strategy of annual MMR screening was cost-saving compared to MMR screening alone, but resulted only in minor reductions in (MDR-) TB cases. Symptom-based strategies were less effective and more expensive than MMR-based strategies.	Moderate

Intervention description • how • when • who	Studies included [no. of studies, perspective, reference, time horizon, no. of studies from EU/EEA]	Scenarios	Conclusions	Level of evidence
• Provider-initiated • At entry • Universal	N=1 study [160], perspective [NR], time horizon [NR] EU/EEA (0), USA (1)	1. Routine miniature chest radiography 2. TST 3. Symptom-based	Based on analysis of the cost per active TB case identified, screening for active TB at entry using miniature chest radiography seemed to be more sensitive and more cost-effective than screening at entry with either TST or based on symptoms.	Low

MDR: multi-drug-resistant, MMR: mass miniature radiography, NR: not reported, PCR: polymerase chain reaction, TB: tuberculosis, TST: tuberculin skin test
[$] Active TB refers to pulmonary TB

In addition, four supranational guidelines were identified, providing recommendations for systematic passive and active case finding for active TB at prison entry and during incarceration [10,45,161,162]. National guidelines specific to prison settings from the United Kingdom and Italy recommended universal screening for active TB at prison entry, with one recommending additional annual check-ups for individuals with predisposing conditions [163-165]. A Dutch guideline recommended active case finding at entry only for high-risk groups and foreign-born individuals [166]. Active case finding for LTBI was covered in two national and one supranational guidelines, the latter not specific to prison settings [43,163,164]. All documents recommended provider-initiated testing for LTBI among high-risk individuals such as people originating from areas with a high prevalence of TB, contacts of active TB cases, and individuals at a higher risk of developing active TB (e.g. HIV-positive people). Further details are presented in the ECDC/EMCDDA systematic review [62].

4.4.2 Ad hoc scientific panel opinion

Despite the overall low level of evidence, the scientific panel shared the opinion that it is advisable to actively promote TB case finding in order to offer appropriate and timely treatment and reduce the risk of transmission and of developing disease.

The available evidence confirms previous reports [4,40] of high TB prevalence in prison settings in the EU/EEA (Table 7), and raises concerns about the relative proportion of drug-resistant TB cases [167]. Socioeconomic and behavioural factors which are predisposing for active TB development are prevalent among prison populations, and high-risk groups for active TB are generally overrepresented in EU/EEA prison settings [5,10]. In closed settings, such as prisons, active TB is a potentially highly infectious respiratory disease that can spread easily in overcrowded and poorly ventilated environments, as corroborated by existing incidence data and data on the relative risk for active TB in prison settings [40,143]. Prevention of TB transmission in prison settings is of paramount importance, both at the individual and the public health level, and provides a compelling argument for case finding for active TB in prison settings.

The available evidence suggests a high prevalence of LTBI among people in prison in the EU/EEA (Table 7), particularly among individuals originating from high-prevalence countries and underserved communities, though with some degree of heterogeneity between studies [148,152-156]. Although LTBI is not contagious and does not pose a direct threat to people in prison, it may progress to infectious active TB. Risk of LTBI re-activation is higher in immunocompromised people (e.g. HIV-positive people) and may be increased by other factors common in people in prison (e.g. poor nutrition, stress, drug use) [5]. LTBI treatment is effective against re-activation of TB. According to one included study, the relative risk of developing active TB while in prison was significantly higher for LTBI-positive individuals refusing treatment [143]. However, the rationale for LTBI active case-finding is tempered by other relevant factors such as the underlying TB prevalence and coverage of BCG vaccination in the general population, the population characteristics of the target prison population (e.g. proportion of individuals from endemic countries) and the available resources.

Although it was not possible to determine the ideal timing and modality of testing for TB in prison settings based on the available evidence, the scientific panel reached a consensus on active case finding for active TB and LTBI, provided that seven principles (7Cs[4]) are guaranteed. It was considered important to offer provider-initiated testing for active TB within 48 hours of prison admission (very low level of evidence). It was also considered beneficial to implement regular provider-initiated active TB testing among individuals at high risk of TB infection or LTBI reactivation (e.g. people living with HIV) (very low level of evidence). To complement these efforts, passive case finding was considered a valid approach to increase case detection during incarceration (very low level of evidence). Screening for active TB could also be considered for staff newly employed to work in prison setting.

[4] The 7Cs are: consent, confidentiality, counselling or communication, correct test results, connection to care and treatment, supportive culture of the prison system, and continuity of care post-release. See Chapter 5 for an explanation of these principles.

Repeated screening (e.g. yearly) could be considered, depending on national/local epidemiology and available resources.

