Strengthening vaccination services in prison settings

Public health guidance

Co-funded by
the Health Programme
of the European Union

RISE-Vac

RISE-Vac

This document
is downloadable from:
https://wephren.tghn.org/rise-vac/

Co-funded by
the Health Programme
of the European Union

Partners working on RISE-Vac:

Consortium Consisting of: Università di Pisa, Frankfurt University of Applied Sciences, Azienda Socio-Sanitaria Territoriale Santi Paolo e Carlo, UK Health Security Agency, Administratia Nationala a Penitenciarelor, Centre Hospitalier Universitaire Montpellier, Health Without Barriers, Cyprus National Addictions Authority, Cyprus Ministry of Justice and Public Order.

This document is part of the project RISE-Vac - Reaching the hard-to-reach: Increasing access and vaccine uptake among prison population in Europe. — HP-PJ-2020' which has received funding from the European Union's 3rd Health Programme 2014-2020. Grant 101018353. DL4.3 Guidance document on how to increase VU in prison settings. Coordinated by Lara Tavoschi (University of Pisa).

Authors: Erica De Vita (University of Pisa), Esergita Thanasi (University of Pisa), Joe McGregor-Harper (UK Health Security Agency), Maria Grazia Di Nino (University of Pisa), Nicola Cocco (ASST Santi Paolo e Carlo), Babak Moazen (Frankfurt University of Applied Sciences), Maria Paola Tramonti Fantozzi (University of Pisa), Mark Gleave (UK Health Security Agency), Laura Baglietto (University of Pisa), Roberto Ranieri (ASST Santi Paolo e Carlo), Heino Stöver (Frankfurt University of Applied Sciences), Lara Tavoschi (University of Pisa) and the RISE-Vac Consortium.

Cite as: RISE-Vac Consortium, Strengthening vaccination services in prison settings. Public health guidance, RISE-Vac Project 2024.
Erica De Vita (University of Pisa), Esergita Thanasi (University of Pisa), Joe McGregor-Harper (UK Health Security Agency), Maria Grazia Di Nino (University of Pisa), Nicola Cocco (ASST Santi Paolo e Carlo), Babak Moazen (Frankfurt University of Applied Sciences), Maria Paola Tramonti Fantozzi (University of Pisa), Mark Gleave (UK Health Security Agency), Laura Baglietto (University of Pisa), Roberto Ranieri (ASST Santi Paolo e Carlo), Heino Stöver (Frankfurt University of Applied Sciences), Lara Tavoschi (University of Pisa) and the RISE-Vac Consortium.

Strengthening vaccination services in prison settings

Public health guidance

CONTENTS

ABSTRACT

The aim of this document is to provide national and sub-national authorities involved in prison health and health services with practical principles and actions for scaling up immunisation services in prisons and other places of detention. It also aims to enhance capacity to address inequities in access to and uptake of effective preventive measures and to accelerate progress towards the Sustainable Development Goals (SDGs), including universal health coverage.

The document was produced as part of the RISE-Vac project, co-funded by the European Union, to explore ways of promoting vaccine provision and uptake in prisons in Europe, involving six countries in the region. This document was developed through an evidence review, dedicated surveys, remote and face-to-face consultations with partners during dedicated workshops to share vaccination practices, and interaction with experts during the project's General Assembly meetings.

The evidence collected was compiled and synthesised into decision-making tables, which were discussed at a dedicated RISE-Vac face-to-face meeting in Chişinău, Moldova, in May 2024. The expert consultation led to the development of recommendations and options for the implementation of lifecourse vaccination services in prisons. The proposed advice and options for implementation are presented with an incremental approach, from a minimum level to an expanded approach, that would lead to equity of care and outcomes for people living in prison, taking into consideration the burden of disease and the increased risk of acquiring vaccine preventable diseases in the prison setting.

Although the primary audiences for this document are policy professionals and decision makers, it is expected that it will also be useful to prison governors, prison staff and healthcare professionals working in prisons and other places of detention.

ACKNOWLEDGEMENTS

Authors would like to thank for their invaluable contribution:

RISE-Vac consortium members

Aurelie Mieuset (Centre Hospitalier Universitaire Montpellier), Chantal Edge (UK Health Security Agency), Eva Murauer (Centre Hospitalier Universitaire Montpellier), Fadi Maroueh (Centre Hospitalier Universitaire Montpellier), Iakovos Stylianou (Cyprus Ministry of Justice and Public Order), Ioanna Yiasemi (Cyprus National Addictions Authority), Irina Barbîroș (National Administration of Penitentiaries of Moldova), Josefina Mavrou (Cyprus National Addictions Authority), Liuba Suveica - Jignea (National Administration of Penitentiaries of Moldova), Lucy Thomas (UK Health Security Agency), Anjana Roy (UK Health Security Agency), Tasos Trattonikolas (Cyprus Ministry of Justice and Public Order), Vlad Busmachiu (National Administration of Penitentiaries of Moldova).

RISE-Vac Scientific Advisory Board members:

Ehab Salah (UNODC), Emma Plugge (Soton University), Erika Duffell (European Centre for Disease Prevention and Control), Filipa Alves da Costa (WHO – HIPP), Jörg Pont (Medical University Vienna), Linda Montanari (European Union Drug Agency), Lucia Mihailescu (independent consultant), Niall Walsh (Irish Penal Reform Trust, City of Dublin ETB), Silvia Declich (Italian Istituto Superiore di Sanità).

Other contributors

Alicia Rosello (UK Health Security Agency), Ana Maria Culai (Romanian National Administration of Penitentiaries), Davide Petri (University of Pisa), Jemima Chantal D'Arcy (UK Health Security Agency), Svetlana Doltu (Expert, Director NGO AFI), Nisreen Agbaria (Frankfurt University of Applied Sciences), Sara Mazzilli (University of Pisa), Ulla-Britt Klankwarth (Frankfurt University of Applied Sciences), Veaceslav Gutu (Moldovan National Agency for Public Health).

Authors would like to acknowledge all those who contributed with information related to specific countries.

ACRONYMS AND ABBREVIATIONS

ACIP	Advisory Committee on Immunization Practices
CDC	Centers for Disease Control and Prevention
CHB	Chronic Hepatitis B
CIN	Cervical Intraepithelial Neoplasia
cVDPV	Circulating vaccine-derived poliovirus
DHSC	Department of Health and Social Care
DTP	Diphtheria, Tetanus, and Pertussis (vaccination against)
ECDC	European Centre for Disease Prevention and Control
EUDA	European Union Drugs Agency
HAV	Hepatitis A Virus
HBV	Hepatitis B Virus
HC	Healthcare
HCC	Hepatocellular carcinoma
Hib	Haemophilus influenzae type b
HIPED	Health in Prisons European Database
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
IDU	Injecting drug use
IIS	Immunization information systems
IMD	Invasive meningococcal disease
IPV	Inactivated Polio Vaccine
LRTI	Lower respiratory tract infections
MenB	Meningococcal B

MMR	Measles, Mumps and Rubella (vaccination against)
Mpox	Previously known as monkeypox
MSM	Men who have sex with men
NHSE	National Health Service England
NGO	Non-Governmental Organisations
NPA	National Partnership Agreement
PHEIC	Public Health Emergency of International Concern
PHN	Post-herpetic neuralgia
PLP	People living in prison
PLHIV	People living with HIV
Polio	Poliovirus
PPE	Personal protective equipment
PWUD	People who use drugs
RSV	Respiratory syncytial virus
SDGs	Sustainable Development Goals
STI	Sexually transmitted infection
STIKO	Standing Committee on Vaccination (Germany)
UK	United Kingdom
UKHSA	United Kingdom Health Security Agency
US	United States
VPD	Vaccine-preventable disease
VZV	Varicella - Zoster Virus
WHO	World Health Organization

GLOSSARY

- **Accelerated HBV vaccination schedule** refers to an immunization schedule of three injections at 0, 7, and 21 days, followed by a fourth dose at 12 months. It is recommended when rapid protection against the pathogen is needed.

- **Booster** denotes an additional vaccine dose following the original (or primary) one. Booster shots reinforce the body's immune system memory regarding the targeted pathogen, enhancing its defensive capabilities. These boosters may be administered weeks, months, or even years after the initial dose.

- **Catch-up** refers to the practice of administering a vaccine to individuals who missed receiving it at the recommended age. Catch-up vaccines may be provided to those not previously vaccinated, missed a scheduled dose, or did not complete a vaccine series.

- **Immunisation:** by the WHO definition, refers to the process of making a person immune or resistant to an infectious disease, typically through vaccination.

- An **outbreak** refers to the occurrence of cases of a particular disease or condition in a population, geographic area, or community that is greater than what is normally expected. It often denotes a sudden increase in the number of disease cases that can be linked to a common source or a specific event. Outbreaks can be localized or widespread and may involve infectious diseases, foodborne illnesses, or other health-related events. Effective outbreak management involves identifying the source, implementing control measures, and preventing further transmission.

- **People living in prison**: all people in detention in the criminal justice system, irrespective of the reason for and duration of detention and their legal status. As many different terms are used to denote places of detention of people who are awaiting trial, those who have been convicted and people who are subject to other conditions of security, different terms are used for those who are detained. In this document, the term "prisons and other closed settings" refers to all places of detention in a country, and the terms "people living in prison", "prisoners" and "detainees" refer to all those detained in criminal justice and prison facilities, including adult and juvenile males, females, trans and gender diverse individuals, during investigation of a crime, while awaiting trial, after conviction, before sentencing and after sentencing. The term does not formally

include people detained for reasons related to immigration or refugee status, those detained without charge or those sentenced to compulsory treatment and to rehabilitation centres.

- **People who inject drugs**: people who inject psychoactive substances for non-medical purposes. The substances include opioids, amphetamine-type stimulants, cocaine and hypno-sedatives, including new psychoactive substances. Injection may be by intravenous, intramuscular, subcutaneous or other injectable routes. People who self-inject medicines for medical purposes – referred to as "therapeutic injection" – are not included in this definition. The guidelines include people who inject drugs because of their specific risk of HIV and HCV transmission due to sharing of blood-contaminated injection equipment; however, much of the guidance is also relevant for people who use substances through other routes of administration, such as snorting, smoking and ingestion.

- **People who use drugs**: people who use psychoactive substances through any route of administration, including injection, oral, inhalation, transmucosal (sublingual, rectal, intranasal) and transdermal. This definition often does not include widely used substances such as alcoholic and caffeine-containing beverages and foods.

- **People working in prison**: refers to prison staff including custodial staff, prison governor, administration staff, healthcare staff, educators, cultural mediators, etc.

- **Prison**: institution that holds people who have been sentenced, are on trial or are awaiting sentence by a court to a period of imprisonment for offences against the law. Also includes other forms of compulsory detention, such as police cells, immigration removal centres and secure mental health institutions. The term may differ by country.

- **Vaccination**: by the WHO definition, describes the use of vaccines to stimulate an individual's immune system to protect against infection or disease.

Chapter 1

INTRODUCTION AND EXECUTIVE SUMMARY

Chapter 1
INTRODUCTION AND EXECUTIVE SUMMARY

People living in prison and burden of disease

Over 11 million people are detained worldwide, with more than 30 million transitioning between prisons and communities annually. In the WHO European Region, over 1.5 million individuals are in detention at any given time. However, due to high turnover rates, the number of individuals passing through European prisons each year is significantly higher.

The risk of criminality and imprisonment is heightened by various political, economic, environmental, and social factors, such as poverty and social exclusion, combined with individual issues like lack of access to healthcare services and certain behavioural factors. Despite limited data and differences between countries, substantial evidence shows that people living in prison (PLP) disproportionately experience complex, co-occurring health problems, including non-communicable and infectious diseases, mental illness, cognitive disabilities, and substance use disorders.

Due to their infrastructure and organization, prisons pose a high risk for the transmission of infectious diseases. Chronic overcrowding is common in many European countries, particularly in prisons for people awaiting trial or serving short sentences. Spatial density in prisons is a significant risk factor forsignificant risk factor for airborne transmission of pathogens and other transmission routes. Reports of outbreaks in prisons are common and concern a variety of infectious diseases, including many vaccine-preventable diseases such as influenza, varicella, measles, mumps and COVID-19. Moreover, PLP are at increased risk of acquiring infectious diseases and/or suffering serious consequences due to pre-existing conditions or risk factors.

The fundamental health needs of those in detention, including juveniles, migrants, and individuals in pre-trial detention, are often inadequately met. Since most PLP return to their communities, their time in prison provides a crucial opportunity to address health inequalities and offer essential health interventions.

Vaccination as a prevention intervention in prison settings

Vaccination represents one of the most efficient and cost-effective public health measures for reducing mortality and morbidity from infectious diseases. However, despite established immunization programs for children and adults, gaps persist in many countries and among specific population groups. One key group with low vaccination coverage is PLP. The available evidence, albeit scarce, indicates that individuals who enter the prison system are under-immunized, particularly against Hepatitis B Virus (HBV), influenza, measles mumps and rubella (MMR), and pneumococci.

Many guidelines and policy documents on communicable disease prevention in prisons fail to emphasize the importance of vaccination. Vaccination services, except for COVID-19 vaccines, are not universally available in prisons. The release of the COVID-19 vaccine in late 2020, along with the WHO Regional Office for Europe's recommendation (in collaboration with the United Nations Office on Drugs and Crime and Penal Reform International) to prioritize prisons, led to the inclusion of prisons in most national COVID-19 vaccination programs. This unprecedented implementation of universal vaccination services in prison settings could pave the way for the much-needed expansion of vaccination offers for PLP in the future.

When implemented, vaccination campaigns in prisons are often reactive rather than routine interventions. Outbreaks of vaccine-preventable diseases, such as mumps, measles, influenza, varicella, and pneumococcal disease, have been reported in detention settings. Low immunization rates and waning immunity have been identified as key risk factors for disease spread among the prison population, with cases also reported among custodial staff. Typically, vaccination campaigns are initiated as part of outbreak response measures and discontinued once the immediate threat is managed.

Providing expanded, age-appropriate, and non-coercive vaccination services tailored to PLP will significantly improve the health status of PLP while reducing disease transmission within prisons. As PLP transition back to the community, the health benefits of vaccination extend beyond the prison walls, contributing to public health overall. The importance and potential of expanded vaccination programs in prison settings become even more evident when considered within the context of regional and global initiatives, such as the elimination of measles and rubella, efforts to eradicate vaccine-preventable cancers and the pursuit of universal health coverage. Access to safe, effective, quality, and affordable vaccines for all is a key component of the UN Sustainable Development Goal (SDG) 3.8.

In 2021, the RISE-Vac project was launched, co-funded by the European Union's 3rd Health Programme under grant agreement No 101018353. This initiative aims to promote vaccine availability and uptake in prisons across Europe, involving six countries in the region (https://wephren.tghn.org/rise-vac/). The evidence gathered during the project's implementation has been compiled and serves as the foundation for the development of this document.

Prisons in the landscape of national health system

The provision of health services in prison is heterogeneous across Europe. The most common situation is for this responsibility to be shared between the Ministry of Health and the Ministry of Justice/the Interior, followed by responsibility falling exclusively to the Ministry of Justice/the Interior. In 2020 in Europe there were seven countries where responsibility belonged to the Ministry of Health alone (Finland, France, Italy, Luxembourg, San Marino, Slovenia, United Kingdom). The diverse set-ups may have implications on the availability or organization of infrastructures, human resources and medical commodities, including financing. According to the latest WHO report, in half of the European countries, the Ministry of Justice finances prison healthcare, followed by countries in which this responsibility is shared with the Ministry of Health or the Ministry of the Interior. In the vast majority of the countries PLP access prison healthcare at no costs at least for general health-care services.

Health and healthcare data collection, including immunization information systems (IIS), in prisons is currently suboptimal. Several challenges and barriers contribute to the state of affairs, including jurisdictional arrangements, poor understanding of the usefulness of health data, and its relevance for planning and performance assessment. Additional challenges include inadequate information technology infrastructure, lack of motivation, time pressures, and chronic understaffing. According to the latest WHO report, the most common format for health records in European prisons is paper-based (44.5%), and more than half of the countries (51.4%) reported non-interoperable systems with community. The availability and accessibility of data on prison health are thus major challenges, suggesting that prison health systems are not integrated into the wider health system. However, during the COVID-19 pandemic, most European countries developed interoperable prison–community health information systems to ensure monitoring and traceability of vaccination, demonstrating that scaling up interoperability is feasible.

Equivalence of care, human rights, and independence

The United Nations Standard Minimum Rules for the Treatment of Prisoners, known as the "Nelson Mandela Rules", updated in 2015, emphasises equivalence, consent, autonomy, continuity of care, and the independence of healthcare staff in prisons. They assert that prison healthcare is a state responsibility, should be free of charge, and closely linked to public healthcare, upholding the principle of **equivalence of care**. The Bangkok Rules, adopted in 2011, complement these by outlining gender-sensitive interventions in prisons, addressing the unique needs of women. In the aftermath of COVID-19, the United Nations issued a common position on detention, calling further attention to over-incarceration, overcrowding and the serious neglect of prison services for public safety, **health and human rights**. Health programs in prisons not only benefit the incarcerated population but also reduce disease transmission in the broader community, a concept referred to as "community dividend". This benefit of prison-based interventions for wider public health has been noted in numerous studies of diverse infectious diseases, including through the implementation of expanded vaccination services. This approach is enshrined by the sentence **"Prison health is part of public health"** as fostered by the WHO Health in Prison Programme.

People in prison often have complex health and social care needs, stemming from overlapping risk factors such as problematic substance use. An aging prison population in Europe presents additional challenges. High underlying prevalence of communicable diseases and risk factors, such as smoking, may exacerbate the course and clinical outcome of noncommunicable diseases in growing numbers of poly-morbid patients. Incarceration can be an opportunity to provide high-quality healthcare to underserved, socially deprived groups, if a **person-centered care** approach is pursued. Effective prison healthcare requires collaboration between prison governance and health services. In Europe, prison health services are typically managed by the ministries of health and justice, or in some cases, solely by one of these ministries. Coordination and synergy between these entities are crucial for maximizing health benefits at national level as well as at local level. The whole-of-prison approach calls for continuous collaboration between prison governance and healthcare services in the community. This would not only benefit provision of adequate and quality care for PLP during detention, but also ensure **continuity of care** during transitions into and out of prison.

Finally, maintaining **clinical independence** is essential in prison settings to ensure quality healthcare. The correctional environment can challenge optimal medical care, making independence a critical component as defined by international standards.

Chapter 2

SCOPE AND TARGET AUDIENCE

Chapter 2
SCOPE AND TARGET AUDIENCE

Scope and objectives

The purpose of this document is to provide national and subnational authorities involved in prison health and health services with practical principles and actions for strengthening vaccination services in prisons and other places of detention in European countries and beyond. The document is consistent with the vision of the "WHO Health in Prisons Programme" that prison health is public health. Therefore, the implementation of effective primary prevention interventions, such as vaccination, in prisons should be considered as an integral part of prevention strategies for the general population. In line with strategies tailored to the general population, the lifecourse approach to immunisation is the backbone of this document. Finally, this document aims to strengthen the capacity to address health inequities and accelerate progress towards achieving the Sustainable Development Goals, including universal health coverage.

There is great heterogeneity in the availability and coverage of vaccination services in prisons across European countries. This diversity is well represented within the RISE-Vac project consortium. With such scenarios in mind, the recommendations and options for implementation contained in this document are presented using a step-by-step approach. For each vaccine-preventable disease covered in the document, a vaccination strategy tailored to PLP is considered along a spectrum from a minimum level to an expanded level, the latter leading to equity of care and equity of outcomes with the general population.

Target audience

The document is intended primarily for national, sub-national and local policy and decision-makers responsible for planning, organizing, delivering and financing health services in prisons and other places of detention within Europe and beyond.

It may also be used by national and supranational agencies and partners, as well as non-governmental actors working in the field of prison health. It is also intended to be useful to healthcare workers and other health professionals who provide health and immunization services in prisons and other places of detention, regardless of their contractual arrangements and the ministry responsible for prison health in their country. This document may also be useful to prison governors and other custodial or non-health staff engaged in planning, organizing or facilitating the delivery of health and immunization services.

3

Chapter 3
METHODOLOGY FOR THE CONSTRUCTION OF THIS DOCUMENT

Chapter 3
METHODOLOGY FOR THE CONSTRUCTION OF THIS DOCUMENT

This document was developed following a multi-stage approach, including planning, evidence collection, consultation with experts, and drafting, was used to develop vaccination guidance.

Planning

A guidance document team (the team) was convened to include staff of University of Pisa (UniPi), ASST Santi Paolo e Carlo Presidio Ospedale San Carlo Borromeo - San Paolo Hospital (SPH), Frankfurt University of Applied Sciences (FRA-UAS). The team met several times over the period January 2022 - September 2024 to define scope and methodology of the present document, and conducted continuous oversight of the process. The team decided a priori on domains that would form the basis of the Guidelines. Each domain corresponds to a specific group of VPDs defined on the basis of the modality of vaccine offer or administration (e.g., seasonal offer, catch-up) or of the public health objective (e.g., cancer-preventing vaccines).

The **domains** are as follow:

- **Catch-Up and Booster Vaccinations**
  Administering vaccines for diphtheria, tetanus, and pertussis (DTP), measles, mumps, and rubella (MMR); polio; varicella-zoster virus (VZV); HBV; and HPV, to PLP with no/incomplete or unknown immunisation has multiple objectives: providing individual protection against common preventable diseases; reducing the risk of infectious disease outbreaks in closed settings; increasing equity in the access to effective preventive intervention; contributing to national, regional immunisation goals.

Vaccine-Preventable Cancers

Cancers caused by hepatitis B virus (HBV) and human papillomavirus (HPV) can be prevented through vaccination. Getting vaccinated for HPV and HBV can greatly decrease the likelihood of someone developing cancers caused by any of these two viruses.

Covid-19 and Flu Vaccinations

Vaccines against COVID-19 and flu are offered in combination and during seasonal campaigns during fall and winter, when both viruses are most prevalent, to reduce the burden on healthcare systems and protect public health.

Vaccinations for Specific Conditions

Immunizations against specific pathogens, including pneumococcal infections, VZV, respiratory syncytial virus (RSV), meningococcal infections, influenza, COVID-19, hepatitis A virus (HAV), DTP, HBV, and HPV, is recommended for specific population groups based on age or on medical, behavioural factors. Vaccinating PLP with specific conditions not only boost their individual level of protection, but also contributes to herd immunity, reducing the overall burden of disease within the prison population at large.

Vaccine provision during incarceration pathway and linkage to care

Continuity of care during transitions between prison institutions or at release healthcare is important to ensure vaccination schedule completion in order to maximize vaccination efficacy and to reduce disease transmission.

The team also convened a group of technical experts (n=27) in the field of vaccination and prisons, including clinicians, researchers, service providers, consultant and policy advisors, peers, and advocates, that contributed to evidence interpretation and to the development of the present document.

Evidence collection

Evidence on vaccination in prison settings was gathered via three main sources: scientific and grey literature; focus groups with RISE-Vac project partners; survey targeting prison experts.

1. Scientific and gray literature

The literature review entailed a thorough examination of sources to collect data on VPDs, potential vaccination strategies in prison environments, and the existence of relevant guidelines. This review used natural language keywords and MeSH terms to investigate vaccines for COVID-19, Flu, HBV, HPV, DTP, MMR, pneumococcal disease, VZV, Mpox, RSV, HAV, Polio, Meningococcal disease among prison populations, particularly on the PubMed database. Furthermore, a targeted search was conducted to locate systematic reviews related to vaccination practices in prisons settings, covering the mentioned diseases. Additional grey literature was obtained from reputable organizations such as the World Health Organization (WHO), the European Centre for Disease Prevention and Control (ECDC), and the Directorate-General for Health and Food Safety of the European Commission.

2. Focus groups with RISE-Vac project partners

Over the course of the RISE-Vac project, several focus groups were convened (March 2022, October 2022, December 2022, February 2023, September 2023, December 2023, March 2024, and June 2024). Additionally, three major General Assemblies were conducted in Milan (30/31 May 2022), Cyprus (26/28 April 2023), and in the Republic of Moldova (22/24 May 2024) either in person or remotely with project partners to discuss national and local strategies and practices for each of the abovementioned five domains. Quantitative and qualitative information were collected during the focus groups.

3. Survey targeting PLP

Information on vaccination strategies and practices in prisons were gathered through a two rounds online survey (https://it.surveymonkey.com). The first survey, conducted between November 2021 and April 2022, focused on prison-specific vaccination information. It gathered responses from RISE-Vac partner countries: Cyprus, France, Germany, Italy and the Republic of Moldova. The second round was conducted from July 2023 to January 2024 and involved respondents from twenty European countries (Belgium, Croatia, Cyprus, UK, Finland, France, Ireland, Italy, Latvia, Luxembourg, Malta, Republic of Moldova, the Netherlands, Norway, Portugal, Romania, Slovakia, Spain (Catalonia), Sweden, and Ukraine). Whenever information collected were unclear or incomplete, at least two follow up contacts were made either via mail or telephone with the respondents.

The survey addressed several key questions regarding the vaccination status of PLP:

- Vaccines usually administered in facilities
- Time of first/only dose
- Everyone/risk groups
- Active offer/On request
- Catch-up after release

Evidence collection and synthesis

A dedicated database was developed by UniPi scientists to systematically store the collected information. To ensure a comprehensive analysis, the data sourced as described above were triangulated, integrating information from the literature review with insights obtained from stakeholders and experts working in European prisons. The synthesized evidence was then utilized to populate five working documents, each corresponding to a specific domain. These documents, referred to as Decision-Making Table (DMT), served as structured frameworks to guide the following step of the document development process. The structured approach ensured that each DMT was thorough and addressed all critical aspects necessary for informed decision-making and effective implementation.

Expert panel discussion

The technical experts were convened in a face-to-face meeting held in the Republic of Moldova in May 2024. The group included members of the RISE-Vac consortium and Steering Committee as well as external experts, covering a wide range of expertise and experience and included healthcare professionals working in prisons, clinicians, public health experts, prison governors, custodial staff, people with lived experience of incarceration, educators (group of expert, including scientific advisory board and other contributors as list in the Acknowledgement section). The DMTs for each domain were circulated to the expert group prior to the meeting. During the meeting, each DMT was presented by a member of the team, followed by a group discussion on that specific domain. For each domain an advice on how to improve vaccination offer and uptake in prison settings was developed and agreed. The group formulated each advice providing an incremental set of options, taking into consideration the local context, public health objectives of vaccination, individual benefit, heterogeneity in prison healthcare services set-up across countries, variation in national vaccination policies across the European region. The proceedings were used to update the content of each DMT which were subsequently circulated among the experts.

Drafting of the document

The present document was developed by consolidating and synthesizing the final version of the DMT. The document was circulated for a final round of comments and input to all members of the expert group.

Chapter 4

FRAMEWORK FOR VACCINATION SERVICES IN PRISON

Chapter 4
FRAMEWORK FOR VACCINATION SERVICES IN PRISON

This chapter aims to describe the key features of vaccination services in prisons, providing a framework for countries to support their own local design. This chapter will discuss how creating a framework for vaccination services at all levels, as well as across government departments, can drive progress as well as create accountability for vaccine operations. Examples of the structures in place in England have been provided where possible as a case study from the point of view of the UK Health Security Agency (UKHSA). Other countries or organisations may find this chapter useful when developing or reviewing their own frameworks appropriate to the context in which they are working.

