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European Monitoring Centre for Drugs and Drug Addiction

INTERAGENCY GUIDANCE

Prevention and control of infectious diseases among people who inject drugs

2023 update

ECDC AND EMCDDA GUIDANCE

Prevention and control of infectious diseases among people who inject drugs: 2023 update

European Monitoring Centre
for Drugs and Drug Addiction

This document is an update of the joint guidance that was published in 2011 by the European Centre for Disease Prevention and Control (ECDC) and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). The drafting of the guidance update was coordinated by Otilia Mårdh and Janelle Sandberg from ECDC and by Anne Bergenström and Dagmar Hedrich from the EMCDDA.

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- EMCDDA (2023): Evidence for the effectiveness of interventions to prevent infections among people who inject drugs – Drug treatment, needle and syringe programmes and drug consumption rooms for preventing hepatitis C, HIV and injecting risk behaviour, Technical report, EMCDDA, Lisbon [1]
- EMCDDA (2023): Evidence for the effectiveness of interventions to prevent infections among people who inject drugs: Review of mathematical modelling studies of opioid agonist treatment and needle and syringe programmes for preventing hepatitis C transmission, Technical report, EMCDDA, Lisbon [2]
- ECDC (2022): A systematic literature review of interventions to increase linkage to care and adherence to treatment for hepatitis B and C, HIV and tuberculosis among people who inject drugs, Technical report, ECDC, Stockholm [3]
- ECDC (2022): Summary of Expert Panel meeting discussions on interventions to increase linkage to care and adherence to treatment for hepatitis B and C, HIV and tuberculosis among people who inject drugs, Technical report, ECDC, Stockholm [4]
- ECDC (2022): Models of good practice for community-based testing, linkage to care and adherence to treatment for hepatitis B and C, HIV, and tuberculosis and for health promotion interventions to prevent infections among people who inject drugs, Technical report, ECDC, Stockholm [5]

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Contents

Figures

Tables

Abbreviations

ART	Antiretroviral therapy (HIV)
DAA	Direct-acting antiviral (HCV)
DOT	Directly observed therapy
ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EFTA	European Free Trade Association
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
ENP	European Neighbourhood Policy
EU	European Union
HAT	Heroin-assisted treatment
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCC	Hepatocellular carcinoma
HCV	Hepatitis C virus
HDSS	High dead space syringes
HIV	Human immunodeficiency virus
HPV	Human papillomavirus
IECS	Information, education, counselling and skills training
LDSS	Low dead space syringes
MSM	Men who have sex with men
NSP	Needle and syringe programme
OAT	Opioid agonist treatment
OST	Opioid substitution treatment/therapy
PEP	Post-exposure prophylaxis
PICO	Population, Intervention, Comparison and Outcome
POC	Point-of-care
PrEP	Pre-exposure prophylaxis
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
SDG	Sustainable Development Goal
STI	Sexually transmitted infection
TB	Tuberculosis
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization

Glossary

Adherence to treatment	The extent to which a patient actively follows through with prescribed medical treatment and recommendations.
Chronic care approach	A multidimensional approach to chronic disease management that promotes application of evidence-based clinical recommendations, enhances clinical teamwork, and empowers patients to better manage their own care. It can especially benefit populations with multifaceted challenges and needs.
Community-based approach	Where programmes and services are provided outside of healthcare facilities.
Community-based testing	Where voluntary HBV, HCV, TB and/or HIV testing occurs outside of healthcare facilities.
Contingency management	A behavioural management technique that involves using incentives such as cash, vouchers, prizes or other kinds of privileges to reinforce behaviours or disincentives to discourage them.
Continuum of care	A concept that describes steps in the patient pathway, from diagnosis of an infection/disease to treatment to viral suppression or disease cure. Preventative care and quality of life beyond viral suppression can also be included in the model.
Directly observed therapy	A method of treatment administration in which a healthcare professional watches as a person takes each dose of a medication to ensure all medications are received and taken as prescribed. It is sometimes called directly administered antiretroviral therapy (DAART) within the context of HIV/AIDS.
Drug consumption rooms	These are generally healthcare facilities where individuals who have purchased drugs elsewhere can go to take their drugs in a clean environment, typically under the supervision of medically trained staff. Such facilities may also either provide or actively refer clients to a range of other services.
Drug dependence treatment	This typically refers to medical (including pharmacological), psychological, social, and behavioural interventions to address problems associated with drug dependence. This can be delivered in outpatient or in inpatient settings.
Health promotion	The 'process of enabling people to increase control over their health and its determinants and thereby improve their health' [6].
Heroin-assisted treatment	Treatment based on provision of diamorphine (medical-grade heroin) which is generally prescribed to treat long-term heroin-dependent individuals who have not responded to standard agonist treatment. It is also referred to as supervised injectable heroin.
Injecting risk behaviour	Behaviours that may include receptive needle/syringe sharing, passing on used needles/syringes, reusing one's own needles/syringes and sharing other non-needle/syringe injecting equipment.
Linkage to care	The process that links a person newly diagnosed with a disease to care, including medical treatment.
Low dead space syringes	A particular design of syringe with a lower volume of 'dead space' between the syringe and needle when the plunger is completely depressed. This results in less residual blood left in the syringe after injecting, which can reduce the risk of blood-borne virus transmission during needle/syringe sharing.
Low-threshold services/settings	Easily accessible and affordable social and health services that remove barriers to care that are typically encountered in traditional healthcare systems.
Multicomponent intervention	An approach in which a variety of targeted services (e.g. case management, peer mentors, social workers, mental health support) are delivered in an integrated manner.

Opioid agonist treatment	Use of opioid agonist medications such as methadone and buprenorphine to prevent withdrawal symptoms and reduce drug cravings among opioid-dependent individuals. Opioid substitution treatment/therapy (OST) is only used in this document when a source using this term is cited. Naltrexone, an opioid antagonist, is not considered as part of OAT in this document.
Peers	People within a community with equal standing with each other, belonging to the same group and sharing a common experience. Peer support, which can occur informally or formally, refers to support provided and received by people who are peers.
People who inject drugs	Individuals who inject a psychoactive substance. In this guidance, the recommendations using this term may also include individuals on OAT.
Person-centred approach	Where programmes and services are focused on the health needs and expectations of the individual rather than diseases.
Point-of-care tests	Tests that are performed on any part of the patient's body or its derivatives, during or very close to the time of consultation, allowing availability of results at the time of the clinical decision-making.
Screening	The presumptive identification of unrecognised disease or defect by the application of tests, clinical examinations, or other procedures that can be applied rapidly. It differentiates apparently well people who probably have an infection or disease from those who probably do not.
Sterile injecting equipment	Sterile items used to prepare and/or inject drugs, including sterile syringes, needles and sterile drug preparation equipment such as cookers, filters and water.
TB disease	The disease state caused by *Mycobacterium tuberculosis* complex. It is usually characterised by clinical manifestations, which distinguish it from TB infection without signs or symptoms [8]. Used interchangeably with 'active TB' to differentiate it from TB infection.
TB infection	State of persistent immune response to stimulation by *Mycobacterium tuberculosis* antigens with no evidence of clinically manifest active tuberculosis [7]. Also referred as latent TB infection (LTBI).
Telemedicine	The use of telecommunication technologies to deliver health services where clients/patients and healthcare providers are separated by a distance.

Executive summary

In the European Union/European Economic Area (EU/EEA) and countries in the eastern European Neighbourhood Policy (ENP) area, hepatitis B and C, HIV and tuberculosis (TB) continue to circulate and cause substantial morbidity and mortality [9-12]. These diseases are the focus of the United Nations (UN) Sustainable Development Goal (SDGs) 3.3, which is to 'end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases' by 2030 [13].

Injecting drug use remains an important risk factor for acquiring blood-borne and other infectious diseases in the EU/EEA and ENP area. Prevention and control of infectious diseases among people who inject drugs is important because these diseases reduce individuals' quality of life and life expectancy. Ultimately, they can lead to both indirect and direct societal costs through, for example, lost productivity, high treatment and care costs, and risk of onward transmission to others, including those who do not inject drugs [14].

This joint guidance by the European Centre for Disease Prevention and Control (ECDC) and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) aims to support policy-makers and public health/social programme planners by providing an evidence base for developing national strategies, policies, and programmes for preventing and controlling infections and infectious diseases among people who inject drugs. It also provides practice considerations and aims to inform the monitoring and evaluation of prevention and control strategies, policies, and programmes.

This guidance is an update to the 2011 guidance on the same topic [14], accounting for advances in harm reduction and infectious diseases prevention and control, the emergence of new public health concepts and interventions, and stakeholder needs. It provides an overview of the epidemiological situation of drug-related infectious diseases and identifies evidence-based interventions for preventing and controlling infectious diseases among people who inject drugs. The main infectious diseases covered are hepatitis B, hepatitis C, HIV, and TB. Other infections for which people who inject drugs may be at higher risk are also discussed in less detail, including respiratory infections such as COVID-19 and influenza, skin and soft tissue infections, and sexually transmitted infections (STIs). While the guidance focuses primarily on people who inject opioids, the proposed interventions may also be relevant for people who inject other substances, such as cocaine, amphetamines, synthetic cathinones, and medicines, either separately or in combination (polydrug use).

Drawing on the most robust evidence available, alongside expert opinion and what is regarded as best practice according to existing international guidelines, several key intervention areas to prevent and control infectious diseases in this population are recommended. To provide maximum benefit, these interventions should be delivered in line with principles for prevention and service provision. These include implementing specific interventions in combination, to maximise coverage and effectiveness and in the context of other relevant health promotion activities that target structural and individual factors that promote healthier and/or safer behaviours.

Regarding people who inject drugs, the aim of health promotion should be to reduce the risk of individuals contracting and transmitting infectious diseases through injecting drug use and other means. At the structural level, WHO recommends that enabling interventions should, among other measures, involve removing punitive laws, policies, and practices such as the criminalisation of possession of needles and syringes which impacts on the ability of harm reduction programmes to operate needle and syringe programmes; reducing stigma and discrimination; promoting community empowerment; and addressing violence against people who inject drugs [15]. At the individual level, health promotion activities should be focused on moving towards safer injecting behaviour and reduced injection frequency, transition to non-injecting drug use, cessation of drug use if desired, and safer sexual behaviour, as well as infectious diseases prevention, testing, and treatment knowledge [14]. Condoms, together with health promotion information and referrals to primary care or sexual health services, should be provided based on client need in harm reduction settings, drug consumption rooms, through community outreach, including settings where drugs are used in the context of sex [16], and in prisons and pharmacies.

Key intervention areas and recommendations for preventing and controlling infectious diseases among people who inject drugs following critical review of the evidence by the expert panel

Provision of sterile injecting equipment:

- Provide sterile needles and syringes and other drug preparation equipment (cookers, filters and water for injection), including in prisons and through pharmacies.

Drug dependence treatment:

- Provide opioid agonist treatment (OAT), including in prisons;
- Provide sterile injecting equipment in combination with OAT;
- Offer information, education, counselling and skills training alongside OAT and needle and syringe programmes (NSPs), including in prisons.

Vaccination:

- Offer vaccinations against hepatitis A and B, respiratory infections such as COVID-19 and influenza, and against tetanus to prevent infections and/or their complications in people who inject drugs; in addition, particularly for people living with HIV who inject drugs, offer the pneumococcal and the human papillomavirus vaccines.

Testing for infectious diseases:

- Routinely offer voluntary, confidential testing with informed consent and that is in line with relevant guidance for:
  - HCV and HIV to all people who inject drugs;
  - HBV to all people who inject drugs with no/incomplete vaccination;
  - STIs (e.g. syphilis, chlamydia, gonorrhoea) to all people who inject drugs with STI symptoms and/or those with higher risk (e.g. multiple sexual partners, exchange of sex for money/drugs);
  - TB disease to all people who inject drugs with TB signs and symptoms, and/or those with higher risk (e.g. have an exposure or predisposing underlying condition).
- All people with a positive test result should be linked to care.

Infectious disease treatment:

- Offer:
  - Antiviral treatment for those diagnosed with HBV and eligible for treatment;
  - Antiviral treatment for those diagnosed with HCV;
  - Antiretroviral treatment for those diagnosed with HIV;
  - Anti-TB treatment to those with TB disease;
  - TB preventive treatment for people with TB infection after ruling out TB disease;
  - Treatment for other infectious diseases such as STIs and bacterial skin infections as clinically indicated.
- Ensure that there is cooperation between service providers dedicated to people who inject drugs and infectious disease care to increase linkage to care, in particular for HCV.
- There is evidence that for HCV treatment at least, adherence can be strengthened through the involvement of peer mentors.

Drug consumption rooms providing supervised injecting facilities:

- Provide supervised injecting facilities in order to reduce injecting risk behaviour among people who inject drugs, which could as a consequence contribute to prevention of HCV and HIV transmission.

The interventions recommended in this report follow an expert panel's critical review of the evidence available for whether implementation of those interventions will lead to public health impact – in this case, a reduction in the incidence of new infections among people who inject drugs and the improved management of people with existing infections. However, the reality of implementation is inevitably more complex, as countries differ with regard to their existing policies, financial and human resource capacities, public health and healthcare system infrastructure, epidemiological contexts, as well as in respect to social, cultural, physical, behavioural, and ethical frameworks. It remains up to those implementing the guidance to decide which interventions and combination of interventions should be prioritised given the particular context within which they are to be applied.