LTBI screening followed by an offer for appropriate treatment could also be considered, depending on national/local epidemiology (e.g. low-incidence countries) and available resources (very low level of evidence). Regular provider-initiated LTBI screening could be considered for high-risk individuals (e.g. people living with HIV) (very low level of evidence). Screening for LTBI could be considered for newly employed prison staff (very low level of evidence).

ECDC and EMCCDA assessment

Based on the available evidence on TB active case finding in prison settings, and considering the public health implications of TB transmission in closed settings, it is advisable to offer universal provider-initiated testing at prison entry. Provider-initiated testing at prison entry is also consistent with the general principle of disease prevention to not delay diagnosis, in order to offer appropriate treatment and prevent, as much as possible, further transmission within the prison setting (see Section 5.1.8).

LTBI provider-initiate testing could also be considered, at least for individuals at high risk of disease progression, depending on local epidemiology and availability of resources (see Section 5.1.8).

5 Implications for public health practice and research

5.1 Public health practice

This section presents specific considerations related to the implementation of active case finding initiatives in prison settings. It encompasses a number of various issues, ranging from human rights aspects to testing modalities and disease-specific considerations. This section is intended to complement Chapter 4 by providing evidence-based and practice-based information to support the design and planning of active case finding initiatives in prison settings in the EU/EEA.

5.1.1 Equivalence of care and human rights considerations

A large number of guidance documents defines the principles and standards of prison healthcare delivery [10,46-51]. One of these principles maintains that people in prison have the same right to care as those in the community. This so-called 'principle of equivalence of care' is an internationally agreed minimum [48,49,60]. It aims to secure, as much as possible, the same standards of healthcare for people in and outside of prison. However, based on the principle of equitable care or equivalence of health objectives, people in prison are entitled to expect services and interventions over and above those that are available in the community: this is due to the higher burden of, for example, viral hepatitis, HIV and TB and the increased responsibility of the state, which is based on human rights obligations [57,58]. Failure to detect or properly treat a health problem or adequately assess treatment needs, may raise human rights issues, as do malpractice, negligence or errors in medical treatment [51,168]. The combination of measures and recommendations set forth by applicable national and international guidelines, alongside normative provisions, constitute a set of standards that can serve as an indicator of compliance with human rights requirements.

In practice, an approach to communicable diseases that is also sensitive to human rights should translate into proactive engagement of healthcare staff, early disease detection, awareness and application of medical standards and ethics, prevention and vaccination, and treatment [51]. As in other settings, early detection allows for preventive measures. In the context of highly infectious airborne diseases (such as TB), isolating a patient during the infectious period might be justified, as this would be in accordance with medical standards and guidance [53]. By contrast, medically unjustified segregation of imprisoned people who suffer from certain conditions (e.g. HIV) would violate human dignity or be considered degrading and discriminatory.

Equivalence of prevention, treatment, care, and support can best be achieved by ensuring continuity and coordination of care between community and prison services, and would also avoid the duplication of efforts. In some countries, the responsibilities for healthcare in prison settings and healthcare in the community lie with separate government departments/health authorities. If this is the case, a joint strategic approach to promote continuity and coordination of care between community and prison services is advisable.

5.1.2 7C principles

The active case finding process in prison settings poses a number of specific challenges. Most people held in prison, especially at the early stages of their incarceration, are in a state of considerable fragility and vulnerability, at times combined with aggressiveness and distrust; the reasons for this are complex, but can include general psychological problems, substance use, poor health, educational deficits, and poor social skills. It is advisable to take these aspects into consideration during the planning and implementation of active case finding initiatives in prison settings. In this context, WHO formulated five principles and called them the 'five Cs': consent, confidentiality, counselling (or communication), correct test results, and connection to prevention, care, and treatment [114].

These principles should constitute the foundation of active case finding, both in prison settings and the community. With regard to the prison system, the ad hoc scientific panel endorsed two additional principles as particularly relevant: continuity of care post-release and an overall supportive culture within the prison system.

Figure 2. The seven Cs

In accordance with recognised international standards [53,54,114], active case finding should be voluntary and based on informed consent. People who get tested, including people in prison, would need to be informed about the testing procedures and their right to decline testing. Regardless of whether the offered interventions are opt-in or opt-out, seeking consent for testing would need to take into account that people in prison often feel vulnerable and disempowered. This is often aggravated by language problems, developmental and educational deficits, and poor social skills [51,53]. It is therefore advisable to train staff members (e.g. physicians, nurses), support staff (e.g. from non-governmental organisations) or peers in counselling. Legal parameters for consent may differ between countries; national requirements should be taken into account when designing testing programmes.

In accordance with international standards, every person undergoing testing should receive his/her results as soon as possible, and, if tested positive, receive appropriate care and treatment. If tested negative, preventive care should be offered, for example HBV vaccination. Active case finding alone is insufficient if not followed up by appropriate control and prevention measures. Given the transitory nature of incarceration, continuity of care post-release is essential to reap the rewards of testing interventions in prison settings.