This chapter will include work that has been conducted in England over an extended period both as part of the Rise-Vac project and as part of routine work. This country-specific case study provides a good example of how to ensure equivalence of access to vaccinations in line with community policies.

International governance and monitoring of vaccinations in prisons

The WHO has developed a framework to assess prison health performance, to improve surveillance at the local, national, and international level, and to act as a guide for the improvement of prison health systems (WHO, 2021b). The framework is designed to support national organisations assessing the performance of their prison healthcare system as well as allow for standardised data collection at the national level to be able to compare effectiveness of different policy approaches.

The WHO Health in Prisons Programme conducts an annual survey amongst member states to collate information for the Health in Prisons European Database (WHO, 2024a) (HIPED). From the 2016-2017 survey it was clear that, despite WHO guidance to keep prison healthcare budgets under the authority of the ministry of health, there is a diversity of governance systems across the

world which will impact the ability of systems to fund and deliver prison-based vaccination programmes. The HIPED survey also collects data on the availability of vaccination programmes in prisons across member states including DTP, HPV, HAV, HBV, seasonal influenza and MMR. Results of the most recent survey show variation in the availability of prison vaccination programmes by country, with some programmes not being provided in any prisons in a particular country.

National governance and monitoring of vaccination programmes

Within different countries there will be different national mechanisms in place for the governance and monitoring of country-wide vaccination programmes. Ideally, these national systems should be able to distinguish and monitor the delivery and coverage of vaccinations in prisons, to help both improve health equity within national services and to strengthen the impact of the broader immunisation programme.

National vaccination strategies and guidance

Comprehensive national vaccination strategies should be in place for the wider community, and these strategies should equally be applied within the prison estate to support the principle (Mazzilli et al., 2024) of equivalence of care. It is important that groups at high risk of poorer outcomes from vaccine preventable diseases, such as pregnant women, newborn infants in mother and baby units and children in the secure estate should receive all vaccinations as per community guidance. National vaccination strategies should also highlight where additional vaccinations are considered for prison populations, for example in England there is a comprehensive routine vaccination schedule, whilst hepatitis B vaccination is not routinely recommended universally, it is specifically recommended for all new prison receptions. This hepatitis B prison vaccination programme applies to all residents even where immunity status remains unknown given that vaccination causes no harm even if an individual has pre-existing immunity, but acknowledging failing to vaccinate may be a missed opportunity.

System partner agreement on vaccination services and target

There should be national agreement on the vaccination services to be delivered in both the community and prisons by the health service, informed by expert advice and evidence, and agreement on vaccine coverage targets

providers are required to meet. Ideally coverage indicators should align to WHO immunisation coverage targets (WHO, 2024c).

> In England the Department of Health and Social Care (DHSC) Public Health Functions Agreement (GOV UK, 2023b) is a tripartite health agency document which sets out the arrangements under which the government delegates to the English health service responsibility for certain elements of the state's public health function. The agreement focuses on achieving positive health outcomes and reducing health inequalities through the provision of services set out in the agreement. Services that are currently commissioned in this way are: national immunisation programmes, national screening programmes, child health information services, sexual assault services and public health services for adults and children in secure and detained settings in England. The agreement also set out performance indicators and key deliverables which, in terms of immunisation programmes, are aligned to the WHO immunisations coverage targets.
>
> Prison health services are required to deliver on the targets in this agreement, including vaccinations. These services are commissioned directly in prisons by health services to address health disparities experienced by this vulnerable population group.

Strategies for improving vaccination services and uptake

National strategy should be developed to support and ensure the constant improvement of national vaccination programmes, including referencing support for prison uptake.

> In England the national NHS vaccination strategy brings together information on all vaccination programmes to protect communities and save lives. The current national strategy outlines three clear priority areas: improving access, vaccination delivery to support uptake in underserved populations, and more joined-up prevention and vaccination offer.
>
> The UK Health Security Agency (UKHSA) is the national agency in England for health protection. The UKHSA strategic plan (2023-2026) sets out three goals to achieve the agency's mission to prepare for, prevent and respond to health threats, save lives and protect livelihoods. The strategy has three overarching goals (Prepare, Respond, Build) supported by a commitment to improving health outcomes for groups whose health is disproportionately affected by health threats. A key strategic priority for the UKHSA is to improve health through vaccines. Although UKHSA is not responsible for delivery of vaccinations, as set out in the strategic plan, the

UKHSA will ensure that it works across the whole of the vaccine pathway to facilitate innovation in the development of safe and effective vaccines, reliable procurement, and increased uptake among the population, thereby reducing the burden of infectious diseases.

The Joint Committee on Vaccination and Immunisation (JCVI) is an expert scientific advisory committee which advises the UK Government on vaccination programmes for delivery in the four UK nations. JCVI considers vaccine safety, efficacy and the impact and cost effectiveness of immunisation strategies in their recommendations. Information on agreed vaccination programmes including eligibility criteria, are published in the Green book which provides the latest information on vaccines and procedures for all vaccine preventable infectious diseases that may occur in the UK. In addition, it provides guidance on the design and use of monitoring and evaluation before, during and after implementation of vaccination programmes. People in prison are able to receive any vaccination described in the Green Book providing they meet the listed eligibility criteria. In addition, the Green Book provides direction on whether people living in prison are listed as a specific target group for certain vaccinations, for example hepatitis B. Immunisation is also recommended for prison service staff who are in regular contact with PLP, following a role-based risk assessment.

National governance structures for the monitoring of vaccinations

National structures should be in place to support oversight of vaccine delivery and coverage; these structures should also specifically consider prisons as a priority population within their monitoring (see chapter 6).

Within England there exists a national tripartite health partner forum with representation from the health service who deliver vaccinations, the Government agency who hold the health service to account and the expert public health advisory agency. This forum overseas the national Public Health Functions Agreement, and specifically asks for and receives information on delivery of public health services in prisons against nationally agreed targets, including immunisations, thereby supporting national monitoring.

Prison specific national governance structures for the monitoring of vaccinations

Alongside national public health monitoring structures, prison specific national assurance forums provide an opportunity to discuss prison-based immunisation programmes in more detail and to raise concerns at an earlier stage.

> In England, a national assurance group exists for the delivery of public health services in prisons, including immunisations. This group has membership from all English regions to ensure national oversight.
>
> In addition, English prison health partners are all signatories on a National Partnership Agreement (NPA) (National Partnership Agreement for Prison Healthcare in England 2018-2021, 2018) which ensures partnership support across both the health and justice systems for delivery of health services within prisons, including those related to Immunisation programmes.

Local delivery and monitoring of vaccinations in prisons

In-prison vaccine provision

Vaccinations should be provided by healthcare teams within prison settings themselves, removing the need for residents to be taken outside of the prison for vaccination, and to ensure maximum opportunities for engagement in immunisation programmes. As previously outlined, as a minimum, people in prison should have access to the same range of vaccinations provided in the community, provided they meet nationally defined eligibility criteria. In-prison services should have the ability to offer vaccinations to individuals on entry into prison based on assessed need, but also to stand up broader more widespread seasonal immunisation programmes at set times of the year. Clinical record systems should support the identification of those eligible for seasonal vaccinations such as influenza or COVID-19, based on clinical risk factors.

There should be clear mechanisms for funding in place to support delivery of prison-based immunisation programmes by trained health professionals. Health care staff delivering vaccinations should receive ongoing support and training in line with that of community vaccinators, especially in light of new or changed vaccination programmes.

> Within England specialist prison health regional commissioners receive funding to support the commissioning of in-prison vaccination services in line with the community offer. These services are delivered by in-house commissioned prison healthcare providers, who check vaccine status where available on resident entry into prison and support catch up vaccination as required and deliver mass seasonal vaccination campaigns. Providers are held to account for the delivery of vaccinations in prison by their regional commissioner who in turn reports up to the national prison public health assurance forum.

Outbreak models

There should be local agreement of how vaccinations will be deployed in the event of a vaccine preventable disease outbreak in a prison setting. Specialist public health system advice should be available to guide the scale and targeting of vaccinations as part of outbreak response. Local or national health authorities and providers should ensure they are able to access and deliver increased stocks of vaccinations if required. Implementation plan for delivering mass vaccination to staff should be considered as well as to prison residents.

Regional governance and monitoring

Prison-based vaccination providers should be held to account for delivery by their regional commissioner. In addition, it is desirable to have regional public health support to provide specialist advice and guidance on the monitoring and improvement of local prison vaccinations.

> In England, regional public health leads who specialise in prison health work with their commissioners to support assurance. The role of the regional health and justice leads, and the regional health and justice commissioners is one example of how the National Partnership Agreement, and its governance structures bring together national strategy and policy with local delivery, recognizing that relationships with prison governors and local health systems is key for effective delivery.

Interface with community-based vaccination programmes

PLP will have access to community immunisation programmes before entry into prison and on return to the community. It is important to provide

continuity and ensure vaccinations given in prison are reflected in the individuals ongoing healthcare record, especially to allow completion of immunisation dosage schedules where required on return to the community. Community vaccination programmes will also be the most likely route for staff vaccination, especially if there is no occupational health service in place who can provide this service, and staff should be encouraged to access community provision.

In some instances, with highly targeted or novel vaccines provision may only be available via specialist community structures.

> In England Mpox vaccination is mainly provided via specialist sexual health services.

In these situations, there should be national consideration at the outset of programme launch as to how people in prison can access these vaccines equitably. This may include enhanced provision to escort people off site to receive vaccination, or mechanisms to bring the vaccine into prison, either via in-reach from the specialist service or by sharing community vaccine stock with the prison. In either scenario consideration should be given to management of the cold chain.

As recognised in previous chapters, vaccine coverage in prisons is integral to community resilience, however, coverage may be unknown to public health leaders who have local system responsibility. Where possible data on prison vaccine coverage should be shared with local system leaders to raise awareness of vaccine gaps and subsequent public health risk.

Opportunities to improve vaccine uptake in prisons

Models of community engagement

The WHO recognizes that resources may have more significance if they are aligned with the priorities of the people which they are aimed at (WHO, 2016). PLP are often left out of the development phase of interventions targeting prison populations (Visser et al., 2021). Current research practice highlights the importance of including people with lived experience throughout the research process (Cowley et al., 2019). Engagement with PLP has been a key element of the RISE-Vac project. For example, within the RISE-Vac project the UKHSA partnered with the Prison Reform Trust to co-produce educational materials on vaccination for PLP across Europe (Laryea-Adekimi et al., 2024).

The Prison Reform Trust were able to conduct multiple focus groups and surveys across prisons in the UK and Europe in order to bring the voice of PLP to the project and to ensure the learning materials were appropriate and useful to PLP.

> The UKHSA Health Equity and Inclusion Health Division has developed a community engagement model (GOV UK, 2023a) co-created with teams across UKHSA and with people with lived experience of social exclusion. The model is designed to support individuals to be clear about what they mean by 'engagement' with communities, enabling them to manage expectations and build trust between UKHSA and communities. A community engagement assurance group has been established to support and oversee the model's implementation. The UKHSA Health and Justice Team uses this model to ensure that engagement with people living in prison is appropriate and standardised across the organisation.

Supporting staff

Rates of certain infectious diseases are higher in prisons than in the general population (Beaudry et al., 2020). This may mean there is a higher risk of occupational exposure to infectious disease amongst prison staff and several studies have shown staff to be potential index cases in prison outbreaks (Blackmore et al., 2022). This highlights the importance of ensuring staff are as protected against infections where possible.

A well-deployed vaccination program for prison staff may be crucial to alleviate morbidity and mortality, reduce staff absenteeism and prevent disruption of the day-to-day running of the facility (Meyer et al., 2022). Ideally a comprehensive vaccination programme should be provided by an in-house occupational health service, supporting catch up vaccinations to the routine schedule, seasonal vaccinations and targeted programmes proposed specifically for prison staff or vulnerable individuals.

Prison staff are a vital component of the criminal justice system and PLP rely on them for safe and secure custodial care (Liebling et al., 2010). Furthermore, it has been documented that many of the perceptions of PLP correlate positively with prison staff characteristics (Marzano et al., 2012; Molleman & Leeuw, 2012; Van Ginneken et al., 2020). Although there are many potential internal and external influences the knowledge and attitudes that custodial staff have around vaccines is, therefore, likely to influence PLP decision on vaccination. Interventions aimed at improving prison staff competences around vaccinations and communicable diseases within prison settings (Moazen, Agbaria, et al., 2024) have applied vaccination knowledge dissemination techniques such

as educational courses, videos, group discussions and information via email. While the WHO refers to staff training as a 'key element of any preparedness plan for prisons and other places of detention' (WHO, 2021a), there appears to be a lack of evidence related to exactly how effective educational and training materials are at influencing overall vaccination uptake.

Development of an E-learning course for staff working in prisons

As part of the RISE-Vac project, the consortium designed and developed two e-learning courses on vaccinations for prison staff to complete (one course for vaccine-trained staff and one for non-vaccine-trained staff). The courses were developed in conjunction with people with lived experience of prison in England and France. During the design phase, surveys comprising five questions were disseminated to understand:

- Whether staff were open to learning about vaccines
- How and when they would like this to happen
- What topic they would find interesting
- Whether accreditation was important
- How long they would be willing to learn about vaccines

Facilitated by the Prison Reform Trust, 60 surveys were completed in England (66 surveys completed in France). 55% of respondents were healthcare staff, 32% custodial staff and 13% other types of staff. Key feedback included:

- 60% of respondents were 'very open' to learning about vaccines with 32% 'somewhat open'
- Learning should be less than 5 hours
- The most preferred method of delivery was via healthcare worker with an E-learning course the second most preferred.
- In both countries, accreditation was deemed important.
- Topics that staff wanted the training to cover included: Effectiveness, safety, risk factors and debunking common myths

Based on the feedback from these surveys, the courses, hosted by the platform 'FutureLearn', were created with two main learning outcomes: understanding the importance of vaccination in prisons and improving communication about vaccinations.

The length of each course is approximately 4 hours, but they can be saved and revisited over a two-week period. The information is delivered by videos and text with short multiple-choice knowledge assessments throughout. Once delegates have completed all chapters, they are asked to complete a larger final multiple-choice assessment. In 2023 the course was piloted with 172 staff across 10 prisons in England. Following amendments guided by user

feedback, the course was disseminated as part of the RISE-Vac intervention in May 2024. Before and after surveys were sent for staff to complete to assess the course's effectiveness

Peer champions

Peer champions have been recognized as an effective way to support people in prison to take action to protect their health (Wright et al., 2011).

> In England, the Hepatitis C trust peer educator programme has seen continued success in increasing uptake of hepatitis C testing and treatment amongst people in prison. It is possible that the development of peer vaccination champions in prisons may improve understanding, acceptability and uptake of vaccinations amongst people in prison.

Coproduced MMR campaign.

Source: UKHSA

In partnership with key stakeholders, bespoke information resources were developed about measles and MMR vaccination for staff, residents and visitors to prisons.

The UK Health Security Agency commissioned National Prison Radio to produce and broadcast a six-month radio campaign to raise awareness of the risks of measles and the benefits of the MMR vaccination in English prisons. The radio adverts were developed to be played regularly between the scheduled programmes and included information on the symptoms of measles, transmission routes of infection, myth busting and vaccine hesitancy.

The aim of this campaign was to improve understanding and awareness of measles and increase MMR vaccination uptake.

Raising awareness in prisons is traditionally a challenging task. This campaign was made possible due to effective collaboration and partnership working, including the enablement of the evaluation, that gave the PLP the opportunity to give their feedback.

Bespoke communications

PLP may not always feel represented in mainstream communication materials to promote and support awareness and availability of vaccinations. Where possible communication materials should be developed in partnership with people in prison to ensure the messaging, tone, language and format of delivery is appropriate for their needs. The aim of this chapter was to describe how national and regional strategies and oversight can ensure the effective delivery of vaccinations in prisons. Multi-agency work is needed to deliver vaccinations in an evidence-based and efficient manner. Creating cross-government agreements that clearly set out the roles and responsibilities of each agency with accompanying priorities allows for clear ways of working towards agreed priorities, reducing the risk of gaps in service provision and duplication of work. Importantly, whilst creating these national frameworks there is a need to ensure that effective assurance mechanisms are in place at both national and regional levels to hold agencies to account. Local functions need to have clear lines of escalation to national governance mechanisms to ensure rapid and effective reporting of issues and to receive appropriate support, advice and guidance.

Prison Healthcare: The RISE-Vac initiative and state-specific challenges in Germany.

Source: Frankfurt University of Applied Sciences.

Since 2006, responsibility for prison matters has been in the hands of the 16 federal states (Länder) in Germany. This means that each state has developed its own prison laws. While these laws align with the national prison law, they offer differing interpretations of prison-related issues, including prison healthcare. To implement the RISE-Vac research, an approval was necessary for each federal state involved trough state's penitentiary centers. This required a very high effort from the RISE-Vac staff, who run different approval procedures. As part of the RISE-Vac project, the Ministry of Justice of Lower Saxony expressed their approval and interest in implementing the project within the state's penitentiary centers. To support this initiative, educational materials highlighting the importance of vaccination in prison settings were prepared and translated for both prison staff (medical and non-medical) and individuals residing in the facilities.

5

Chapter 5

ENHANCING VACCINATION OFFER AND UPTAKE IN PRISON SETTINGS

Chapter 5

ENHANCING VACCINATION OFFER AND UPTAKE IN PRISON SETTINGS

Addressing low vaccine coverage in prisons is crucial as a public health priority for several important reasons. PLP are at higher risk of contracting VPDs due to overcrowded, poorly ventilated conditions, and limited hygiene in prisons. These factors, combined with the higher prevalence of multiple underlying health conditions among PLP, significantly increase their vulnerability to severe illness. PLP and prison staff maintain regular contact with the wider community, making prisons potential hubs for the spread of infectious diseases, as seen during the pandemic. Staff and PLP can introduce and transmit diseases both within the prison and back into the community. Therefore, vaccinating PLP not only protects them but also benefits public health by reducing the overall risk of disease spread. The principle of equivalence of care asserts that incarcerated individuals should receive the same standard of healthcare as those in the general community. This makes it essential for PLP to have access to vaccinations and necessary catch-up programs, just as they would outside of prison. Providing vaccination services in prisons can improve health and healthcare access for marginalized individuals, such as those affected by poverty, homelessness, drug use, or migrant status. By vaccinating PLP, we offer long-term protection both during incarceration and after their release, potentially encouraging broader engagement with healthcare services in the future.

While this document focuses on PLP, prison staff, including custodial staff, HC staff and other professionals that work in prison, are also an important target group for tailored vaccination interventions. On an epidemiological basis, this is relevant as people accessing prison premises may inadvertently spread pathogens. This has been documented during COVID-19. Yet, people working in prison may also be at increased risk of acquiring VPDs and should be offered adequate vaccination schemes by occupational medicine services. Finally, it is a matter of equity between PLP and people working in prison as they share the same environment and both may contribute to a whole-of-prison approach to health promotion.

To enhance vaccination efforts in prisons, several key enablers can be implemented. Firstly, it is important to include explicit mentions of incarcerated individuals

and prison staff in both international and national vaccination guidelines and strategies. Even when national vaccination plans for the general population don't fully align with these international recommendations, using them for people in prisons can still be beneficial. In consideration of the heightened burden of disease and increased risk of acquiring infections, expanding the vaccination offer for PLP beyond standard offer for the general community (equivalence of care), may be warranted to achieve equivalence of outcomes and foster health equity.

In terms of actionable steps within prisons, the first priority is to establish robust vaccination services. This includes ensuring a consistent supply of vaccines and assessing individuals' vaccination histories upon entry. Vaccination should be offered during every interaction with healthcare services, in line with national strategies, and ad-hoc vaccination campaigns should be organized for seasonal infections like influenza or in response to specific threats. This chapter presents and discusses specific considerations for achieving this, together with options for implementation articulated along an incremental approach, from a minimum/ entry level to a gold standard, which would lead to equity of care and outcomes.

Furthermore, strengthening knowledge about vaccination throughout the life course is essential. This can be achieved by organizing training sessions for healthcare workers and custodial staff, as well as educational interventions for those living in prisons to raise awareness and understanding of the importance of vaccination (refer to chapter 4). Additionally, establishing an immunization information system is crucial for monitoring vaccination uptake and coverage as individuals transition through the custodial system (refer to chapter 6).

Strategies for Improving Vaccine Awareness: Romanian Perspectives at the RISE-Vac Meeting.

Source: Romanian experience.

During the RISE-Vac meeting in the Republic of Moldova, held from May 22 to 24, 2024, the Romanian representatives discussed the strategies they have adopted to enhance vaccine accessibility and increase public awareness. The National Administration of Penitentiaries supports the vaccination of PLP through Decision 471/2023, Article 8, Paragraph 9, "In the case of epidemiological situations, other than those provided for in paragraph (8), which affect public health, persons deprived of liberty who are immunized through vaccination for the purpose of protecting life and health are granted credits, according to Annex No. 9. The credits are awarded by the unit's director, based on documents certifying participation in the prevention of these epidemiological risk situations, upon the proposal made by medical personnel." The Romanian representatives expressed their observation about given that PLP have increased susceptibility, being a predominantly closed community with a population whose vaccination history is partially known or unknown, with a high risk of spreading infectious diseases compared to the general population, the National Administration of Penitentiaries, through the Medical Supervision Department, seeks to participate in projects that facilitate screening, diagnosis, and prevention through vaccination to improve quality of life by ensuring a healthy and risk-free environment regarding infectious diseases.

5.1

Chapter 5.1
CATCH-UP AND BOOSTER VACCINATION

Chapter 5.1

CATCH-UP AND BOOSTER VACCINATION

Catch-up vaccination focuses on individuals who missed vaccinations at the recommended ages. This includes those who were never vaccinated, missed scheduled doses, or did not complete a vaccine series. The goal of catch-up vaccination is to ensure complete immunisation coverage according to national or local immunisation strategies.

Booster vaccinations, on the other hand, provide an additional dose after the primary vaccination series to strengthen the immune system's memory of the pathogen, thereby enhancing defence mechanisms. Boosters can be administered weeks, months, or even years after the initial dose, depending on the vaccine and specific guidelines.

Vaccines Considered for Catch-Up Interventions:

- Diphtheria, Tetanus, and Pertussis (DTP) trivalent vaccine
- Measles, Mumps, and Rubella (MMR) trivalent vaccine
- Human Papillomavirus (HPV) vaccine [Refer to chapter 5.2]
- Hepatitis B Virus (HBV) vaccine [Refer to chapter 5.2]
- Poliovirus (Polio) vaccine
- Varicella-Zoster Virus (VZV) vaccine (as part of multivalent MMRV vaccination, where applicable based on national/local immunization strategy)

Catch-up vaccination courses should be initiated during detention in prisons. However, additional doses may be required after release to complete the schedule if necessary [Refer to chapter 5.5].

Overview of diseases and vaccination strategies

Historically, diphtheria, tetanus, and pertussis have been major causes of illness and death. Although vaccination has substantially decreased the incidence of these diseases, **diphtheria** continues to present a significant threat, with

a fatality rate ranging from 5 to 10%, particularly among young children and older adults. **Tetanus** remains a serious concern, especially for adults exposed to occupational hazards and those with low immunization coverage. **Pertussis** (whooping cough) presents varying risks across different age groups, with infants and older adults generally being at the highest risk. Booster doses are essential to combat infections in both unvaccinated and partially vaccinated adults and adolescents.

Measles is a highly contagious viral disease. Before vaccination programs, millions of cases occurred annually, leading to substantial morbidity and mortality. The global burden has been reduced drastically with vaccination, but outbreaks still occur, particularly in under-vaccinated populations. For these reasons, measles continues to be a significant global health challenge, causing high morbidity and mortality, especially in regions with inadequate vaccination coverage. In 2022, approximately 9 million people were infected with measles, resulting in 136,000 deaths, with young, unvaccinated children being the most severely affected. The disease remains highly contagious and prone to outbreaks, with Europe alone reporting over 56,000 cases in the first quarter of 2024. Although mumps generally presents with less severity than measles, it can still result in serious complications. **Rubella** outbreaks continue to occur, primarily impacting unvaccinated individuals. Rubella is of particular concern due to its potential to cause congenital rubella syndrome (CRS) in pregnant women, leading to severe birth defects. Effective vaccination programs have drastically reduced cases, but outbreaks continue in under-vaccinated populations. Without vaccination, rubella would cause significant public health challenges, especially among pregnant women.

Herpes zoster, also known as shingles, is a disease caused by the reactivation of the varicella-zoster virus (**VZV**). Shingles affects millions worldwide, and its incidence increases with age. People aged 50 years and older are particularly at risk with an annual incidence rate of 5 to 10 per 1,000. Without vaccination, approximately 20 to 30% of individuals may experience herpes zoster over their lifetime. One of the most common complications of shingles is postherpetic neuralgia (PHN), a chronic pain syndrome that severely impacts quality of life, particularly among older adults and those with compromised immune systems.[-] Vaccination has proven to be an effective measure to reduce the burden of shingles and its complications. The shingles vaccine, particularly in older adults, has shown to reduce the incidence of shingles by 51% and PHN by 67%, contributing to lower disease burden and improving patient quality of life. The condition can lead to postherpetic neuralgia (PHN), a persistent and debilitating pain syndrome that severely impacts quality of life.

Global vaccination efforts have significantly reduced the burden of **poliovirus**; however, wild-type poliovirus 1 remains endemic in Afghanistan and Pakistan,

while wild-types 2 and 3 have been eradicated. In 2023, there were 522 reported cases of circulating vaccine-derived poliovirus (cVDPV), a decrease from 882 cases in 2022.

Burden of disease and vaccination interventions in prisons

Recent global trends indicate significant outbreaks of infectious diseases such as measles, diphtheria, VZV, and polio in prison settings, driven by decreased vaccination rates and increased population movements. In 2024, measles cases surged globally, surpassing totals from 2023. Prisons, with their close quarters and limited healthcare resources, are particularly vulnerable to the spread of infectious diseases. Historical data, such as a 2016 measles outbreak in a London prison affecting over 1,500 PLP highlight the high transmission risks in these environments.

Similarly, diphtheria outbreaks have been reported in various prisons globally. Since January 2022, the EU/EEA reported 281 confirmed diphtheria cases, many linked to migrant-related facilities, including prisons. In November 2023, a diphtheria outbreak at Pollsmoor Prison in Cape Town resulted in a death and eight confirmed cases, prompting vaccination campaigns.

VZV, which causes chickenpox, poses particular challenges in prisons and other custodial settings due to the close quarters and high turnover of PLP. Recent reports indicate that chickenpox outbreaks in these environments can be challenging to control, primarily due to the ease of transmission among closely housed populations. For example, a notable outbreak occurred in a large immigration removal center in England from December 2017 to February 2018. During this outbreak, isolation of cases, serological testing to determine immunity, and vaccination were key strategies used to control the spread.

Polio outbreaks in prisons have also been reported globally, particularly linked to cVDPV. For example, in Indonesia, in November 2022, cases of cVDPV2 were reported in different regions, highlighting the ongoing risk and the need for enhanced vaccination efforts in such environments. The Indonesian Ministry of Health has been working to improve surveillance and routine immunization, especially after identifying cases linked to the spread of cVDPV2 in provinces like Aceh and East Java. The global situation remains concerning, with the WHO extending the Public Health Emergency of International Concern for polio, emphasizing the need for continuous vaccination efforts to control outbreaks and prevent the spread of the virus in high-risk areas, including prisons.

Efforts across these diseases emphasize the critical need for robust vaccination programs, effective public health measures, and rapid response strategies to mitigate the spread within and beyond prison populations.