As the epidemiology of both drug use and infectious diseases among people who inject drugs is subject to rapid changes, robust surveillance and continuous monitoring are essential and should be invested in. Ongoing research is also needed to fill gaps where evidence is of low quality and/or non-existent so as to provide the basis for strengthened recommendations in the future. Despite remaining gaps in evidence, there is sufficient evidence and examples of good practice upon which policy-makers and public health/social programme planners can develop national strategies, policies, and programmes for preventing and controlling infections and infectious diseases among people who inject drugs. Implementation of the interventions recommended in this guidance within countries is expected to contribute towards the achievement of local, regional, national, and international infectious disease targets if undertaken at sufficient scale.

Introduction

Why it is important to prevent and control infectious diseases in people who inject drugs

In the European Union/European Economic Area (EU/EEA) and countries in the eastern European Neighbourhood Policy (ENP) area, hepatitis B and C, HIV, and tuberculosis (TB) continue to circulate [9–12]. These diseases are the focus of the United Nations' (UN) Sustainable Development Goal (SDG) 3.3, which is to 'end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases' by 2030 [13]. They are also the focus of other globally-agreed elimination targets, including those of the World Health Organization (WHO)'s Global Health Sector Strategies on HIV, sexually transmitted infections (STIs) and viral hepatitis [17–19] and the End TB Strategy [20].

Injecting drug use is a major contributor to the global burden of disease [21] and remains an important risk factor for acquiring blood-borne and other infectious diseases in the EU/EEA and ENP area (Box 1) [22]. For several infectious diseases, especially hepatitis C, the burden attributable to injecting drug use is very high and disproportionate compared with the relatively small size of the population of people who inject drugs [22]. Untreated HIV and viral hepatitis have also been shown to reduce the quality of life and life expectancy of those who are infected, including people who inject drugs [21]. From a public health perspective, a high burden of infections in this population can lead to both indirect and direct societal costs through, for example, lost productivity, high treatment and care costs, and the risk of onward transmission to others, including those who do not inject drugs [14].

Box 1. Infectious diseases for which people who inject drugs may be at increased risk

- Hepatitis A;
- Hepatitis B;
- Hepatitis C;
- Hepatitis D;
- HIV infection;
- Respiratory infections (e.g. COVID-19, influenza);
- Sexually transmitted infections, including chlamydia, gonorrhoea, human papillomavirus, and syphilis;
- Bacterial infections caused by streptococcus and staphylococcus species such as *Staphylococcus aureus* (including methicillin-resistant *S. aureus*, MRSA) and group A streptococci (GAS) (necrotising fasciitis, sepsis, endocarditis, bone and joint infections, thrombosis, and emboli); *Clostridium botulinum* (botulism); *Clostridium tetani* (tetanus); and *Bacillus anthracis* (anthrax);
- Tuberculosis.

The main mode of transmission of blood-borne viruses such as hepatitis B virus (HBV), hepatitis C virus (HCV), and HIV among people who inject drugs is the sharing of contaminated injecting equipment, such as syringes, needles, drug mixing vessels, and other drug preparation paraphernalia [21]. HCV infection is of particular concern among people who inject drugs, normally exceeding HIV prevalence in this population [23]. This is thought to be because relatively high concentrations of HCV can be found in blood during both the primary infection phase and in those who become chronically infected, as well as because HCV can survive longer outside the body compared with HIV [24]. The higher transmission risk may also explain why HCV is more difficult to prevent and control through the application of single interventions, and why higher intervention coverage may be needed to reduce HCV incidence at the population level [25].

This document also provides guidance for the prevention and control of infections where injecting drug use is not the mode of transmission but where factors such as living conditions or higher-risk sexual practices place some people who inject drugs at greater risk. These infections include respiratory infections such as COVID-19 and influenza; STIs such as chlamydia, gonorrhoea, human papillomavirus, and syphilis; and TB. Notably, HIV and viral hepatitis can also be transmitted through condomless sex, and people who inject drugs may also be at risk for associated infections through this route [26,27]. For HBV, this would apply to those not vaccinated, and for HCV the risk of transmission is mainly through male-to-male sex or for those co-infected with HIV [28]. In addition, men who have sex with men (MSM) who inject stimulants such as methamphetamine in the context of sex are more likely to engage in unsafe sexual practices, which puts them at risk for sexual transmission of HIV, HCV, HBV, and other STIs [29–31].

Prisons are an important setting for injection-related infection prevention and control as: (i) compared with the general public, people in prison in the EU/EEA have a higher burden of many infectious diseases, including blood-borne virus infections, STIs, and TB [32]; and (ii) there is evidence that drugs often continue to be used and injected in prison settings despite their strict prohibition [33,34]. Infectious diseases in the prison population pose a public health risk both for people living and working in prisons and for the general population, as most people in prison eventually return to the wider community. Notably, countries are obliged by a United Nations resolution to provide medical care to prisoners equivalent to that received by people in the community [35].

Infections among people who inject drugs are not yet effectively prevented and controlled in the EU/EEA and countries of the eastern ENP area. Advances in treatment for these infections combined with implementation of evidence-based interventions have the potential to reduce transmission and pave the way for countries to meet global elimination targets.

Guidance objectives, target audience and overview

This document is an update of the 2011 guidance on the same topic [14]. Its aims to support policy-makers and public health/social programme planners by providing the evidence base for developing national strategies, policies, and programmes for preventing and controlling infections and infectious diseases among people who inject drugs. It also provides practice considerations and aims to inform the monitoring and evaluation of prevention and control strategies, policies and programmes.

The guidance gives a comprehensive overview of the intervention areas and interventions that should be considered the key components of a comprehensive approach to prevent and control infectious diseases in people who inject drugs, as well as details about how to implement them. It is based on the best current knowledge in the field and relies on a foundation of principles that guide disease prevention and service provision. The proposed interventions are primarily relevant to people who inject opioids but may also be relevant for people who inject other substances, such as cocaine, amphetamines, synthetic cathinones, and medicines, separately or in combination (polydrug use).

Background

Injecting drug use

While injecting drug use in general has declined over the past 10 years, it remains an important health challenge in many EU/EEA countries [36]. There are considerable differences between countries in terms of both the prevalence of injecting drug use and the substances that are injected. In some countries of the eastern ENP area, population prevalence of injecting drug use remains particularly high [37]. Of 15 EU countries that have recent estimates of population prevalence of injecting drug use, the estimates range from less than 1 in 1 000 population aged 15 to 64 years in, Belgium, Greece, Hungary, the Netherlands, and Spain, to more than 10 in 1 000 in Estonia [36].

While the use of heroin and other opioids remains relatively rare in Europe, these continue to be the drugs most commonly associated with the more harmful forms of use, including injecting [36]. In addition, stimulant injecting is becoming more common in some settings [38] and has been associated with high-frequency injecting patterns of use and blood-borne virus outbreaks [39–43].

Viral hepatitis

Hepatitis B and C infections are common among people who have previously or are currently injecting drugs, and a history of injecting drug use is the most frequently reported risk factor in EU/EEA countries among newly diagnosed acute and chronic HCV infections [44].

There has been a declining trend in the number of acute cases of HBV among people who inject drugs, which is consistent with the trends in the general population and likely related to the widespread implementation of national hepatitis B vaccination programmes [45]. No EU/EEA country has seen a significant reduction in the transmission of HCV among people who inject drugs since 2015 in the available data on trends in the prevalence of HCV among people aged under 25 years who inject drugs and among people who have recently started injecting (the prevalence in these groups reflects relatively recent transmission and may be considered a proxy for incidence) [46].

The results from prevalence studies among people who inject drugs reported to EMCDDA by EU countries, Norway, and Türkiye have found a very high prevalence of HCV antibodies and current HCV infections, with the prevalence of current infection based on HCV RNA being over 50% in four of the six countries with recent data, and little evidence of declining trends [46]. The prevalence of HBV infection among people who inject drugs is lower than HCV infection, but it is considerably higher than the prevalence among the general population.

Data on the continuum of care for hepatitis B and C among people who inject drugs in EU/EEA countries are scarce, as treatment registries are uncommon and data on the likely route of transmission of infection are often not reported [47]. Data reported to EMCDDA from Czechia, the one country able to provide estimates for all steps along the hepatitis C continuum for a sample of people who inject drugs accessing low-threshold services, indicate that the proportion of individuals diagnosed was low and there was a high proportion of diagnosed individuals not receiving treatment [47]. These findings are consistent with data across the wider population reported to ECDC from EU/EEA countries, which indicate that the overall undiagnosed proportion is large and many diagnosed people are not linked to care and treated [48]. While it is now widely recommended that all people living with HCV receive antiviral treatment irrespective of their degree of fibrosis, there are ongoing restrictions on HCV treatment in some EU/EEA countries, including restrictions on access for those actively using drugs or not enrolled in opioid substitution therapy (OST) [49]. The European Association for the Study of the Liver (EASL) issued a policy statement in 2020 recommending that all barriers to the uptake of the continuum of care by people who inject drugs be removed in order to achieve the 2030 WHO viral hepatitis elimination goals [50].

Hepatitis D is caused by infection with the hepatitis delta virus (HDV). Infection with HDV is dependent on the same person also being infected with HBV, which means that the HDV infection can either be acquired at the same time as the HBV infection or later [51]. The prevalence of HDV among people infected with HBV in the WHO European Region has been estimated to be 3% [52]. Compared to people infected only with HBV, people infected with HDV are at higher risk of progression to cirrhosis and of developing hepatocellular carcinoma [53].

Hepatitis A is an acute, usually self-limiting infection caused by the hepatitis A virus (HAV). Transmission mostly occurs through contaminated water or food products and/or by person-to-person contact, but transmission through the sharing of needles and syringes among people who inject drugs and sexual transmission among men who have sex with men is also known to occur [54]. Clusters and outbreaks of hepatitis A in people who inject drugs have been reported in the EU [5457], while large HAV outbreaks among people who use drugs (injection and non-injection) and/or people who are homeless have been reported in the United States [58].

HIV infection

Robust national estimates of HIV prevalence rates among people who inject drugs are lacking for most countries. However, data from sero-prevalence studies, while not necessarily representative at the national level, can be regarded as indicative of the overall situation and typically show that HIV prevalence among people who inject drugs is significantly higher than that found in the general population. Recent estimates range from 0.7% in Germany (Bavaria region, 2022) to 54.3% in Estonia (city of Kohtla-Jarve, 2020), although in two countries recent studies did not detect any sero-prevalent cases. The national situation appears very heterogenous, making generalisation difficult, but the median estimate of HIV prevalence from the national studies available is around 3% and the mean around 14%. Although the data are even more limited in studies of people who inject drugs with overlapping risk factors, such as engaging in sex work or men having sex with men, relatively higher prevalence rates have been reported [59]. Furthermore, local HIV outbreaks, mostly associated with the injecting of cocaine and synthetic cathinones have been reported in Cologne, Germany; Luxembourg; Dublin, Ireland; and Glasgow, the United Kingdom (UK) [36,47,60]. Ongoing HIV transmission following a large outbreak among people who inject drugs in Athens, Greece, has also been documented between 2014 to 2020 [61].

For countries reporting higher prevalence, this usually reflects a long-established problem. Overall, 4.8% of new HIV cases with known transmission mode in 2021 were attributable to injecting drug use. The number of new HIV diagnoses associated with drug-injecting between 2011 and 2020 has declined steadily, with 571 new diagnosed cases in the EU/EEA in 2020 [9]. This represents a decrease of 51% from 2011 when comparing data from countries with consistent reporting over this period [9]. However, in 2020 in the EU/EEA, 52% of all people diagnosed with HIV where the transmission mode was attributed to injecting drug use were diagnosed late (CD4 cell count less than 350 cells/mm^3 at diagnosis). Late diagnosis is associated with a higher risk of HIV-associated morbidity and mortality [9] and indicates a need to invest more in early detection and improve access to treatment.

There are limited data available on the continuum of care among people who inject drugs living with HIV in the WHO European Region [62]. Among the 13 countries with available data across the four steps of the continuum, France and Spain have met or exceeded the overall global target of having 73% of all people living with HIV virally suppressed among people who inject drugs. Of the other 11 countries, four are within 10% of meeting the target (Austria, Georgia, Italy, and the UK) and seven are more than 10% away from reaching the target (Czechia, Kazakhstan, Kyrgyzstan, Luxembourg, Poland, Romania, and Ukraine) in 2020.

Skin and soft tissue infections

Skin and soft tissue infections in people who inject drugs can be caused by numerous types of bacteria that are present in the environment or present on the users' own skin or other parts of the body and can contaminate drugs or drug-injecting equipment [47,63,64]. These can also be introduced during the injection process if the injection site is not cleaned. The most common bacterial infections among people who inject drugs are caused by streptococcus and staphylococcus species such as *Staphylococcus aureus* (including methicillin-resistant *Staphylococcus aureus*, MRSA) and group A streptococci (GAS). These pathogens can cause infections at the site of injection as well as systemic and life-threatening complications such as necrotising fasciitis, sepsis, endocarditis, bone and joint infections, thrombosis, and emboli [47,64,65]. Less common are infections with spore-forming bacteria found in the environment, such as *Clostridium botulinum* (botulism), *Clostridium tetani* (tetanus), and *Bacillus anthracis* (anthrax). These can also contaminate illicit drugs and lead to severe illness and death [66–68]. Clusters and outbreaks of wound botulism, tetanus, and other spore-forming bacterial infections have been reported in people who inject drugs, particularly in three countries: Ireland, Norway, and the UK [68–70].