A supportive culture is crucial to the success of prevention and control interventions. Trust and confidence in the prison healthcare services should be encouraged, not only among people in detention but also among prison staff, especially correctional officers. Health promotion, peer-education, training and information sessions for staff and people held in prison may be considered (see Section 5.1.3).

A high level of healthcare services, as envisioned by the 7 Cs, can be attained if staff members work together and focus on common goals, for example by providing continuous feedback and sharing intervention outcomes related to the virtuous circle of the quality improvement process[5].

Skilled and motivated healthcare workers in sufficient numbers are necessary to respond to health needs in prisons; shortage of skilled clinical staff is a common problem in prison settings [51,53].

5.1.3 Active case finding modalities

There are several modalities in which testing can be offered. While mandatory testing is one of those, it will not be considered in this guidance document because it runs contrary to the principle of informed consent. Mandatory testing in prison settings will rarely meet medical ethics and human rights requirements as it constitutes an interference with the right to private life and would fail to meet the requirements of the European Convention on Human Rights and the tests developed by the European Court of Human Rights.

[5] The EU-funded project 'Joint action on improving quality in HIV prevention' (quality action) developed a basket of practical tools and materials to maximise the quality of HIV prevention projects and programmes. More information is available from: http://www.qualityaction.eu/choosetool.php

Voluntary testing may be initiated by the healthcare provider (provider-initiated testing), i.e. by offering tests for communicable diseases to people held in prison; testing can also be requested by people in prison, especially by people with symptoms and people who perceive a risk of infection (client-initiated testing). Voluntary provider-initiated testing can be offered in two modalities: 1) opt-in, where testing is offered to all eligible individuals (often upon identification of risk factors), who then choose whether to have the test, and 2) opt-out, where all consenting eligible individuals are informed that a test will be conducted, unless the person actively refuses. Due to differences in the perception of opt-in and opt-out in different countries and settings, this document uses the term 'provider-initiated' because it covers opt-in and opt-out approaches.

The patient's consent to screening and testing is required, regardless of the type of testing service provided in a prison setting; this consent is grounded in the fundamental right to private life (see Section 5.1.2). While both opt-in and opt-out approaches adhere to the principle of consent prior to testing, the implementation of opt-out testing in prison settings may raise concerns over possible coercion or intimidation on the part of the service providers. People in detention may lack self-determination and may fail to reject testing because they may not fully understand their right to refuse, and that their refusal will be without negative consequences [169]. Opt-out testing, especially if well-designed and thoroughly explained, can be consistent with the obligation of the state to uphold a person's right to the highest standards of health and healthcare. Opt-out approaches have been shown to result in higher uptake rates and in improved testing coverage in the prison population [1,61,123].

Opt-in approaches failing to achieve a sufficient level of coverage will also fail to adequately prevent further disease transmission within prison settings [61,74,91]. With regard to human rights, the state's responsibility to uphold human rights is ensured as long as opt-in testing does not result in undertesting.

Opt-out testing might be a more favourable option as it is less subject to stigma and discrimination, but some Member States may lack the legal framework for opt-out testing.

The optimal timing for active case finding initiatives was scarcely researched in the reviewed literature. However, it is evident that active case finding as soon as possible after prison entry is essential to prevent further disease transmission in the prison population as well as to offer adequate care to diagnosed people, including initiation/continuation of treatment. A medical examination upon admission [49] may offer a good opportunity for testing. However, the emotional and psychological status of individuals entering detention needs to be taken into full consideration. Active case finding does not necessarily have to be conducted at entry but can also take place in the days following admission (i.e. within seven days), ideally after the so-called 'entry trauma' [170,171] – with the notable exception of active TB testing. Early detection may also help dispel claims that infection took place after admission, or serve to allocate or apportion responsibility. Although the individual and public health benefits of active case finding are greater if entry testing is performed, additional testing opportunities, either provider- or client-initiated, could be considered. This includes targeting high-risk groups, testing those who refused testing at prison entry, testing people who were involved in exposure incidents, or testing people affected by an outbreak.

Several initiatives tried to increase testing uptake in prison settings, but the level of corresponding evidence is generally low or very low. Measures included health promotion and peer-led education interventions targeted at people in detention. A combination of different approaches was reported, encompassing enhanced pre-test counselling, handing out information materials (e.g. leaflets, personalised information letters), education sessions on communicable diseases and the advantages of testing, and peer-led education or support programmes [23,98,103,172]. While a significant change in testing uptake was reported by only one study [103], increases were observed in all. Two studies reported that educating prison healthcare staff on communicable diseases and the benefits of active case finding may increase participation and acceptance rates [80,102].