Overview of existing guidelines for people living in prison

On February 13, 2024, the WHO issued its first comprehensive guidance on the clinical management of **diphtheria**. Although this guidance does not explicitly address prison settings, a previous WHO report highlighted essential PLP considerations. According to this earlier report, all incoming PLP should receive the diphtheria vaccination unless their immunity can be confirmed, using the adult combined diphtheria/tetanus vaccine. For **tetanus**, incoming PLP must be vaccinated unless they can provide evidence of their immunity status. Additionally, PLP with wounds should receive vaccinations promptly, and those with wounds at greater risk should be given specific immunoglobulin treatment.

Regarding measles, the UK Health Security Agency's "National Measles Guidelines," released in July 2024, stipulate that individuals entering a prison or other detention facility must have their vaccination history verified during reception screening. Those with an uncertain or inadequate vaccine record should receive the MMR vaccination. In the event of an outbreak within such a facility, all vulnerable or partially vaccinated residents should be administered the vaccine or booster immediately, irrespective of direct exposure to the infected individual.

For varicella (chickenpox), the guidelines for cohorting, serologic testing, and screening in residential settings also applyare also applicable to correctional and detention facilities. These recommendations are crucial for managing and preventing outbreaks within these environments.

Service models for Catch-up and booster vaccination in prison settings in Europe and immunization strategies

The availability and approaches for providing catch-up and booster vaccines vary significantly across Europe. Data from 20 European countries indicate that DTP, MMR, VZV, and Polio immunizations are offered in 17, 14, 9, and 1 countries, respectively.

For the **DTP** vaccine, 12 out of 17 countries make it available to all PLP. Two countries provide it only to high-risk groups, while one administers it solely to specific age groups. Another country offers DTP vaccination to both specific age groups and high-risk groups, and one country provides the vaccine without specifying target groups.

Among the 14 countries offering the **MMR** vaccine, 6 provide it to all PLP. Four countries limit its availability to high-risk groups, while 2 countries offer it only to specific age groups. One country administers it to PLP with comorbidities, another to high-risk groups and PLP with comorbidities, and one does not specify its target groups.

Only one of the 9 countries provides the **VZV** vaccine to all PLP, while 4 countries restrict it to high-risk groups. Two countries offer the vaccine to specific age groups, and 1 country makes it available to PLP with comorbidities. One other country offers it to both specific age groups and high-risk groups.

Lastly, the sole country offering the **polio** vaccine is the one that provides it to all PLPs.

As part of RISE-Vac project activities, qualitative evidence on service models for catch-up and booster vaccination has been collected from participating prisons between November 2021 and February 2022. Polio vaccination services were not investigated in this survey. The number of prisons enrolled in this survey is explicitly indicated for each country.

The availability of vaccinations in European prisons varies significantly, with DTP vaccines being commonly accessible but administered at inconsistent times, MMR vaccines being offered more selectively, and varicella vaccines frequently being disregarded. The absence of uniform booster and catch-up schedules accentuates the inequalities in prisoner healthcare.

In **Cyprus** prison (1 prison), DTP vaccination is offered to all PLP upon request, with the first dose administered between 2-4 weeks of prison entry. However, MMR and varicella vaccinations are not offered. No specific booster or catch-up schedule was available.

In **France** (3 prisons), the DTP vaccine is actively offered to all PLP, with one-third at the time of entrance and two-thirds receiving it between 2-4 weeks from their prison entrance. The MMR vaccine is actively offered to two-thirds of the prisons, while one-third can receive it on request. It is also offered to specific risk groups, including pregnant women, young people, and foreigners. Varicella

vaccination is not offered. In one third of the prisons where PLP received the DTP and MMR vaccination, there is a catch-up after release, while vaccinations against polio and chickenpox are not applicable.

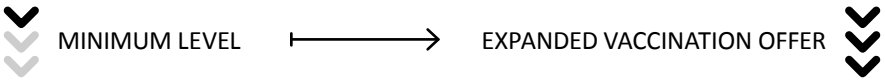
In **Germany** (2 prisons), data indicates that only one prison offers the DTP and MMR vaccinations. There is no information available regarding the schedule for varicella vaccination. No specific booster or catch-up schedule was available.

In **Italy** (4 prisons), the DTP vaccine is actively offered to PLP, with one-quarter of prisons offering it between 2-4 weeks from PLP entrance into the prison and three-quarters of prisons offering it to high-risk individuals, such as workers. The MMR vaccine is similarly provided between 2-4 weeks from prison entrance to PLP in only one-quarter of prisons. Varicella vaccination is ongoing in half of the prisons, while the other half does not offer it. No specific booster and catch-up schedule is provided.

In the **Republic of Moldova** (5 prisons), there is no available data on offering DTP, MMR, or varicella vaccinations, nor is there any specific booster and catch-up schedule provided.

Advice and options for implementation

The following considerations and implementation options are presented with an incremental approach, ranging from a minimum/ entry-level to an expanded program to achieve equity of care and outcomes for PLPs.



Upon entry into prison, the immunisation status of all individuals should be assessed as part of the initial medical examination. This can be done through reviewing vaccination certificates, using immunisation information systems, or serological testing.

Catch-up and booster vaccination programs should be offered routinely to all adolescents in detention, in alignment with national and local immunisation plans.

Catch-up and booster immunisation programs for PLP should be embedded within a lifecourse vaccination framework and offered as part of a comprehensive package of preventive services.

With regard to prison staff, both custodial and medical, it is advisable that the vaccination programme, in terms of vaccination schedules and catch-up, is not inferior to that offered to PLP.

Strength of the evidence and implementation considerations

Admission to prison provides an opportunity for individuals to engage in preventive health services, including catch-up and booster vaccination doses as per national/regional immunisation plans. Catch-up vaccination or booster doses administration in prison settings are public health interventions aimed at increasing vaccination coverage among typically under-immunised populations.

Verifying immunisation status can be particularly difficult in prison settings. While this should ideally be performed through direct record linkage with the general population Immunisation Information System, it is possible to collect information on vaccination history and previous infections with VPDs as part of taking a medical history at reception or by performing serological testing to determine immunity levels. This process would allow the timely identification of immunisation gaps and prompt the active vaccination offer (and re-offer for those declining). When considering whether to perform a serological test or proceed directly with vaccination, it is essential to carefully evaluate the current epidemiological situation, vaccination coverage, and the characteristics of both the vaccine and the immunity related to the specific disease (Table 1). An alternative is to offer a full course of immunisation to all eligible individuals with an incomplete or unreliable immunisation history without prior serological testing.

Prisons have strict schedules and limited healthcare resources, making organising and efficiently administering vaccines complex. Additionally, there may be resistance or hesitancy towards vaccination among PLP, often due to mistrust or misinformation. It is crucial to ensure privacy and confidentiality during vaccination procedures to overcome these barriers, as this can help encourage participation and build trust.

PLP includes children, migrants and people with diverse vaccination histories. Tailored approaches are required to meet specific health needs and ensure vaccination interventions are effective and equitable.
The healthcare needs of **minors** in prison requires particular attention, given that they differ significantly from those of adults. It is fundamental that vaccination programs offered in juvenile prisons align with those in the general population to ensure that children and adolescents in detention receive timely and appropriate immunisations and complete vaccination schedules. Efforts should be made to educate minors and

their guardians about the importance of vaccines to promote vaccine acceptance. **Foreign-nationals** in prison often have incomplete or undocumented immunisation records, which presents another significant challenge. Effective communication strategies must be developed to address language barriers and cultural differences, possibly involving interpreters or cultural mediators to ensure clear and respectful communication.

Outbreaks of VPDs in prisons

Outbreaks of VPDs in prison settings represent a significant public health challenge. Heightened burden of disease and frequent under-immunisation increase the risk of more severe health outcomes.

While vaccination campaigns in response to outbreaks of VPDs are an essential measure that should be deployed rapidly, preparedness and prevention activities are equally fundamental. Among these are improved monitoring, infection control measures (e.g. adequate environmental and personal hygiene standards, personal protection equipment (PPE), medical isolation) and regular health checks offered to PLP to identify cases of VPDs early and prevent outbreaks. Enhancing healthcare services, boosting staffing levels, and aligning prison health services with national systems can assist in reducing risks. Continuous training activities for PLP and custodial staff regarding vaccinations and VPDs symptoms are also crucial. Ultimately, prevention of VPDs, and other infectious diseases, outbreaks in prison settings would require a comprehensive strategy tackling overcrowding, low immunisation rate, and sub-optimal healthcare services.

Advantages	Disadvantages
✓ **Optimizes Vaccine Use** Identifies who has developed antibodies, reducing unnecessary vaccinations.	**Costly** ✗ Serological testing requires lab resources, personnel, and time, leading to higher expenses.
✓ **Targets Booster Doses and Supports Catch-Up Programmes** Determines who needs boosters, especially for diseases where immunity wanes. Helps identify those needing catch-up vaccines, ensuring complete coverage.	**Logistical Challenges** ✗ Testing and follow-up for boosters may be complex to implement in prisons.
✓ **Efficent Resource Use** Ensures vaccines are administered only to those who need them.	**Initial Investment** ✗ High initial costs for widespread implementation, especially in larger prisons.

Table 1 - *Advantages and disadvantages of serological test.*

5.2

Chapter 5.2
CANCERS-PREVENTING VACCINES

Chapter 5.2
CANCERS-PREVENTING VACCINES

This section focuses on cancer-preventing vaccines, namely vaccines against hepatitis B virus (HBV) and human papillomavirus (HPV). HBV and HPV are important human oncogenic viruses and infection can be prevented with immunization. Vaccinations against HBV and HPV have been identified as leading interventions for cancer prevention in the Europe Beating Cancer Plan (European Commission, 2023).
HBV and HPV immunisation courses shall be initiated in prison during detention, however additional doses may be needed after release, if necessary to complete the schedule [Refer to chapter 5.5].

Overview of diseases and vaccination strategies

Hepatitis B, caused by the hepatitis B virus (HBV), manifests in both acute and chronic forms with varying degrees of severity Acute hepatitis B is typically self-limiting, with a case fatality rate of 0.5–1%. Chronic Hepatitis B (CHB), defined by the presence of detectable HBsAg in the blood for over six months, can range from asymptomatic to severe liver disease, including fibrosis, cirrhosis, end-stage liver disease, and a high risk of hepatocellular carcinoma (HCC). The risk of chronic infection is higher when acquired in childhood. HBV is primarily spread through percutaneous or mucosal exposure to infected blood and body fluids, including saliva, menstrual and vaginal discharge, seminal fluid, colostrum, breastmilk, and serous exudates. It can also be transmitted through accidental inoculation during medical, surgical, and dental procedures, use of contaminated sharp objects, inadequately sterilised syringes and needles, intravenous and percutaneous drug use, tattooing, body piercing, acupuncture, and sexual contact (WHO, 2024b).

The active substance in the hepatitis B vaccine is the viral surface protein HBsAg. Recombinant HBV vaccines, available since 1986, require adjuvants. Hepatitis B vaccines come in monovalent forms for birth doses or adult vaccination, and in combination with other vaccines for infants, including DTP, Hib, and IPV. A combined

hepatitis B and hepatitis A vaccine is also available. The primary hepatitis B vaccination series for infants includes one monovalent birth dose followed by two doses of either monovalent or combination vaccine. For delayed schedules (children, adolescents, and adults), WHO recommends three doses: the second dose at least 1 month after the first, and the third dose 6 months after the first. For rapid protection, an accelerated schedule of three injections at 0, 7, and 21 days, followed by a fourth dose at 12 months, is available. Furthermore, vaccination against HBV also prevents the increased risk of cirrhosis and hepatocellular carcinoma that result from possible superinfection with hepatitis D virus (HDV) (WHO, 2017a).

HPV is the most common viral infection of the reproductive tract, causing various conditions in men and women, including precancerous lesions that can progress to cancer. While most HPV infections are asymptomatic and resolve spontaneously, about 5–10% of infected women develop persistent infections, which can lead to cervical intraepithelial neoplasia (CIN) and potentially cancer. Most low-grade CIN lesions regress spontaneously. HPV infection is also linked to cancers of the head, neck, oropharynx, anogenital area, as well as anogenital warts and respiratory papillomatosis. Over 200 HPV types have been identified, with 12 classified as high-risk (oncogenic) and capable of causing cancer, with HPV16 being the most oncogenic. HPV spreads through contact with infected genital skin, mucous membranes, or bodily fluids, and can be transmitted via sexual intercourse, including oral sex. Tobacco smoking, low socioeconomic status, immunosuppression, early age at first intercourse and multiple sexual partners are associated with higher risk of developing CIN and cervical cancer.

The first **HPV vaccine** was licensed in 2006, and now six prophylactic HPV vaccines are available. These vaccines should ideally be administered before the onset of sexual activity. All vaccines are made using recombinant DNA and cell-culture technology from the purified L1 structural protein, forming HPV type-specific virus-like particles (VLPs). All HPV vaccines include VLPs for high-risk HPV types 16 and 18. The nonavalent vaccine also covers types 31, 33, 45, 52, and 58, while the quadrivalent and nonavalent vaccines protect against anogenital warts linked to HPV types 6 and 11. HPV vaccines are licensed for females aged 9 and older, up to 26 or 45 years, and some are also licensed for males. Based on age, the vaccine is given over six months in a two- or three-dose schedule (WHO, 2022c). Vaccine availability in EU Member States depends on national procurement policies (Parliament, 2024).

As of 2022, 125 countries (64%) have introduced HPV vaccine in their national immunisation programme for girls, and 47 countries (24%) also for boys.

In 2022, WHO recommended one-dose HPV regimens in specific contexts to improve feasibility, flexibility, and reduce logistical challenges, supported by evidence showing at least eight years of effectiveness and immunogenicity (Setiawan et al., 2024; WHO, 2022c). In July 2024, Canada joined UK and Australia in recommending single-dose HPV gender-neutral vaccination for individuals up to

20 years of age (Public Health Agency of Canada, 2024) or 25 in the UK (GOV UK, 2022a).

Burden of disease and vaccination interventions in prisons

PLP have a significantly higher prevalence of HBV infection and CHB compared to the general population, as evidenced by numerous studies. Prison populations often include individuals with multiple risk factors for HBV infection. Demographically, they encompass social groups disproportionately affected by HBV, particularly migrants from endemic countries likely to have acquired the infection earlier in life. Additionally, PLP are at increased risk of acquiring and transmitting HBV while incarcerated due to unprotected sexual activities and injecting drug use (IDU).

A recent systematic review of studies from eight countries found that HBV prevalence among PLP ranged from 0.6% in France to 8.3% in Greece (Bivegete et al., 2023). Another study in the European region reported CHB seroprevalence ranging from 0% in a maximum-security prison in the United Kingdom to 25.2% in two Bulgarian juvenile detention centres (Nakitanda et al., 2021). Estimates of the burden of advanced liver disease or hepatocellular carcinoma (HCC) among PLP are limited. However, a recent review identified HCC as one of the main causes of liver morbidity and mortality in prisons within the European region of the WHO (Cancer and Cardiovascular Health Inequities in Prison Settings, 2022).

The recommendation that PLP should be immunised against HBV in European prisons achieved a large international consensus. Indeed, recent studies indicated that HBV vaccination was available in prison in 21/30 (Stöver et al., 2021) and 24/36 (WHO, 2023e) European Member States in 2021 and 2022, respectively. A 2022 WHO report indicated that HBV vaccination was provided in prisons in 77% of the 36 European countries that submitted data (WHO, 2023e). Despite variations across European prisons, the vaccination schedules also differed. Studies indicate that an accelerated HBV vaccination schedule (D0, D7, D21) is more efficient in achieving vaccination uptake than the standard schedule (D0, D30, D180) (Christensen, 2004; Stasi et al., 2019, 2019). Stasi and colleagues demonstrated that the accelerated HBV vaccination schedule results in very high coverage levels, providing short-term protection for most people living in prisons.

It is essential to distinguish between the availability of vaccination services and actual coverage, as the approach to offering vaccinations varies across regions. HBV vaccination programs can be active or passive and may differ based on age or risk group (Nakitanda et al., 2021). When systematically implemented, HBV vaccination in prisons has shown clear community benefits. A study from Scotland found that the introduction of a universal HBV vaccination offer in prisons was

associated with increased immunisation coverage among people who use drugs (PWUD) in the community (Palmateer et al., 2018).

Among the prison population the prevalence of HPV infection is likely higher than for the general population. Current available evidence indicates higher prevalence of sexual behaviours at risk, including among adolescents in juvenile institutions (Emerson et al., 2021), and of most common STI as compared to that in the general population (Spaulding et al., 2022). PLP are more likely than the general population to smoke cigarettes, live with HIV, engage in commercial sex work, and come from low socioeconomic backgrounds. These factors increase their risk for persistent HPV infection and progression to CIN and cervical cancer. Currently, data on the prevalence of HPV infection and HPV-related cancers among PLP are available almost exclusively for women in detention. Detained women have higher rates of abnormalities detected during cervical screenings, and some studies suggest that cervical cancer is the most common cancer in this population. The prevalence of HPV among prisoners ranges from 10.5% to 55.4%, showing significant heterogeneity. The prevalence of CIN diagnosed by cytology in prisoners ranges from 0% to 22%. Comparisons of CIN prevalence between imprisoned women and the general community show ratios ranging from 1.13% to 5.46%. Estimates of cancer prevalence in imprisoned women are at least 100 times higher than those in populations participating in national screening programs (Escobar & Plugge, 2020). Research has found that cancer screening rates are lower in prison populations compared to non-prison populations. Individuals who spend time in prison tend to present at a later stage for all cancer types and for preventable diseases. For example, a study of women in a provincial prison in Ontario, Canada, found that 54% were overdue for Papanicolaou (Pap) testing upon their release, compared to 33% of the non-prison population (Cancer and Cardiovascular Health Inequities in Prison Settings, 2022).

Information on the implementation or benefits of HPV vaccination in prison settings is extremely limited. The HPV vaccine is primarily aimed at young adolescents who are typically younger than the minimum age for incarceration. The availability of HPV vaccinations in prisons is inconsistent and based mainly on age-based targets rather than on a robust assessment of risks and potential benefits for individuals and the broader community. However, substantial evidence exists on the benefits of vaccination on reducing HPV infections, genital warts, and low-/high-grade cytological cervical abnormalities, including when the vaccine was administered to older women (Maldonado et al., 2022).

Overview of existing guidelines for people living in prison

PLP are identified as target group for HBV vaccination in several national and supranational documents, including the WHO position paper on HBV vaccines

(WHO, 2017a), the Prison and Health (WHO, 2014d) manual and the European public health guidance on blood-borne virus prevention in prison settings (ECDC, 2018). The latter advises for universal offer of HBV vaccination to PLP, namely in all individuals with no/unknown vaccination history and/or negative serology, considering the high prevalence of HBV in the prison population, the available evidence on HBV vaccination in prison settings. Most recently the Proposal for a Council Recommendation on vaccine-preventable cancers (Parliament, 2024) (01/2024), identifies PLP as target population groups for HBV vaccination and refers to administering a rapid/very rapid schedule to increase vaccination completion rate. Finally, prison staff, including healthcare and custodial staff, are recognised as targets for offering HBV vaccination as part of a comprehensive occupational health package.

On the contrary, there is hardly any reference to PLP in national or supranational strategy or guidance documents on HPV vaccination (Cocco et al., 2024). In many countries a number of groups at increased risk of acquiring, progressing to persistent infection or developing HPV-related cancers are targeted for HPV vaccinations at an older age (i.e. above 18 years of age). These include PLHIV, MSM, trans people and people who engage in transactional sex, as recognised by the Proposal for a Council Recommendation on vaccine-preventable cancers, which are prevalent in prison settings.

Service models and immunization strategies

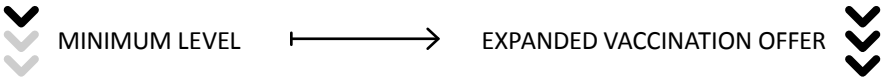
At the national level, the availability and strategies for offering HBV and HPV vaccines vary widely. Data from 20 European countries indicate that HBV and HPV vaccinations are offered in 17 out of 20 and 12 out of 20 countries, respectively. In most of these countries (11 out of 17), HBV vaccination is offered to all people living in prisons (PLP), although no information was available in 4 out of 17 countries. HPV vaccination is offered to all PLP in only 2 out of 12 countries. The first or only dose of vaccines is generally administered between one week and one month after prison entry (10 out of 20 countries). Compared to HPV vaccination, more countries offer HBV vaccination in prison settings, and national documents or strategies explicitly identify PLP as a target group for HBV vaccination but not for HPV vaccination (Cocco et al., 2024).

As part of RISE-Vac project activities, qualitative evidence on service models for catch-up and booster vaccination offer has been collected from participating prisons during 2023. The number of prisons enrolled in this survey is explicitly indicated for each country. In Cyprus prison (1 prison) HBV vaccination is offered to all PLP upon request, with the first dose administered within one week of prison entry. In Italy (4 prisons), France (3 prisons) and Germany (1 prison), HBV vaccination is actively offered to PLP, with the first dose given between two and

four weeks after entry. In the Republic of Moldova (5 prison), HBV vaccine is offered to prison medical staff and at prison entry from 2022 to all PLP born before 1994, individuals working in the food blocks. Regarding HPV vaccination, in Cyprus (1 prison), France (3 prisons) and England (3 prisons) assessment of HPV immunisation status is part of entry health check, at least in juvenile institutions (England). In Italy (3 prison), France and England, HPV vaccine is offered in prison settings as per national immunisation strategy specifically to risk groups and as part of catch-up programs based on age. In Cyprus HPV vaccine is offered in prison settings as per national immunisation strategy to girls aged 11-13 years. In the Republic of Moldova (5 prisons) HPV vaccine is not available for PLP.

Advice and options for implementation

The following considerations and implementation options are presented with an incremental approach, ranging from a minimum/ entry-level to an expanded program to achieve equity of care and outcomes for PLPs.



Vaccination against HBV

In line with existing WHO and ECDC / EMCDDA (EUDA) recommendations, all people transitioning through the prison system should be offered vaccination against HBV. Ideally, HBV screening should be offered as a complement; however, the lack of screening availability should not affect the assessment of vaccine eligibility or the subsequent offer.
ECDC / EMCDDA (EUDA) recommends offering HBV vaccination at the entrance to all PLP who have an unknown or incomplete prior vaccination history and/ or negative serology.

Based on the limited evidence available, the HBV rapid vaccination schedule is more effective in promoting the completion of the immunisation course.

Prison staff, including all healthcare staff and custodial staff who have regular contact with PLP, should be offered HBV vaccination as part of a comprehensive occupational health package.

Vaccination against HPV

As part of the entry assessment, the following should be considered to provide adequate primary or secondary prevention interventions: HPV vaccination history, HPV infection risk, and history of HPV/Pap-test screening.

HPV catch-up vaccination should be offered to all people transitioning through the prison system who are eligible based on their age, gender and risk-factor criteria of their national vaccination programme and who have an unknown or incomplete prior vaccination history. In this setting, one-dose HPV vaccination shall be considered to increase coverage.

HPV catch-up vaccination should be offered to all young people transitioning through prisons and juvenile institutions.

HPV/Pap-test screening should be provided to all women transitioning through the prison system as per the national screening strategy.

Universal HPV vaccination for those up to the age of 45 could be considered in prison with a gender-neutral approach, taking into account the greater risk of acquiring the infection and/or developing clinical sequelae among this population.

Strength of the evidence and implementation considerations

Vaccinations against HBV and HPV have been identified as leading interventions for cancer prevention in the Europe Beating Cancer Plan and relaunched through the European Council Recommendation on vaccine-preventable cancer (Parliament, 2024) providing a robust strategic framework to scale-up these interventions. In fact, HBV and HPV vaccinations should be introduced in prison as part of integrated sexual health and harm reduction services, to provide a comprehensive prevention package against STI, and blood-borne viruses including HIV and HCV (ECDC, 2018).

Offering HBV vaccination in prison settings is widely regarded as a crucial preventive service due to the high prevalence of people who inject drugs in prison and the increased risky behaviours before and during incarceration, such as non-consensual sex, unprotected sex, tattooing, piercing, and blood mingling. Scaling up HBV vaccination in prisons would reduce virus circulation and transmission within

the prison population, ultimately preventing liver cancer and yielding significant public health benefits. Moreover, providing HBV vaccination in prisons has been shown to positively impact vaccination coverage among underserved populations, such as people who use drugs and migrants, when they are in the community (Palmateer et al., 2018). This benefit is particularly significant for promoting equality among juvenile detainees (Gaskin et al., 2015).

In many countries, HBV vaccination is offered after a screening test, which can delay the first administration of the HBV vaccine. This poses challenges in high-turnover settings such as jails and remand houses. However, screening for HBV at intake can increase individual benefits by ensuring prompt linkage to care for those with chronic HBV infection, reducing virus circulation among PLP, and improving the overall efficiency of HBV vaccination interventions, leading to cost savings.

Studies indicate that completing the classic 3-dose HBV immunisation schedule is difficult, with uptake rates declining at each subsequent dose, particularly in high-turnover settings. Adapting dosing schedule and ensuring effective linkage to care post-release is crucial to maximise full coverage [Refer to chapter 5.5]. Although HBV immunisation coverage among PLP varies by geographic region and prison type, research in the UK, Denmark and Italy has shown increased uptake and schedule completion with the introduction of accelerated or 2-dose schedules. Expanding the use of **accelerated schedules** in European prisons could significantly improve vaccination coverage.

Despite the prison population facing increased health challenges and potentially greater benefits from vaccination, access to these services remains limited during incarceration. A 2020 WHO report highlights this disparity in Europe: while HBV vaccination services were available in prisons across 77% of the countries that reported data, HPV vaccines were available in only 50% of these countries. In consideration of the limited information available, it is challenging to investigate how availability of vaccine products translates into actual coverage of the service among PLP. **Gender-neutral HPV vaccination offer** is available in most European countries, with substantial heterogeneity in target age groups among female and male populations. This may result in inequalities and the exclusion of PLP from HPV vaccination access in some countries, including among prison populations.

Available data indicate sub-optimal immunisation coverage among youth in detention (Gaskin et al., 2015). Immunisation status assessment at entry and active offer of HPV vaccination represents an effective catch-up strategy to improve individual protection, minimise risk of HPV-associated diseases and increase overall vaccination coverage. Such intervention would contribute to increasing equity in access to and benefit from an effective preventive intervention. There are some challenges in vaccinating adolescents detained in juvenile institutions. These include a lack of attention to their specific needs, low perception of their health

risks, insufficient or suboptimal links between healthcare services and health information systems between detention facilities and the broader community, and difficulties in obtaining consent for vaccination from parents or legal guardians. To overcome the consent barrier, two strategies have been reported: either the institution's director assumes the role of legal guardian for the detained adolescents, or the minors themselves directly express their consent to be vaccinated (Mazzilli, Moazen, et al., 2022).

Little is known about the actual prevalence of HPV infection and the burden of HPV-related diseases among people living in prisons (PLP), particularly among incarcerated boys and men. However, given the available data on HPV infection among females in detention and the prevalence of other sexually transmitted infections (STIs) in the prison population, the burden is likely higher than in the general population. Irrespective of age, the main public health rationale and recommendations for administering HPV vaccinations relate to the increased risk of sexual transmission due to behaviors such as anal intercourse or sex work.