Other infections affecting people who inject drugs

The prevalence of TB infection has been found to be high among people who use drugs, and people who inject drugs are at increased risk of active TB disease [7,71,72]. The combination of social risk factors such as poor living conditions, homelessness, incarceration, poverty, malnutrition, tobacco use, and problematic alcohol use can place people who inject drugs at higher risk for becoming infected with TB and/or developing TB disease, and at an increased risk of mortality [71–74]. One of the most significant risk factors for the development of TB and a major reason for the high prevalence of TB among people who inject drugs is HIV-induced immunosuppression [75,76]. TB and HIV coinfection is known to be a problem in the EU/EEA, and people acquiring HIV through injecting drug use have been shown to have had higher odds of TB as an AIDS-defining illness [77]. Furthermore, studies have shown that people who are actively injecting drugs have lower rates of adherence to TB treatment compared to other populations who do not use drugs [78].

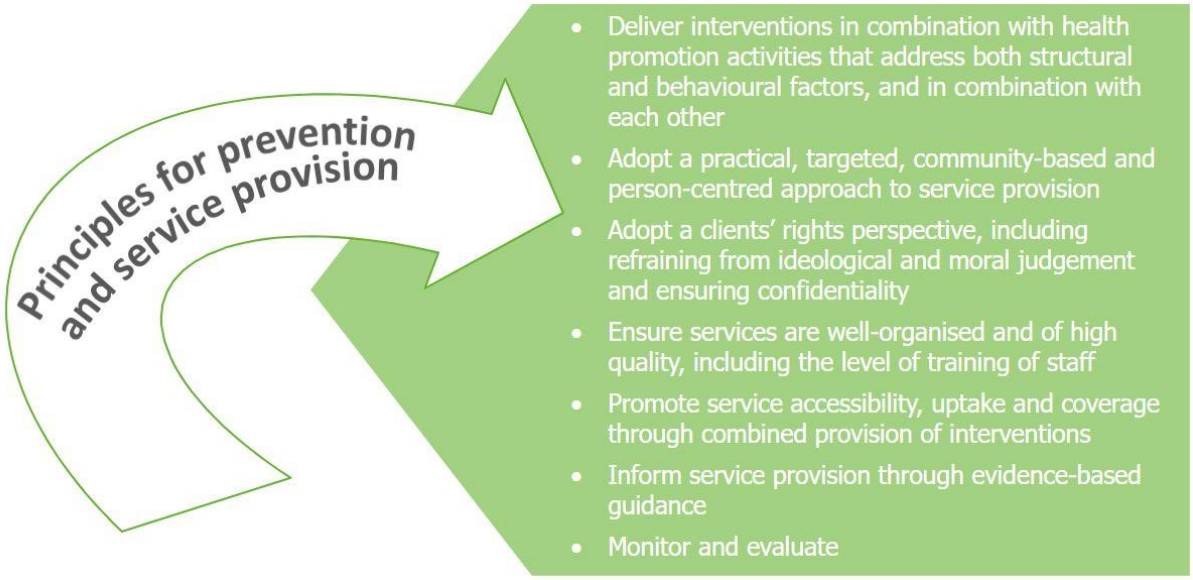
Other infections for which people who inject drugs are particularly vulnerable include respiratory infections such as COVID-19 and influenza. These infections may be more common because of social conditions and more severe because of underlying health conditions [79,80].

The epidemiology of STIs among people who inject drugs is not well documented, but drug use, including that in the context of higher-risk sexual practices, may place some people who inject drugs at greater risk of these infections. This includes exchanging sex for money or drugs, impaired judgment in negotiating safer sex, and difficulties accessing sexual health services [81]. The practice of using drugs in the context of sex has been reported in particular by some MSM and linked to the acquisition of STIs, including hepatitis C [29] [30] [82].

Principles for prevention and service provision

This guidance proposes a holistic approach that is grounded in a collection of principles for prevention and service provision (Figure 1). These principles – which encompass the delivery of interventions in combination with broader health promotion activities and with each other and in combination – should be seen as the foundation of effective implementation of the recommendations within the key areas of intervention.

Figure 1. Principles for prevention and service provision among people who inject drugs



Health promotion is the 'process of enabling people to increase control over their health and its determinants and thereby improve their health' [6]. It overlaps with the various stages of prevention, and acknowledges that improvement in health requires that conditions are favourable for such to occur [6]. Health promotion is therefore a fundamental companion component for the delivery of the other interventions outlined in this guidance.

With respect to people who inject drugs, the key aim of health promotion should be to reduce the risk for individuals of contracting and transmitting infectious diseases through injecting drug use and other means by addressing both structural and individual factors that contribute to environments that promote healthier and/or safer behaviours that impact the various transmission routes.

Structural factors refer to policies, norms, infrastructure, etc. that influence individual behaviours and access to services, and are thus underlying determinants of heath. People who inject drugs can experience inequities in their access to services because of, for example, gender, sexual orientation, ethnicity, level of education, income, homelessness, migration or residential status and geographical location. At the structural level, WHO recommends removing punitive laws, policies and practices, such as criminalisation of possession of needles and syringes; reducing stigma and discrimination; promoting community empowerment; and addressing violence against people who inject drugs [15]. This means that in some countries, a review of national, regional and/or local laws, policies, and practices are needed to address any potential barriers they may create to the prevention, treatment, and care of infectious diseases among people who inject drugs. Addressing stigma and ensuring meaningful engagement of people who inject drugs in how services are provided is also needed to ensure the acceptability and relevance of services for this population.

Individual factors such as behaviours, health literacy, and infectious disease knowledge also impact the risk of contracting and of transmission of infectious diseases. At the individual level, health promotion activities should be focused on moving towards safer injecting behaviour and reduced injection frequency, transition to non-injecting drug use, cessation of drug use if desired, and safer sexual behaviour, as well as infectious diseases prevention, testing and treatment knowledge [14]. Condoms together with health promotion information and referrals to primary care or sexual health services should be provided based on client need in harm reduction settings, drug consumption rooms, community outreach, including settings where drugs are used in the context of sex [16], and

in prisons and pharmacies. Meanwhile, information, education, counselling, and skills training (IECS) should be delivered by trained individuals and provided at every appropriate opportunity. And while interventions are best delivered in combination, IECS interventions can be provided as stand-alone interventions where there are barriers to accessing other harm reduction interventions. Clients receiving injecting equipment should be provided with risk reduction information, including: the importance of washing hands with soap and water prior to injecting, the correct use of each item of equipment, the risks of sharing equipment, and how to safely dispose of needles/syringes and other equipment after injecting. Information about vaccination, early symptoms, testing and treatment of drug-related infections, including early signs of skin and soft tissue infections and the importance of seeking early medical care should also be provided. Peer-delivered IECS interventions can facilitate access to people who inject drugs and can also be a means to refer these individuals to other services. In all cases, messages should be adapted according to various factors, including needs, concerns, expectations and literacy level of the target audience, as well as any personal conditions such as mental health issues and vision or hearing impairments, local context, gender and culture, and languages.

Combined provision of interventions refers to interventions that are delivered together to achieve synergistic effects. Offering a menu of interventions that can be used in combination is important, as studies and experience from successful prevention programmes document the added value of offering a range of effective measures in the same venues, and of providing a combination of interventions targeted according to clients' needs [83]. Further to this, the WHO recommends a comprehensive package of interventions for the prevention, treatment and care of HIV, viral hepatitis and STIs among people who inject drugs [15].

Some of the effects of the provision of combined services may be direct, while some may be indirect through attracting and attaching clients to services, improving service reach and coverage accordingly. For maximum effectiveness, interventions should be applied through national and local cooperation and coordinated between sectors as far as possible. To ensure that prevention resources are spent effectively, infectious disease prevention efforts should be targeted to people who inject drugs where the risk of transmission is greatest.

What is new in this update of the guidance

All areas of the guidance have been updated to incorporate new developments in the field since 2011. While the main intervention areas are replicated, the intervention areas of health promotion and targeted delivery of services have been updated and incorporated into the section on 'Principles for prevention and service provision'. Health promotion was broadened to also address structural issues such as enabling environments while targeted delivery of services was merged into Figure 1 and the paragraph on combined provision of interventions.

Updates in the other intervention areas are as follows:

- Provision of sterile injecting equipment: Recommendations are based on an updated evidence review conducted in 2020, which also includes a review of the effects of low dead space syringes (LDSS) in preventing transmission of HCV and HIV.
- Drug dependence treatment: Recommendations are based on an updated evidence review conducted in 2020, comprising medical (including pharmacological), psychological, social, and behavioural approaches to address problems associated with drug dependence. These include agonist treatment for opioid dependence, pharmacological treatment for stimulant dependence, psychosocial interventions involving information, education, counselling, and or skills training (IECS), psychosocial interventions involving contingency management, and technology-based psychosocial interventions in the community and in prisons.
- Vaccination: COVID-19 vaccination is addressed, and recommendations for human papillomavirus (HPV) have been included.
- Testing for infectious diseases: Recommendations are primarily based on a desk review of the latest published guidance from ECDC and guidelines from WHO.
- Infectious disease treatment: Treatment recommendations are primarily based on a desk review of the latest published international and European guidance. Linkage to care and adherence to treatment recommendations are based on a new systematic review.
- Drug consumption rooms providing supervised injecting facilities: Drug consumption rooms are included as a distinct intervention area and the topic was included in the updated evidence review.

Finally, the structure of the document has been changed to align it with the revised format used for ECDC guidance. Text transferred from the 2011 guidance has been edited to keep the guidance succinct.

Guidance development

A stakeholder survey of individuals from public health and drug services sectors was carried out in 2018 to assess whether the guidance published in 2011 required updating to include emerging evidence and practice considerations. In response to this survey, a multidisciplinary expert panel of 21 people from a range of disciplines including public health policy, drug policy, infectious diseases, mental health, civil society, advocacy, community of people who inject drugs, and harm reduction and drug treatment service providers, was established by ECDC and EMCDDA to inform the updating of the joint guidance and five separate pieces of work were undertaken, four of which inform the content of this guidance (See Annex A and accompanying technical reports [14] for details on the establishment of the expert panel and the evidence reviews). These include:

1. An updated review commissioned by EMCDDA to identify and synthesise the evidence, published since the 2011 guidance, on the effectiveness of: (i) drug treatment for both opioid and stimulant dependence; (ii) needle and syringe programmes (NSPs); and (iii) drug consumption rooms (DCRs) in the prevention of injecting risk behaviour, HCV transmission, and HIV transmission among people who inject drugs [1].
2. A literature review commissioned by EMCDDA to identify and synthesise evidence from mathematical modelling studies published up to and including 2020 on the population-level impact of: (i) opioid agonist treatment (OAT); (ii) NSPs; and (iii) the combination of OAT and NSPs with and without direct-acting antiviral (DAA) treatment for HCV in the prevention of HCV transmission among people who inject drugs [2].
3. A systematic review commissioned by ECDC to identify and synthesise evidence to determine which interventions can increase linkage to care and which can increase adherence to treatment for HBV, HCV, HIV, and TB among people who inject drugs [3,4].
4. A desk review was conducted by ECDC to identify the latest evidence-based guidelines and recommendations from international organisations or clinical societies regarding infectious diseases vaccination, testing, and treatment.

Evidence arising via the reviews (1, 2, 3) was critically appraised, formulated into evidence statements, and – except for the literature review looking at mathematical modelling studies (2) – transferred into Evidence to Summary and Evidence to Decision tables. Expert panel members were tasked with critically reviewing the evidence within the Evidence Summary and Evidence to Decision tables and submitting feedback on these. At two expert panels meetings (March and June 2021), the Expert Panel provided their assessment on the benefits, acceptability and transferability of the interventions, and suggested practice considerations. They also further supported the translation of research findings into recommendations for public health practice.

Each 'recommendation' is informed by an assessment of the evidence and expert opinion on the intervention's relevance, acceptability, wider benefits, and any potential harms. Where the panel felt the evidence available was currently insufficient to fully endorse the intervention but was sufficiently favourable for the intervention to be considered, any related recommendation was classified as a 'Conditional recommendation'.

Meanwhile, recommendations arising through the desk review (4) were derived from those already published within international guidelines and evidence-based practice.

The fifth piece of work, a collection of models of good practice [5] commissioned by ECDC, was also undertaken to accompany the guidance.

Intervention areas

The areas of intervention that should be considered as key components of a comprehensive approach to prevent and control infectious diseases in people who inject drugs are detailed in the following sub-sections. Each intervention area is accompanied by one or more recommendations, justification for these, and practice considerations. The full set of evidence underlying the recommendations as well as the judgments made in the process of going from evidence to recommendation can be found in the accompanying technical documents [14].

Intervention area 1: Provision of sterile injecting equipment

Injecting equipment refers to items used to prepare and/or inject drugs, such as syringes, needles, cookers, filters, and water. Sterile injecting equipment can be provided via a range of settings and modes of delivery. The latter include fixed harm reduction sites, peer outreach, and through pharmacies and in prisons.

Recommendations

- Provide sterile needles and syringes, including in prisons;
- Provide sterile needles and syringes through pharmacies in addition to traditional needle and syringe programmes;
- Provide sterile drug preparation equipment (cookers, filters and water for injection).