Focus on implementation
The role of peer educators in prison settings: the Italian FLEW project

The FLEW project (Free to live well with HIV in prison) is the result of a consolidated effort between NPS Italia Onlus (a network of people living with HIV), SIMSPe (the Italian Society for Prison Health and Medicine) and the University Ca' Foscari Venice. In 2016, 677 people in prison, 107 prison officers, 112 healthcare professionals, 70 educators and office staff, and 28 volunteers were given a questionnaire to assess their knowledge on HIV and HIV transmission. They were also asked to report on the level of stigma attached to HIV among people in prison, prison officers, educators and healthcare professionals.

For example, almost 60% of those interviewed thought that engaging in a fistfight – which can easily lead to bleeding – would not expose them to the risk of HIV transmission.

In 10 prisons across seven Italian regions, educational activities were organised for people in detention, prison officers and educators. A group of peer educators – people living with HIV (PLHIV) who also at some point in their lives were imprisoned – conducted a number of activities aimed at people in detention. Their work was essential to meet the project goals of improving HIV prevention in prisons, fighting stigma, and improving the quality of life of PLHIV. Another innovative element was the introduction of HIV rapid testing in prison settings. Over 650 tests were requested, both by people in detention and prison staff. All appreciated the testing opportunities presented by the project. The methods developed in this project are adaptable to other detention facilities.

Additional information is available from: http://www.npsitalia.net

As suggested by the retrieved evidence, diagnostic methods may influence acceptability and uptake of testing services among people in prison. The choice of a diagnostic method for a given communicable disease depends on a broad spectrum of factors, such as test characteristics, national and/or European regulations, available facilities and resources at national and local levels, and the specific characteristics of the people in prison.

It is important to note that invasive methods and/or diagnostics relying exclusively on venous blood may discourage uptake [61,66]. Higher acceptance/uptake of testing services was reported when oral tests or dry blood spots were used to complement routine venipuncture [79,80,97]. Acceptance was also higher after the introduction of rapid diagnostic tools for TB (e.g. chest X-ray [139,140]. The latter produced an increase in the rate of active TB diagnosis and shortened the time to isolate TB cases.

5.1.4 Prison settings

Prisons and custodial institutions differ from other settings in a number of ways when it comes to healthcare delivery. Structural barriers, such as lack of adequate health facilities, limited resources, high turnover of the prison population (average detention period in Europe is seven months [3]) [77,78] are coupled with individual barriers such as lack of trust in prison institutions, concern about confidentiality in prison settings, and difficult living conditions [75,95,173,174].

Testing coverage in prison is likely to be influenced by structural and organisational challenges, including the availability of adequate resources, which can affect the delivery of healthcare services. According to the available evidence, the most relevant barrier to testing uptake, performance and result notification (including induration reading for TB testing) was the transfer or sudden release from detention facilities [62]. This is probably more relevant for jails or remand prisons, where individuals are generally incarcerated for shorter periods of time. Differences may also be connected to the specific situation in a country or national prison system.

In addition, prison settings may differ from each other in the demographics of the incarcerated population (nationalities, minorities, etc.). These differences may have implications for the specific needs of the various prison population groups and need to be taken into consideration, alongside local availability of healthcare and diagnostic services, when planning and implementing active case finding initiatives.

Prison staff may also influence the implementation of prevention measures and other healthcare interventions in prison settings. Apart from the well-recognised need for dedicated training for healthcare staff [10], education interventions targeting correctional officers may increase cooperation between different groups, create awareness about the right to health, and ultimately ensure the successful implementation of healthcare interventions.

Special attention should be paid to all factors that contribute to disease transmission in prison settings. Poor hygiene, overcrowding, lack of availability of (and access to) evidence-based prevention tools, and under-resourced healthcare services can undermine the right to health of people in prison and thus promote disease transmission [10]. Active case finding cannot curb communicable disease spread in prison settings if implemented in isolation and without properly addressing adverse circumstances and structural barriers.

5.1.5 Other people in prison settings

People 'in prison' not only include people in detention, but also visitors, support and service providers from the community, and staff. All are exposed to a higher risk of acquiring communicable diseases while visiting or working in prison. People who enter the prison environment can also be an inadvertent source of infection for the prison population, for instance during a seasonal influenza wave.

It is important to pay close attention to the fundamental right to health of people working in prisons or visiting prisons, especially prison staff, and consider the implications this has for employment under national labour law. Such considerations are particularly important when prison staff are called upon to work in places with poor hygiene, squalid material conditions, poor working environments, prison overcrowding. Equally relevant are conditions characterised by a high prevalence of mental problems, physical illness, or infectious disease [175]. It

would be beneficial for prison staff to be able to take informed decisions which protect their safety and health, in addition to adequate occupational health services [176]. Prison staff should also be seen as a potential target group for active case finding initiatives at the start of employment and at regular intervals thereafter.