Considering the heightened risk of STIs, the overrepresentation of subgroups widely identified as target groups for this intervention (e.g., individuals engaging in transactional sex, men who have sex with men, transgender people), and the prevalence of high-risk sexual behaviors (e.g., consensual and non-consensual anal intercourse, sexual abuse) in prison, an expanded offer of HPV vaccination could be warranted. Additionally, stigma and challenges in ensuring full disclosure of risk factors during consultations with healthcare professionals in prison may support the adoption of a universal and gender-neutral approach to HPV vaccination in these settings. Universal age-based offers in prison may not only simplify implementation and organisational arrangements but are likely to increase coverage among a high-burden population.

Implementing a gender-neutral HPV immunisation strategy in prisons has the potential to reduce the prevalence of the virus within this population, thereby lowering healthcare expenses associated with treating HPV-related conditions. Most PLP eventually return to their communities, and reducing HPV transmission in prison can contribute to overall public health cost savings by decreasing the prevalence of the infection. While the initial cost of vaccination programs may be significant, the long-term financial benefits of reduced healthcare expenditures and the prevention of HPV-related diseases make it a prudent investment in the health of PLP and the broader community. However, no evidence is available about the cost-effectiveness and financial implications of HPV vaccination in the prison setting.

Emerging evidence on single-dose regimens for HPV may lead to increased feasibility of vaccination scale-up in prison settings by reducing the costs and logistical challenges of vaccine delivery, alleviate vaccine supply constraints. Simplified schedule is particularly relevant in prisons due to population mobility, such as

rapid turnover, unplanned releases, or transfers between facilities, especially in remand homes and juvenile prisons. Currently only few countries have adopted single-dose HPV vaccination for adolescents and young adults. Evidence generated by the implementation of national-level programs, including on the long-term immune response of a single-dose HPV vaccination regimen, is likely to contribute to building the case for broader adoption of a simplified schedule.

The burden of infection and diseases among PLP and suboptimal access to prevention measures before incarceration, including screening, may well justify extending the current age limit to include older women (Escobar & Plugge, 2020; Lüchtenborg et al., 2024). Although most studies have focused on the effectiveness of HPV vaccination under the age of 26 (Ellingson et al., 2023), there is growing evidence of the effectiveness and benefits of vaccination for preventing cancerous lesions even at older ages (Maldonado et al., 2022). Currently in European countries vaccination is seldomly recommended beyond 24-25 years of age.

Irrespective of age of targeted vaccination offer, uptake may be suboptimal due to lack of information regarding the vaccine, its safety and effectiveness (Allison et al., 2018). For example, a study conducted in Italy reported that 70% of the women sampled were unaware of the vaccine (Di Giuseppe, Folcarelli, et al., 2022). It is particularly important to overcome cultural and social barriers for adolescents in juvenile prisons (Allison et al., 2018).

Vaccination for all: The Republic of Moldova's initiative to protect health in penitentiary institutions.

Source: National Institute of Penetentiaries - Republic of Moldova.

The Republic of Moldova initiated a comprehensive vaccination campaign across its penitentiary institutions on March 18, 2021. This campaign, integral to the RISE-Vac project, sought to enhance the health and well-being of PLP by expanding access to essential vaccines. The initiative was carried out in coordination with the ongoing accreditation of medical departments in the prison service. The campaign targeted both staff and PLP.

Since its launch, over 14,142 doses of vaccine have been administered:

- 2,491 people were fully vaccinated against COVID-19.
- 1,196 people were vaccinated against Hepatitis B.
- 2,800 people were vaccinated against influenza.

5.3

Chapter 5.3
COVID AND FLU

Chapter 5.3
COVID AND FLU

This section focuses on two vaccine-preventable respiratory diseases: influenza and COVID-19. The influenza virus, Orthomyxoviridae family, is responsible for seasonal flu outbreaks, while SARS-CoV-2, a coronavirus, causes COVID-19. Both viruses primarily affect the respiratory system, leading to symptoms like cough, fever, and difficulty breathing, and infection can be prevented with immunisation. The European Centre for Disease Prevention and Control (ECDC) collaborates closely with the different states in monitoring and advising on vaccination strategies for both diseases, aiming for the highest vaccination coverage and mitigating the burden of respiratory illnesses.

Despite these differences, both viruses can spread rapidly, especially in crowded settings, and vigilant public health measures are required to control their transmission.

Overview of diseases and vaccination strategies

Influenza, or flu, is a respiratory illness caused by influenza viruses. It occurs globally and affects an estimated 5-10% of adults and 20-30% of children annually. Influenza viruses are categorised into types A, B, C, and D, with types A and B being the most significant in human disease. Seasonal influenza refers to the flu viruses that circulate annually, mainly during the winter months. There are two subtypes of influenza A viruses that are currently circulating among humans during the annual influenza epidemics (A(H3N2) and A(H1N1)pdm09) and two influenza B lineages (B/Victoria and B/Yamagata); B/Yamagata-lineage viruses however have not been detected since 2020 (ECDC, 2024).

Influenza vaccines are a primary method of preventing influenza infections, with two main types available: inactivated and live attenuated influenza vaccines. Inactivated Influenza Vaccines are the most common type of flu vaccine and are available in different formulations to cater to various populations. For this reason, they can be adjuvanted, recombinant, and taken in high doses to answer

a wide range of needs. Inactivated flu vaccines, administered via injection, are the most common type worldwide. In 2011, a live attenuated flu vaccine was also approved for use in the EU for children and adolescents. Live attenuated influenza vaccines are more effective in children and unsuitable for pregnant women and immunocompromised patients (ECDC, 2017b).

For many years, flu vaccines have been formulated to protect against three different influenza viruses: A/H1N1, A/H3N2, and one influenza B virus. Since two distinct lineages of influenza B viruses circulate during most flu seasons, a B virus from the second lineage (B/Yamagata) was later added to vaccines (Paget et al., 2022).

All European countries have vaccination recommendations for individuals with specific underlying medical conditions, although these vary between countries. Commonly targeted conditions include chronic pulmonary diseases, cardiovascular diseases, renal diseases, metabolic disorders, and immunosuppression. Only 18 countries include recommendations for individuals taking long-term aspirin therapy, and 21 countries recommend vaccination for individuals with morbid obesity (ECDC, 2023).

COVID-19 is an illness caused by SARS-CoV-2 that emerged in late 2019 and quickly spread worldwide. The World Health Organization declared it a global pandemic on 11 March 2020. In May 2023, it was stated that COVID-19 is no longer a public health emergency of international concern. However, the virus continues circulating in communities and remains a potentially serious health risk.

The first COVID-19 vaccine to receive emergency use authorization was the Pfizer-BioNTech vaccine (BNT162b2), granted by the U.S. Food and Drug Administration (FDA) on December 11, 2020. Shortly after, on December 21, 2020, the European Medicines Agency (EMA) granted conditional marketing authorization for the same vaccine in the European Union.

Burden of disease and vaccination interventions in prisons

FLU

Correctional settings have historically been highly vulnerable to global infectious disease outbreaks, including influenza (Besney et al., 2017; Centers for Disease Control and Prevention (CDC), 2012). Prisons have consistently been targets for influenza pandemics throughout the 20th and 21st centuries, such as A/H1N1 in 1918, A/H2N2 in 1957, A/H3N2 in 1958, SARS-CoV-1 in 2003, A/H1N1 in 2009,

and MERS in 2012 (Chao et al., 2017; Turner & Levy, 2010). Seasonal influenza viruses are responsible for an estimated 40-50 million symptomatic infections annually within the European Union (EU) and European Economic Area (EEA). Influenza-related causes lead to the premature deaths of between 15,000 and 70,000 European citizens each year (Bick, 2007).

Prisons face a significant risk of severe influenza outbreaks, which can result in large numbers of cases and a higher rate of complications, including death. A comprehensive approach to mitigating the impact of influenza in correctional facilities is essential (Vicente-Alcalde, Ruescas-Escolano, et al., 2020). This includes prevention, early identification and notification of illness, rapid access to treatment, and vaccination, a crucial preventative measure in such environments (Madeddu et al., 2019). Evidence strongly suggests that chronic respiratory disease and limited healthcare access are linked to influenza-related mortality in individuals under the age of 65.

The 2009 influenza A (H1N1) pandemic may have catalysed organisations like the Centers for Disease Control and Prevention (CDC) to introduce vaccination as a preventive measure in prisons, given that vaccination rates in U.S. prisons were below 50% at the time (Sequera et al., 2015). A 2022 study evaluating seasonal flu vaccination policies in Massachusetts (Khorasani et al., 2022) prisons revealed persistently low vaccination rates.

Despite its importance, seasonal influenza vaccination in prisons has historically been underutilised, often only considered for secondary prevention during outbreaks. Furthermore, there have been few recent reports on the epidemiology of seasonal influenza in prison settings, aside from occasional outbreak reports. To better monitor the burden of disease and health needs among prison populations, gathering more information on current trends in influenza epidemics in prisons and studying virus characteristics like antigenic variability and virulence is essential.

There is limited data in the literature regarding flu vaccinations in prisons. However, the study “Making Prisons and Places of Detention Resilient to Infectious Diseases” provides some insights into the availability of immunisation against various infections, including influenza, in Member States (WHO, 2023a). According to the study, the seasonal flu vaccine is available in all prisons in 30 countries (83.3%), in most prisons in 2 Member States (5.6%), in a minority of prisons in another 2 Member States (5.6%), and not available in prisons in the remaining 2 Member States (5.6%).

According to the WHO, influenza remains one of the most significant public health threats (WHO, 2024a). It recommends vaccination for patients with hepatitis and HIV, populations with high prevalence in prisons. People living in

prisons (PLP) have a high prevalence of HBV, HCV, and HIV infections (Dolan et al., 2016).

Despite close contact with staff and visitors, PLP are often under-immunised against influenza. For example, between 2008 and 2018, flu vaccination coverage in three Spanish prisons remained below 16% (Vicente-Alcalde, Tuells, et al., 2020). Flu vaccines are not routinely administered to PLP with risk factors and are more often provided during outbreaks (Beaudry et al., 2020). However, in such circumstances, several challenges can hinder flu vaccination efforts. According to two U.S. studies, the following challenges have been reported: insufficient staff, lack of readily available medical records to determine vaccination status or underlying medical conditions, lack of access to sufficient quantities of vaccine and antiviral drugs, and lack of skilled personnel to administer large amounts of vaccine and antiviral drugs promptly (Madeddu et al., 2019).

COVID-19

The COVID-19 outbreak, first detected in Wuhan in December 2019, led to a global pandemic declared by WHO on March 11, 2020. Managing the pandemic in prisons has been particularly challenging due to overcrowding, poor ventilation, and frequent movements, which facilitate the spread of infectious diseases. Prisons have seen some of the most significant outbreaks, and many prisoners (PLP) are more vulnerable to severe COVID-19 due to underlying health risks (Beaudry et al., 2020).

In the US, the COVID-19 case rate among PLP has been 5.5 times higher than among the general population, with a higher crude death rate (39 vs. 29 per 100,000). By April 2021, 394,066 COVID-19 cases and 2,555 deaths were reported among PLP (Di Giuseppe, Pelullo, et al., 2022). A global non-governmental organisation estimated that by June 2020, 73,254 PLP had tested positive across 79 countries, with over 1,100 deaths (Beaudry et al., 2020).

A WHO report noted 285 COVID-related deaths among PLP in 21 Member States and 74,928 cases in 19 Member States (WHO, 2024f). In Italy, infection rates among PLP consistently exceeded the general population, with 18.7 per 100,000 PLP infected in April 2020, compared to 16.8 in the general population. Similar trends were observed during later waves (WHO, 2024f).

In June 2021, the WHO urged authorities to explicitly include and prioritise PLP and prison staff in their national COVID-19 vaccination plans (Biondi et al., 2022). As a result, from June to July 2021, a more intensive vaccination rollout was implemented. By 2024, data indicated that 8 out of 9 countries had immunised over half of their PLP population against COVID-19, with three countries—Georgia, Lithuania, and Malta—exceeding 70% coverage. Additionally, four countries reported that more than half of their prison officers had been

immunised, with two of those (Moldova and Ukraine) surpassing 70% coverage. Among healthcare workers, two countries (Malta and Ukraine) achieved 100% coverage, while all six reported exceeding 89% coverage (Georgia, Lithuania, Luxembourg, Malta, Moldova, and Ukraine) (Ismail et al., 2022; WHO, 2024f).

Overview of existing guidelines for people living in prison

FLU

According to England's guidance (last update: March 2024), the public health principles guiding preparation for the influenza season within prisons closely align with those applied in the broader community (GOV UK, 2024a).

Guidance - Managing flu in prisons (England)

Appointment of Flu Coordinators

Prisons should designate flu coordinators for both healthcare and custodial staff. These coordinators oversee preparations, including the organisation of the seasonal flu vaccination campaign.

Vaccination of PLP

- Ensuring vaccination for individuals in clinical risk groups.
- Ensuring vaccination to individuals in eligible age groups following the annual flu national immunisation programme (GOV UK, 2022b).

Vaccination of Prison Healthcare Staff

Vaccination should be provided to prison healthcare staff as part of the prevention efforts.

Infection Control Practices

Emphasis should be placed on promoting and adhering to good infection control practices within prison facilities. Necessary resources must be provided to prevent the spread of influenza.

Key points:

Similarly, according to the USA Federal Bureau of Prisons' "Seasonal Influenza Guidance" from September 2021, it is recommended that the flu vaccination be offered to all staff and PLP. Vaccination should be strongly promoted for both groups, particularly those at high risk for influenza. Priority should be given to staff and PLP who work on assignments requiring interaction with others from different areas of the institution (e.g., health services, food services). These individuals should be given the highest priority when receiving the vaccination

(ECDC, 2017b). Since 2021-2022, NHS Scotland has extended the offer of seasonal flu vaccination to individuals living in a Scottish prison and officers and support staff who deliver direct detention services (Public Health Scotland, 2024).

COVID-19

Effective response plans are crucial in prisons, where overcrowding and poor ventilation significantly increase the risk of COVID-19 transmission. However, of the 36 COVID-19 response plans reviewed, only six specifically addressed prison settings—those from Ireland, Kazakhstan, North Macedonia, Slovenia, Spain, and England (WHO, 2023d). While some of these plans acknowledged the significance of prisons and the vulnerability of both inmates and staff, most lacked detailed measures to prevent the transmission of COVID-19 within these facilities.

Service models and immunization strategies

Country-specific data regarding flu vaccination in prison settings were collected within the RISE-Vac project through a survey conducted in 2023 and updated in January 2024.

Influenza

Cyprus: The Ministry of Health determines Cyprus's Adult Immunization and Immunization Program policy. According to the latest update of the Immunization Program for 2023-2024, the flu vaccination is offered to all adult citizens (CYPRUS & MINISTRY OF HEALTH, 2022). It is specifically recommended for individuals aged 65 and over, pregnant women in the first trimester, adults with chronic conditions, residents of long-term care facilities, travellers, and children aged six months to 15 years with chronic conditions (CYPRUS & MINISTRY OF HEALTH, 2022).

> In Cyprus, the RISE-Vac project survey conducted in 2021 (number of prisons involved=1) revealed that flu vaccination is offered to all people living in prison (PLP) upon request within one week of entering the prison.

France: Under the National Plan, seasonal flu vaccination is strongly recommended for people aged 65 and over, those with heart or respiratory conditions, individuals with chronic liver disease (with or without cirrhosis), individuals with obesity, and pregnant women. Additionally, vaccination may be offered to children without comorbidities between the ages of 2 and 18. It is also strongly recommended for caregivers of young or older adults (Service-Public.fr, 2024).

> According to the 2021 RISE-Vac survey (n=3), practices in French prisons vary.

One-third of prisons actively offer a single dose during the influenza season, another third offer vaccination after one week from prison entrance, and the final third offer it within one week of entrance. Two-thirds vaccinate only risk groups, while one-third offer it to all PLP.

Germany: The Standing Committee on Vaccination (STIKO) recommends annual flu vaccination for individuals aged 60 and over, those with chronic illnesses, pregnant women, and employees at higher risk of infection due to their occupation (e.g., public transport workers or healthcare personnel) (Koch-Institut, 2022).

In Germany, data from the 2021 RISE-Vac survey is available for only one prison (n=1) where the flu vaccine is offered to PLP.

Italy: Flu vaccination is recommended and offered free of charge to people aged 60 and over, pregnant or postpartum women, residents in long-term care facilities, individuals with chronic diseases (such as diabetes, heart or respiratory conditions, or immune system disorders), specific categories of workers (e.g., healthcare and social workers, police, firefighters, farmers, and those working with animals), and blood donors. It is also recommended for non-risk children aged six months to 6 years. The flu vaccine is available to anyone wishing to avoid influenza, but it is not free of charge for this group. One dose is sufficient for all age groups except for children under nine who have never been vaccinated before, for whom two doses, four weeks apart, are recommended (Ministero della Salute, 2024).

The RISE-Vac survey in 2021 (n=4) indicates that all surveyed Italian prisons actively offer flu vaccination to PLP. Three out of four prisons provide a single dose during the influenza season, while one offers flu vaccination to all PLP regardless of the season.

Republic of Moldova: In the Republic of Moldova, flu vaccination is recommended for adults with chronic conditions, residents of long-term care facilities, pregnant women, and children with chronic conditions (WHO Immunization Data Portal - European Region, 2023).

According to the 2021 RISE-Vac survey (n=5), no data regarding flu vaccination practices in Moldovan prisons is available.

England: The seasonal flu vaccine is offered to those at higher risk of serious illness from influenza. Eligibility is reviewed annually. For the 2023/24 season, it is offered free of charge to children aged 2 or 3 years, primary school-aged children, individuals aged 65 and over, those with certain long-term health conditions, pregnant women, care home residents, caregivers for elderly or

disabled individuals, people living with someone who has a weakened immune system, and frontline health and social care workers (UK NHS, 2024).

While specific prison data from the 2021 RISE-Vac survey is not provided for England, the Status Report on Prison Health in the WHO European Region 2022 indicates that all Member States, including England, reported having flu vaccination services available in all or most prisons.

According to the Status Report on Prison Health in the WHO European Region 2022, all Member States reported having flu vaccination services available in all or most prisons (WHO, 2023a). The RISE-Vac project surveys support this finding, demonstrating varying practices across countries but the general availability of flu vaccination in prison settings.

COVID-19

Country-specific data regarding COVID-19 vaccination in prison settings were collected within the RISE-Vac project through surveys conducted in 2021 and updated in January 2024.

Cyprus: The Ministry of Health oversees Cyprus's Adult Immunization and Immunization Program policy. According to the most recent 2023-2024 Immunization Program update, vaccination is offered to all citizens aged 18 and above (ECDC, 2017a). According to the European Centre for Disease Prevention and Control (ECDC) Vaccine Scheduler, COVID-19 vaccination in Cyprus was recommended in 2021, starting from 5 years old. However, in the latest vaccine schedule update on 01/01/2023, the COVID-19 vaccine is no longer listed.

In Cyprus prison settings, the RISE-Vac project survey conducted in 2021 (n=1) revealed that COVID-19 vaccination is available to all PLP upon request within one week of entering the prison.

France: In France, COVID-19 vaccination was recommended and made available to all individuals aged 12 and above. The latest update from the ECDC Vaccine Scheduler states that the COVID-19 vaccine is recommended for people aged five and above. France did not prioritise PLP or prison staff for the COVID-19 vaccine, but it is offered to everyone in prisons (WHO, 2023e).

According to the 2021 RISE-Vac survey (n=3), COVID-19 vaccination is actively offered in two-thirds of French prisons at entry. In two-thirds of cases, the vaccine is provided at the time of prison entry, while in one-third, it is offered within one week.

Germany: According to the ECDC, COVID-19 vaccination is recommended for

people six months and older. The STIKO recommended in its 2023 guidelines that the COVID-19 vaccine be administered to individuals at increased risk of severe disease outcomes, particularly those aged 60 and above. Further booster vaccinations are recommended for individuals at higher risk of infection, usually administered at least 12 months after the previous dose or infection, preferably in the fall (Robert Koch institute, 2024). Most prisons (15 out of 16 federal states) offer the COVID-19 vaccine to PLP, with 93.75% of federal states ensuring access to vaccination in their prisons (WHO, 2023e).

In Germany prison context, data from the 2021 RISE-Vac survey is available for only one prison (n=1), where the COVID-19 vaccine is offered to PLPs.

Italy: On 12/03/2021, the Ministry of Health issued a decree adopting a new National Strategic Plan for preventing SARS-CoV-2 infections and implementing a national vaccination campaign. This plan redefined priority vaccination groups to include PLP, regardless of age or pre-existing conditions (EpiCentro, 2021). According to the ECDC Vaccine Scheduler, COVID-19 vaccination is recommended for all individuals aged five and older in the general population. The WHO European Region's Status Report on Prison Health for 2022 confirms that all prisons in Italy offer the COVID-19 vaccine to PLP (WHO, 2023e).

The RISE-Vac survey in 2021 (n=4) indicates that while all Italian prisons offer COVID-19 vaccination, only one prison specified that the vaccine is actively offered to all PLP within 2-4 weeks of their prison entry.

Republic of Moldova: Initially, the COVID-19 vaccine was offered only to prison staff. However, according to WHO data, it is now available to all PLP (Ismail et al., 2022).

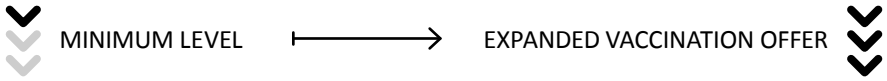
In Moldova, the 2021 RISE-Vac survey (n=5) shows that COVID-19 vaccination is offered in all prisons. In two-fifths of cases, the vaccine is provided at prison entry; in one-fifth, after four weeks; and for two-fifths of cases, no data is available. Overall, the vaccine is available to all PLP in four-fifths of the surveyed prisons.

Following the broader community prioritisation strategies, COVID-19 vaccination was offered to staff and PLP based on age and long-term health conditions in the UK. Early in the pandemic, health and social care workers were prioritised for primary COVID-19 vaccinations and boosters, but other occupational groups, such as prison staff, were not. As of 2024, COVID-19 boosters are no longer offered to occupational groups. Despite this, the 2022 WHO European Region Status Report on Prison Health confirms that all prisons in the UK continue to offer the COVID-19 vaccine (WHO, 2023e).
According to the Status Report on Prison Health in the WHO European Region

2022, all Member States reported having COVID-19 vaccination services available in all or most prisons. The RISE-Vac project surveys support this finding, demonstrating varying practices across countries but general availability of COVID-19 vaccination in prison settings.

Advice and options for implementation

The following considerations and implementation options are presented with an incremental approach, ranging from a minimum/ entry-level to an expanded program to achieve equity of care and outcomes for PLPs.



Covid-19 Vaccination

In alignment with national and international vaccination campaigns, targeted seasonal COVID-19 vaccination should be offered to certain risk groups based on age, underlying health conditions and risk-factor criteria of their national vaccination programme.

COVID-19 vaccination could be administered concurrently with flu vaccination during seasonal campaigns to simplify logistics and promote uptake. Simultaneous administration of COVID-19 and influenza vaccines represents a pragmatic strategy tailored to the conditions and operational challenges of the prison environment.

A seasonal offer of COVID-19 vaccination could also be considered for prison staff, including officers and healthcare workers, as a measure to ensure business continuity by potentially reducing staff absenteeism due to illness. Although the cost-effectiveness of this approach is uncertain, especially given the limited effect of the vaccine on transmission, it may still be of value in minimizing operational disruptions during peak infection periods.

Considering the infrastructural constraints and overcrowding typical of prison premises, offering COVID-19 vaccination to PLP with underlying health conditions remains a priority to lower the risk of severe outcomes, as they are at higher risk for complications. While evidence regarding the impact of COVID-19 vaccination on transmission remains limited, particularly in enclosed settings, its administration may still provide individual-level health benefits and reduce severe disease, especially for those with underlying health conditions.

Flu Vaccination

Flu vaccinations should be offered to PLP at the beginning of the season, to certain risk groups based on age, health conditions and risk-factor criteria of their national vaccination programme.

To ensure maximum coverage, vaccinations should be offered to all eligible people at the prison entrance or as soon as possible during the flu season.

In line with national campaigns, seasonal flu vaccination should be considered for prison staff, including prison officers and healthcare staff working in the prison environment. This measure would reduce the risk of introducing the virus into the prison premises, mitigate potential disruptions to prison operations, and ensure business continuity.

Considering prison premises' features, such as infrastructural constraints and overcrowding, a universal offer of seasonal flu vaccination could reduce virus transmission within prison facilities. This approach might then contribute to lowering the risk of infection for individuals with underlying health conditions who are at higher risk for severe outcomes - although evidence of this is currently lacking.

Considerations for preparedness activities

Prisons should be recognised as a high-risk setting for the transmission of infectious diseases and, therefore, included in national pandemic preparedness plans.

Prison-specific plans may be needed where the level of detail in national plans is insufficient to prepare for and respond to pandemic threats in congregate settings. This would require the involvement of prison authorities as stakeholders in developing national pandemic preparedness plans and aligning prison-specific.

Strength of the evidence and implementation considerations

COVID-19

PLP face heightened risks of COVID-19 infection due to overcrowded and

unhygienic living conditions and limited access to hygiene supplies in many detention facilities. However, PLP have often been neglected in COVID-19 responses. A modelling study conducted in 2021 found that COVID-19 vaccination in prisons is most effective at preventing and mitigating health consequences when administered to all individuals living and working in prison before an outbreak occurs (McCarthy et al., 2022).

According to a systematic review by Esposito and colleagues (Esposito et al., 2022), the primary prevention strategies identified included widespread screening of prisoners and staff using swab tests and efforts to reduce prison overcrowding. However, there was limited emphasis on vaccination as a preventative measure, and the findings did not cover quarantine protocols extensively (WHO, 2023d).

Prisons, being porous environments, can serve as entry points for community-circulating pathogens and pose a risk of spreading outbreaks to surrounding communities (Ismail et al., 2022). Moreover, PLP are at a higher risk of COVID-19 than the general population (Kim et al., 2022; Plugge et al., 2022; Toblin & Hagan, 2021).

The evidence highlights a significant gap in national pandemic preparedness regarding prison settings. The desktop review conducted by WHO in 2023 revealed that while 30 Member States had pandemic plans accessible online, only seven mentioned prisons. Similarly, of the 36 Member States with COVID-19 preparedness or response plans, only six addressed the vulnerabilities of people living in detention (WHO, 2023d). This underrepresentation indicates a systemic oversight of prisons as high-risk environments for pathogen transmission. The strength of this evidence underscores the need for urgent action to include prisons in national vaccination strategies. Implementation considerations should focus on integrating prisons into public health planning, addressing logistical challenges unique to the prison environment, ensuring equitable vaccine access for incarcerated individuals, and mitigating the potential impact of prison outbreaks on the wider community.

The WHO recommends a simplified single-dose regimen for primary immunisation for most COVID-19 vaccines, which improves acceptance, uptake, and provides sufficient protection, particularly as most people have had at least one prior infection. Available data suggest that monovalent Omicron XBB vaccines offer modestly enhanced protection compared to bivalent or monovalent index virus vaccines. However, when XBB vaccines are unavailable, any WHO emergency-use listed or prequalified vaccine, whether bivalent or monovalent, may be used, as they continue to offer protection against severe illness in high-risk groups (WHO, 2022a).

Flu

Antibodies generated in response to one type or subtype of influenza do not necessarily protect against other types or subtypes (known as cross-protection). Similarly, cross-immunity from infection or vaccination against one strain of flu does not completely protect against subsequent variants of the same type or subtype. Furthermore, immunity from vaccination diminishes over time, making annual vaccination necessary for ongoing protection against influenza (Woolthuis et al., 2017).