Evidence and justification

There is sufficient evidence of a benefit of needle/syringe provision with regard to preventing injecting risk behaviour and HIV transmission, and tentative evidence that it is effective in reducing HCV transmission. While there is a lack of evidence on the effectiveness of providing sterile drug preparation equipment in reducing the incidence of HCV and HIV, there is sufficient evidence that it reduces the sharing of these items of equipment. The provision of sterile needles/syringes and drug preparation equipment may prevent skin, soft tissue and other infections among people who inject drugs. There are also other benefits that arise from the engagement with services that results when people who inject drugs seek out NSPs – such as the opportunity to provide them with risk reduction advice, or to refer them to other services.

There is insufficient evidence to draw strong conclusions about the benefit of NSPs in prisons regarding preventing HCV, HIV or injecting risk behaviour. Rigorous evaluation of this intervention is hampered by the sensitivity of the intervention, structural barriers such as acceptability among prison staff and access of researchers to prisons, and few places where it has been implemented to date. The panel concluded that the principle of equivalence of care [84,85] – i.e. that incarcerated people are entitled to the same standard of care as people in the community – should apply, and therefore was in favour of recommending in-prison NSPs.

There is insufficient evidence to say conclusively whether there is a benefit of pharmacy-based NSPs with regard to preventing HCV or HIV; however, there is evidence of a moderate effect of pharmacy-based NSPs compared to no NSPs on reducing injecting risk behaviour. There is also evidence to show that pharmacy-based NSPs are at least equivalent to other types of NSPs in terms of reducing injecting risk behaviour. Furthermore, using existing healthcare infrastructure such as pharmacies may be a cost-effective way of expanding access to sterile injecting equipment, especially in countries where dedicated harm reduction services are geographically limited.

There is insufficient evidence to say conclusively whether there is a benefit of providing LDSS with regard to HCV or HIV prevention. However, some cost-effectiveness studies have suggested that, under certain circumstances, these syringes may have benefits [86]. In 2012, WHO indicated that it may be beneficial to encourage the use of LDSS citing evidence that the provision of LDSS leads to a reduction in the transmission of HIV and HCV [87].

There is evidence from mathematical modelling studies to suggest that there are potentially large reductions in HCV incidence, and tentative evidence of a reasonably large reduction in injecting risk behaviour, associated with the provision of combined OAT and NSPs. OAT and NSPs do not necessarily have to be integrated, but people who inject drugs need access to both. If interventions provided in combination are effective for HCV, they are likely also to be effective for HIV prevention among people who inject drugs.

It can be assumed that the public health impact in preventing HCV and HIV transmission of any needle/syringe programme is likely to be influenced by the accessibility and reach of the service. Reflecting this, it is generally accepted that it is important to maximise the accessibility, reach, and coverage of NSPs through whichever mix of settings or modes are appropriate to the local injecting population.

Practice considerations

- Provision of sterile needles/syringes and other drug preparation equipment should be free of charge to people who inject drugs.
- In addition to needles/syringes, cookers, filters and water ampoules, services should provide a minimum set of essential equipment that includes acidifiers, alcohol/disinfectant swabs and dry swabs, foil, sharps bins and naloxone (for overdose prevention and management) [88]. See Box 2.
- User preferences for syringe types and needle sizes should be carefully considered to maximise service uptake.
- For clients who express a need or preference for detachable syringes, low dead space detachable syringes should be provided.
- Services providers should consider transitioning to LDSS instead of high dead space syringes (HDSS) even though there may be a higher cost attached to procurement of LDSS and they may be more difficult to procure.
- While some settings require the return of used needles and syringes in order to be given new ones, this policy can be counterproductive and act as a barrier to accessing and using sterile injecting equipment.
- To encourage safe transportation and disposal of injecting equipment, puncture-proof containers to collect and return injecting equipment should be made available. Other strategies such as community-based safe disposal sites or home collection have also been successfully used in some settings.
- The provision of non-injecting equipment, such as foil for smoking drugs may attract clients to services and encourage transition away from injecting.
- If it is not possible to prevent completely the re-use and sharing of needles and syringes, syringe identifiers could be offered to clients. These are syringes that come with numbers, colour codes, stickers, or some other system of anonymous identification to minimise inadvertent sharing of syringes.
- In addition to traditional fixed-site NSPs, alternative settings/modes include prisons, pharmacies, vending machines or outreach, peer, mobile or postal distribution. The exact mix of settings and modes of distribution should be determined by local context and user preferences.
- Negative attitudes around injecting drug use could contribute to stigma and deter people from accessing the service. While staff training is important in all types of services, it may be particularly crucial in settings such as prison and pharmacy where staff may not have as much experience working with people who inject drugs as compared to dedicated services [89].

Box 2. Basic set of essential harm reduction equipment for people who inject drugs

Recent technical guidelines have proposed a set of harm reduction equipment items that were considered essential by harm reduction experts [88]. These items are listed below, along with the purpose of each item and its potential benefits. What is provided to each client needs to be based on their specific needs.

- **Sterile needles and syringes, including low dead space syringes**
- **Cookers:** Cookers or spoons (also sometimes referred to by the brand name, e.g. Stéricups®) are used to heat and dissolve drugs such as heroin prior to injecting, or to mix crushed tablets with water. Use of a new, sterile cooker for each injection may reduce the risk of blood-borne virus and bacterial infections.
- **Filters:** Dissolved drugs are drawn into the syringe through a filter to prevent large particles from entering the bloodstream. Using a filter when injecting into the vein is important as it can prevent blood clots or emboli; however, filters tend to be re-used because they are thought to contain residual drugs. Use of a new, sterile filter for each injection may reduce the risk of blood-borne virus and bacterial infections. Different types of filters are available and user preference should be taken into account.
- **Water:** Water is used to dissolve drugs prior to injecting and to rinse and flush the needle and syringe after injecting. Users may share a common source of water for this purpose, which potentially puts them at risk of transmitting blood-borne viruses, and the use of non-sterile water (tap water, for example) poses a risk of skin and soft tissue infections. Use of a new, sterile water ampoule for each injection may reduce the risk of blood-borne virus and bacterial infections.
- **Acidifiers:** Acidifiers are used to make insoluble drugs, such as brown heroin, soluble. The use of household products as acidifiers (e.g. lemon juice, vinegar) can lead to vein damage and infections. Infections may be avoided if single-use sachets of acidifiers, such as ascorbic or citric acid, are provided to people who inject insoluble drugs.
- **Alcohol swabs and dry swabs:** Alcohol or disinfectant swabs/wipes should be used to clean the injection site before injecting. Clean dry swabs can be used after the injection to stop the bleeding, as alcohol pads will prolong the bleeding time. Alcohol swabs may reduce the risk of bacterial infection.
- **Foil**: Foil may be used to inhale or smoke drugs. Commercially available foil for household use has usually been coated with oils or non-stick coatings and is unsafe to use for smoking drugs. Untreated foil should be provided; provision of non-injecting drug equipment such as foil may attract clients to the service and may also encourage route transition away from injecting drug use. Smoking, instead of injecting, drugs may reduce the risk of blood-borne virus transmission and overdose.
- **Sharps bins**: Sharps bins are containers for the safe disposal of equipment after injecting.

In addition to the above equipment, **naloxone** is an effective medicinal product used to reverse opioid overdoses and as such, is an important component of a comprehensive harm reduction response.

Intervention area 2: Drug dependence treatment

Drug dependence treatment represents an important component in a comprehensive response to prevent health-related harm associated with drug dependence. Drug treatment encompasses a range of medical (including pharmacological), psychological, social and behavioural strategies to stop or reduce drug use and injecting and can be delivered in outpatient or in residential settings.

The main pharmacological treatment approach, opioid agonist treatment (OAT), involves using opioid agonists. These are prescription medicines [90] that bind to and activate opioid receptors. They prevent withdrawal symptoms and reduce cravings, therefore allowing for reduced use of illicit opioids and injecting risk behaviour. Furthermore, they reduce overdose risk and other injecting related risks, improve health, quality of life and social reintegration and enable the individual to lead a more stable life. OAT is often provided in combination with psychosocial treatment and further support services. The most widely used OAT medicines are methadone and buprenorphine (a partial agonist) [91]. Meanwhile, to treat long-term refractory heroin-dependent people who have not responded to standard treatments, such as OAT, injectable heroin-assisted treatment (HAT) – the prescription of diamorphine (medical-grade heroin) may be considered [92].

Recommendations

- Provide OAT for preventing HCV (primary infection and reinfection), HIV and injecting risk behaviour, and for reducing injecting frequency among people who inject opioids.
- Provide OAT in the prison setting for preventing injecting risk behaviour and for reducing injecting frequency among people who inject opioids, which could be beneficial to HCV and HIV prevention.
- Provide sterile injection equipment in combination with OAT to maximise the coverage and effectiveness of these interventions among people who inject opioids.

- Promote safer injecting behaviour and reduced injection frequency via, for example, IECS alongside OAT and NSPs, including in prisons.

In addition to the above, the expert panel was in favour of the following conditional recommendation: providing HAT for reducing opioid use in specific patient groups, which could be beneficial to HCV and HIV prevention.

While the evidence base on what constitutes effective treatment of problematic use of stimulants is relatively weak the panel considered that the following interventions merited a conditional recommendation as they could be beneficial to HCV and HIV prevention: using contingency management to reduce drug use and increase retention in drug treatment; providing pharmacological treatment for reducing stimulant use in specific patient groups; and using technology-based approaches to deliver psychosocial interventions to address challenges in delivering timely in-person services and historically underserved populations.

Evidence and justification

There is sufficient evidence to demonstrate that OAT is effective in reducing HCV transmission, HIV transmission and injecting risk behaviour/injection frequency. OAT (methadone/buprenorphine) is already a widely used frontline treatment for opioid dependence.

There is insufficient evidence from studies of OAT delivered in prison and its impact on blood-borne virus transmission because of a scarcity of studies in the prison context. However, evidence is sufficient in respect to effectiveness of OAT in reducing sharing of injecting equipment and injecting drug use. The lack of evidence regarding HCV and HIV probably reflects the challenge in evaluating in-prison OAT, which includes the need for large sample sizes to detect statistical differences in blood-borne virus incidence between intervention and control groups. However, based on the principle of equivalence of care between prison and the community, OAT can be recommended regardless of the scarcity of direct evidence on HCV and HIV transmission. Providing OAT in the prison setting may also have other benefits, such as a reduction in drug-related deaths, and promoting continuity of treatment between prison and the community.

In addition to empirical evidence, mathematical modelling studies suggest that there are potentially large reductions in HCV incidence, and tentative evidence of a reasonably large reduction in injecting risk behaviour, associated with the provision of combined OAT and NSPs.

Evidence of the effectiveness of psychosocial interventions involving IECS for preventing HCV or HIV among people who inject drugs, including in prison settings, is generally limited. For example, evidence on the effectiveness of psychosocial interventions involving IECS in reducing injecting risk behaviour and injection frequency comes from a combination of studies of interventions that differed in content, were delivered differently in various settings, had different frequency or intensity of interventions, and had varying control conditions. However, a systematic review found that 'psychosocial interventions could boost the impact of current harm reduction interventions delivered as routine care and could be included with other harm reduction approaches, including OST and needle and syringe exchange' [93].

The expert panel acknowledged that psychosocial interventions are one of the most widespread harm reduction interventions, are easy to implement and can be used in a wide variety of settings, including in prisons. Of psychosocial interventions, peer-delivered interventions were thought to be particularly effective by the expert panel.

While there is an absence of evidence for the effectiveness of HAT in relation to prevention of HCV, HIV or injecting risk behaviour, there is strong evidence that it reduces 'street' heroin use [92]. This may lead to reductions in blood-borne viruses.

Most studies of pharmacological treatment for stimulant dependence have focused on drug use (not necessarily injecting) outcomes, and while no treatments have been found to be consistently efficacious in reducing drug use, there are promising results for certain prescription medicines when applied to specific patient sub-populations [16].

There is no direct evidence that contingency management – a behavioural management technique that involves using incentives such as cash, vouchers, prizes, or other kinds of privileges to reinforce behaviours or disincentives to discourage them – has an impact on HCV or HIV transmission, and insufficient evidence on this regarding injecting risk behaviour. This lack of direct evidence is in large part because it is difficult to assess the benefit from this intervention given the evidence combines studies of interventions that targeted different behaviours (for example, abstinence from different drugs or use of different drugs), involved different rewards, and were delivered alone or in combination with varying pharmacological treatments. The benefit may be dependent on all of these factors. There may be benefits of contingency management with regard to retention in drug treatment (OAT), as well as vaccination adherence and completion however these outcomes were outside the scope of this update. The cost of contingency management interventions needs to be weighed against any potential benefit.

With regard to technology-based psychosocial interventions, while one robust study showed a positive impact of a psychosocial intervention on reducing injecting risk behaviour [94], there was insufficient evidence overall to either

support or discount the effectiveness of technology-based psychosocial interventions in the prevention of HCV or HIV transmission among PWID or prevention of injecting risk behaviour. Technology-based psychosocial interventions warrant further consideration and evaluation aimed at improving access for people who inject drugs in remote or rural areas and among those who prefer virtual, as opposed to face-to-face, contact. Such interventions may be more cost-effective than face-to-face interventions and may also be beneficial in situations when face-to-face contact is not possible. However, people who inject drugs often have very limited access to technology and may have low technological literacy, so technology-based interventions need to be implemented with care in this population.