5.1.6 Blood-borne viruses

The existing body of evidence provides a clear indication of an elevated prevalence of blood-borne virus (BBV) infections in the prison population [4,86]. This is the result of the combination of high disease prevalence among people entering a prison setting [62] and the high risk of disease transmission in prison settings due to high-risk behaviours among people held in prison [177]. High-risk behaviours for BBV transmission inside prison settings include: unprotected sexual relations, injection of drugs without sterile needles and syringes, sharing of drug use paraphernalia, tattooing, body piercing, scarifications, blood brother/sister rituals, unsafe medical equipment (dental, medical, gynaecological), and sharing of other equipment (spoons, razors, toothbrushes). These behaviours are among the principal drivers of the HIV and viral hepatitis epidemics, and people in prison engaging in these high-risk behaviours are a key vulnerable population.

For active case finding to be effective in preventing BBVs transmission in prison settings, it is advisable to offer a comprehensive package of prevention services (e.g. health promotion, provision of sterile injecting equipment, opioid substitution treatment and other effective treatment of drug dependence, provision of condoms, safe medical procedures), combined with psychological and social services [16,178]. These interventions and their modalities of implementation in prison settings are explored in a dedicated guidance module (see Figure 1).

Several studies refer to the implementation of targeted active case finding for high-risk groups within the prison population, most commonly HCV testing for PWID and people living with HIV [74,78,179]. A number of studies analysed alternative scenarios of targeted HCV testing for PWID, including the cost-effectiveness of a variety of risk assessment approaches (Table 3) [80-85]. Targeted HCV testing is shown to capture only a limited fraction of HCV cases [74] and does not succeed to accomplish the health benefits, neither for the individual patient nor for the community, of other approaches [85]. Valid arguments in favour of universal active case findings for BBVs in prison settings are: concerns that risk-based testing is insufficient; the need to reduce the number of undiagnosed cases of HIV and chronic viral hepatitis; and the availability of effective prevention and control measures. Regular or continuous testing during incarceration could also be considered, either client-initiated or targeted at high-risk groups, ideally in settings where the prevalence of BBV infections is high [96]. In addition, international [180] and national guidelines on antenatal screening for HBV and HIV should also be applied to people in prison.

Focus on implementation: universal screening for BBVs at admission into prison – Pathfinder Programme in the United Kingdom

Since 2014, Public Health England (PHE) Health and Justice has been supporting HM Prison & Probation Service (previously the National Offender Management Service) and National Health Services (NHS) England in the delivery of opt-out testing for blood-borne viruses (BBV) in all adult prisons in England. The evaluation of phase two Pathfinder prisons was published by PHE Health and Justice in October 2016, with phase three evaluation slated for publication in Q4 of the 2017/18 financial year [1,2].

Roughly 70% of the prison estate in England was implementing BBV opt-out testing as of Q4 2016/17, with full implementation expected by the end of the 2017/18 financial year. Performance in relation to BBV opt-out testing programmes is measured by NHS England through the collection of data via the Health & Justice Indicators of Performance (HJIPs). These metrics include specific reports of offer and uptake of HIV, hepatitis B and hepatitis C testing within 72 hours of reception to prison as well as referral for treatment for those found infected. These data show that in England in 2016/17, 16 321 tests were conducted for hepatitis B infection, 21 268 for hepatitis C infection and 37 474 for HIV infection. The proportion of new receptions receiving tests for HCV increased from 5.3% in 2010/2011 to 11.5% in 2015/2016 [2].

Additional information and supporting documents on The Pathfinder Programme and on BBV opt-out testing are available here: https://www.gov.uk/government/publications/improving-testing-rates-for-blood-borne-viruses-in-prisons-and-other-secure-settings

Implementation of active case finding is generally considered to be justified when an effective prevention or control measure exists and is made available to a person individual after the receipt of test results. While effective measures exist for each BBVs infection, ensuring access in prison settings may be challenging. Highly effective treatment for hepatitis C is largely available (direct acting antivirals, DAAs) in the EU/EEA, but the differences in accessibility between countries remain large. Testing interventions for hepatitis C in prison settings may be limited to specific population groups if the availability and affordability of DAAs cannot be ensured. On the other hand, implementation of active case finding for hepatitis C may result in a better understanding of the size of the population in need of treatment in prison settings, leading to more accurate planning and resource allocation.

Although there is no cure for HIV and chronic hepatitis B, existing treatment options are effective in halting disease progression and reducing transmission. In addition, effective vaccination for HBV is an additional preventive measure that may be offered to unexposed and unvaccinated individuals. Finally, from a human rights perspective, not actively promoting active case finding for BBVs may be interpreted as depriving people in detention of the possibility to receive effective treatment for HIV and chronic hepatitis B or be cured from chronic hepatitis C.