All European countries have vaccination recommendations for individuals with specific underlying medical conditions, although these vary by country. Common conditions include chronic pulmonary diseases, cardiovascular diseases, renal diseases, metabolic disorders, and immunosuppression. Only 18 countries have recommendations for individuals on long-term aspirin therapy, and 21 countries have recommendations for individuals with morbid obesity (ECDC, 2023).

According to the WHO, influenza is one of the greatest public health threats, and vaccination is recommended for patients with hepatitis and HIV. People living in prisons (PLP) have a high prevalence of HBV, HCV, and HIV infections. Despite close contact with staff and visitors, PLP are under-immunized against influenza. Between 2008 and 2018, vaccination coverage in three Spanish prisons was reported to be lower than 16% (Vicente-Alcalde, Tuells, et al., 2020).

In some countries, flu vaccines are not routinely administered to PLP with risk factors but are more often provided during outbreaks (Vicente-Alcalde, Ruescas-Escolano, et al., 2020). However, even in such cases, flu vaccination can face several challenges: insufficient staff, lack of easily accessible medical records to establish vaccination status or underlying conditions, limited access to sufficient quantities of vaccines and antiviral drugs, and a lack of skilled personnel to administer large volumes of vaccines and antiviral medications promptly (Madeddu et al., 2019). According to a data survey conducted among 25 correctional facilities, 79% of respondents reported no barriers to storing and administering the A/H1N1 vaccine. In contrast, 21% reported a lack of storage space for vaccines, and 8% cited insufficient space for storing supplies as a barrier.

5.4

Chapter 5.4
VACCINATION FOR INDIVIDUALS WITH SPECIFIC CONDITIONS

Chapter 5.4

VACCINATION FOR INDIVIDUALS WITH SPECIFIC CONDITIONS

This section focuses on vaccinations for specific conditions that PLP might have/ experience. Age, clinical conditions, and behaviours may increase the risk of acquiring an infection and/or of developing serious consequences: children born in detention, elderly individuals (loss of immunological function), those with comorbidities (impaired immunological function, increased susceptibility to develop sequelae), pregnant women, individuals who are more vulnerable to sexually transmitted infections (STIs) like MSM, transgender individuals, and individuals engaging in transactional sex, or those at risk of parenteral transmission like self-harmers, PWUD, and individuals exposed to sharp objects or tattoos, and those at risk of oral-faecal transmission like individuals working in detention facilities.

The following vaccines are to be considered for one or more of the specific conditions described above: anti-pneumococcal vaccine, VZV vaccine, RSV vaccine, Meningococcal vaccine, Flu vaccine [Refer to chapter 5.3], COVID-19 vaccine [Refer to chapter 5.3]; HAV vaccine, DTP vaccine [Refer to chapter 5.1], HBV vaccine [Refer to chapter 5.2], HPV vaccine [Refer to chapter 5.2]. The availability of these vaccinations varies across countries and is dependent on national guidelines and strategies, as there is no unified international standard for offering vaccines based on clinical conditions.

Overview of diseases and vaccination strategies

Streptococcus pneumoniae causes pneumonia, bacteremia, meningitis, or otitis media in cases of pneumococcal disease. It results in more than 1.6 million deaths each year, primarily affecting children, the elderly, and those with weakened immune systems (CDC, 2024b). Every year, about 1.2 million cases of pneumococcal pneumonia and around 70,000 deaths are reported in Europe (ECDC, 2010a, 2010b).

RSV is the primary reason for lower respiratory tract infections in infants

and young children, leading to serious illness and death among the elderly and immunocompromised individuals. Almost every child contracts RSV by the time they reach two years old, showing its widespread and significant effects (CDC, 2024g; WHO, 2017b). Worldwide, RSV causes approximately 3.2 million hospitalizations and 59,000 deaths each year in children younger than five.

RSV is detected in around 60,000-160,000 older adults being hospitalised and 6,000-10,000 deaths occurring in Europe every year (Hall et al., 2009).

The RSV vaccine was approved by the FDA in August 2023 and recently validated by the European Medicines Agency (EMA) for use in pregnant women (First RSV Vaccine to Protect Infants up to 6 Months of Age and Older Adults | European Medicines Agency (EMA), 2023). It is administered during 32 to 36 weeks of pregnancy to help protect infants from severe RSV-related lower respiratory tract disease (LRTD) from birth up to 6 months. In clinical trials, it showed significant efficacy, reducing the risk of severe LRTD by over 80% within the first three months of life. Side effects observed were generally mild, such as injection site pain and headaches, though a small increase in preterm birth risk was noted, leading to precautions for its administration only after 32 weeks of pregnancy (CDC, 2024f; Commissioner, 2023).

Meningococcal disease (MD), caused by the bacterium Neisseria meningitidis, can result in sporadic cases and outbreaks worldwide. It has a high fatality rate and can cause severe long-term sequelae among survivors, such as hearing loss, neurological damage, and limb amputations. The burden varies by region, with higher incidence rates in the "meningitis belt" of sub-Saharan Africa (CDC, 2024e; WHO, 2023b). During outbreaks, the disease can cause tens of thousands of cases. In Europe, invasive meningococcal disease (IMD) is associated with severe illness and deaths, although with heterogeneous occurrence rate across the region (WHO, 2023b). Neisseria meningitidis serogroups A, B, C, W, X and Y cause the majority of these severe infections. Currently, in Europe and North America, serogroup B is the leading cause of IMD (Villena et al., 2018). For babies and young adults in the US, it is advised to get the meningococcal B (MenB) vaccine as part of their regular immunisation schedule. Serogroup B of Neisseria meningitidis is a major factor in causing invasive meningococcal disease in different areas. In 2023, a study assessed the effectiveness of MenB vaccine distribution in adults highlighting its effectiveness in managing outbreaks in various environments and proposing that comparable approaches may be advantageous in correctional facilities (Kassianos et al., 2023). Nevertheless, there are still important gaps in knowledge concerning immunogenicity in individuals aged 50 and older and the impact of comorbidity or frailty on vaccine responses.

According to a recent study, the meningococcal group B vaccine (4CMenB) could offer simultaneous protection against one of the sexually transmitted infections, Neisseria gonorrhoeae, reducing the incidence. However, these are preliminary results that need further investigation to obtain more solid scientific evidence (Molina et al., 2024).

In March 2017, a meningitis outbreak due to Neisseria meningitidis serogroup C was confirmed in Yaounde prison, Cameroon. The relevant fact was that none of the PLP infected had documented vaccination against meningitis (Neisseria Meningitidis C Isolated during an Outbreak in a Prison, 2016).

It is estimated that around one every three individuals in the US will be affected by Herpes Zoster, commonly known as shingles, at some stage in their life. The risk increases with age and is the highest after 50 years of age. Only in the US, about one million cases are reported every year, with increased rates found in individuals with weakened immune systems (CDC, 2024d). In Europe, Herpes Zoster affects around 3 to 4 out of every 1,000 people each year, but this number jumps to more than 10 out of every 1,000 for individuals who are 60 years old or older. Issues such as post-herpetic neuralgia (PHN) can result in intense, enduring pain, impacting the quality of life of 20-30% of patients (Siedler et al., 2019).

Over the past few years, several HAV outbreaks occurred in Europe, due to factors like travel, migration, and variations in susceptibility rates across birth cohorts and populations. The disease still poses a threat, especially among groups with low vaccination rates and inadequate sanitation (ECDC, 2011). In the European Union, the implementation of HAV vaccination initiatives has led to a decrease in infection rates. Nevertheless, intermittent epidemics continue to happen, frequently associated with imported instances from areas with greater endemicity (Santos et al., 2024).

Burden of disease and vaccination interventions in European prisons for people with specific conditions

The available evidence on the burden of disease in prison settings related to infections for people with specific conditions and vaccinations remains scarce. Most of the existing data is focused on outbreak prevention or control rather than a comprehensive understanding of routine disease prevalence or the overall effectiveness of vaccination programs.

In 2021, an outbreak investigation of pneumococcal disease in an Alabama state prison was published. The outbreak, caused by Streptococcus pneumoniae,

suggested that increased risk might result from close living quarters, substance use, and underlying health conditions. The investigation concluded that improved pneumococcal disease surveillance and proactive vaccination of at-risk PLP, according to national recommendations, could mitigate the risk and scale of future outbreaks, highlighting the importance of the anti-pneumococcal vaccine in prison settings (Sanchez et al., 2021).

Overview of existing guidelines for people living in prison

The existing guidelines for Flu, COVID-19, HBV, HPV and DTP vaccination in prison settings are presented in the previous chapters [Refer to chapter 5.3, chapter 5.2 and chapter 5.1 respectively]. For the remaining vaccines (HAV, Meningococcal, Pneumococcal, RSV and VZV) guidelines tailored to prison settings are limited or absent.

The Michigan Department of Health and Human Services (MDHHS) has developed guidelines for surveillance, investigation, and public health follow-up for VPDs (Pneumococcal disease, Meningococcal disease, VZV). Some of these guidelines explicitly consider the prison setting (State of Michigan, 2019).

In addition documents issued by the Federal Bureau ("Federal Bureau of Prisons Clinical Guidance" - 2016) address vaccination services in prison, mostly in the context of outbreak prevention and management, alongside other measures such as infection control and contact tracing. One of the recommendations suggests that, in case of airborne infections, infected PLP be transferred to community hospitals if medically indicated or housed in the prison medical isolation area with limited contact with other PLP (Federal Bureau of Prisons & Clinical Guidance, 2016).

In November 2019, the "Federal Bureau of Prisons Clinical Guidance" emphasised hepatitis A outbreaks linked to homelessness, drug use, and correctional facilities during 2017-2019. According to this document, in correctional facilities with outbreaks, it is important to have contact tracing and vaccination, along with screening new PLP for hepatitis A risk factors. Populations at increased risk like MSM, PWUD, people with liver disease, those without stable housing, and individuals with clotting disorders should receive the HAV vaccine. The guidance stresses the significance of preventive measures for managing the spread of hepatitis A in at-risk populations (Federal Bureau of Prisons Clinical Guidance, 2019).

An important outbreak occurred at Los Angeles County Jail in 2023, for instance.

In the 2023 epidemic, the vaccination campaigns were crucial in decreasing the spread of the virus. Vaccination efforts targeted individuals at high risk, including those with chronic liver disease and individuals aged 60 and older. Expanding routine vaccination and offering post-exposure prophylaxis were key elements of the strategy. Enhanced monitoring and documentation aided in tracing vaccinations and exposures, leading to a more efficient response (CDC, 2024h).

During earlier outbreaks, like the one from 2007 to 2010, Los Angeles County Jail introduced a fast-tracked HAV vaccination initiative that reached a significant portion of the population. These actions greatly decreased the transmission of HAV in these confined settings (Qureshi, 2024).

The guidance "Respiratory Virus Quick Reference Guidance for Prisons, Detention Centers, and Homeless Service Sites" urges staff, clients, volunteers, and residents to keep up-to-date on immunizations, despite the limited details on RSV in prisons (Prisons, Detention Centers, & Homeless Service Sites: COVID-19 - MN Dept. of Health, 2024).

Service models and immunization strategies in prison settings in Europe

The availability and approaches to vaccination for specific conditions vary widely across countries, as does the definition of high-risk groups. According to the RISE-Vac survey conducted in 2023 among 20 European countries, vaccines such as anti-meningococcal, VZV, and HPV were available in prisons in few countries. Conversely, anti-pneumococcal, flu, DTP, HBV, and HAV vaccines were available in prisons in most countries (Moazen, Tramonti Fantozzi, et al., 2024). Availability of RSV vaccination was not investigated in the survey.

The pneumococcal vaccine was available in prisons in 14 countries. In six countries, it was offered to all relevant groups. In three countries the vaccine was offered to specific age groups and high-risk groups; in one country to high-risk groups and PLP with comorbidities, and in one country to specific birth-cohorts and to PLP with comorbidities. Finally, two countries offered pneumococcal vaccination without specifying who was eligible.

The VZV vaccination was available in prisons in 9 countries. In one country it was offered to all groups, in one to high-risk and age groups, in two to specific age groups, in one to PLP with comorbidities, and in four to high-risk groups.

The meningococcal vaccination was available in prisons in 9 countries. In three

countries, it was provided to all groups, in two countries it was offered to PLP in specific age groups, while one country offered it to high-risk groups.

The Flu vaccination was available in prisons in 19 countries. In 13 countries it was offered to all groups, in one country to high-risk and age groups, in two to specific age groups, in two to PLP with comorbidities, and in one to high-risk groups and to PLP with comorbidities.

The COVID-19 vaccination was available in prisons in all countries. In 16 countries, it was offered to all groups, in two countries it was offered to PLP in specific age groups, while in one country to high-risk groups and PLP with comorbidities. Lastly, one country offered COVID-19 vaccination to PLP without specifying the eligible groups.

The HAV vaccination was available in prisons in 15 countries. In six countries it was offered to all groups. In seven countries, the vaccine was only available for high-risk groups, and in two countries to high-risk groups and PLP with comorbidities.

The DTP vaccination was available in prisons in 17 countries. In 12 countries it was available to all groups, in one to specific age groups and high-risk groups, in one to specific age groups and in two to high-risk groups. Lastly, one country offered DTP vaccination to PLP without specifying the eligible groups.

The HBV vaccination was available in prisons in 17 countries. In 12 countries it was offered to all groups, in one to high-risk and PLP with comorbidities. Lastly, four countries offered HBV vaccination to PLP without specifying the eligible groups.

The HPV vaccination was available in prisons in 17 countries. In three countries it was offered to all groups, in four countries to PLP in specific age groups, and in three countries to high-risk groups, in two countries to specific age groups and high-risk groups.

As part of RISE-Vac project activities, qualitative evidence on service models for vaccination offered to individuals with specific conditions was collected from participating prisons between November 2021 and February 2022, with the exception of polio and RSV. The number of prisons enrolled in this survey is indicated in brackets for each country.

In Cyprus prison (1 prison) the pneumococcal vaccine was offered to all PLP upon request, and usually administered between two and four weeks after their prison entrance. The VZV vaccine was not offered, and the meningococcal vaccine was not available to PLP. The HAV vaccine was also available upon

request to all PLP and usually administered within one week after prison entrance. In France (3 prisons), vaccination practices for PLP varied across facilities. The pneumococcal vaccine was actively offered in two prisons, while in one was available upon request. In one prison the vaccine was usually administered between two and four weeks after prison entrance, in the other two after four weeks. The vaccine was primarily targeted at older individuals (over 64 years of age) and those in high-risk groups. The VZV vaccine was not offered in any of the prisons. Meningococcal vaccine was actively offered in one prison, and administered between two and four weeks after prison entrance. HAV vaccine was actively offered between two and four weeks after entrance in two prisons, while in one was only offered to high-risk groups and individuals aged more than 40 years. Additionally, catch-up vaccination was provided after release for both pneumococcal and HAV vaccines in one prison. In Germany (2 prisons), vaccination practices varied across facilities. The pneumococcal vaccine was offered in one prison. The VZV vaccine was not available. For HAV, the vaccine was available in one prison and usually administered between two and four weeks after prison entrance. There was no information available regarding the availability of the meningococcal vaccine in these facilities. In Italy (4 prisons), pneumococcal vaccination was actively offered in all facilities. In three out of four prisons, it was administered in a two-dose regimen: the first dose was given upon entrance, followed by a second dose approximately one year later. The vaccine was primarily targeted at individuals over the age of 64. The VZV vaccine was not available in two of the four prisons, while it was actively offered in the remaining two. The meningococcal vaccine was actively offered in all four prisons, with two facilities targeting high-risk groups and the other two providing it to adults and high-risk groups. The HAV vaccine was not offered in any of the Italian prisons. In the Republic of Moldova (5 prisons), the pneumococcal, VZV, meningococcal and HAV vaccines were not offered in any of the five prisons.

Taken together, available data indicate some gaps in vaccination provision across countries, such as the lack of VZV vaccine in most countries and the prioritisation of high-risk groups and older individuals for targeted offer. Standardised guidelines would be beneficial to ensure more equitable access to vaccination for PLP in these countries.

Advice and options for implementation

Children born to mothers in detention

Children born and living with a primary caregiver in prison should be offered

vaccinations according to the national programme with no delays. The implementation of tailored vaccination schedules or the provision of additional vaccinations should be assessed and planned, taking into account the vulnerability of their immune system and the environment in which they live, overcrowded, leading to inadequate living space, limited access to hygiene facilities, and poor air quality. This increases the risk of acquiring airborne infections (Sapkota et al., 2022).

Faster access to vaccines for diseases such as hepatitis B, polio, measles and tuberculosis could be beneficial. Accelerated schedules, often with shorter intervals between doses than standard schedules, may be considered to provide protection as soon as possible (WHO, 2018).

Individuals with comorbidities

Multi-pathological profiles should be assessed upon prison admission in order to design an individualised immunisation plan and prioritise administration of vaccination as per individual need. Vaccinations to consider, based on clinical characteristics and national recommendations are Flu and COVID-19 [Refer to chapter 5.3], Pneumococcal vaccine, Herpes zoster vaccine, Meningococcal vaccines.

Pregnant women

Pregnant women in detention should be identified through pregnancy tests upon prison admission in order to ensure appropriate prenatal care, including an individualised immunisation plan. Vaccination during pregnancy has the scope of protecting the mother and the unborn child from serious consequences of VPDs and should include Flu vaccine, dTp vaccine, RSV vaccine. It is important to remember that pregnancy is a contraindication to certain vaccines, such as MMR, due to the potential risks to the developing foetus.

Older individuals

Older adults should be offered additional vaccines in accordance with the national strategy (vaccine product and schedule). These include influenza and COVID-19 [Refer to chapter 5.3]; Pneumococcal vaccine; Herpes zoster vaccine. The definition of the minimum target age for vaccination of older adults varies between countries (50-65 years).

As PLP may suffer from accelerated ageing, anticipating the minimum age for vaccination and extending the age range beyond that recommended for the general population may be considered.

People at increased risk of sexual transmission

Unprotected sexual activities, transactional sex and non-consensual sex are associated with an increased risk of acquiring and transmitting infectious diseases. MSM, transgender people and people who engage in transactional sex, should be actively offered HAV, HBV and HPV vaccines as part of routine immunisation programmes, according to the national strategy.

PLP shall be incorporated into vaccination campaigns against emerging infectious diseases, such as Mpox, in response to outbreak or epidemic events.

The vaccination offer targeting PLP at increased risk of sexual transmission should be expanded in accordance with emerging evidence, which could potentially include the future use of MenB vaccine to prevent gonorrhoea.

Vaccination services should be part of a comprehensive package of sexual health services that includes the provision of condoms, lubricants, dental dams and contraceptives, as well as STI screening at the point of entry and during the stay. Additionally, it is advisable that gynaecological or andrological consultations be made available.

People at increased risk of parenteral transmission

PLP are susceptible to infection via parenteral transmission, which may occur through injecting drug use, the performance of tattoos and piercings in uncontrolled environments, and self-harm.

DTP vaccination should be offered at entrance to individuals with reported or self-disclosed risks of parenteral transmission. A booster dose of DTP should be offered after self-harm events.

HBV vaccination at the entrance of all PLP with no/unknown vaccination history and/or negative serology [Refer to chapter 5.2].

People involved in food preparation and distribution

PLP may perform a diverse set of working tasks in prison, including food preparation and distribution, waste management, and cleaning. In light of the potential occupational hazards and food safety concerns associated with these roles, HAV vaccination should be considered for these individuals.

Strength of the evidence and implementation considerations

Prison facilities, which are frequently overcrowded, represent an environment of heightened risk for the development of certain infections and subsequent pathologies. Specific conditions are overrepresented among PLP, including a range of clinical conditions that require particular attention, especially with regard to ensuring universal access to healthcare.

Given the widely recognized issue of low immunisation rates among PLP, it is crucial to prioritise immunisation for PLP with specific conditions in order to prevent the acquisition of VPDs and/or their most serious consequences (Cocco et al., 2024).

Children born to detained mothers face unique health challenges due to inadequate prenatal care, suboptimal nutrition, and limited access to paediatric healthcare services. These children are more susceptible to infections and long-term health issues, and may benefit from timely vaccinations along with comprehensive healthcare to promote healthy development. Governments should monitor the number of children in detention and their health status. It would also be desirable to investigate the impact of detention during early years development. A vulnerability framework that takes into account child development and environmental health factors affecting children in detention could also support specialised monitoring of detention standards by national inspectorates and national prevention mechanisms under the Optional Protocol to the Convention Against Torture (Van Hout et al., 2024).

For instance, given the higher risk of tuberculosis (TB) transmission in crowded settings like prisons, children in such environments should receive the Bacillus Calmette-Guérin (BCG) vaccine at birth, especially in regions where TB is prevalent (CDC, 2024c).

According to available evidence, PLP may suffer from accelerated ageing (Kaiksow et al., 2023). Elderly PLP, due to age-related immunosenescence and a higher prevalence of chronic diseases such as diabetes, cardiovascular diseases, and respiratory conditions, are particularly vulnerable. Their weakened immune systems render them more susceptible to infections and complicate recovery from illnesses, making targeted health interventions essential. In consideration of this, anticipating minimum age for vaccination may be considered to expand the offer in response to hightehend needs. This approach has been considered some countries such as England, Wales and the US, where a threshold of 50 years of age has been proposed to define older individuals in prison settings

(Kaiksow et al., 2023; Living (and Dying) as an Older Person in Prison, 2024).

PLP with comorbidities, such as HIV/AIDS, diabetes, cardiovascular diseases or chronic respiratory diseases, face compounded health risks. The presence of multiple chronic conditions can weaken the immune system, making it more difficult to fight off infections. Ensuring that PLP with comorbidities receive appropriate medical care, including regular monitoring and tailored treatment plans, is essential for managing their health effectively.

People with cardiovascular diseases, for example, should be vaccinated against influenza, pneumococcal disease and pertussis (whooping cough), because the inflammation caused by these infectious diseases could play an important role in the development and complications of coronary artery disease (CAD). Similar considerations apply to diabetic patients; diabetes and hyperglycemia may make it more difficult for the immune system to resolve the infection (Smith, 2017). Patients with immunodeficiency, such as People Living with HIV (PLHIV), are generally advised to avoid live attenuated vaccines (e.g., MMR) due to their potential risk of causing infections in individuals with weakened immune systems (Crum-Cianflone & Wallace, 2014).

Pregnant women in prison require specialised healthcare to ensure the well-being of both the mother and the developing foetus. The prison environment, often characterised by inadequate healthcare facilities and limited access to prenatal care, poses significant risks to pregnant PLP. Complications such as preterm birth, low birth weight, and maternal infections are more likely in this setting. Comprehensive prenatal and postnatal care, including appropriate vaccinations and nutritional support, is crucial to safeguard the health of pregnant women and their babies.

DTP vaccine is generally recommended ideally between 16 and 36 weeks of gestation. Vaccination in this period ensures that enough maternal antibodies are passed to the baby, providing protection against pertussis (whooping cough) in the critical first months of life. The Flu vaccine is highly recommended during pregnancy and can be administered at any time during gestation. It is especially critical to receive it as soon as possible before the flu season (usually from October to the end of April each year) (HSE, 2024). Pregnant individuals face higher risks of severe flu complications due to changes in the immune system, lungs, and heart. Vaccination not only protects the mother but also provides antibodies to the baby, both through the placenta and breast milk, offering protection until the infant is eligible for their own Flu vaccine at six months of age (CDC, 2024a). The RSV vaccine is recommended between 28-36 weeks of gestation for all women with expected due date between September - end of March. The goal is to prevent severe respiratory infections in newborns. The vaccine provides antibodies to the infant that will protect against RSV for the

first few months of life. Vaccines made from live attenuated virus or bacteria, such as MMR, BCG or oral polio contain weakened forms of the pathogen that, while not harmful to the mother, may pose a potential risk to the unborn baby to become infected (Vaccinations in Pregnancy, 2020).

MSM and transgender individuals often face stigma and discrimination, which can limit their access to appropriate healthcare and prevention services. Providing comprehensive sexual health education, access to condoms, and regular STI screenings are essential to reduce the transmission of infections (Gohil et al., 2024). Some STIs are vaccine-preventable such as HPV and HBV [Refer to chapter 5.2]. Among STIs of concern are also some (ri)emerging infectious diseases such as Mpox and HAV for which transmission during sexual activities has been proven. Acute hepatitis from HAV infection, for which there is an effective vaccine, is nowadays often presented as an STI, especially for sexual practices such as rimming, particularly associated with MSM. The clinical presentation is also often more severe than the food-borne form and is often accompanied by other STIs (Marciano et al., 2020). This makes penitentiary institutions particularly at risk and worthy of considering vaccination for the subjects most at risk. The recent 2022 Mpox epidemic, which mainly affected MSM at an international level, has opened a great debate on considering this pathology as an actual STI (Sah et al., 2022). At international level the problem of how to secure the prison context of promiscuity and also of difficult transparency on sexual behaviour has arisen. The WHO has produced an information leaflet (Mpox Prevention and Control among People Living in Prison, 2023) and in some contexts (for example in the prisons of Lombardy in Italy) a vaccination campaign has been implemented for subjects at risk (Cocco et al., 2022).

Although effective vaccines are available, PLP should be included in vaccination campaigns in response to outbreaks or epidemics occurring in the community (Taylor, 2022). Finally, recent evidence indicates a certain degree of effectiveness of MenB vaccination to prevent gonorrhoea (Molina et al., 2024). Some countries, including the UK, expanded provision of the MenB vaccine to MSM and other high risk groups (Molina et al., 2024).

Identifying the target group for these vaccines is especially challenging because it depends on obtaining accurate information from individuals regarding their personal lives. Frequently, revealing this information is linked to anxiety about being judged for specific behaviours within the society, even though the doctor's confidentiality regarding the medical records remains unchanged.

However, STIs are a significant concern in prison populations, not only among MSM and trans people, due to high-risk behaviours such as unprotected sex and transactional sex (WHO, 2023c). Therefore, universal vaccination for vaccine preventable STIs could be considered, either as routine intervention (e.g., HBV

vaccination) or as targeted campaigns during periods of heightened risk (e.g., public health emergency of international concern (WHO, 2024g) or when large community outbreaks occur (Freidl et al., 2017).

Parenteral transmission of infections is a significant risk in prisons due to behaviours such as drug injection and tattooing with non-sterile equipment. Sharing needles and exposure to contaminated sharp objects can lead to the spread of bloodborne pathogens, including HBV, HCV and HIV (Moazen et al., 2018). PLP are characterised by a higher prevalence of mental health conditions, including self-harm. Self-harm practices may also carry a higher risk of Clostridium tetani through the use of non-sterile sharp objects. Individuals who engage in these behaviours require targeted and comprehensive interventions, such as needle exchange programs, access to sterile tattooing equipment, and mental health support to address self-harm tendencies (WHO, 2023c). These measures are crucial to reduce the risk of infection transmission through parenteral routes. Additionally, by ensuring high vaccination coverage for HBV and tetanus, the spread of these diseases can be substantially reduced. This protects both the individual and the broader prison population.

The oral-faecal transmission of infections, such as hepatitis A and gastrointestinal diseases, is a concern for PLP involved in activities such as food handling, waste management, and cleaning that can increase the risk of infection if proper hygiene practices are not followed. Ensuring a high vaccination coverage, providing adequate sanitation facilities, hygiene education, and regular health screenings for PLP involved in such work activities is essential to prevent the spread of oro-fecally transmitted infections within the prison environment.