Practice considerations

- Anyone who is clinically assessed as dependent on opioids should be considered for OAT, regardless of whether or not they also use other substances.
- OAT should be provided at sufficient dose and individuals should be maintained on continuous treatment. Evidence indicates that, following individual clinical assessment, flexible dosing structures should be encouraged without restriction on dosage and duration of treatment [95,96]. To optimise effectiveness, recent WHO guidance suggests that OAT is more effective as maintenance treatment than as medically-assisted detoxification [97], with mathematical modelling evidence also showing that retention on OAT is critical for reducing drug related mortality (including HCV- and HIV-related mortality) [98,99]. OAT can be dispensed in a multitude of settings including general practice, specialised centres in the community, pharmacies, outreach/mobile clinics and in prison. A good link between prison and community-based programmes is important to facilitate continuity of treatment (upon incarceration or after release) so that longer-term benefits can be achieved and harms such as blood-borne virus acquisition and fatal overdoses in the period immediately after release can be prevented.
- In all settings, the direct observation of the patient taking the medications can prevent diversion of drugs to the illicit market. However, take-home doses can be made available for stable patients, which can reduce the burden of daily visits [100].
- OAT may also help to prevent skin abscesses due to the impact on reduced injecting risk behaviour.
- Low-threshold programmes/services, i.e. those that remove barriers to care that are typically encountered in traditional healthcare systems, are more accessible to people who inject drugs.
- Opioid antagonist treatment, specifically naltrexone, which blocks the effects of heroin and other opioids, may be useful for some patients in preventing relapse [101]. It should be emphasised that it is not an alternative to OAT and there is no evidence that naltrexone contributes to preventing blood-borne viruses or injecting risk behaviour [91].
- Supervised injectable HAT could be considered for people who have not responded to standard treatments where this approach is possible. Such treatment requires structurally adapted services to respect strict safety conditions and prevent any diversion to the illicit market. Clinics have to be open several sessions per day, every day of the year, in order to allow clients to inject their treatment under supervision as indicated in treatment guidelines [92].
- Technology-based interventions may be part of an evolving drug treatment approach to delivering psychosocial interventions, which have the potential to increase reach to people who inject drugs in remote or rural areas, or those who prefer participating virtually instead of face-to-face [102]. However, people who inject drugs often have very limited access to technology and may have low technological literacy, so technology-based interventions need to be implemented with care in this population.

Key findings from a review of mathematical modelling studies of combined provision of NSPs and OAT for preventing HCV transmission

As mentioned in the guidance development section, a literature search was undertaken to identify mathematical modelling studies to examine the population-level impact of NSPs and OAT, individually and in combination, on HCV transmission among people who inject drugs. The evidence from this search indicates there are estimated positive effects of combining OAT and NSPs. See also the accompanying technical report for full details [2].

Mathematical modelling can estimate the level of intervention coverage scale-up required to achieve a desired reduction in HCV transmission at the population level. This has rarely been considered through epidemiological studies. To achieve HCV incidence decreases of a least 40% after 10 years, sustained increases in OAT and NSP coverage is required regardless of the baseline coverage of these interventions. Countries starting with low levels of baseline OAT and NSP coverage will require larger absolute increases.

Table 1 presents target coverage levels of OAT and NSPs depending on a country's current, i.e. baseline, coverage (A). Target levels of coverage (B) are those that need to be sustained in order to achieve HCV incidence decrease of at least 40% after 10 years. While the expert panel felt that targets were important for countries to understand the impact of their investment, as well as a tool for advocacy and to improve accountability, it was acknowledged that there is a spectrum of different baseline coverage levels of these interventions across Europe, and that the target may depend on a country's starting point. Details of how these targets were calculated can be found in the technical report [2]. Other models have also shown that in order to reduce chronic HCV and subsequently reduce HCV incidence requires scaling of HCV treatment; and that the combination of HCV treatment and OAT and NSP will minimise re-infection and reduce chronic HCV prevalence and incidence in people who inject drugs [103-105].

Table 1. Recommended target coverage of both OAT and NSPs to achieve a 40% reduction in HCV transmission after 10 years based on current, i.e. baseline, coverage levels

Baseline coverage (A)	Target coverage (B)
10%	**46%**
20%	**50%**
30%	**58%**
40%	**64%**
50%	**70%**
60%	**76%**
70%	**82%**
80%	**88%**
90%	**94%**

Intervention area 3: Vaccination

Recommendation

- Offer vaccinations against hepatitis A and B, respiratory infections such as COVID-19 and influenza, and against tetanus to prevent infections and/or their complications in people who inject drugs; in addition, particularly for people living with HIV who inject drugs, offer the pneumococcal and the human papillomavirus vaccines.

Evidence and justification

Vaccination against infectious diseases continues to be among the most effective prevention interventions available [106]. In most settings, people who inject drugs are at a greatly increased risk of acquiring hepatitis A, hepatitis B and tetanus, all of which are infections preventable through vaccination. People who inject drugs are at higher risk of adverse outcomes from COVID-19 and influenza because of poor living conditions, lower access to healthcare, and impaired immunity because of co-infections and underlying medical conditions [80]. When HIV co-infected, there is a higher risk of pneumonia from pneumococcal infection, and also, if infected with human papillomavirus (HPV) as well, cervical or anal cancer [107,108]. Effective vaccines are available which can prevent each of these infections [109,110].

Practice considerations

- National and international vaccination guidelines should be applied to people who inject drugs unless otherwise indicated [87,111,112].

- Hepatitis A vaccination (or combined hepatitis A and B vaccination) should be offered to protect against hepatitis A infection and is particularly important for those who have chronic hepatitis B or C infection and/or HIV infection [113,114]. People chronically infected with hepatitis C (for which no vaccine currently exists), hepatitis B, or HIV are at higher risk of severe disease from HAV infection. Those who become co-infected with hepatitis B and C may suffer from accelerated liver disease progression and have an increased risk of hepatocellular carcinoma [115,117].
- Hepatitis B vaccination campaigns that target people who inject drugs have been shown to be cost effective and even cost-saving [118].
- While testing for hepatitis B serum markers at the first service contact can aid the targeting of vaccination to only those who would benefit from the vaccine, it may result in the delayed start of a vaccination course, which may not always be considered appropriate [32,119].
- Accelerated hepatitis B vaccination schedules provide rapid protection and can increase the proportion of people who inject drugs who complete three doses of the vaccine [120,122]. However, there is some evidence that immunity after three doses given as an accelerated schedule may not be as good long-term compared to the normal schedule [123] and that the immune response to the accelerated schedule may be reduced in people who inject drugs because of, for example, underlying illnesses [87,120,124,125]. Evidence suggests that with the accelerated schedule, a higher dose is more effective [120]. Additional evidence suggests that a fourth dose at 12 months provides good seroprotection in the long-term [123,126]. Emerging evidence around a new vaccine that only requires two doses over one month and has an earlier onset of protection suggest it may be a good, possibly cost-saving, alternative for people who inject drugs [127].
- Even one dose of the hepatitis B vaccine may provide partial immunity and for this reason vaccinating all people who seek a first dose of hepatitis B vaccination is important even if they may not come back for follow-up doses [128,129].
- People who inject drugs should be offered the full course of vaccination against COVID-19 and seasonal influenza, as well as pneumococcal vaccination, particularly if the client is HIV positive and/or more than 50 years of age [130].
- Tetanus vaccination status should be checked among people who inject drugs and a booster vaccine should be offered if vaccination status is uncertain, particularly for those who have injection site infections. Often the combined tetanus-diphtheria vaccination is given, which is advisable because diphtheria, while rare in EU/EEA, has a high case-fatality rate [14,131,132].
- There is evidence that uptake of vaccination improves when integrated into other services [133]. Furthermore, vaccination at NSP sites has been found to be cost-saving [118].
- Routine or one-off vaccination services through fixed sites or mobile services serving people who inject drugs can be of particular benefit to people who inject drugs who have difficulty accessing/attending conventional healthcare services.
- Offering vaccination in prison settings or residential drug rehabilitation centres can be effective in increasing vaccination uptake [32].
- Outreach activities may be needed to improve vaccination uptake and completion among people who inject drugs [134,135].

Intervention area 4: Testing for infectious diseases

Recommendations

- Routinely offer voluntary, confidential testing with informed consent and that is in line with relevant guidance for:
  - HCV and HIV to all people who inject drugs;
  - HBV to all people who inject drugs with no/incomplete vaccination;
  - STIs (e.g. syphilis, chlamydia, gonorrhoea) to all people who inject drugs with STI symptoms and/or those with higher risk (e.g. multiple sexual partners, exchange of sex for money/drugs);
  - TB disease to all people who inject drugs with TB signs and symptoms, and/or those with higher risk (e.g. have an exposure or predisposing underlying condition).
- All people with a positive test result should be linked to care.

Evidence and justification

Voluntary and confidential infectious disease testing of people who inject drugs is a key strategy to eliminate hepatitis B and C, HIV, STIs and TB in the EU/EEA and a prerequisite for linkage to care and treatment provision. There is a large body of evidence from EU/EEA countries generally supporting the implementation of community-based testing services, i.e. testing outside formal healthcare facilities. According to the available evidence, community-based testing is effective in reaching populations such as people who inject drugs [136]. ECDC's public

health guidance on HIV, hepatitis B, and C testing further recommended the implementation of an integrated, community-based testing approach [136]. Community-based testing is also essential to high-quality, person-centred TB care [7,8,137].

Practice considerations

General

- National and international testing guidelines should be applied to people who inject drugs, unless otherwise indicated [8,136,138,143].
- Testing should also be offered to those who have injected drugs in the past, followed by linkage to care in the event of a positive result.
- Testing for infectious disease should be free of charge for people who inject drugs.
- Settings where testing can be provided include harm reduction services, drug treatment services, low-threshold clinics, outreach settings, pharmacies, prisons, and healthcare settings such as primary care, emergency, TB services, and hospitals.
- Hepatitis B and C testing and HIV testing is recommended in injecting and sexual partners of people who inject drugs diagnosed with HBV, HCV or HIV [136].
- Partner notification and management should be conducted following national/international guidelines [144,145].
- In some countries, review of national, regional and/or local legislation will be needed to allow for peers and other non-medical staff working in, for example, community settings to conduct rapid testing for HBV, HCV, HIV and/or other STIs for which rapid tests are available.

Specific to hepatitis and HIV

- Rapid diagnostic tests (RDTs) and dried blood spot (DBS) tests for hepatitis B and C that can be delivered at the point-of-care (POC) could be considered to increase testing uptake among risk groups [136]. A benefit of POC testing is that a positive test result can be immediately acted upon by initiating linkage to care and providing risk-reduction counselling [146].
- HCV self-testing has been recommended as an additional approach to HCV testing [143] and HIV self-testing has been recommended as an additional approach to HIV testing [142]. In both cases, confirmatory testing following a positive result should be conducted.
- For HCV, periodic retesting for those at ongoing risk of infection should be considered [138], including after successful HCV treatment in order to detect possible reinfections [147].

Specific to STIs

- Testing followed by referral to treatment should be part of regular screening, especially among those that engage in condomless sex, have multiple sexual partners, exchange sex for drugs or money, are pregnant, are diagnosed with other STIs and/or on HIV pre-exposure prophylaxis [141,148].
- In recent years a range of rapid POC tests for syphilis diagnosis have been developed and, although not differentiating between active and past treated infections, they can be useful for on-site outreach testing when followed by confirmatory laboratory testing [149,150].

Specific to TB

- All people who inject drugs who have symptoms of TB disease, have an exposure (i.e. close contact with a TB case, living in prison) or predisposing underlying condition (i.e. people living with HIV) should be screened for TB disease. People living with HIV who inject drugs should be screened for TB disease at each visit to a health facility [8].
- Screening for TB infection can be resource intensive and should be well targeted. A mathematical model assessing different systematic screening strategies for TB infection estimated that annual screening of people who inject drugs and people who are homeless is more cost-effective than triennial screening in EU/EEA countries with low TB incidence [151,152].
- Interferon gamma release assays are the preferred test for screening of TB infection among people who inject drugs who do not have HIV, as a second visit is not required to interpret test results [7].
- People who are known to have TB or show clinical indications of TB should be offered HIV testing and considered for HBV and HCV testing [136].

Intervention area 5: Infectious disease treatment

Highly effective antiviral treatments for HCV and HIV have an important role in infectious disease control by reducing viral loads, thus reducing onward transmission. Antiviral treatment against HBV is able to suppress viral replication and reduce progression to cirrhosis, the risk of hepatocellular carcinoma and liver-related deaths [153,154].

In the case of HCV, there has been major progress in antiviral therapeutics over the last few years with the development of direct-acting antiviral (DAA) regimes. These regimens are highly effective in clearing the virus, i.e. rendering viral RNA undetectable following a course of treatment [155,156]. This applies to both initial and reinfections with HCV, even when treatment following reinfection is delivered in non-specialist settings [142]. DAA HCV therapy is also well tolerated and effective among people on OAT and those who continue using drugs during HCV therapy.