One point of concern regarding active case finding for HIV is that a positive result may lead to unjustified segregation and discrimination of HIV-positive patients in certain prison institutions. Only full compliance with the 7C principles (Section 5.1.2) by the national prison system and its detention facilities can guarantee the rights of the individual detainee while at the same time maximising the prevention potential of active case finding initiatives.

5.1.7 Sexually transmitted infections

STIs are often asymptomatic. As a result, symptom-driven case finding may be insufficient because asymptomatic people may not be aware of an infection [125-127]. Raising awareness about STIs, prevention measures, symptoms, and the availability of testing services for people in detention is important to increase the number of STI diagnoses and improve disease control in prison settings. Health promotion initiatives which target people in detention are more effective when implemented at entry or immediately after incarceration due to the increased risk of sexual violence in the early days of detention. In addition, peer support may be relevant to promote awareness among people in prison [23,98].

Active case finding for STIs can lead to a higher disease detection rate in the prison population [124-127,131]. Active case finding for syphilis was generally offered to all people entering a prison setting [98,129,181] or during imprisonment [23,172]. Active case finding for chlamydia and gonorrhoea (usually combined) and trichomoniasis was frequently targeted at specific population groups based on sex [118,120,125,126] or age [122,127]. While sexual risk behaviours for STIs are well known (e.g. multiple sexual partners, sex between men), the sensitivity of behaviour-based risk assessment approaches to evaluate the likelihood of syphilis, chlamydia, gonorrhoea and other STIs may be affected by the challenges of a full disclosure. Other more easily measurable criteria (e.g. age, sex, existing co-infections), as recommended by several international guidelines, may be considered instead [36,135-137]. Epidemiological data on the underlying prevalence/incidence of STIs in the community and the availability of resources (including laboratory facilities and appropriate treatment) may be considered when assessing or planning active case finding initiatives for STIs. Finally, not only urogenital, but also rectal (and possibly pharyngeal) infections could be considered for testing, in line with reported sexual practices. In addition, it is also advisable that international [180,182] and national guidelines on antenatal screening for syphilis are applied to people in prison.

Sexual activities in prison settings may be illegal, but their occurrence cannot be completely prevented. This justifies the continuous re-assessment of the risk for STIs and the assessment of testing needs during incarceration, e.g. after a prison furlough or conjugal visits. It is important to note that the detection of an STI may constitute proof of illegal behaviour and lead to sanctions. It is advised that medical information is therefore treated confidentially, but when healthcare providers detect coercive sex activity, they may have the duty to report it. Rape and sexual aggression among people in prison and between prison staff and people in prison has received little attention, despite reports from many prison systems in many countries [10].

Finally, notification of partners of incarcerated individuals diagnosed with an STI is advisable (after patient's consent). It is advisable that partner notification procedures follow existing national guidance for the general population.

5.1.8 Tuberculosis

Since active pulmonary TB is highly infectious, screening people at prison admission is advisable so that prevention and control measures (e.g. treatment, isolation) can be taken to avoid onward transmission [183]. When planning active case finding initiatives for TB in prison settings, it is important to take into consideration the different epidemiological situation of TB across the EU/EEA [40], the characteristics of the prison population, and existing national/international guidelines and national legislation. Certain population groups, which tend to be overrepresented in prison settings, are at higher risk for TB and LTBI. These may include foreign-born people from high-burden countries, homeless people, and people with substance use disorders. WHO has released a compendium of good practices for the prevention and control of (multidrug-resistant) TB in prison, which includes models for TB active case finding at prison entry from a number of EU/EEA countries [184].

When assessing the need for active case finding for LTBI, the size of the foreign-born prison population from high-endemic countries is of great relevance, given the high prevalence of LTBI among this group [167,185-187]. The relative proportion of LTBI and active TB cases among foreign-born members of the prison population in the EU/EEA is related to the underlying dynamics of the overall migrant population. Given the substantial east-west gradient of TB endemicity within the EU/EEA [40], internal migration may contribute to the TB burden in the migrant population as much as migration from countries outside the EU/EEA. In recent years, the influx of foreign-

born people has possibly influenced the demographics of the migrant population, which seems to have shifted from 'generally healthy' (economic migrants) to a higher proportion of refugees/asylum seekers in poor health. Many of these people come from and/or travelled through countries with a high TB prevalence and are more prone to have LTBI and develop active TB.

The rationale behind active case finding for LTBI varies greatly from country to country, usually because of different LTBI prevalence in the community and the (un-)availability of resources. For instance, countries with a high LTBI prevalence would not benefit much from screening the prison population for LTBI, while in a country with a low burden of TB and a low LTBI prevalence in the general population, LTBI active case finding in the prison population might be justified [164,188]. Moreover, in a prison population largely composed of young and immunocompetent individuals, the probability of progression to active TB is low, despite the high risk of acquiring LTBI if exposed to a smear-positive TB patient. In addition, availability and uptake of LTBI preventive treatment should be considered. Evidence suggests that while treatment initiation for active TB in prison settings is generally around 100% [142,144,145,167], it is much lower for LTBI [143,145,157,189].