Diseases such as Pneumococcal, VZV, meningococcal, RSV, flu, COVID-19, or DTP infections, often managed without major complications outside prison, can lead to serious complications in prison due to the high prevalence of co-morbidities and other clinical conditions. Recognising and identifying specific conditions that may increase the risk of developing serious disease sequelae and/or increased risk of disease spread on admission to prison is crucial for the timely administration of appropriate vaccinations.

This process should include a thorough assessment of medical history, including the use of serological and other diagnostic tests. Such an approach is essential to uphold the principle of equitable health care by ensuring that all individuals, from the youngest to the oldest, receive necessary health interventions in a timely manner.

In summary, addressing the diverse health needs of the PLP requires a multifaceted approach that takes into account age-specific vulnerabilities, clinical conditions and transmission pathways. The implementation of targeted health interventions,

including immunisation, regular health check-ups and preventive measures, is essential to protect their health and ensure their right to comprehensive health care. such as needle exchange programs, access to sterile tattooing equipment, and mental health support to address self-harm tendencies. These measures are crucial to reducing the risk of infection transmission through parenteral routes. Additionally, by ensuring high vaccination coverage, the spread of these diseases can be substantially reduced. This protects both the individual and the broader prison population.

The oral-fecal transmission of infections, such as hepatitis A and gastrointestinal diseases, is a concern for PLP involved in work activities that expose them to unsanitary conditions. Jobs such as food handling, waste management, and cleaning can increase the risk of infection if proper hygiene practices are not followed. Ensuring a high vaccination coverage, providing adequate sanitation facilities, hygiene education, and regular health screenings for PLP involved in such work activities is essential to prevent the spread of oro-fecally transmitted infections within the prison environment.

Pneumococcal, VZV, meningococcal, RSV, flu, COVID-19, or DTP infections, which could be treated outside prisons without major complications, can prove deadly inside prisons, where the state of health is often already precarious. Recognizing and identifying these specific conditions right from entry can be crucial in administering adequate vaccinations in time. This process should involve thorough medical histories when known, or the reconstruction of clinical histories through serological tests and other diagnostic measures. Such an approach is essential to uphold the principle of equitable healthcare, ensuring that all individuals, from the youngest to the oldest, receive necessary health interventions in a timely manner.

In conclusion, addressing the diverse health needs of the PLP requires a multifaceted approach that considers age-specific vulnerabilities, clinical conditions, and transmission pathways. Implementing targeted health interventions, including vaccinations, regular medical check-ups, and preventive measures, is crucial to safeguarding the health of and ensuring their right to comprehensive healthcare.

5.5

Chapter 5.5

VACCINE PROVISION AS PART OF CONTINUITY OF CARE

Chapter 5.5

VACCINE PROVISION AS PART OF CONTINUITY OF CARE

Continuity of care for adult and adolescent PLP is a critical aspect of public health, particularly in the context of vaccination programs. People in detention, including those in remand, awaiting sentencing, serving sentences, or recently released, often have limited access to healthcare services, making it essential to ensure that health interventions initiated in prisons are continued after their release. Vaccinations are pivotal in preventing infectious diseases, but ensuring that PLP complete their vaccination schedules and receive appropriate follow-up care remains challenging.

Vaccination services in prisons provide an opportunity to deliver essential healthcare to a vulnerable population. However, for vaccines requiring multiple doses, such as the HBV, HPV, or Tdap vaccines, coordinated efforts are needed to ensure that individuals complete the vaccination schedule. As many individuals approach release, the need for seamless continuity of care becomes even more pressing. Collaboration between prison and community healthcare services is essential to ensure that individuals continue receiving necessary vaccinations and follow-up care once they are reintegrated into society.

Ensuring continuity of care involves institutional efforts within the prison system and partnerships with external healthcare organisations, such as public services, outreach programs, and non-governmental organisations (NGOs). The transition from prison to community life represents a critical moment when individuals may fall out of the healthcare system, potentially leading to incomplete vaccination schedules and increased vulnerability to preventable diseases.

This chapter will explore the importance of continuity of care in prison settings, with a focus on vaccination services. It will examine the strategies and models of collaboration that can help ensure that individuals transitioning from prison to the community receive the necessary healthcare to complete their vaccination schedules and maintain their overall well-being

Barriers to vaccine provision during incarceration pathway and linkage to care

A significant challenge in providing healthcare, including vaccines, for individuals transferred between institutions or at the time of release from prison and return to the community is the disruption in continuity of care. The discontinuity can be attributed to several factors, including structural impediments in healthcare governance, the discontinuity of healthcare coverage and entitlements, and the absence of interoperability and/or data-sharing platforms for individual medical health records. These elements result in suboptimal access to and utilisation of primary and specialised care following release, representing a significant and addressable health inequity.

In the U.S. and in some European countries one of the main barriers is bureaucracy, as formerly PLP lose access to welfare benefits and have to reapply on release, a process that can take 2-4 weeks. This is compounded by the requirement to have a valid ID and address to apply for health services outside prison, which many may need the help of NGOs or shelters to obtain (Buck et al., 2006).

While there are benefits to be gained from the political drive for the early release of prisoners, this can have unintended consequences if not accompanied by adequate reintegration strategies, including healthcare planning. The current shortage of prison healthcare and support staff has resulted in lengthy waiting lists, leading to difficulties in maintaining healthcare provision for PLP (Woods et al., 2013). In addition, a lack of communication between probation, rehabilitation and prison health staff exacerbates these problems. This lack of coordination is particularly problematic when release dates change, leaving little room for healthcare transitions, such as continuing immunisation schedules (Ismail et al., 2022).

Risks encountered by PLP upon release include universal risks, such as lack of access to healthcare, housing instability, unemployment, and limited social support networks; and selective risks such as criminal history affecting employment opportunities, legal barriers to accessing healthcare, financial strain, and disruption in family roles (A. Nyamathi et al., 2015).

Previous data in England showed a disconnect in healthcare provision during the transition to the community after incarceration. This mainly centred around the fact that people who were previously living in prison had to re-register with a new general practitioner (GP). The RECONNECT service is a post-custody initiative run by the NHS in England and aims to address issues in relation to continuity of care such as the lack of access to a GP immediately after release. Work continues

to ensure that people who have recently been released into the community are able to access healthcare in a timely manner, such as the development of a single electronic health record and the use of digital immunisation templates to facilitate the import of GP records into the prison healthcare system.

Burden of disease and vaccination interventions in prisons

Although explicit information regarding the continuity of care for PLP, particularly those who have not completed vaccination schedules, is scarce, the importance of this is emphasised in policies like the UK's National Partnership Agreement for Prison Healthcare (2018–2021). This agreement, involving multiple agencies such as the Ministry of Justice and NHS England, explicitly supports access to healthcare and continuity of care both pre-custody, during custody, and post-custody (Healthcare for Offenders, 2023).

The need for solid continuity of care was also highlighted during the World Health Organization/Russian Federation International Meeting on Prison Health and Public Health (Moscow, 2003). The meeting underscored the danger of allowing individuals with infectious diseases to transition between the prison system and civil society without adequate treatment and follow-up. The spread of communicable diseases is a significant risk; lack of treatment continuity can exacerbate this (Europe, 2003).

In the U.S., strategies have been developed to mitigate such risks, including implementing accelerated vaccine schedules for high-risk populations in prison, like the combined hepatitis A/B vaccine. These strategies could be models for similar programs in other countries, including Europe (Costumbrado et al., 2012).

In Italy, individuals leaving prison often need a medical record or health insurance card. A study conducted in the Lazio region (Fusillo et al., 2018) highlights the importance of collaboration between local health authorities and prison staff. In this initiative, PLP with no history of measles vaccination were immunised, and the data were recorded in the regional health information system. This approach helps retain health records when individuals return to the community, improving care continuity.

However, numerous barriers impede PLP from accessing primary healthcare after release, including inadequate discharge planning and the stigma they face in the community (Binswanger et al., 2011; Kinner & Young, 2018). A study conducted between 2017 and 2018 across prisons in Germany, Belgium, France, and Portugal found that many PLP experienced a sharp decline in the quality of care after

release, transitioning from regular, well-defined support inside the prison to sporadic, unreliable care outside. This gap highlights the need for more structured and accessible healthcare services for individuals reintegrating into society (Stöver et al., 2023).

In conclusion, the continuity of care for PLP is critical in ensuring public health and successful reentry into society. Better collaboration between prison and community healthcare systems, improved access to medical records, and strategies to address mental health and substance abuse post-release are crucial to addressing this issue.

. › Overview of existing practices

Professionals have identified a range of promising practices to help overcome barriers to continuity of care. These practices, though effective, are rare and often limited to certain prisons or individual professionals. The essential practices include:

- **Ensuring continuity of care** through case management, providing support for six months before and after release (Prendergast & Cartier, 2008; Wohl et al., 2011).

- **Offering a release checklist** to ensure all necessary (administrative) arrangements, such as obtaining an ID card and securing health insurance, are completed before release (Carswell et al., 2017; Kinner et al., 2016).

- **Providing a leaflet** with an overview of local support services just before release (Grierson et al., 2022).

- **Ensuring immediate access to health insurance** after release, by coordinating with health insurance providers, municipal services, and prison authorities. Alternatively, assistance could be offered through the National Health Service inside and outside the prison, as in Portugal, so there are no delays in accessing free healthcare (Stöver et al., 2023).

- **Developing a clear reintegration plan** in collaboration with professionals inside and outside the prison. For example, general practitioners (GPs) should work closely with prison health teams to ensure continuity of care. This includes sharing information about ongoing treatments (both pharmacological and non-pharmacological), pending investigations, and any required follow-up with secondary care (Tadros et al., 2023; Wang et al., 2008).

- **Facilitating access to NGOs** within prisons, with health professionals' input, and formally delegating some support services to organisations in the community (Lincoln et al., 2006; Rich, 2001).

- **Activating pre-release social support**, ensuring assistance is available during the critical first week after release (Divakaran et al., 2023; Fuller et al., 2019).

Service models and immunisation strategies

Some prison systems have begun utilising peer mentors to support individuals reentering society. Upon release, these mentors meet the former PLP and accompany them to services that may assist in their reintegration, thus providing active advocacy.

During the COVID-19 pandemic in the U.S., PLP who were vaccinated for COVID-19 received a vaccine certification. If a PLP was released before completing their vaccination schedule, they were given a vaccination card to obtain the second dose in the community. This approach can still be applied today, ensuring PLP receive vaccination certifications for those administered in prison or allowing them to complete their vaccinations post-release.

In San Vittore prison, Italy, efforts are being made to enhance referral letters to ensure PLP can complete their HPV vaccination schedules. By improving the clarity and accessibility of these dispatch letters, PLP can more easily visit vaccination departments to finish their programs typo.

A notable example of good practice emerged in Portugal, where the Institute of Employment and Vocational Training (IEFP) once led a program supporting the professional integration of drug users. Though discontinued by the Portuguese government in 2017, the program helped individuals through a therapeutic process involving general practitioners, psychologists, and social workers. This team provided medical and social support while preparing participants for the workforce and establishing formal contacts with employers. Over 20 years, the program achieved an impressive success rate of 80%, with most participants securing employment through this initiative (Stöver et al., 2023).

Advice and options for implementation

Ensuring continuity of care for individuals released from prison is crucial for their health and as a public health strategy. The social challenges and critical barriers that people face upon release often lead to recidivism, reincarceration,

and increased health risks, particularly for those with chronic conditions. One significant issue is the need for access to necessary vaccinations or the failure to complete vaccination schedules, especially in detention contexts characterised by brief stays and high mobility, such as remand centres. An example is the difficulty of achieving the standard HBV vaccination regimen (three doses over six months).

Critical recommendations for improving vaccination delivery with a continuity of care approach include:

1. **Connections with Local Healthcare Services**

   Prison healthcare systems should establish strong ties with local vaccination departments through formal agreements. Together, they can determine optimal pathways for continuing vaccination schedules, particularly for multi-dose vaccines such as HBV and HPV. Prison healthcare staff should provide a referral letter or implement a referral system to ensure the vaccination process continues seamlessly after an individual is released.

2. **Tailored Vaccination Strategies**

   Vaccination strategies should be adapted to suit the unique needs of prison settings, including continuity of care. Utilising accelerated and/or shortened vaccine regimens can help achieve higher coverage rates. The use of such regimens, particularly for HBV and HPV vaccines, is supported by literature (Heyward et al., 2013) and WHO guidelines (WHO, 2022b) and could be piloted in penitentiary settings to improve outcomes.

3. **Enhanced Digital Information Systems**

   An effective Prison Management Information System (PMIS) must integrate smoothly with community healthcare services. A continuous flow of information about an individual's vaccination history is critical, and there is no "interruption" during detention while respecting privacy regulations. The PMIS should at least provide the completion of vaccination schedules initiated in prison, which will continue in the community.

4. **Continuity of Care at the Time of Incarceration**

   Continuity must also be ensured when an individual enters the prison system. Efficient communication with community healthcare services is essential to swiftly transfer medical records, including vaccination history, into the prison system. This ensures that healthcare within the prison does not begin from scratch, preventing the loss of critical elements of the individual's medical history, which is vital for quality care, including continuing vaccinations.

These measures are essential to reducing gaps in healthcare, improving vaccination coverage, and protecting individual and public health during the transition from prison to community.

Strength of the evidence and implementation considerations

Vaccination programs in prison settings are crucial for preventing the spread of vaccine-preventable diseases among PLP, who are at higher risk due to close living conditions and often pre-existing health issues. Prioritising this population is crucial for effective disease mitigation (Strodel et al., 2021).

Accelerated vaccination schedules, such as the 3-week schedule for Hepatitis B, show higher compliance and seroprotection rates than the standard 6-month schedule, making them more efficient in prison settings (Asli et al., 2011; Christensen, 2004). Accelerated vaccination schedules for Hepatitis A and B have been successfully implemented in high-risk populations, such as MSM and injection drug users, within prison settings, achieving significant coverage and compliance (Asli et al., 2011; Costumbrado et al., 2012).

Ensuring continuity of care post-release is essential. Strategies include administering booster doses within prison premises and providing informational material to facilitate follow-up care (Tavoschi et al., 2022).

Programs involving peer coaching and nurse case management can significantly improve vaccine completion rates among recently released homeless parolees, highlighting the importance of support systems in ensuring vaccination adherence (A. Nyamathi et al., 2015; A. M. Nyamathi et al., 2012).

Enhancing Health Outcomes: The Impact of the RISE-Vac Project at San Vittore Remand House.

Source: San Vittore Remand House.

The primary achievement of the RISE-Vac Project within Milan's penal institutions was the establishment of a vaccination clinic at the San Vittore Remand House. This initiative facilitated clinical activities focused on the screening of infectious diseases and the implementation of preventive measures, including vaccination. As a result, both PLP and staff demonstrated a more favorable attitude toward vaccination. The clinic is designed to ensure continuity of care in collaboration with local healthcare providers, thereby guaranteeing the completion of treatment even in cases of unscheduled release from custody. This is accomplished through formal agreements with local vaccination centers and a well-organized referral system.

6

Chapter 6

FRAMEWORK FOR MONITORING VACCINATIONS IN PRISON

Chapter 6

FRAMEWORK FOR MONITORING VACCINATIONS IN PRISON

Prison health systems require a well-functioning health information system to generate reliable and timely information on the performance of the health system and the health status of the prison population (WHO, 2021b). The 2020 Helsinki Conclusions on 'Leaving No One Behind in Prison Health' emphasise the necessity for prisons to adopt a lifecourse approach to health and the provision of health services. This vision would entail the establishment of robust systems for routine surveillance and the creation of comprehensive datasets to inform decision-making and facilitate the systematic evaluation of programmes (Europe, 2020).

Health information systems in many prisons remain underdeveloped and are frequently not integrated in national health information systems (WHO, 2023d). In Europe, data indicates that approximately half of all countries still rely on paper-based health records in prisons, with most lacking interoperable health records at the prison-community interface (WHO, 2023e). This disconnect hampers the ability to assess the impact of health systems, fully understand the health needs of incarcerated individuals, and ensure continuity of care during and after their release. The link between prisons and the community is particularly vital for controlling communicable diseases, as timely information in both settings is essential for an effective public health response. The same applies to the provision of vaccinations and the level of immunisation coverage among people in prison and prison staff.

In Europe, the efforts to collect systematic data on vaccination provision in prison settings have intensified during the COVID-19 pandemic. Virtually all participating countries reported providing COVID-19 vaccination to PLP and registering the immunisation onto the national dedicated immunisation information system (IIS) (WHO, 2023e). However, in most cases the digitalisation and integration of prisons into national IIS was performed selectively for COVID-19 with minimal improvements on routine vaccination programs, including adult vaccination (Mazzilli et al., 2024).

Data on vaccination services and vaccination coverage in prison are sparse.

According to a survey among 20 European countries in the post-pandemic period, the doses of vaccine administered are usually recorded in the prison-based IIS (14/20 countries) and generally available in digital format (8/14). Among the RISE-Vac partners, the prison-based IIS is inter-linked with national/ regional health records, at least for some vaccines such as COVID-19 (Moazen, Tramonti Fantozzi, et al., 2024).

Immunization Information System as part of general prison information systems

Comprehensive prison Health Information System and Immunisation Information System (IIS) are essential for monitoring vaccination provision and immunisation coverage. Each of these components should be integrated with general population Health Information Systems.

The WHO has developed a Prison Health Framework to help countries enhance their prison health systems (WHO, 2021b). This framework emphasises the importance of strengthening information systems to improve surveillance and response capacity, monitor service provision to identify gaps, and track performance. It also includes a set of core indicators that can be used to measure progress and assess various health outcomes regularly, including new cases of VPD to signal clusters of cases and identify opportunities for preventive interventions. Electronic health information systems should be developed to encompass all aspects of the framework, including 1) Health systems (inputs), 2) Health service delivery (outputs), and 3) Health outcomes (impacts). These information systems should be designed i) to guarantee the collection of similar data across prisons and countries; ii) to accommodate the local needs and be sustainable; iii) to ensure data accessibility for all stakeholders.

For the development of a sustainable and effective health information system it is essential to identify and involve all key stakeholders, clearly define the structure and processes for all essential data pathways and evaluate the possible integration of existing data sources, based on the evaluation of their quality and accessibility.

The European Center for Disease Prevention and Control (ECDC) developed a handbook on how to design and implement IIS (WHO, 2021b). The IIS are defined as confidential, population-based, computerised information systems that record, store, and provide access to consolidated individual immunisation information. They aim to be comprehensive and community-wide, covering individuals in a specific geographic area across multiple healthcare providers. Although the document does not refer explicitly to the prison setting, vaccination

services in prisons would need to be specifically included within the local or national IIS.

Functional and effective IIS would fulfil the aim of capturing and tracing information about individuals' vaccination history through a lifetime (individual level), while providing a timely overview of vaccination status in a population over a given time period and geographical area (population level). The IIS should grant access to the vaccination profile of each individual and produce a summary report either at individual level or in the form of aggregated data at the level of a single prison institution, jurisdiction, or at national level.

Individual vaccination status should be collected during prison medical assessment for all newly admitted individuals. While this should ideally be performed through direct record linkage with general population IIS, it is possible to collect information on vaccination history and previous infections with VPD as part of medical anamnesis at reception. This process would allow the timely identification of immunisation gaps and should prompt the active offer (and re-offer for those declining) of relevant vaccines including catch-up or booster vaccination.

Prison-based IIS should collect information on individual vaccination uptake during detention, including offering and refusal/acceptance of each first vaccination dose and boosters. In such a way, the IIS could also be used to plan and schedule vaccinations and support health staff to deliver vaccines among PLP. Ultimately, this would improve likelihood of vaccination schedule completion, including when the individual is transitioning across prison institutions or is released. At an aggregate level, data on vaccination uptake would allow the assessment of vaccination coverage among the prison population and the relative share of progress towards national or regional immunisation goals attributable to prison-based vaccination services. This information would have direct implications for organisational and planning purposes.

Proposed metrics for monitoring vaccination provision and immunisation coverage in prison settings

Although the establishment of a fully operational prison ISS would undoubtedly represent the optimal solution, it is likely to be challenging to implement in numerous countries within a relatively short timeframe. Nevertheless, the identification of a standardised minimum set of indicators to assess the provision, uptake and coverage of vaccinations in prison settings would be highly beneficial in monitoring progress. In the event that an IIS is in place, the same metrics could be sourced directly from that platform.

Relevant metrics would encompass the three dimensions mentioned above, namely inputs, outputs and outcomes, and would provide information useful to assess availability of vaccination services, immunisation coverage, provision of immunisation services and population immunisation level. A list of proposed metrics are described below.

The key information collected at prison level should include:

- Availability of vaccination services
- Vaccines available to PLP on a routine basis
- Vaccination offer modality by vaccine (active offer, upon request, universal, age-based, risk-based)
- Number of individual vaccinated in detention by age, gender, type of vaccine
- Number of individuals fully immunised by age, gender, type of vaccine

The key information collected by the IIS should include for each PLP:

- Demographic characteristics (age, gender, date of beginning of detention, provisional date of end of detention)
- Clinical history (comorbidities)
- Vaccination status
- Vaccination uptake during detention

A minimum set of indicators to monitor quality and availability of services and relevant health outcomes at population level are presented in table 2 below. Vaccination uptake in prison, would be useful to measure the coverage of vaccination services in a given prison institution, jurisdiction or at national level. Immunisation coverage among the prison population, would allow the measurement of the level of immunisation against a specific pathogen in a single prison institution, jurisdiction, at national level. While numerator data would be sourced from the prison ISS, the denominator may present some challenges due to the turnover of PLP and different solutions for its definition are possible, as detailed in Table 2.
The minimum dataset presented in Table 2 has been designed for use in prison-based monitoring, as well as in regional and national-level monitoring activities involving the collection and collation of single prison data at the higher jurisdiction level.

Monitoring progress towards global public health goals and health equity

The potential utility and desirability of expanded vaccination programmes in prison settings is even more evident when framed within supra-national and global initiatives such as the elimination of measles and rubella (WHO, 2020),

INDICATOR	NUMERATOR	DENOMINATOR	DISAGGREGATION	SOURCES OF DATA
VACCINATION STATUS ASSESSMENT	**Do you assess vaccination status at prison entry?** Yes/No			
VACCINATION AVAIABILITY IN PRISON	**Do you offer free-of-charge vaccination in prison?** Yes/No **Opt-in/Opt-out** At prison entry/Routinely throughout prison sentence/Offered in the period close to release All individuals/Birth cohorts/Individuals originating from selected countries/ Individuals with high-risk behaviours/Other			
VACCINATION UPTAKE RATE	Number of PLP fully immunised (people who completed full vaccination schedule in prison or elsewhere, people who acquired natural immunity)	**Preferred:** Number of PLP present during the reporting period (individuals present at the beginning of the reporting period + newly admitted individuals) **Alternative 1:** Prison occupancy at end/start of year **Alternative 2:** Prison capacity	• Vaccine • Sex/gender • Age • Nationality/ migration status • Risk factors (e.g. drug use, sexual behaviour, comorbidities)	• Prison health information system • IIS • vaccine supply chain
VACCINATION COVERAGE	Number of PLP fully immunised (people who completed full vaccination schedule in prison or elsewhere, people who acquired natural immunity)	**Preferred:** Number of PLP present during the reporting period (individuals present at the beginning of the reporting period + newly admitted individuals) **Alternative 1:** Prison occupancy at end/start of year **Alternative 2:** Prison capacity	• Vaccine • Sex/gender • Age • Nationality/ migration status • Risk factors (e.g. drug use, sexual behaviour, comorbidities)	• Prison health information system • IIS • vaccine supply chain

Table 2 - *Proposed minimum set of indicators to monitor vaccination services in prison settings.*

the efforts to eliminate vaccine preventable cancer (European Parliament, 2024) and the achievement of universal health coverage, including access to safe, effective, quality and affordable vaccines for all is a component of UN Sustainable Development Goal 3.8 (European Parliament, 2024).

While the COVID-19 pandemic has catalysed some progress, improving the prison immunisation information systems remain a major area for future investment. Should the integration of prison and community IIS be achievable, the convergence of prison-based data into a national data flow would allow for the evaluation of coverage at the national level. In this context, the capability of extracting data indicating the setting where immunisations were provided (e.g., prisons) would ensure the accurate assessment of the relative contribution of different vaccination services to national immunisation goals. Ensuring interoperability of individuals' and population (aggregated) IIS between prison and community is an essential requisite to guarantee continuity of care (especially for vaccines requiring multiple doses) for people transitioning through the penal system, as well as to allow healthcare monitoring and planning activities to be performed at the same standard as in the community and using a data driven approach, ultimately promoting health equity. Inconsistent and poorly available data on PLP immunisation compromise the ability to identify, assess and respond to existing pockets of under-immunised individuals, impeding tailored planning and programming.

The omission of PLP from national and supranational immunisation targets monitoring may not only result in overestimating achieved results, including at the SDG level, but also in an inaccurate assessment of population health equity. The exclusion or uncertain inclusion of PLP from global monitoring systems raises concerns about the accuracy of measures and validity of equity assessment. This has resulted in recent calls for PLP to be purposively included in SDGs monitoring efforts (Cocco et al., 2024; Tavoschi et al., 2024).

Vaccination Without Interruption: RISE-Vac Project's Success in Prison Health Initiatives.

Source: Villeneuve Les Maguelone prison.

The Rise-Vac project has facilitated efforts to update vaccination schedules for PLP. On-site availability of all vaccines listed in the French vaccination calendar ensures no gaps between vaccine acceptance and completion. Enhanced information access allows for easier procurement of vaccination records and has led to increased vaccine acceptance, especially for HPV vaccines.

7

Chapter 7

RESEARCH GAPS

Chapter 7
RESEARCH GAPS

Prisons are high-risk environments for the transmission of infectious diseases, making vaccination an important health promotion and disease prevention intervention for people in detention. However, despite the high burden of disease in these settings, studies of vaccination coverage for PLP remain scarce and geographically limited. Expanding the evidence base is essential to assess current coverage, identify gaps and inform the design of effective vaccination programmes.

Current studies of vaccination among PLP focus on a few selected countries, limiting the generalisability of findings and the understanding of vaccination gaps across different prison systems. Having more studies would assist in evaluating gaps in vaccinations and the necessity of expanding vaccination services in prisons, while also enabling the development of specific catch-up and booster vaccination initiatives customised for prison populations.

In addition, studies should explore optimal vaccination schedules and modalities for vaccines such as HPV and HBV. This includes assessing the benefits of gender-neutral vaccination for those at increased risk of infection, particularly those under 26 years of age, under 45 years of age, and with no age limit. Research should also focus on understanding the long-term immune response to a single dose of HPV vaccine in a prison setting, particularly in older individuals of both sexes, which could have important implications for vaccination strategies and resource allocation. Accelerated HBV vaccination schedules are often required in prison settings to ensure completion of vaccination courses before individuals are transferred or released. Evidence on the effectiveness of such accelerated schedules from larger and multi-country studies would support the development of robust recommendations and could improve HBV vaccination coverage in prisons.

There is a general lack of research on the organisation of vaccination services in prisons. Understanding the interplay between different health authorities and service providers in prisons is crucial to developing integrated vaccination strategies. This gap becomes even more critical during outbreaks and other

health incidents, when coordinated efforts are essential to prevent the spread of disease.

Research on occupational health services in prisons is also extremely scarce, although a better understanding of how vaccination and preventive health interventions are designed and delivered to prison staff is needed. This is particularly relevant in countries where the MoH is responsible for the health of the PLP but not for prison staff.