HCV treatment targeted towards people who inject drugs at highest risk of sharing injecting equipment has the potential to prevent the greatest number of infections [157]. There have been many modelling studies exploring the impact of HCV treatment as prevention for people who inject drugs. These studies have found that even modest levels of antiviral treatment, especially with DAAs, could substantially reduce chronic HCV prevalence within the next 10 to 20 years [158,159]. These modelling studies indicate potential prevention benefits in targeting treatment towards people who inject drugs in order to avert the greatest number of HCV infections [160]. However, there is still uncertainly around the actual level of impact of HCV treatment as prevention, especially in settings with higher or increasing prevalence among people who inject drugs where some analyses have indicated that the prevention benefit may be less because of the high re-infection risk [157,161,162].

For HIV, antiretroviral therapy (ART) can effectively suppress the virus and stop progression of HIV disease [107]. Provision of ART is an essential part of care for people who inject drugs that test positive for HIV irrespective of CD4 counts [15,107,108,142]. WHO and European AIDS Clinical Society guidelines recommend initiating ART for all people living with HIV, including people who inject drugs, regardless of clinical stage and at any CD4 cell count [15,107]. People who inject drugs have treatment outcomes similar to others when ART is provided in a supportive environment [15]. HIV treatment is a life-long process, which needs additional support for adherence. ECDC guidance recommends that pre-exposure prophylaxis (PrEP) for HIV should be accessible and affordable to all people in need of HIV prevention, where clinically appropriate, as part of combination prevention services, however, the literature on interventions to optimize PrEP use among people who inject drugs is still emerging, mostly based on small pilots and demonstration projects. PrEP is documented to be highly effective in preventing sexual transmission of HIV and it should be recognised that injecting risk and risk associated with multiple sexual contacts or the exchange of sex for money or drugs may overlap [15,148]. In addition, post-exposure prophylaxis (PEP) for HIV and STIs should also be available after possible exposure [15].

Effective treatment exists for both TB disease, including drug resistant forms, and TB infection. TB preventive treatment aims at preventing progression to active disease, whereas treatment regimens for TB disease aim at curing the disease and thus preventing morbidity and mortality and in addition preventing ongoing transmission [7,139,163,164]. The most important factor determining progression from TB infection to active disease is an individual's immunological status. Identifying and treating those at the highest risk of progression with a treatment option suited to the individual is therefore key [7]. Several TB preventive treatment options are available [7]. Treatment of TB disease involves using several medicines administered in combination for an adequate duration. TB strains with drug resistance, especially rifampicin-resistant/multi-drug resistant/extensively drug-resistant organisms exist and are more difficult to treat than drug-susceptible ones. Treatment regimens for drug resistant TB can be of longer duration, with more drugs and a higher risk of side effects [165].

Effective antibiotic treatment regimens exist that can cure the three most frequent bacterial STIs, chlamydia, gonorrhoea and syphilis, however reinfections are possible [166].

It is important that those who test positive for an infectious disease are linked to care, adhere to and complete treatment as per clinical guidelines. Linkage to care interventions are those that aim at increasing the likelihood of a visit by people who inject drugs with a provider/specialist after having tested positive for an infectious disease for an initial evaluation in order to start the treatment if indicated. Adherence to treatment interventions are those that aim at improving outcomes such as treatment adherence, treatment completion, and viral suppression or elimination where applicable.

Recommendations

- Offer:
  - Antiviral treatment for those who are diagnosed with HBV and eligible for treatment;
  - Antiviral treatment for those diagnosed with HCV;
  - Antiretroviral treatment for those diagnosed with HIV;
  - Anti-TB treatment to those with TB disease;
  - TB preventive treatment for people with TB infection after ruling out TB disease;
  - Treatment for other infectious diseases such as STIs and bacterial skin infections as clinically indicated.
- Ensure there is cooperation between service providers dedicated to people who inject drugs and infectious disease care to increase linkage to care, in particular for HCV;
- Involve peer mentors to increase adherence to HCV treatment.

In addition, the following interventions/approaches were conditionally recommended: (i) directly observed therapy (DOT), contingency management, multicomponent interventions/approaches, telemedicine, primary care-based treatment to increase linkage to HCV care and adherence to treatment; (ii) peer mentors to increase linkage to HCV care; (iii) integrated OAT and HCV treatment to increase adherence to HCV treatment; (iv) multicomponent interventions to increase linkage to HIV care and adherence to treatment; and (v) cooperation between service providers to increase adherence to TB treatment.

Evidence and justification

While the certainty of evidence is low, cooperation between service providers (e.g. harm reduction services, mobile units and specialised HCV care) may improve treatment initiation rates and therefore is considered important for rapid linkage to care and initiation of treatment. In addition, while there is low certainty of evidence that peer interventions will help people who inject drugs attending a first HCV evaluation visit, there is a high certainty of evidence that peers may improve HCV treatment initiation, increase rates of DAA treatment completion and achievement of SVR12.

For the conditionally recommended interventions, very few studies were identified per intervention, with most having only very low to moderate certainties of evidence.

Practice considerations

General

- National and international guidelines regarding HBV, HCV, HIV, TB and STIs, including those regarding PrEP, PEP and ART, should be applied to people who inject drugs unless otherwise indicated [7,15,107,141,142,153-156,163,164].
- Current substance use should not be a barrier for accessing treatment as long as there are no other clinical contraindications.
- Treatment for infectious diseases should be free of charge for people who inject drugs.
- In some countries, review of national, regional and/or local legislation will be needed to allow for distribution of ART, DAA, and treatment for other diseases such as STIs to occur outside the healthcare system, as well as for the implementation of interventions such as contingency management (i.e. use of incentives).

Specific to hepatitis C

- Neither enrolment in OAT nor DOT should be a requirement to receive HCV treatment. As many patients as possible should receive DAA HCV treatment which is well tolerated and effective among both those that continue to inject and those on OAT.
- Simplified pre-treatment assessment and antiviral therapy for HCV with pan-genotypic regimes that require no pre-genotype/subtype testing in advance of starting therapy can improve access to treatment in settings or for particular groups where a more streamlined, simplified care pathway is preferable [155,156].

- Reinfection with HCV following DAA treatment can occur but people who inject drugs at risk of reinfection should still be offered treatment. Reinfection risk should be evaluated for each individual together with referrals to appropriate services targeting the relevant needs and risks to prevent reinfections following treatment [147,167,168]. Such an assessment should take both individual and contextual factors into account that have been shown to be associated with a higher risk of reinfection such as: current injection drug use, in particular cocaine or methamphetamine, short duration of injection drug use, problematic alcohol use, younger age, male sex, being HIV-positive, being part of a high-risk injection partnership/network, and being part of a cluster of HCV-positive/HIV-positive MSM [167-170]. Those with ongoing risk behaviours should receive regular testing – ideally biannual although more frequent testing can be considered depending on the context. Retreatment should be made available if reinfection is identified during post-SVR follow-up [15,171] .
- Those using OAT continuously after DAA treatment have been shown to have lower rates of reinfection [167].
- Treatment of a group or network of people who inject drugs may be the most effective in preventing reinfections as it reduces the reservoir of infected people [172,173].
- The observation of HCV reinfections can be considered as an indication that treatment efforts are reaching those people who inject drugs at the highest risk. It is important to monitor reinfections to assess their extent, understand their cause and prevent them [147,168,174].
- Services should preferably be in the same geographic area and assist in referral by accompanying clients to other services.
- Peers facilitate access to communities of and interactions with people who inject drugs by promoting a trusting environment. This is important to counter the distrust of public healthcare services often experienced by marginalised communities. Different peer models and concepts can be considered, and training should be a pre-condition for people to successfully act as peers in programmes.
- It is important to assess for whom delivery of DAA using DOT is a suitable option. For example, it may be feasible for people who are stable on OAT and those with a lack of places to store medication. It may not be feasible for the most vulnerable people who inject drugs.
- Several settings may be suitable for DOT delivery, such as pharmacies, harm reduction services (NSP and OAT sites, drug consumption rooms), low threshold settings, shelters, food distribution units and prisons. The optimal settings are highly dependent on the structure of the healthcare system in a country as well as acceptability among service providers.
- Pharmacy-led DOT for HCV treatment in combination with OAT seems to improve both DAA treatment initiation and treatment adherence.
- Contingency management can enhance both motivation (financial incentive) as well as provide resources (transportation costs, food vouchers/packages, help getting health insurance, etc.) to overcome potential barriers to accessing and adhering to HCV care and treatment. Contingency management that targets people who inject drugs at venues where they are already receiving services, such as NSPs, shows some potential to improve the entire cascade of care.
- Care should be taken to not create inequalities when financial incentives are only provided in specific sites and given to specific sub-populations.
- Multicomponent interventions/approaches appear to be particularly promising for improving linkage to care and adherence to HCV treatment of people who inject drugs and have mental health issues and/or other serious health and social problems. The role of case managers and flexibility in responding to the needs of these populations is key.
- Telemedicine may facilitate access to HCV treatment by remotely linking patients to healthcare services. However, people who inject drugs may experience barriers to using telemedicine, including homelessness, lack of electronic equipment, limited access to internet and mobile phones and poor internet connection. In addition, a low-level of digitalisation within some healthcare systems and in certain settings such as prisons also impacts its usefulness.
- Telemedicine may be more useful for increasing adherence to treatment than it is for linkage to care, as the initiation of treatment often requires a more complex interaction with the care provider (e.g. clinical evaluation, laboratory investigations).
- Primary care settings may provide advantages for engaging people who inject drugs in HCV treatment, including knowledge of existing patient treatment plans.

Specific to HIV

- Barriers to prevention, testing and treatment of HIV among people who inject drugs should be removed. These can include stigma and discrimination, insufficient OAT and NSP coverage, and criminalisation/punitive legislation, such as criminalisation of the possession of needles and syringes.
- Implementation of a chronic care approach – which is person-centred and promotes application of evidence-based clinical recommendations, enhances clinical teamwork, and encourages patients to more actively undertake self-care – may help ensure treatment adherence.

- The fragmentation of care can lead to poorer treatment adherence, limited follow-up, increased risk for treatment interruption, and poorer clinical outcomes.
- PrEP should be accessible and affordable to all in need of HIV prevention, including people who inject drugs [148,175].
- There is limited experience in the implementation of PrEP among people who inject drugs in the European setting, but recent ECDC guidance on PrEP implementation in the EU/EEA explicitly states that PrEP should be accessible and affordable to all in need of HIV prevention [148].

Specific to TB

- Cooperation between drug treatment services and institutions providing TB treatment will allow for the implementation of strategies for the early identification of TB disease, as well as rapid linkage to care and treatment.
- People who inject drugs receiving OAT should not be denied TB preventive treatment containing rifamycins; instead, healthcare providers should proactively monitor and manage any adverse events arising [176].
- Patient-specific, personalised approaches are needed to improve TB treatment adherence.

Specific to skin and soft-tissue infections

- Approaches to support early recognition and treatment of skin and soft-tissues infections in community settings are important so that people who inject drugs receive timely and appropriate medical care [177].
- Long-term injecting often leads to chronic, non-healing wounds among people who inject drugs. Wound management procedures can be very effective if the client-staff relationship is stable and based on trust and adherence to the treatment. Wound care services should be offered along with needle and syringe services, as well as drug treatment, where possible [178].
- The use of novel wound care materials, although often more expensive than standard materials, could be considered in vulnerable people who inject drugs as they require fewer human resources and better protect wounds.

Intervention area 6: Drug consumption rooms providing supervised injecting facilities

Supervised injecting facilities are provided by most drug consumption rooms. These are healthcare settings where people who have purchased drugs elsewhere can go to take their drugs in a clean environment, typically under the supervision of medically trained staff. They often attract the most vulnerable people who inject drugs, many of whom are already infected with blood-borne viruses or are at a relatively high risk of acquiring these infections because of multiple factors.

There are many different operational models that may be referred to as drug consumption rooms, making generalisation in this area challenging. In such facilities, staff may provide sterile injecting equipment, give information and advice on reducing risk of blood-borne viruses and other infections, and intervene in the case of overdose. Many drug consumption rooms also provide referrals to drug treatment and other healthcare and social support services.

Recommendation

- Provide supervised injecting facilities in order to reduce injecting risk behaviour among people who inject drugs, which could as a consequence contribute to prevention of HCV and HIV transmission.

Evidence and justification

While the evidence is insufficient to either support or discount the effectiveness of drug consumption rooms in preventing infectious diseases outcomes there is some tentative evidence to indicate that DCRs may help prevent injecting risk behaviour in the context of some operational models. Given that injecting risk behaviour is on the causal pathway to blood-borne virus transmission, prevention of HCV and HIV transmission may also be anticipated. Given the possible higher prevalence of infectious diseases among those who may utilise these facilities promoting access to treatment and preventing onwards transmission is likely to be particularly important in this setting. Most expert panel members were in favour of recommending supervised injecting facilities to help reduce injecting risk behaviour among people who inject drugs which could be beneficial to HCV and HIV prevention.