Finally, TB active case finding for prison staff may be considered because of the occupational risk and to prevent additional sources of infection [176]. According to a survey on TB prevention and control practices in European prisons [41], half of the respondent countries reported that they screen annually for TB/LTBI among prison staff. Implementation might differ between countries due different or lacking screening protocols and different responsibilities: depending on the country, the occupational health of prison staff may fall, for example, under the responsibility of the ministry of justice, the interior ministry or the ministry of health.

The choice of a testing method depends on epidemiological considerations and available resources, including laboratory facilities (at national and local levels) and national and international guidelines [161,190]. For first-line screening, less invasive methods are generally preferred [139,140]. Risk-based or questionnaire-based screening tools are not sufficiently sensitive and should therefore not be the only method for TB active case finding [139,167]. CXR is commonly used in the algorithm of active TB diagnosis. In Berlin, Germany, for example, screening at intake to prison is performed with mobile digital CXR units if available [167]. Sputum tests are easily implemented because individuals can self-collect the specimens under a nurse's supervision and deliver them to the healthcare staff, provided that skilled staff, dedicated equipment, and adequate facilities for sputum collection are available. Rapid tests offer clear advantages as they do not require an advanced laboratory, provide rapid results, and speed up isolation and treatment initiation. Some rapid tests (e.g. Xpert MTB/RIF assay) also provide information on drug resistance.

If testing for TB infection is considered, either to detect LTBI or as part of the algorithm for active TB diagnosis, either a tuberculin skin test (TST) or an interferon gamma release assay (IGRA) can be used. Both tests have similar test characteristics [190,191]. Although the use of IGRA is recommended in some EU/EAA countries [164], TST is commonly used because it is less resource-intensive. The successful implementation of TSTs is hampered by, for example, the need for a second consultation with skilled healthcare staff to read the induration. According to the body of evidence, transfer or release from prison settings is the leading cause of incomplete screening for LTBI and TB when using the TST, in addition to structural and organisational challenges affecting healthcare delivery in prison settings, such as the availability of adequate resources. A previous BCG vaccination may cause a false positive reaction to the TST test [190]. BCG vaccination policies differ between EU/EEA countries; while in Western Europe only risk groups are vaccinated, some Eastern European countries offer universal childhood vaccination. In addition co-infection with HIV may influence TST results so that the underlying HIV prevalence should be taken into account [190].

5.1.9 Other diseases

Evidence on active case finding for additional communicable diseases was not retrieved. However, provider-initiated testing may be a valid approach to increase diagnosis rates for other communicable diseases at different points in time during detention.

Parasitic diseases or outbreak-prone diseases may warrant active case finding if there are local outbreaks or case clusters (e.g. measles, hepatitis A), especially when appropriate prevention and control measures are available (e.g. isolation, vaccination, treatment).

5.1.10 Monitoring healthcare services in prison

Prison health is an essential part of public health and it would be advisable that prison health is integrated into national monitoring systems, which is rarely the case in EU/EEA countries. It is essential to actively monitor all elements of healthcare provision in prisons by using standardised data collection tools because only monitoring makes it possible to assess the effectiveness of interventions, identify existing barriers, and inform planning and resource allocation. Collecting standardised data with a breakdown by risk group would be particularly helpful, especially with a focus on people with drug use disorders and drug use patterns (before, during, after prison). For example, it would be particularly helpful to collect data on the number of new diagnoses that were reported to

national communicable disease surveillance schemes after active case finding interventions in prison settings. This would not only allow for a comprehensive assessment of the individual and public health benefits of these interventions, but also contribute to a better understanding of the burden of disease in the prison population and the related health needs of this population, which, in turn, would provide the basis for adequate resource allocation.

Ideally, an effective disease monitoring system for prison systems should generate reliable data, which could also be shared with stakeholders. These data could provide critical evidence when developing tailored interventions for prison settings and support the timely and effective resolution of service delivery challenges.

Ultimately, epidemiological and programmatic data from the prison system should be integrated with national/international data collection systems in order to inform comprehensive health policy and planning. The WHO Regional Office for Europe, as part of the Health in Prison Project (HIPP), began collecting data for a minimum public health dataset for prison health in October 2016. HIPP wants to establish a monitoring framework that regularly collects data on the main areas of prison health, including prison health systems (such as financing and governance); the prison environment; risk factors for diseases; and the screening, prevention, treatment and prevalence of communicable and non-communicable diseases. The data are stored in the Health in Prison European Database (HIPED) and are available on the WHO Global Health Observatory.