Finally, while research on vaccine hesitancy in prisons has increased during the COVID-19 pandemic, the body of evidence developed is largely focused on COVID-19 vaccination and is not necessarily transferable to other vaccines.

REFERENCES

About Diphtheria, Tetanus, and Pertussis Vaccination | CDC. (2024, February 8). https://www.cdc.gov/vaccines/vpd/dtap-tdap-td/hcp/about-vaccine.html

Aebi, M. F. & Cocco, E. (2024). Prisons and Prisoners in Europe 2023: Key Findings of the SPACE I report. Council of Europe and University of Lausanne.; Series UNILCRIM 2024/1. https://wp.unil.ch/space/files/2024/06/SPACE_I_2023_Key_Findings.pdf

Allison, M., Musser, B., Satterwhite, C., Ault, K., Kelly, P., & Ramaswamy, M. (2018). Human Papillomavirus Vaccine Knowledge and Intention Among Adult Inmates in Kansas, 2016–2017. American Journal of Public Health, 108(8), 1000–1002. https://doi.org/10.2105/AJPH.2018.304499

Asli, A. A. Z., Moghadami, M., Zamiri, N., Tolide-ei, H. R., Heydari, S. T., Alavian, S. M., & Lankarani, K. B. (2011). Vaccination against hepatitis B among prisoners in Iran: Accelerated vs. classic vaccination. Health Policy, 100(2–3), 297–304. https://doi.org/10.1016/j.healthpol.2010.12.007

Beaudry, G., Zhong, S., Whiting, D., Javid, B., Frater, J., & Fazel, S. (2020). Managing outbreaks of highly contagious diseases in prisons: A systematic review. BMJ Global Health, 5(11), e003201. https://doi.org/10.1136/bmjgh-2020-003201

Besney, J., Moreau, D., Jacobs, A., Woods, D., Pyne, D., Joffe, A. M., & Ahmed, R. (2017). Influenza outbreak in a Canadian correctional facility. Journal of Infection Prevention, 18(4), 193–198. https://doi.org/10.1177/1757177416689725

Bick, J. A. (2007). Infection Control in Jails and Prisons. Clinical Infectious Diseases, 45(8), 1047–1055. https://doi.org/10.1086/521910

Binswanger, I. A., Nowels, C., Corsi, K. F., Long, J., Booth, R. E., Kutner, J., & Steiner, J. F. (2011). "From the prison door right to the sidewalk, everything went downhill," A qualitative study of the health experiences of recently released inmates. International Journal of Law and Psychiatry, 34(4), 249–255. https://doi.org/10.1016/j.ijlp.2011.07.002

Biondi, B. E., Leifheit, K. M., Mitchell, C. R., Skinner, A., Brinkley-Rubinstein, L., & Raifman, J. (2022). Association of State COVID-19 Vaccination Prioritization With Vaccination Rates Among Incarcerated Persons. JAMA Network Open, 5(4), e226960. https://doi.org/10.1001/jamanetworkopen.2022.6960

Bivegete, S., McNaughton, A. L., Trickey, A., Thornton, Z., Scanlan, B., Lim, A. G., Nerlander, L., Fraser, H., Walker, J. G., Hickman, M., Vickerman, P., Johnson, H., Duffell, E., Brooks-Pollock, E., & Christensen, H. (2023). Estimates of hepatitis B virus prevalence among general population and key risk groups in EU/EEA/UK countries: A systematic review. Eurosurveillance, 28(30). https://doi.org/10.2807/1560-7917.ES.2023.28.30.2200738

Blackmore, C., Czachorowski, M., Farrington, E., O'Moore, É., & Plugge, E. (2022). Testing for COVID-19 during an outbreak within a large UK prison: An evaluation of mass testing to inform outbreak control. International Journal of Infectious Diseases, 125, 138–144. https://doi.org/10.1016/j.ijid.2022.10.018

Branda, F., Giovanetti, M., Romano, C., Benvenuto, D., Ciccozzi, A., Sanna, D., Ciccozzi, M., & Scarpa, F. (2024). Global Measles Surveillance: Trends, Challenges, and Implications for Public Health Interventions. Infectious Disease Reports, 16(2), 367–379. https://doi.org/10.3390/idr16020028

Buck, J. M., Morrow, K. M., Margolis, A., Eldridge, G., Sosman, J., MacGowan, R., Binson, D., Kacanek, D., Flanigan, T. P., The Project START Study Group, Gaiter, J., MacGowan, R., Wolitski, R., Margolis, A., Belcher, L., Lifshay, J., McFarlane, M., O'Leary, A., Eldridge, G., … Silber, E. (2006). Hepatitis B Vaccination in Prison: The Perspectives of Formerly Incarcerated Men. Journal of Correctional Health Care, 12(1), 12–23. https://doi.org/10.1177/1078345806287937

Cancer and cardiovascular health inequities in prison settings: A rapid literature review. (2022). https://www.who.int/europe/publications/i/item/WHO-EURO-2022-5814-45579-65357

Carswell, C., Noble, H., & Farrow, D. (2017). Barriers between offenders and primary health care after release from prison: A case study. Practice Nursing, 28(9), 386–389. https://doi.org/10.12968/pnur.2017.28.9.386

CDC. (2024a). Flu & Pregnancy | Influenza (Flu) | CDC. https://www.cdc.gov/flu/highrisk/pregnant.htm

CDC. (2024b, June 26). Pneumococcal Disease. Pneumococcal Disease. https://www.cdc.gov/pneumococcal/index.html

CDC. (2024c, July 11). Bacille Calmette-Guérin (BCG) Vaccine for Tuberculosis. Tuberculosis (TB). https://www.cdc.gov/tb/hcp/vaccines/index.html

CDC. (2024d, July 12). Shingles (Herpes Zoster). Shingles (Herpes Zoster). https://www.cdc.gov/shingles/index.html

CDC. (2024e, July 17). Meningococcal Disease. Meningococcal Disease. https://www.cdc.gov/meningococcal/index.html

CDC. (2024f, August 28). Pfizer RSV Vaccine Summary. Vaccines & Immunizations. https://www.cdc.gov/vaccines/php/info-by-product/pfizer-rsv-summary.html

CDC. (2024g, September 20). RSV in Infants and Young Children. Respiratory Syncytial Virus Infection (RSV). https://www.cdc.gov/rsv/infants-young-children/index.html

CDC. (2024h, September 24). Summary of CDC Recommendations for Correctional Settings. Correctional Health. https://www.cdc.gov/correctional-health/recommendations/index.html

CDC. (2024i, September 30). Clinical Overview of Chickenpox (Varicella). Chickenpox (Varicella). https://www.cdc.gov/chickenpox/hcp/clinical-overview/index.html

CDC. (2024j, October 3). Chapter 17: Varicella. Manual for the Surveillance of Vaccine-Preventable Diseases. https://www.cdc.gov/surv-manual/php/table-of-contents/chapter-17-varicella.html

CDC. (2024k, October 11). Vaccine-Specific Recommendations. ACIP Vaccine Recommendations and Guidelines. https://www.cdc.gov/acip-recs/hcp/vaccine-specific/index.html

CDC. (2024l, October 15). Global Measles Outbreaks. Global Measles Vaccination. https://www.cdc.gov/global-measles-vaccination/data-research/global-measles-outbreaks/index.html

Centers for Disease Control and Prevention (CDC). (2012). Influenza outbreaks at two correctional facilities—Maine, March 2011. MMWR. Morbidity and Mortality Weekly Report, 61(13), 229–232.

Chao, W.-C., Liu, P.-Y., & Wu, C.-L. (2017). Control of an H1N1 outbreak in a correctional facility in central Taiwan. Journal of Microbiology, Immunology and Infection, 50(2), 175–182. https://doi.org/10.1016/j.jmii.2015.05.005

Charles, M. (2024). WATCH | 'Calm and under control': Diphtheria outbreak has been contained at Pollsmoor Prison. News24. https://www.news24.com/news24/southafrica/news/watch-calm-and-under-control-diphtheria-outbreak-has-been-contained-at-pollsmoor-prison-20231113

Christensen, P. (2004). Hepatitis B vaccination in prison with a 3-week schedule is more efficient than the standard 6-month schedule. Vaccine, 22(29–30), 3897–3901. https://doi.org/10.1016/j.vaccine.2004.04.011

Circulating vaccine-derived poliovirus type 2—Indonesia. (2024). https://www.who.int/emergencies/disease-outbreak-news/item/2024-DON500

Cocco, N., Sebastiani, T., Giuliani, R., Cereda, D., D'Arminio Monforte, A., Tavoschi, L., & Ranieri, R. (2022). Monkeypox epidemic in prisons: How to prevent it? The Lancet Regional Health - Europe, 22, 100530. https://doi.org/10.1016/j.lanepe.2022.100530

Cocco, N., Tramonti Fantozzi, M. P., Ihuthia, J. N., Moazen, B., Meroueh, F., Barbîroș, I., Mavrou, J., Bardelli, A., De Vita, E., Plugge, E., Tavoschi, L., Ranieri, R., Petri, D., Stoever, H., Murauer, E., Mieuset, A., Edge, C., & Yiasemi, I. (2024). Cancer-preventing vaccination programs in prison: Promoting health equity in Europe. The Lancet Regional Health - Europe, 43, 100958. https://doi.org/10.1016/j.lanepe.2024.100958

Commissioner, O. of the. (2023). FDA Approves First Vaccine for Pregnant Individuals to Prevent RSV in Infants. FDA; FDA. https://www.fda.gov/news-events/press-announcements/fda-approves-first-vaccine-pregnant-individuals-prevent-rsv-infants

Costumbrado, J., Stirland, A., Cox, G., El-Amin, A. N., Miranda, A., Carter, A., & Malek, M. (2012). Implementation of a hepatitis A/B vaccination program using an accelerated schedule among high-risk inmates, Los Angeles County Jail, 2007–2010. Vaccine, 30(48), 6878–6882. https://doi.org/10.1016/j.vaccine.2012.09.006

Cowley, A., Kerr, M., Darby, J., & Logan, P. (2019). Reflections on qualitative data analysis training for PPI partners and its implementation into practice. Research Involvement and Engagement, 5(1), 22. https://doi.org/10.1186/s40900-019-0156-0

Crum-Cianflone, N. F., & Wallace, M. R. (2014). Vaccination in HIV-Infected Adults. AIDS Patient Care and STDs, 28(8), 397–410. https://doi.org/10.1089/apc.2014.0121

CYPRUS, R. O. & MINISTRY OF HEALTH. (2022). Immunization Programme of the Ministry of Health against the Covid-19 and seasonal influenza for the period 2023—2024.pdf. https://www.pio.gov.cy/coronavirus/uploads/Immunization%20Programme%20of%20the%20Ministry%20of%20Health%20against%20the%20Covid-19%20and%20seasonal%20influenza%20for%20the%20period%202023%20-%202024.pdf

Di Giuseppe, G., Folcarelli, L., Lanzano, R., Napolitano, F., & Pavia, M. (2022). HPV Vaccination and Cervical Cancer Screening: Assessing Awareness, Attitudes, and Adherence in Detained Women. Vaccines, 10(8), 1280. https://doi.org/10.3390/vaccines10081280

Di Giuseppe, G., Pelullo, C. P., Lanzano, R., Napolitano, F., & Pavia, M. (2022). Knowledge, attitudes, and behavior of incarcerated people regarding COVID-19 and related vaccination: A survey in Italy. Scientific Reports, 12(1), 960. https://doi.org/10.1038/s41598-022-04919-3

Divakaran, B., Bloch, N., Sinha, M., Steiner, A., & Shavit, S. (2023). The Reentry Health Care Hub: Creating a California-Based Referral System to Link Chronically Ill People Leaving Prison to Primary Care. International Journal of Environmental Research and Public Health, 20(10), 5806. https://doi.org/10.3390/ijerph20105806

Dolan, K., Wirtz, A. L., Moazen, B., Ndeffo-mbah, M., Galvani, A., Kinner, S. A., Courtney, R., McKee, M., Amon, J. J., Maher, L., Hellard, M., Beyrer, C., & Altice, F. L. (2016). Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees. The Lancet, 388(10049), 1089–1102. https://doi.org/10.1016/S0140-6736(16)30466-4

ECDC. (2010a). Surveillance and updates for pneumococcal disease. https://www.ecdc.europa.eu/en/pneumococcal-disease/surveillance-and-disease-data

ECDC. (2010b, July 12). Invasive pneumococcal disease. https://www.ecdc.europa.eu/en/invasive-pneumococcal-disease

ECDC. (2011, June 15). Current and future burden of communicable diseases in the European Union and EEA/EFTA countries – Methodology protocol. https://www.ecdc.europa.eu/en/publications-data/current-and-future-burden-communicable-diseases-european-union-and-eeaefta

ECDC. (2017a, June 14). Factsheet about seasonal influenza. https://www.ecdc.europa.eu/en/seasonal-influenza/facts/factsheet

ECDC. (2017b, December 19). Types of seasonal influenza vaccine. https://www.ecdc.europa.eu/en/seasonal-influenza/prevention-and-control/vaccines/types-of-seasonal-influenza-vaccine

ECDC. (2018, July 23). Public health guidance on prevention and control of blood-borne viruses in prison settings. https://www.ecdc.europa.eu/en/publications-data/public-health-guidance-prevention-control-bloodborne-viruses-prison-settings

ECDC. (2023, October 9). Seasonal influenza vaccination recommendations and coverage rates in EU/EEA Member States. https://www.ecdc.europa.eu/en/publications-data/seasonal-influenza-vaccination-recommendations-and-coverage-rates-eueea-member

ECDC. (2024, March 14). Influenza in humans. https://www.ecdc.europa.eu/en/influenza-humans

Ellingson, M. K., Sheikha, H., Nyhan, K., Oliveira, C. R., & Niccolai, L. M. (2023). Human papillomavirus vaccine effectiveness by age at vaccination: A systematic review. Human Vaccines & Immunotherapeutics, 19(2), 2239085. https://doi.org/10.1080/21645515.2023.2239085

Emerson, A., Allison, M., Saldana, L., Kelly, P. J., & Ramaswamy, M. (2021). Collaborating to offer HPV vaccinations in jails: Results from a pre-implementation study in four states. BMC Health Services Research, 21(1), 309. https://doi.org/10.1186/s12913-021-06315-5

EpiCentro. (2021). National COVID-19 vaccination plan. https://www.epicentro.iss.it/en/vaccines/covid-19-vaccination-plan

Epidemiological update: Diphtheria cases in Europe. (2023, August 18). https://www.ecdc.europa.eu/en/news-events/epidemiological-update-diphtheria-cases-europe

Escobar, N., & Plugge, E. (2020). Prevalence of human papillomavirus infection, cervical intraepithelial neoplasia and cervical cancer in imprisoned women worldwide: A systematic review and meta-analysis. Journal of Epidemiology and Community Health, 74(1), 95–102. https://doi.org/10.1136/jech-2019-212557

Esposito, M., Salerno, M., Di Nunno, N., Ministeri, F., Liberto, A., & Sessa, F. (2022). The Risk of COVID-19 Infection in Prisons and Prevention Strategies: A Systematic Review and a New Strategic Protocol of Prevention. Healthcare, 10(2), 270. https://doi.org/10.3390/healthcare10020270

Europe, W. H. O. R. O. for. (2003). Declaration on prison health as part of public health: Adopted in Moscow on 24 October 2003 (WHO/EURO:2003-4915-44678-63438). Article WHO/EURO:2003-4915-44678-63438. https://iris.who.int/handle/10665/352130

Europe, W. H. O. R. O. for. (2020). Leaving no one behind in prison health: The Helsinki conclusions (WHO/EURO:2020-742-40477-54342). Article WHO/EURO:2020-742-40477-54342. https://iris.who.int/handle/10665/352128

European Commission. (2021). Europe's Beating Cancer Plan.

European Commission. (2023) Directorate-General for Health and Food Safety, Europe's beating cancer plan – JANE – Joint Action on Networks of Expertise, Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2875/305295

European Monitoring Centre for Drugs and Drug Addiction. (2022). Prison and drugs in Europe: Current and future challenges. Publications Office. https://data.europa.eu/doi/10.2810/420042

Federal Bureau of Prisons & Clinical Guidance. (2016). MANAGEMENT OF VARICELLA ZOSTER VIRUS (VZV) INFECTIONS. https://www.bop.gov/resources/pdfs/varicella2016.pdf

Federal Bureau of Prisons Clinical Guidance. (2019). Hepatitis A Clinical Guidance.

First RSV vaccine to protect infants up to 6 months of age and older adults | European Medicines Agency (EMA). (2023, July 21). https://www.ema.europa.eu/en/news/first-rsv-vaccine-protect-infants-6-months-age-and-older-adults

Freidl, G. S., Sonder, G. J., Bovée, L. P., Friesema, I. H., Van Rijckevorsel, G. G., Ruijs, W. L., Van Schie, F., Siedenburg, E. C., Yang, J.-Y., & Vennema, H. (2017). Hepatitis A outbreak among men who have sex with men (MSM) predominantly linked with the EuroPride, the Netherlands, July 2016 to February 2017. Eurosurveillance, 22(8). https://doi.org/10.2807/1560-7917.ES.2017.22.8.30468

Fuller, S. M., Koester, K. A., Maiorana, A., Steward, W. T., Broaddus, M. R., Lass, K., Zamudio-Haas, S., Quinlivan, E. B., & Myers, J. J. (2019). "I don't have to do this all by myself": Systems Navigation to Ensure Continuity of HIV Care for Persons Leaving Prison. AIDS and Behavior, 23(S1), 14–24. https://doi.org/10.1007/s10461-018-2050-4

Fusillo, C., Sinopoli, M., Marchetti, C., Cervellini, P., Cirius, S., Morucci, L., Sgricia, S., & Quintavalle, G. (2018). Azienda Sanitaria Locale (ASL) Roma 4: Experience of measles vaccination prophylaxis in a prison. European Journal of Public Health, 28(suppl_4). https://doi.org/10.1093/eurpub/cky218.135

Gaskin, G. L., Glanz, J. M., Binswanger, I. A., & Anoshiravani, A. (2015). Immunization Coverage Among Juvenile Justice Detainees. Journal of Correctional Health Care, 21(3), 265–275. https://doi.org/10.1177/0885066615587790

Global Prison Trends 2023. (2023). Penal Reform International. https://www.penalreform.org/global-prison-trends-2023/

Gohil, J., Ross, S., Prime, K., & Clarke, E. (2024). BASHH standards for the management of sexual health in UK prisons. International Journal of STD & AIDS, 35(12), 997–998. https://doi.org/10.1177/09564624241273824

GOV UK. (2022a). JCVI statement on a one-dose schedule for the routine HPV immunisation programme. https://www.gov.uk/government/publications/single-dose-of-hpv-vaccine-jcvi-concluding-advice/jcvi-statement-on-a-one-dose-schedule-for-the-routine-hpv-immunisation-programme

GOV UK. (2022b, November 4). [Withdrawn] [Withdrawn] Flu in prisons and secure settings. https://www.gov.uk/government/publications/seasonal-flu-in-prisons-and-detention-centres-in-england-guidance-for-prison-staff-and-healthcare-professionals/flu-in-prisons-and-secure-settings-adult-guidance

GOV UK. (2023a). Equality in UK Health Security Agency 2023: How UKHSA met the Public Sector Equality Duty in 2022 to 2023. https://www.gov.uk/government/publications/ukhsa-public-sector-equality-duty-psed-report/equality-in-uk-health-security-agency-2023-how-ukhsa-met-the-public-sector-equality-duty-in-2022-to-2023

GOV UK. (2023b). NHS public health functions agreement 2023 to 2024. GOV.UK. https://www.gov.uk/government/publications/public-health-commissioning-in-the-nhs-2023-to-2024/nhs-public-health-functions-agreement-2023-to-2024

GOV UK. (2024a). Managing flu, COVID-19 and other acute respiratory infections (ARI) in prisons and other prescribed places of detention (PPDs). https://www.gov.uk/government/publications/acute-respiratory-illness-including-flu-and-covid-19-in-prisons/flu-and-acute-respiratory-illness-ari-in-prisons-and-other-prescribed-places-of-detention-ppds

GOV UK. (2024b, July 25). National measles guidelines. GOV.UK. https://www.gov.uk/government/publications/national-measles-guidelines

Grierson, M., Varghese, D., Bolton, M., & Olivier, P. (2022). Design considerations for a digital service to support prison leavers. Designing Interactive Systems Conference, 504–516. https://doi.org/10.1145/3532106.3533567

Hall, C. B., Weinberg, G. A., Iwane, M. K., Blumkin, A. K., Edwards, K. M., Staat, M. A., Auinger, P., Griffin, M. R., Poehling, K. A., Erdman, D., Grijalva, C. G., Zhu, Y., & Szilagyi, P. (2009). The Burden of Respiratory Syncytial Virus Infection in Young Children. New England Journal of Medicine, 360(6), 588–598. https://doi.org/10.1056/NEJMoa0804877

Healthcare for offenders. (2023, February 23). GOV.UK. https://www.gov.uk/guidance/healthcare-for-offenders

Heyward, W. L., Kyle, M., Blumenau, J., Davis, M., Reisinger, K., Kabongo, M. L., Bennett, S., Janssen, R. S., Namini, H., & Martin, J. T. (2013). Immunogenicity and safety of an investigational hepatitis B vaccine with a Toll-like receptor 9 agonist adjuvant (HBsAg-1018) compared to a licensed hepatitis B vaccine in healthy adults 40–70 years of age. Vaccine, 31(46), 5300–5305. https://doi.org/10.1016/j.vaccine.2013.05.068

HSE. (2024). Flu Vaccine Overview. HSE.Ie. https://www2.hse.ie/conditions/flu/vaccine/

Ismail, N., Tavoschi, L., Moazen, B., Roselló, A., & Plugge, E. (2022). COVID-19 vaccine for people who live and work in prisons worldwide: A scoping review. PLOS ONE, 17(9), e0267070. https://doi.org/10.1371/journal.pone.0267070

Junghans, C., Heffernan, C., Valli, A., & Gibson, K. (2018). Mass vaccination response to a measles outbreak is not always possible. Lessons from a London prison. Epidemiology and Infection, 146(13), 1689–1691. https://doi.org/10.1017/S0950268818001991

Kaiksow, F. A., Brown, L., & Merss, K. B. (2023). Caring for the Rapidly Aging Incarcerated Population: The Role of Policy. Journal of Gerontological Nursing, 49(3), 7–11. https://doi.org/10.3928/00989134-20230209-02

Kassianos, G., Barasheed, O., Abbing-Karahagopian, V., Khalaf, M., Ozturk, S., Banzhoff, A., & Badur, S. (2023). Meningococcal B Immunisation in Adults and Potential Broader Immunisation Strategies: A Narrative Review. Infectious Diseases and Therapy, 12(9), 2193–2219. https://doi.org/10.1007/s40121-023-00836-8

Khorasani, S., Zubiago, J., Carreiro, J., Guardado, R., & Wurcel, A. G. (2022). Influenza Vaccination in Massachusetts Jails: A Mixed-Methods Analysis. Public Health Reports, 137(5), 936–943. https://doi.org/10.1177/00333549211041659

Kim, H., Hughes, E., Cavanagh, A., Norris, E., Gao, A., Bondy, S. J., McLeod, K. E., Kanagalingam, T., & Kouyoumdjian, F. G. (2022). The health impacts of the COVID-19 pandemic on adults who experience imprisonment globally: A mixed methods systematic review. PLOS ONE, 17(5), e0268866. https://doi.org/10.1371/journal.pone.0268866

Kinner, S. A., Alati, R., Longo, M., Spittal, M. J., Boyle, F. M., Williams, G. M., & Lennox, N. G. (2016). Low-intensity case management increases contact with primary care in recently released prisoners: A single-blinded, multisite, randomised controlled trial. Journal of Epidemiology and Community Health, 70(7), 683–688. https://doi.org/10.1136/jech-2015-206565

Kinner, S. A., & Young, J. T. (2018). Understanding and Improving the Health of People Who Experience Incarceration: An Overview and Synthesis. Epidemiologic Reviews, 40(1), 4–11. https://doi.org/10.1093/epirev/mxx018

Koch-Institut, R. (2022). Empfehlungen der Ständigen Impfkommission (STIKO) beim Robert Koch-Institut 2023. https://doi.org/10.25646/10829

Laryea-Adekimi, F., D'Arcy, J., Bardelli, A., Mieuset, A., Busmachiu, V., Barbiros, I., Meroueh, F., Doltu, S., Walsh, N., Harriott, P., Tavoschi, L., Plugge, E., & Roselló, A. (2024). RISE-Vac—Co-production of Vaccine Education Materials with Persons Living in Prison. Emerging Infectious Diseases, 30(13), 55–61. https://doi.org/10.3201/eid3013.230812

Lee, C., Kim, M., Chun, J., Kim, S., Yoon, D., Lee, H., Bang, H., Lee, H.-J., Park, H., & Kim, Y. B. (2024). Baculovirus Vector-Based Varicella-Zoster Virus Vaccine as a Promising Alternative with Enhanced Safety and Therapeutic Functions. Vaccines, 12(3), 333. https://doi.org/10.3390/vaccines12030333

Liebling, A., Price, D., & Shefer, G. (2010). The Prison Officer (0 ed.). Willan. https://doi.org/10.4324/9780203832998

Lincoln, T., Kennedy, S., Tuthill, R., Roberts, C., Conklin, T. J., & Hammett, T. M. (2006). Facilitators and Barriers to Continuing Healthcare After Jail: A Community-integrated Program. Journal of Ambulatory Care Management, 29(1), 2–16. https://doi.org/10.1097/00004479-200601000-00002

Living (and dying) as an older person in prison. (2024). Nuffield Trust. https://www.nuffieldtrust.org.uk/research/living-and-dying-as-an-older-person-in-prison

Lüchtenborg, M., Huynh, J., Armes, J., Plugge, E., Hunter, R. M., Visser, R., Taylor, R. M., & Davies, E. A. (2024). Cancer incidence, treatment, and survival in the prison population compared with the general population in England: A population-based, matched cohort study. The Lancet Oncology, 25(5), 553–562. https://doi.org/10.1016/S1470-2045(24)00035-4

Madeddu, G., Vroling, H., Oordt-Speets, A., Babudieri, S., O'Moore, É., Noordegraaf, M. V., Monarca, R., Lopalco, P. L., Hedrich, D., & Tavoschi, L. (2019). Vaccinations in prison settings: A systematic review to assess the situation in EU/EEA countries and in other high income countries. Vaccine, 37(35), 4906–4919. https://doi.org/10.1016/j.vaccine.2019.07.014

Maldonado, I., Plata, M., Gonzalez, M., Correa, A., Nossa, C., Giuliano, A. R., Joura, E. A., Ferenczy, A., Ronnett, B. M., Stoler, M. H., Jin Zhou, H., Joshi, A., Das, R., Bautista, O., Group, T., Luxembourg, A., Saah, A., & Buchwald, U. K. (2022). Effectiveness, immunogenicity, and safety of the quadrivalent HPV vaccine in women and men aged 27–45 years. Human Vaccines & Immunotherapeutics, 18(5), 2078626. https://doi.org/10.1080/21645515.2022.2078626