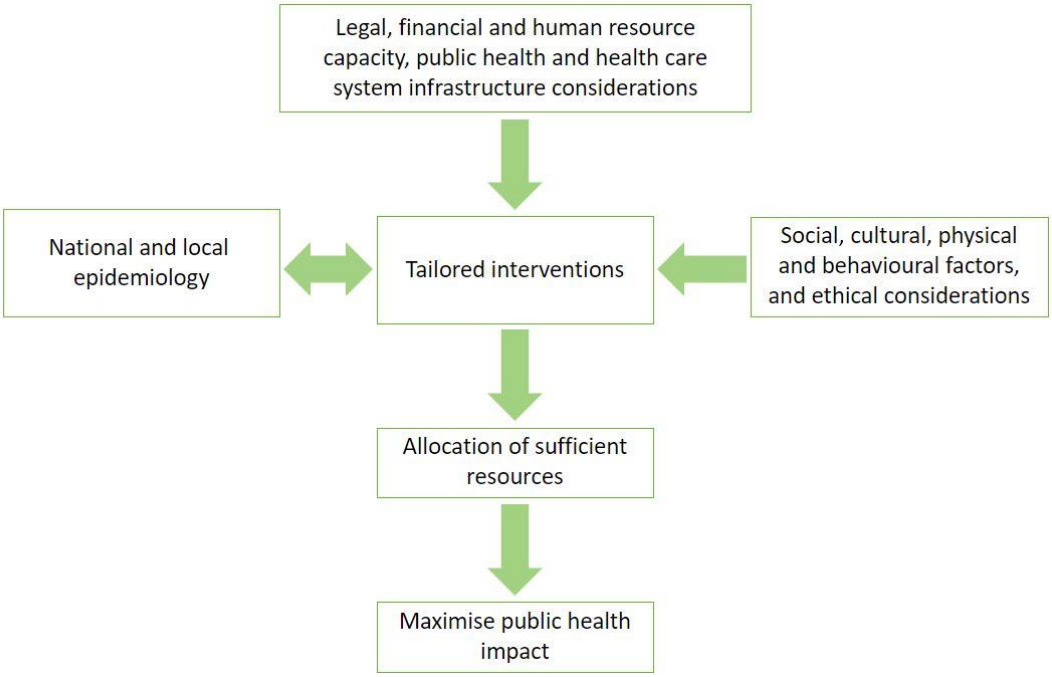
Practice considerations

- Regulatory frameworks vary across countries and may impact on whether this kind of provision can be made available and what kind of operational models are permitted.
- Drug consumption rooms with supervised injecting facilities can provide the opportunity to deliver a range of health and social support services to a particularly vulnerable and hard to reach population. These include interventions such as the provision of injecting equipment that are of known benefit in reducing the risk of infectious disease transmission. Where feasible, providing access to testing and treatment for blood-borne infections should be offered [179-181] and can be referral to other health and social services including treatment for drug problems.
- Since DCRs provide sterile injecting equipment, the practice considerations for sterile injecting equipment provision also apply here.
- DCRs may also provide facilities for people to consume through other modes of administration, e.g. smoking or inhaling. The implications of this for infectious diseases transmission requires further research scrutiny.

Possible implications for public health practice and research

The main aim of this guidance is to support policy-makers and public health programme planners by providing a synthesis of evidence and recommendations to inform effective national strategies, policies and programmes for preventing and controlling infectious diseases among people who inject drugs. The available evidence base indicates that implementation of the recommended interventions will lead to public health impact – in this case, a reduction in the incidence of new infections among people who inject drugs and improved management of people that are already infected. However, to achieve sufficient intervention coverage and thereby contribute to reaching internationally-agreed communicable diseases targets, adequate funding is necessary. To maximise public health impact, certain factors need to be considered in the planning and implementation of the recommended interventions (Figure 2).

Figure 2. Overarching considerations relating to the planning and implementation of interventions recommended in the guidance, and their relationships to public health impact



Existing legislation, financial and human recourse capacities, and public health and healthcare system infrastructure need to be considered when implementing the guidance and ensuring such implementation is sustained over time. These factors should be considered in the tailoring of interventions, as should the national and local epidemiological situation.

Given the epidemiology of both drug use and infectious diseases among people who inject drugs is subject to rapid changes, the dynamics of which are complex, multi-factorial and dependent on social and economic situations, prevention activities and other societal factors [39-43,182], strong surveillance and monitoring are essential to ensuring responsiveness and that programmes are always fit for purpose. Data and information from national surveillance and monitoring systems can also be used to track progress in reaching global goals and targets such as the SDGs and the associated targets outlined by WHO and UNAIDS [183-187]. At the European level, to support surveillance and monitoring efforts by countries, ECDC and EMCDDA coordinate surveillance activities and have developed standardised monitoring and evaluation frameworks for viral hepatitis and HIV [46,62] . Furthermore, EMCDDA also collects data on drug use and health and social responses to drug use and injecting drug use in the EU, Norway and Türkiye using a set of standardised tools [36,188,189]. This includes the monitoring of aspects of harm reduction coverage and testing coverage among people who inject drugs.

Furthermore, interventions should also be cognisant of social, cultural, physical, and behavioural factors, such as gender, sexual orientation, ethnicity, level of education, income, homelessness, migration or residential status, geographical location, health literacy, and infectious disease knowledge, and ethical considerations related to these. A special ethical consideration is the principle of equivalence of care between prison and community settings [35]: the guidance endorses this principle, and most of the recommended interventions in this guidance can be delivered in prison settings.

Limitations and conclusions

This first update of the guidance incorporates evidence that has accumulated since 2011, but it has some limitations. While implementation of all the recommended interventions would provide the greatest benefit, it is recognised that it may be required to prioritise certain interventions over others. And while most harm-reduction and prevention interventions (including NSPs, OAT and vaccinations) are already known to be cost-effective or even cost-saving [118,190] the guidance itself does not suggest which of these are more cost-effective than others. In some areas, evidence is evolving rapidly. For example, recent studies and evaluations published after 2021, including those in in relation to drug consumption rooms, were not included in this evidence review.

The guidance also has other limitations. Firstly, it is focused on the adult injecting population and therefore does not address the specific needs of children and youth who inject drugs. Secondly, only selected interventions to prevent and control infectious disease among people who inject drugs underwent an evidence review. For example, where there was already sufficient evidence in the 2011 version on a particular intervention/outcome combination, no search of the literature was conducted. This means that the evidence was not updated for OAT and HIV/injecting risk behaviour and for NSPs and injecting risk behaviour. Thirdly, it was the case that for several of those interventions that were reviewed, evidence was of low quality and/or non-existent. Research is required to fill these gaps, thereby providing the basis for strengthened recommendations in the future.

Some areas where further research is needed include:

High-level:

- What is the current size of the population of people who inject drugs, as well as infectious disease prevalence within this population across the EU/EEA.
- Patterns and trends in stimulant injecting and their implications for infectious disease prevention and control.
- What are the resource needs for, and barriers to, scaling up the prevention, treatment, and care of infectious diseases in people who inject drugs so as to eliminate HIV and TB, as well as combat hepatitis, STIs and other diseases within this population in the EU/EEA.

Programme level:

- What are the numbers of people who inject drugs who are diagnosed, treated and virally supressed or cured for the different diseases within the EU/EEA.
- What is the optimal combination of prevention, treatment and care interventions to maximise public health impact.
- What approaches optimise linkage to care and adherence to treatment for HIV, STIs, and TB.
- What approaches are particularly effective for linking people who inject drugs who have difficulty accessing/attending conventional healthcare services to HCV care.
- What approaches are optimal for treatment as prevention (e.g. whether raising community-wide interest in and knowledge of PrEP could help facilitate PrEP adherence and uptake in people who inject drugs); preventing reinfections; and treating injection-related skin and soft tissue infections.
- Which digital interventions, including telemedicine, are applicable to different sub-populations of people who inject drugs.
- How effective is HAT, treatment for stimulant dependence, and contingency management in preventing injecting risk behaviour and by extension, infectious diseases.
- To what extent do drug consumption rooms provide an opportunity to HCV and HIV prevention, treatment and control, and what operational features are likely to facilitate or impede this.
- Which interventions could help people who inject drugs transition to safer modes of drug use depending on individual preference, that would result in reduced exposure to infectious diseases.

In conclusion, injecting drug use remains an important risk factor for acquiring blood-borne and other infectious diseases in the EU/EEA and ENP area. The prevention and control of infectious diseases among people who inject drugs is important because these diseases reduce individuals' quality of life and life expectancy, and because they can lead to both indirect and direct societal costs through, for example, lost productivity, high treatment and care costs, and risk of onward transmission to other populations. Despite research gaps, there is sufficient evidence and examples of good practice [5] upon which policy-makers and public health/social programme planners can develop national strategies, policies and programmes for preventing and controlling infections and infectious diseases among people who inject drugs. The available evidence suggests that implementing the recommended interventions will lead to a reduction in the incidence of new infections among people who inject drugs and improved management of individuals with existing infections. As a result, country implementation of this guidance at scale is expected to contribute towards achievement of local, regional, national, and international infectious diseases targets.

Annex A. Overview of evidence update methods

Establishment and role of the expert panel

A multidisciplinary expert panel was established in 2021 by ECDC and EMCDDA (See Annex B for details). The Expert Panel was composed of 21 experts from a range of disciplines deemed as necessary to inform the updating of the joint ECDC/EMCDDA guidance, e.g. public health policy, drug policy, infectious diseases, mental health, civil society, advocacy, community of people who inject drugs, and harm reduction and drug treatment service providers. Experts were not appointed to represent countries but in their own capacity and areas of expertise. The panel acted exclusively as an independent technical body reviewing the provided material, discussing, and concluding based on it.

In addition to inviting experts already known to ECDC and EMCDDA based on previous collaborations and recognised scientific contributions to the field, the agencies consulted ECDC's expert directory and ECDC's Advisory Forum to identify possible panel members. The formal appointment of expert panel members was performed by ECDC/EMCDDA following expression of interest; a selection process that considered expertise area, gender balance and geographical representation; and assessment of individual declarations of conflict of interest.

Interventions regarding sterile injecting equipment, drug treatment, and drug consumption rooms

Further details regarding this review can be found in the accompanying technical report: 'Evidence for the effectiveness of interventions to prevent infections among people who inject drugs – Drug treatment, needle and syringe programmes and drug consumption rooms for preventing hepatitis C, HIV, and injecting risk behaviour' [1].

Literature search

An updated review commissioned by EMCDDA was undertaken to identify and synthesise the evidence, published since the 2011 guidance, to answer the following research questions, formulated according to the population, intervention, comparison and outcome (PICO) model:

- What is the effectiveness of: (i) drug treatment for both opioid and stimulant dependence; (ii) NSPs; and (iii) drug consumption rooms in the prevention of injecting risk behaviour, HCV transmission, and HIV transmission among people who inject drugs?

Injecting risk behaviour was included as an outcome in the guidance because it is on the causal pathway to blood-borne virus transmission and because there is more evidence on injecting risk behaviour than blood-borne viruses.

As the literature review was focused on updating evidence searched in 2011, methods consistent with those used in 2011 (an adapted Health Development Agency approach) were employed to ensure that the evidence was comparable. The evidence review involved a combination of literature searches for systematic reviews (i.e. an overview of reviews [191]) and for primary studies. Only for interventions where the evidence was not considered to be sufficient in the 2011 guidance an updated review was undertaken. Where no reviews for a particular intervention/outcome were identified, or the evidence was not already compelling, a review of primary studies was undertaken to fill the gaps.

Synthesis of evidence and derivation of evidence statements

To critically appraise the included systematic reviews, an adapted version of the internationally recognised and validated AMSTAR2 (A MeaSurement Tool to Assess Systematic Reviews) tool was used [192]. AMSTAR2 provides a broad assessment of review quality and generates a rating of 'high', 'moderate', 'low' or 'critically low'. These assessments were translated into 'core' or 'supplementary' reviews, a grading system that was used in the 2011 guidance. Systematic reviews that had a high or moderate AMSTAR2 rating were included as core reviews: these reviews were used to derive evidence-based statements on the effectiveness of the interventions. Systematic reviews with a low AMSTAR2 rating were included as supplementary reviews and were not considered to be of sufficient quality to derive conclusions but were included as a potential source of primary studies, where core reviews were lacking. Systematic reviews with a critically low AMSTAR2 rating were excluded.

A systematic critical appraisal of the primary studies was not undertaken; rather, the study design was used as an indication of the inferences that could be drawn from the study's findings, with randomised controlled trials, non-randomised experimental studies and cohort studies considered to be 'robust' and any other study designs considered to provide 'weaker' evidence. Results were synthesised according to a framework developed in the 2011

review of reviews, which takes into account the quality of the reviews, statements of evidence made by the reviews, and the number, findings and designs of the primary studies identified by the reviews themselves and by the supplementary searches. These factors determined the strength of the evidence ('sufficient', 'tentative', 'insufficient', 'no evidence') and evidence statements were derived.

Determining the recommendations

The evidence from the review was transferred into Evidence to Summary and Evidence to Decision tables using published frameworks [193,194] and following Scottish Intercollegiate Guidelines Network 50 (SIGN) guideline [195] format. Preliminary recommendations were drafted.

Expert panel members were asked to review the evidence, provide their assessment on the benefits, acceptability and transferability of the interventions, as well as indicate their agreement/disagreement with the preliminary recommendation drafted by the project team.

Each 'recommendation' is informed by an assessment of the evidence and expert opinion on the intervention's relevance, acceptability, wider benefits, and any potential harms. Where the panel felt the evidence available was currently insufficient to fully endorse the intervention but was sufficiently favourable for the intervention to be considered any related recommendation was classified as a 'Conditional recommendation'.

Interventions regarding sterile injecting equipment and drug treatment in combination

Further details regarding this review can be found in the accompanying technical report: Evidence for the effectiveness of interventions to prevent infections among people who inject drugs: Review of mathematical modelling studies of opioid agonist treatment and needle and syringe programmes for preventing hepatitis C transmission [2].