5.2 Research

5.2.1 Challenges of research in prison settings

Prison settings are probably one of the most challenging environments for conducting scientific research, given the ethical implications and the complexity of the prison population. People living in prison often belong to one or multiple vulnerable groups, such as migrants, PWID, homeless people, socially marginalised and uneducated people. In addition, there is a high prevalence of mental disorders. This heterogeneity, combined with mistrust towards prison institutions and the inherently problematic doctor–patient relationship in prisons, makes it difficult for people in prison to give an informed consent to participate in health interventions and research initiatives. People in prison are generally considered a population that is 'hard to reach' and 'hard to treat'.

The high turnover of the prison population negatively impacts the participants' retention and hampers the capacity to measure the outcomes of scientific research in prison facilities. This is particularly challenging for the conduct of interventional studies, since longitudinal data are difficult to collect.

Research is further hampered by suboptimal cooperation between prison personnel of different professions and roles, shortage of staff trained in conducting research, the lack of economic resources devoted to prison health management, and a lack of interest in the institutions responsible for prison healthcare. Research targeting prison populations has the potential to expose service gaps, indicate risk behaviours, and point toward unlawful practices in prison settings, thus raising issues that some of the responsible authorities may be reluctant to address.

The lack of public interest in the 'world behind the walls' is probably another important reason for the relatively low amount of studies conducted in this setting.

5.2.2 Research gaps and future research

While this guidance focuses on the EU/EEA, a sizable portion of the evidence was derived from studies conducted in the USA. Due to the differences in terms of healthcare systems, correctional systems, and population demographics, findings are not always applicable to EU/EEA settings. Moreover, there is a large heterogeneity between studies, both in the peer-reviewed and the grey literature, and the general lack of comparative studies makes it difficult to compare data and results. Overall, the level of evidence of the included peer-reviewed literature studies is quite low. Studies of higher quality and with conclusive evidence are needed as a basis for guidance development.

Operational research on active case findings in prison settings could provide practical and operational insights into the implementation of such interventions. In particular, topics such as timing of testing offer, reiteration and appropriate time intervals, interventions to increase testing uptake, and risk-assessment criteria for STI and LTBI testing are scarcely researched. Long-term follow-up data are needed to assess the benefits of active case finding in terms of treatment uptake, adherence to/completion of treatment, cure rates (TB, HCV), and reactivation rates following treatment (LTBI).

In order to fill the knowledge gaps on interventions such as active case finding in prison settings, future research, conducted in the EU/EEA, is needed to provide evidence on the feasibility, (cost-)effectiveness, and impact of such interventions in the EU/EEA. Studies should have a comparative study design and focus on population and test characteristics, health interventions, and intervention outcomes, based on sample sizes that are large enough to detect and measure relevant effects.

The Worldwide Prison Health Research & Engagement Network (WEPHREN; https://wephren.tghn.org), an open access collaborative forum on the health of people in prison, tries to catalyse research activities that focus on prison settings through the development of an evidence base and capacity building measures.

6 Next steps

This guidance will be reviewed five years after publication to determine whether all or part of it should be updated due to new evidence or new developments in EU/EEA Member States.

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Appendix. Members of the ad hoc scientific panel

Members of the expert panel

Name	Organisation	Country
Barbara Janíková	Government of Czech Republic	Czech Republic
Viktor Mravcik	Government of Czech Republic	Czech Republic
Kristel Kivimets	Ministry of Justice	Estonia
Fadi Meroueh	Association des Professionnels de Santé Exerçant en Prison	France
Laurent Michel	Centre Pierre Nicole, Croix Rouge Française	France
Heino Stöver	HA-REACT	Germany
Peter Wiessner	Action Against AIDS and EATG	Germany
Ruth Zimmerman	Robert Koch Institute	Germany
Roberto Ranieri	Società Italiana di Medicina e Sanità Penitenziaria	Italy
Erica Cardoso	Direcção-Geral de Reinserção e Serviços Prisionais (DGRSP), Ministério de Justiça	Portugal
Teresa Galhardo	Direcção-Geral de Reinserção e Serviços Prisionais (DGRSP)	Portugal
Rui Morgado	Direcção-Geral de Reinserção e Serviços Prisionais (DGRSP), Ministério de Justiça	Portugal
Lucia Mihailescu	Formerly with Romanian National Administration of Penitentiaries	Romania
Jose-Manuel Royo	General Secretariat of Penitentiary Institutions	Spain
Stefan Enggist	Federal Office of Public Health	Switzerland
Hans Wolff	University of Geneva	Switzerland
Sharon Hutchinson	NHS National Services Scotland & Glasgow Caledonian University	UK
Eamonn O'Moore (Chair)	Public Health England	UK
Alison Hannah	Penal Reform International	International
Jan Malinowski	Council of Europe	International
Lars Møller	WHO	International
Ehab Salah	United Nations on Drugs and Crime	International

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