Literature search

A literature review commissioned by EMCDDA was undertaken to identify and synthesise evidence from mathematical modelling studies published up to and including 2020 to address the following PICO-modelled question:

- What is the population-level impact of: (i) opioid agonist treatment (OAT); (ii) NSPs; and (iii) the combination of OAT and NSPs with and without direct-acting antiviral (DAA) treatment for HCV in the prevention of HCV transmission among people who inject drugs?

Synthesis of evidence and derivation of evidence statements

In the absence of a validated tool to critically appraise mathematical modelling studies, a brief critical appraisal of the studies was undertaken, which examined (i) the type of model used in the study and (ii) the quality of the data sources used to obtain estimates of the efficacy of interventions at the individual level to inform the model (i.e. the underlying assumptions in the model of how well the interventions work for preventing HCV transmission). Based on these attributes, studies were graded as 'low', 'medium', or 'high' quality. Both descriptive and quantitative methods were used to synthesise the evidence from the studies: descriptive synthesis involved drawing out key conclusions from each study and comparing them in a qualitative manner to derive an overall picture of the effect for each intervention at the population level; quantitative synthesis used linear regression analysis to combine results from a large number of intervention scale-up scenarios to gain understanding into how the impact of each intervention varies as the coverage of the intervention is scaled up. Study quality was used to inform the strength of the evidence. An overall draft recommendation was formulated by the project team.

Determining the recommendations

Panel members received the technical report prior to the meeting and discussion about the draft recommendation drafted by the project team occurred at the meeting itself. The wording of the final recommendation was then agreed on by the panel members.

Interventions regarding vaccination, testing for infectious diseases and infectious disease treatment

A desk review was conducted by ECDC to identify the latest evidence-based guidelines and recommendations regarding infectious diseases vaccination, testing and treatment from international organisations or clinical societies. The questions that this desk review aimed to answer were as follows:

- Are there any new vaccination recommendations for people who inject drugs?

- Which strategies can increase coverage/participation to testing for infections among people who inject drugs?
- Does community-based testing and integrated testing approaches improve prevention of or reduce burden of infections among people who inject drugs?
- Which testing technologies can be used for testing for infections in people who inject drugs?
- Are there new (i) HCV (ii) HIV and (iii) TB preventive and curative treatment recommendations that apply to people who inject drugs?

In addition to the above, the piece on health promotion, which now appears in the 'Principles of prevention and service provision' section was updated to reflect the broader scope of health promotion, such as enabling environments.

Determining the recommendations

The recommendations for vaccination, testing and treatment (aside from those associated with linkage to care and adherence to treatment describe in section 4 below) were based on those within published international recommendations and evidence-based practice.

Interventions regarding linkage to infectious disease care and adherence to treatment

Further details regarding this review can be found in the technical reports 'A systematic literature review of interventions to increase linkage to care and adherence to treatment for hepatitis B and C, HIV and tuberculosis among people who inject drugs' [3] and 'Summary of Expert Panel meeting discussions on interventions to increase linkage to care and adherence to treatment for hepatitis B and C, HIV and tuberculosis among people who inject drugs' [4].

Literature search

ECDC commissioned a systematic review, conducted using PRISMA guidelines [196], to identify and synthesise evidence to answer the following research questions, which were formulated according to the PICO model:

- Which interventions can increase linkage to care for HBV, HCV, HIV, and TB among people who inject drugs?
- Which interventions can increase adherence to treatment for HBV, HCV, HIV, and TB among people who inject drugs?

Electronic database searches covered the period between 1 January 2011 and 8 July 2020 with no language restrictions. Studies were selected based on predefined inclusion and exclusion criteria. The Effective Public Health Practice Project tool (EPHPP) [197] was used to assess the methodological quality of included studies on the basis of: selection bias, study design, confounders, blinding, data collection method, and withdrawals/drop-outs. The quality of each study was graded as strong, moderate, or weak according to the individual ratings attributed to each dimension.

Synthesis of evidence and derivation of evidence statements

The certainty of evidence was determined based on the GRADE system [198]. The GRADE quality of evidence rating was based on the assessment of five conditions: risk of bias (limitations in study designs, methodology quality assessed with EPHPP tool); inconsistency (heterogeneity) in the direction and/or size of the estimates of effect, indirectness of the body of evidence to the populations, interventions, comparators and/or outcomes of interest, imprecision of results (underpowered study size: few participants/events/observations, wide confidence intervals), and indications of reporting publication bias. Following the recommendations of the Cochrane Effective Practice and Organisation of Care Group [199], standardised statements 'high certainty evidence', 'moderate certainty evidence', 'low certainty evidence, 'very low certainty evidence' and 'no data or no studies' were applied to express results of an intervention with GRADE.

Given conceptual heterogeneity across studies, and variations in study designs, populations, interventions, and outcomes, meta-analysis was not conducted. In the narrative synthesis, 25 studies reporting on interventions to increase linkage to care and/or adherence to treatment for HCV (20), HIV (4) and TB (1) were included.

Determining the recommendations

The evidence from the review was transferred into Evidence to Summary and Evidence to Decision tables using published frameworks [194] and following the Scottish Intercollegiate Guidelines Network 50 (SIGN) guideline format [195]. Expert panel members were asked to review the evidence and provide their assessment on the benefits, acceptability, and transferability of the interventions.

Each recommendation is made by ECDC based on an assessment of the evidence and expert opinion on the intervention's relevance, acceptability, wider benefits and potential harms. Recommendations are those based on robust evidence and/or expert opinion favouring a such. Conditional recommendations are those with weak evidence and/or where expert panel opinion was not in favour of making a stronger recommendation.

Annex B. Summary of the evidence base for the recommendations

For further details, see the accompanying technical reports [1-4].

Interventions	Similar recommended intervention in 2011	For the 2022 update					
		Review-level evidence[a]	Evidence from primary studies[b]	Level/certainty of evidence review/primary studies in 2021	Expert opinion	International guidance documents[c]	Conclusion
Sterile injecting equipment							
Sterile needles and syringes for preventing HCV, HIV and injecting risk behaviour among people who inject drugs	x	x	x	Tentative (HCV), sufficient (HIV, IRB)	x	x	Recommended
Sterile needles and syringes in prisons for preventing HCV, HIV and injecting risk behaviour among people who inject drugs				Insufficient (HCV, HIV), no evidence (IRB)	x	x	Recommended
Sterile needles and syringes through pharmacies to increase access and population coverage, complementary to traditional needle and syringe programmes		x		Insufficient (HCV, HIV), sufficient (IRB)	x		Recommended
LDSS for preventing HCV and HIV among people who inject drugs				Insufficient (HCV, HIV)	x	x	Conditionally recommended
Sterile drug preparation equipment (cookers, filters, and water for injection) for preventing injecting risk behaviour among people who inject drugs	x		x	Insufficient (HCV, HIV), sufficient (IRB)	x		Recommended
Sterile injecting equipment in combination with OAT to maximise the coverage and effectiveness of these interventions among people who inject opioids		x	x	Sufficient (HCV), insufficient (HIV), tentative (IRB)	x	x	Recommended
Drug dependence treatment							
OAT for preventing HCV (primary infection and reinfection), HIV and injecting risk behaviour, and for reducing injecting frequency among people who inject opioids	x	x		Sufficient (HCV, HIV, IRB/IF)	x	x	Recommended
OAT in the prison setting for preventing injecting risk behaviour and for reducing injecting frequency among people who inject opioids, which could be beneficial to HCV and HIV prevention		x		Insufficient (HCV, HIV), sufficient (IRB/IF)	x	x	Recommended
OAT in combination with sterile injecting equipment to maximise the coverage and effectiveness of these interventions among people who inject opioids		x	x	Sufficient (HCV), insufficient (HIV), tentative (IRB)	x	x	Recommended
HAT for reducing opioid use in specific patient groups, which could be beneficial to HCV and HIV prevention				No evidence (HCV, HIV, IRB/IF)	x		Conditionally recommended
Pharmacological treatment for reducing stimulant use in specific patient groups, which could be beneficial to HCV and HIV prevention				No evidence (HCV, HIV, IRB/IF)	x		Conditionally recommended
IECS as stand-alone interventions or alongside other interventions – OAT and NSPs – to reduce injecting risk behaviour and injection frequency	x	x		Insufficient (HCV, HIV), sufficient (IRB/IF)	x		Recommended
IECS as stand-alone interventions or alongside other interventions – OAT and NSP – in the prison setting to reduce injecting risk behaviour and injection frequency				No evidence (HCV, HIV), insufficient (IRB/IF)	x	x	Recommended
Contingency management to reduce drug use and increase retention in drug treatment, which could be beneficial to HCV and HIV prevention				No evidence (HCV, HIV), insufficient (IRB/IF)	x		Conditionally recommended
Technology-based approaches to the delivery of psychosocial interventions to address challenges in delivering timely in-person services and historically underserved populations				No evidence (HCV, HIV), insufficient (IRB/IF)	x		Conditionally recommended
Vaccination							
Offer vaccinations against hepatitis A and B, respiratory infections such as COVID-19 and influenza, and against tetanus to prevent infections and/or their complications in people who inject drugs; in addition, particularly for people living with HIV who inject drugs, offer the pneumococcal and the human papillomavirus vaccines	X					x	Recommended[c]
Testing for infectious diseases							
Routinely offer voluntary, confidential testing with informed consent and that is in line with relevant guidance for: HCV and HIV to all people who inject drugs; HBV to all people who inject drugs with no/incomplete vaccination; STIs (e.g. syphilis, chlamydia, gonorrhoea) to all people who inject drugs with STI symptoms and/or those with higher risk (e.g. multiple sexual partners, exchange of sex for money/drugs); TB disease to all people who inject drugs with TB signs and symptoms, and/or those with higher risk (e.g. have an exposure or predisposing underlying condition). All people with a positive test result should be linked to care.	X					x	Recommended[c]

Interventions	Similar recommended intervention in 2011	For the 2022 update					
		Review-level evidence[a]	Evidence from primary studies[b]	Level/certainty of evidence review/primary studies in 2021	Expert opinion	International guidance documents[c]	Conclusion
Infectious disease treatment							
Antiviral treatment for those who are diagnosed with HBV and eligible for treatment; antiviral treatment for those diagnosed with HCV; antiretroviral treatment for those diagnosed with HIV; anti-TB treatment to those with TB disease; TB preventive treatment for people with TB infection after ruling out TB disease; and treatment for other infectious diseases such as STIs and bacterial skin infections as clinically indicated.	X					x	Recommended[c]
Cooperation between service providers dedicated to people who inject drugs to increase linkage care, in particular for HCV			x	Very low (1 study)	x		Recommended
Peer mentors to increase adherence to HCV treatment			x	High (1 study)	x		Recommended
Directly observed therapy (adapted to local settings and specific needs of people who inject drugs) to increase linkage to HCV care			x	Moderate (1 study)	x		Conditionally recommended
Directly observed therapy (adapted to local settings and specific needs of people who inject drugs) to increase adherence to HCV treatment			x	Very low to high (4 studies)	x		Conditionally recommended
Contingency management to increase linkage to HCV care			x	Very low to high (2 studies)	x		Conditionally recommended
Contingency management to increase adherence to HCV treatment			x	Very low to high (2 studies)	x		Conditionally recommended
Telemedicine for HCV treatment			x	Very low to low (1 study)	x		Conditionally recommended
Peer mentors to increase linkage to HCV care			x	Low to high (2 studies)	x		Conditionally recommended
Primary care-based HCV treatment			x	Moderate (1 study)	x		Conditionally recommended
Integrated OAT to increase adherence to HCV treatment			x	Low to moderate (2 studies)	x		Conditionally recommended
Multicomponent interventions to increase linkage to HCV care			x	Moderate (2 studies)	x		Conditionally recommended
A chronic care approach to increase linkage to HIV care			x	Very low (1 study)	x		Conditionally recommended
Multicomponent approaches to increase adherence to HCV treatment			x	Moderate to high (2 studies)	x		Conditionally recommended
Multicomponent interventions to increase adherence to HIV treatment			x	Low (2 studies)	x		Conditionally recommended
Cooperation between service providers to increase adherence to TB treatment			x	Very low (1 study)	x		Conditionally recommended
Drug consumption rooms providing supervised injecting facilities							
Provide supervised injecting facilities in order to reduce injecting risk behaviour among people who inject drugs, which could as a consequence contribute to prevention of HCV and HIV transmission	X	x	x	Insufficient (HCV, HIV), tentative (IRB)	x		Recommended

HBV: hepatitis B virus; HCV: hepatitis C virus; HIV: human immunodeficiency virus; IF: injecting frequency; IRB: injecting risk behaviour; LDSS: low dead space syringes; NSP: needle and syringe programme; OAT: opioid agonist treatment; STI: sexually transmitted infection; TB: tuberculosis.

[a] There had to be at least a tentative level (or moderate certainty) of evidence for at least one the outcomes for the column to be populated with an 'x'.

[b] A review of primary studies was undertaken to fill the gaps where no reviews for a particular intervention/outcome were identified, or the evidence was not already compelling.

[c] For some interventions, especially ones related to vaccination, testing for infectious disease, and infectious disease treatment, there was not systematic review because of the existence of accepted international guidelines (e.g. by WHO, ECDC) and clinical practice. Regarding interventions in prisons, United Nations Standard Minimum Rules for the Treatment of Prisoners (the Nelson Mandela Rules) care was considered.

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