Marciano, S., Arufe, D., Haddad, L., Mendizabal, M., Gadano, A., Gaite, L., Anders, M., Garrido, L., Martinez, A. A., Conte, D., Barrabino, M., Rovey, L., Aubone, M. D. V., Ratusnu, N., Tanno, H., Fainboim, H., Oyervide, A., De Labra, L., Ruf, A., & Dirchwolf, M. (2020). Outbreak of hepatitis A in a post-vaccination era: High rate of co-infection with sexually transmitted diseases. Annals of Hepatology, 19(6), 641–644. https://doi.org/10.1016/j.aohep.2020.07.005

Marmot, M. (2005). Social determinants of health inequalities. Lancet (London, England), 365(9464), 1099–1104. https://doi.org/10.1016/S0140-6736(05)71146-6

Marzano, L., Ciclitira, K., & Adler, J. (2012). The impact of prison staff responses on self-harming behaviours: Prisoners' perspectives. British Journal of Clinical Psychology, 51(1), 4–18. https://doi.org/10.1111/j.2044-8260.2010.02007.x

Mazzilli, S., Cocco, N., Petri, D., Moazen, B., Rosello, A., D'Arcy, J., Plugge, E., Baglietto, L., Murauer, E., Stöver, H., Trattonikolas, T., Stylianou, I., Doltu, S., Busmachiu, V., Mavrou, J., Yiasemi, I., Barbiros, I., Da Costa, F. A., Meroueh, F., … Tavoschi, L. (2024). Implementation of COVID-19 vaccination services in prison in six European countries: Translating emergency intervention into routine life-course vaccination. BMC Public Health, 24(1), 1001. https://doi.org/10.1186/s12889-024-18063-2

Mazzilli, S., Moazen, B., Stover, H., Plugge, E., & Tavoschi, L. (2022). Covid-19 vaccine in prison: A not-to-be-missed opportunity to promote access to vaccination in adolescents. BMJ, o1439. https://doi.org/10.1136/bmj.o1439

Mazzilli, S., Tavoschi, L., Soria, A., Fornili, M., Cocca, G., Sebastiani, T., Scardina, G., Cairone, C., Arzilli, G., Lapadula, G., Ceccarelli, L., Cocco, N., Bartolotti, R., De Vecchi, S., Placidi, G., Rezzonico, L., Baglietto, L., Giuliani, R., & Ranieri, R. (2022). COVID-19 Infection Among Incarcerated Individuals and Prison Staff in Lombardy, Italy, March 2020 to February 2021. JAMA Network Open, 5(3), e224862. https://doi.org/10.1001/jamanetworkopen.2022.4862

McCarthy, C. V., O'Mara, O., Van Leeuwen, E., CMMID COVID-19 Working Group, Sherratt, K., Abbas, K., Wong, K. L., Atkins, K. E., Lowe, R., Meakin, S. R., Davies, N. G., Russell, T. W., O'Reilly, K., Hué, S., Finch, E., Villabona-Arenas, C. J., Edmunds, W. J., Jafari, Y., Tully, D. C., … Sandmann, F. (2022). The impact of COVID-19 vaccination in prisons in England and Wales: A metapopulation model. BMC Public Health, 22(1), 1003. https://doi.org/10.1186/s12889-022-13219-4

Meyer, J. P., King, J., & Rosenberg, A. (2022). Meeting the Moment by Vaccinating Prison Staff Against COVID-19. JAMA Health Forum, 3(3), e220107. https://doi.org/10.1001/jamahealthforum.2022.0107

Ministero della Salute. (2024). Vaccinazione contro l'influenza. https://www.salute.gov.it/portale/influenza/dettaglioContenutiInfluenza.jsp?lingua=italiano&id=686&area=influenza&menu=vuoto

Moazen, B., Agbaria, N., Ismail, N., Mazzilli, S., Klankwarth, U., Amaya, A., Rosello, A., D'Arcy, J., Plugge, E., Stöver, H., & Tavoschi, L. (2024). Interventions to increase vaccine uptake among people who live and work in prisons: A global multistage scoping review. Journal of Community Psychology, 52(8), 1091–1107. https://doi.org/10.1002/jcop.23077

Moazen, B., Saeedi Moghaddam, S., Silbernagl, M. A., Lotfizadeh, M., Bosworth, R. J., Alammehrjerdi, Z., Kinner, S. A., Wirtz, A. L., Bärnighausen, T. W., Stöver, H. J., & Dolan, K. A. (2018). Prevalence of Drug Injection, Sexual Activity, Tattooing, and Piercing Among Prison Inmates. Epidemiologic Reviews, 40(1), 58–69. https://doi.org/10.1093/epirev/mxy002

Moazen, B., Tramonti Fantozzi, M., De Vita, E., Petri, D., Barbîroș, I., Busmachiu, V., Ranieri, R., Cocco, N., Mieuset, A., Meroueh, F., Baglietto, L., Stöver, H., & Tavoschi, L. (2024). Vaccines and vaccination in prison settings: Availability and model of service delivery in 20 European countries. BMC Public Health, 24(1), 2716. https://doi.org/10.1186/s12889-024-20207-3

Molina, J.-M., Bercot, B., Assoumou, L., Rubenstein, E., Algarte-Genin, M., Pialoux, G., Katlama, C., Surgers, L., Bébéar, C., Dupin, N., Ouattara, M., Slama, L., Pavie, J., Duvivier, C., Loze, B., Goldwirt, L., Gibowski, S., Ollivier, M., Ghosn, J., … Mebarki, S. (2024). Doxycycline prophylaxis and meningococcal group B vaccine to prevent bacterial sexually transmitted infections in France (ANRS 174 DOXYVAC): A multicentre, open-label, randomised trial with a 2 × 2 factorial design. The Lancet Infectious Diseases, 24(10), 1093–1104. https://doi.org/10.1016/S1473-3099(24)00236-6

Molleman, T., & Leeuw, F. L. (2012). The Influence of Prison Staff on Inmate Conditions: A Multilevel Approach to Staff and Inmate Surveys. European Journal on Criminal Policy and Research, 18(2), 217–233. https://doi.org/10.1007/s10610-011-9158-7

Mpox prevention and control among people living in prison. (2023). Retrieved 18 October 2024, from https://www.who.int/andorra/publications/m/item/mpox-prevention-and-control-among-people-living-in-prison

Nakitanda, A. O., Montanari, L., Tavoschi, L., Mozalevskis, A., & Duffell, E. (2021). Hepatitis B virus infection in EU/EEA and United Kingdom prisons: A descriptive analysis. Epidemiology and Infection, 149, e59. https://doi.org/10.1017/S0950268821000169

National Partnership Agreement for Prison Healthcare in England 2018-2021. (2018).

Neisseria meningitidis C isolated during an Outbreak in a Prison: Investigation and response - Cameroon, 2017. TEPHINET. Retrieved 18 October 2024, from https://www.tephinet.org/learning/fead/neisseria-meningitidis-c-isolated-during-outbreak-prison-investigation-and-response

Nyamathi, A. M., Marlow, E., Branson, C., Marfisee, M., & Nandy, K. (2012). Hepatitis A/B vaccine completion among homeless adults with history of incarceration. Journal of Forensic Nursing, 8(1), 13–22. https://doi.org/10.1111/j.1939-3938.2011.01123.x

Nyamathi, A., Salem, B. E., Zhang, S., Farabee, D., Hall, B., Khalilifard, F., & Leake, B. (2015). Nursing Case Management, Peer Coaching, and Hepatitis A and B Vaccine Completion Among Homeless Men Recently Released on Parole: Randomized Clinical Trial. Nursing Research, 64(3), 177–189. https://doi.org/10.1097/NNR.0000000000000083

Paget, J., Caini, S., Del Riccio, M., Van Waarden, W., & Meijer, A. (2022). Has influenza B/Yamagata become extinct and what implications might this have for quadrivalent influenza vaccines? Eurosurveillance, 27(39). https://doi.org/10.2807/1560-7917.ES.2022.27.39.2200753

Palmateer, N. E., Goldberg, D. J., Munro, A., Taylor, A., Yeung, A., Wallace, L. A., Mitchell, A., Shepherd, S. J., Gunson, R. N., Aitken, C., & Hutchinson, S. J. (2018). Association between universal hepatitis B prison vaccination, vaccine uptake and hepatitis B infection among people who inject drugs. Addiction, 113(1), 80–90. https://doi.org/10.1111/add.13944

Parliament, E. (2024). Council recommendation on vaccine-preventable cancers | Legislative Train Schedule. European Parliament. https://www.europarl.europa.eu/legislative-train/spotlight-JD%2023-24/file-council-recommendation-on-vaccine-preventable-cancers

Plugge, E., Burke, D., Czachorowski, M., Gutridge, K., Maxwell, F., McGrath, N., O'Mara, O., O'Moore, E., & Parkes, J. (2022). Determining the Prevalence and Incidence of SARS-CoV-2 Infection in Prisons in England: Protocol for a Repeated Panel Survey and Enhanced Outbreak Study. JMIR Research Protocols, 11(1), e30749. https://doi.org/10.2196/30749

Poliomyelitis—Health New Zealand | Te Whatu Ora. (n.d.). Retrieved 18 October 2024, from https://www.tewhatuora.govt.nz/for-health-professionals/clinical-guidance/immunisation-handbook/18-poliomyelitis

Pont, J., Enggist, S., Stöver, H., Williams, B., Greifinger, R., & Wolff, H. (2018). Prison Health Care Governance: Guaranteeing Clinical Independence. American Journal of Public Health, 108(4), 472–476. https://doi.org/10.2105/AJPH.2017.304248

Prendergast, M., & Cartier, J. J. (2008). Improving Parolees' Participation in Drug Treatment and Other Services through Strengths Case Management. Perspectives (American Probation and Parole Association), 32(1), 38–46.

Prisons, Detention Centers, & Homeless Service Sites: COVID-19—MN Dept. Of Health. (2024). Retrieved 18 October 2024, from https://www.health.state.mn.us/diseases/coronavirus/communities.html

Public Health Agency of Canada. (2024, July 24). Updated recommendations on human papillomavirus vaccines [Guidance]. https://www.canada.ca/en/public-health/services/publications/vaccines-immunization/national-advisory-committee-immunization-updated-recommendations-hpv-vaccines.html

Public Health Scotland. (2024). Who is eligible? - Eligible groups and invitations—Adult flu immunisations—Flu immunisations—Seasonal immunisations—Immunisation, vaccine and preventable disease—Our areas of work—Public Health Scotland. https://publichealthscotland.scot/our-areas-of-work/immunisation-vaccine-and-preventable-disease/seasonal-immunisations/flu-immunisations/adult-flu-immunisations/eligible-groups-and-invitations/who-is-eligible/

Qureshi, N. S. (2024). Hepatitis A Exposure Response and Outbreak Prevention in a Large Urban Jail—Los Angeles County, California, May–July 2023. MMWR. Morbidity and Mortality Weekly Report, 73. https://doi.org/10.15585/mmwr.mm7306a3

Rashid, N. M. (n.d.). United Nations System Common Position on Incarceration. United Nations and the Rule of Law. Retrieved 18 October 2024, from https://www.un.org/ruleoflaw/blog/document/united-nations-system-common-position-on-incarceration/

RCGP. (2018). Equivalence of care in Secure Environments. https://www.rcgp.org.uk/representing-you/policy-areas/care-in-secure-environments

Rich, J. D. (2001). Successful linkage of medical care and community services for HIV-positive offenders being released from prison. Journal of Urban Health: Bulletin of the New York Academy of Medicine, 78(2), 279–289. https://doi.org/10.1093/jurban/78.2.279

Robert Koch institute. (2024). RKI - Impfungen A - Z - STIKO-Empfehlung zur COVID-19-Impfung. https://www.rki.de/DE/Content/Infekt/Impfen/ImpfungenAZ/COVID-19/Impfempfehlung-Zusfassung.html

Sah, R., Abdelaal, A., Reda, A., Katamesh, B. E., Manirambona, E., Abdelmonem, H., Mehta, R., Rabaan, A. A., Alhumaid, S., Alfouzan, W. A., Alomar, A. I., Khamis, F., Alofi, F. S., Aljohani, M. H., Alfaraj, A. H., Alfaresi, M., Al-Jishi, J. M., Alsalman, J., Alynbiawi, A., … Rodriguez-Morales, A. J. (2022). Monkeypox and Its Possible Sexual Transmission: Where Are We Now with Its Evidence? Pathogens, 11(8), 924. https://doi.org/10.3390/pathogens11080924

Sanchez, G. V., Bourne, C. L., Davidson, S. L., Ellis, M., Feldstein, L. R., Fay, K., Brown, N. E., Geeter, E. F., Foster, L. L., Gilmore, C., McIntyre, M. G., Taylor, B., Velusamy, S., Chochua, S., & Matanock, A. M. (2021). Pneumococcal Disease Outbreak at a State Prison, Alabama, USA, September 1–October 10, 20181. Emerging Infectious Diseases, 27(7), 1949–1952. https://doi.org/10.3201/eid2707.203678

Santos, J. V., Padron-Monedero, A., Bikbov, B., Grad, D. A., Plass, D., Mechili, E. A., Gazzelloni, F., Fischer, F., Sulo, G., Ngwa, C. H., Noguer-Zambrano, I., Peñalvo, J. L., Haagsma, J. A., Kissimova-Skarbek, K., Monasta, L., Ghith, N., Sarmiento-Suarez, R., Hrzic, R., Haneef, R., … Devleesschauwer, B. (2024). The state of health in the European Union (EU-27) in 2019: A systematic analysis for the Global Burden of Disease study 2019. BMC Public Health, 24(1), 1374. https://doi.org/10.1186/s12889-024-18529-3

Sapkota, D., Dennison, S., Allen, J., Gamble, J., Williams, C., Malope-Rwodzi, N., Baar, L., Ransley, J., & Renae McGee, T. (2022). Navigating pregnancy and early motherhood in prison: A thematic analysis of mothers' experiences. Health & Justice, 10(1), 32. https://doi.org/10.1186/s40352-022-00196-4

Secretariat, U., & Geneva), U. E. and S. C. (2014-2015 : N. Y. and. (2015). United Nations Standard Minimum Rules for the Treatment of Prisoners (the Mandela Rules): Note /: by the Secretariat. https://digitallibrary.un.org/record/805001

Sequera, V.-G., Valencia, S., García-Basteiro, A. L., Marco, A., & Bayas, J. M. (2015). Vaccinations in prisons: A shot in the arm for community health. Human Vaccines & Immunotherapeutics, 11(11), 2615–2626. https://doi.org/10.1080/21645515.2015.1051269

Service-Public.fr. (2024). Seasonal influenza vaccine. https://www.service-public.fr/particuliers/vosdroits/F714?lang=en

Setiawan, D., Nurulita, N. A., Khoirunnisa, S. M., & Postma, M. J. (2024). The clinical effectiveness of one-dose vaccination with an HPV vaccine: A meta-analysis of 902,368 vaccinated women. PLOS ONE, 19(1), e0290808. https://doi.org/10.1371/journal.pone.0290808

Siedler, A., Koch, J., Garbe, E., Hengel, H., Von Kries, R., Ledig, T., Mertens, T., Zepp, F., & Überla, K. (2019). Background paper to the decision to recommend the vaccination with the inactivated herpes zoster subunit vaccine: Statement of the German Standing Committee on Vaccination (STIKO) at the Robert Koch Institute. Bundesgesundheitsblatt - Gesundheitsforschung - Gesundheitsschutz, 62(3), 352–376. https://doi.org/10.1007/s00103-019-02882-5

Smith, K. (2017). Vaccines and Chronic Disease. Delaware Journal of Public Health, 3(1), 46–52. https://doi.org/10.32481/djph.2017.03.007

Spaulding, A. C., Rabeeah, Z., Del Mar González-Montalvo, M., Akiyama, M. J., Baker, B. J., Bauer, H. M., Gibson, B. R., Nijhawan, A. E., Parvez, F., Wangu, Z., Chan, P. A., Rollins Investigational Team on STIs in Corrections, Clausen, A., Levano, S. R., Michel, C., Pett, L., Pluznik, J. A., Richard, D., Ramanna, V., & Vega, A. (2022). Prevalence and Management of Sexually Transmitted Infections in Correctional Settings: A Systematic Review. Clinical Infectious Diseases, 74(Supplement_2), S193–S217. https://doi.org/10.1093/cid/ciac122

Stasi, C., Monnini, M., Cellesi, V., Salvadori, M., Marri, D., Ameglio, M., Gabbuti, A., Di Fiandra, T., Voller, F., & Silvestri, C. (2019). Screening for hepatitis B virus and accelerated vaccination schedule in prison: A pilot multicenter study. Vaccine, 37(11), 1412–1417. https://doi.org/10.1016/j.vaccine.2019.01.049

State of Michigan. (2019). Vaccine-Preventable Disease Investigation Guidelines. https://www.michigan.gov/mdhhs/adult-child-serv/childrenfamilies/immunization/providerinfo/surveillance/vaccine-preventable-disease-investigation-guidelines

Stöver, H., Jamin, D., Jauffret-Roustide, M., Michel, L., Mendes, V., & Vanderplasschen, W. (2023). Continuity of care for drug users in prison and beyond: A qualitative insight. International Social Work, 66(4), 1298–1311. https://doi.org/10.1177/00208728211048926

Stöver, H., Tarján, A., Horváth, G., & Montanari, L. (2021). The state of harm reduction in prisons in 30 European countries with a focus on people who inject drugs and infectious diseases. Harm Reduction Journal, 18(1), 67. https://doi.org/10.1186/s12954-021-00506-3

Strodel, R., Dayton, L., Garrison-Desany, H. M., Eber, G., Beyrer, C., Arscott, J., Rubenstein, L., & Sufrin, C. (2021). COVID-19 vaccine prioritization of incarcerated people relative to other vulnerable groups: An analysis of state plans. PLOS ONE, 16(6), e0253208. https://doi.org/10.1371/journal.pone.0253208

Tadros, E., Barbini, M., & Kaur, L. (2023). Collaborative Healthcare in Incarcerated Settings. International Journal of Offender Therapy and Comparative Criminology, 67(9), 910–929. https://doi.org/10.1177/0306624X211058952

Tavoschi, L., Cocco, N., Alves Da Costa, F., Lloyd, A. R., & Kinner, S. A. (2024). People living in prison must be included in country monitoring systems to accurately assess HCV elimination progress. The Lancet Gastroenterology & Hepatology, 9(6), 500–501. https://doi.org/10.1016/S2468-1253(24)00075-X

Tavoschi, L., Mazzilli, S., Petri, D., Busmachiu, V., Stylianou, I., Meroueh, F., Stöver, H., Rosello, A., Ranieri, R., & Baglietto, L. (2022). COVID-19 vaccination in prison settings: A model to design tailored vaccine delivery strategies. European Journal of Public Health, 32(Supplement_3), ckac129.388. https://doi.org/10.1093/eurpub/ckac129.388

Taylor, L. (2022). Monkeypox: Concerns mount over vaccine inequity. BMJ, o1971. https://doi.org/10.1136/bmj.o1971

THE 17 GOALS | Sustainable Development. (n.d.). Retrieved 18 October 2024, from https://sdgs.un.org/goals

Toblin, R. L., & Hagan, L. M. (2021). COVID-19 Case and Mortality Rates in the Federal Bureau of Prisons. American Journal of Preventive Medicine, 61(1), 120–123. https://doi.org/10.1016/j.amepre.2021.01.019

Turner, K. B., & Levy, M. H. (2010). Prison outbreak: Pandemic (H1N1) 2009 in an Australian prison. Public Health, 124(2), 119–121. https://doi.org/10.1016/j.puhe.2009.12.005

UK NHS. (2024, March 6). Flu vaccine. Nhs.Uk. https://www.nhs.uk/vaccinations/flu-vaccine/

United Nations General Assembly. (2010). United Nations Rules for the Treatment of Women Prisoners and Non-custodial Measures for Women Offenders (the Bangkok Rules). OHCHR. https://www.ohchr.org/en/instruments-mechanisms/instruments/united-nations-rules-treatment-women-prisoners-and-non-custodial

Vaccinations in pregnancy. (2020, December 9). Nhs.Uk. https://www.nhs.uk/pregnancy/keeping-well/vaccinations/

Van Ginneken, E. F. J. C., Bosma, A. Q., Pasma, A., & Palmen, H. (2020). Unhappy Staff, Unhappy Prisoners? The Relation between Work Climate and Prison Climate in Dutch Prisons. Criminology - The Online Journal, 182-200 Seiten. https://doi.org/10.18716/OJS/KRIMOJ/2020.2.5

Van Hout, M. C., Fleißner, S., Klankwarth, U.-B., & Stöver, H. (2024). Children living with incarcerated mothers: Invisible, undocumented, and neglected. The Lancet Child & Adolescent Health, 8(5), 317–319. https://doi.org/10.1016/S2352-4642(23)00318-8

Vicente-Alcalde, N., Ruescas-Escolano, E., Harboe, Z. B., & Tuells, J. (2020). Vaccination Coverage among Prisoners: A Systematic Review. International Journal of Environmental Research and Public Health, 17(20), 7589. https://doi.org/10.3390/ijerph17207589

Vicente-Alcalde, N., Tuells, J., Egoavil, C. M., Ruescas-Escolano, E., Altavilla, C., & Caballero, P. (2020). Immunization Coverage of Inmates in Spanish Prisons. International Journal of Environmental Research and Public Health, 17(21), 8045. https://doi.org/10.3390/ijerph17218045

Villena, R., Safadi, M. A. P., Valenzuela, M. T., Torres, J. P., Finn, A., & O'Ryan, M. (2018). Global epidemiology of serogroup B meningococcal disease and opportunities for prevention with novel recombinant protein vaccines. Human Vaccines & Immunotherapeutics, 14(5), 1042–1057. https://doi.org/10.1080/21645515.2018.1458175

Visser, R., Barber, A.-E., X, A., Wheatcroft, S., Mullen, P., & Armes, J. (2021). Collaboration with people with lived experience of prison: Reflections on researching cancer care in custodial settings. Research Involvement and Engagement, 7(1), 48. https://doi.org/10.1186/s40900-021-00284-z

Wang, E. A., White, M. C., Jamison, R., Goldenson, J., Estes, M., & Tulsky, J. P. (2008). Discharge Planning and Continuity of Health Care: Findings From the San Francisco County Jail. American Journal of Public Health, 98(12), 2182–2184. https://doi.org/10.2105/AJPH.2007.119669

WHO. (2024-a). Health in prisons European database (HIPED). Retrieved 18 October 2024, from https://www.who.int/data/region/europe/health-in-prisons-european-database-(hiped)

WHO. (2022b). One-dose Human Papillomavirus (HPV) vaccine offers solid protection against cervical cancer. Retrieved 15 May 2024, from https://www.who.int/news/item/11-04-2022-one-dose-human-papillomavirus-(hpv)-vaccine-offers-solid-protection-against-cervical-cancer

WHO. (2014d). Prisons and health. Retrieved 14 May 2024, from https://www.who.int/europe/publications/i/item/9789289050593

WHO. (2016). Technical Series on Safer Primary Care: Patient engagement. https://www.who.int/publications/i/item/9789241511629

WHO. (2017a). Hepatitis B vaccines: WHO position paper – July 2017. https://www.who.int/publications/i/item/WER9227

WHO. (2017b). Respiratory Syncytial Virus (RSV). https://www.who.int/teams/immunization-vaccines-and-biologicals/diseases/respiratory-syncytial-virus-(rsv)

WHO. (2018). HBV screening and accelerated vaccination in prison. https://www.who.int/europe/teams/alcohol-illicit-drugs-prison-health/hbv-screening-and-accelerated-vaccination-in-prison-(2018)

WHO. (2020). Immunization Agenda 2030: A Global Strategy To Leave No One Behind. https://www.who.int/publications/m/item/immunization-agenda-2030-a-global-strategy-to-leave-no-one-behind

WHO. (2021a). Preparedness, prevention and control of COVID-19 in prisons and other places of detention. https://www.who.int/europe/publications/i/item/WHO-EURO-2021-1405-41155-57257

WHO. (2021b). The WHO prison health framework a framework for assessment of prison health system performance. https://www.who.int/europe/publications/i/item/9789289055482

WHO. (2021c). Why people living and working in detention facilities should be included in national COVID-19 vaccination plans: Advocacy brief. https://iris.who.int/handle/10665/341497

WHO. (2022a). Global COVID-19 Vaccination Strategy in a Changing World: July 2022 update. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines

WHO. (2022b). Health in prisons—COVID-19. Minimum dataset: Summary of data reported from May 2020 to October 2021. https://iris.who.int/handle/10665/351496

WHO. (2022c). Human papillomavirus vaccines: WHO position paper, December 2022. https://www.who.int/publications/i/item/who-wer9750-645-672

WHO. (2023a). Making prisons and places of detention resilient to infectious diseases: The London conclusions. https://www.who.int/europe/publications/i/item/WHO-EURO-2023-8242-48014-71109

WHO. (2023b). Meningococcal Meningitis. https://www.who.int/teams/health-product-policy-and-standards/standards-and-specifications/norms-and-standards/vaccine-standardization/meningococcal-meningitis

WHO. (2023c). Principles for making prisons and places of detention resilient to infectious diseases, including epidemic and pandemic threats. https://www.who.int/europe/publications/i/item/WHO-EURO-2023-8262-48034-71157

WHO. (2023d). Prisons and other places of detention in pandemic preparedness plans across the WHO European Region in the context of the COVID-19 pandemic. https://iris.who.int/handle/10665/372866?search-result=true&query=covid+19+prison&scope=&rpp=10&sort_by=score&order=desc

WHO. (2023e). Status report on prison health in the WHO European Region 2022. https://www.who.int/europe/publications/i/item/9789289058674

WHO. (2024a). Clinical management of diphtheria: Guideline, 2 February 2024. https://www.who.int/publications/i/item/WHO-DIPH-Clinical-2024.1

WHO. (2024b). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection. https://www.who.int/publications/i/item/9789240090903

WHO. (2024c). Immunization coverage. https://www.who.int/news-room/fact-sheets/detail/immunization-coverage

WHO. (2024d). Joint press release from WHO and UNICEF: Measles cases across Europe continue to surge, putting millions of children at risk. https://www.who.int/europe/news/item/28-05-2024-joint-press-release-from-who-and-unicef--measles-cases-across-europe-continue-to-surge--putting-millions-of-children-at-risk

WHO. (2024e). Measles. https://www.who.int/news-room/fact-sheets/detail/measles

WHO. (2024f). Three years of COVID-19 enhanced surveillance in prisons: Member States' efforts and capacities during a public health emergency of international concern. https://www.who.int/europe/publications/i/item/WHO-EURO-2024-9010-48782-72599

WHO. (2024g). WHO Director-General declares mpox outbreak a public health emergency of international concern. https://www.who.int/news/item/14-08-2024-who-director-general-declares-mpox-outbreak-a-public-health-emergency-of-international-concern

WHO Immunization Data portal—European Region. (2023). Immunization Data. Retrieved 13 May 2024, from https://immunizationdata.who.int/dashboard/regions/european-region

Wohl, D. A., Scheyett, A., Golin, C. E., White, B., Matuszewski, J., Bowling, M., Smith, P., Duffin, F., Rosen, D., Kaplan, A., & Earp, J. (2011). Intensive Case Management Before and After Prison Release is No More Effective Than Comprehensive Pre-Release Discharge Planning in Linking HIV-Infected Prisoners to Care: A Randomized Trial. AIDS and Behavior, 15(2), 356–364. https://doi.org/10.1007/s10461-010-9843-4

Woods, L. N., Lanza, A. S., Dyson, W., & Gordon, D. M. (2013). The Role of Prevention in Promoting Continuity of Health Care in Prisoner Reentry Initiatives. American Journal of Public Health, 103(5), 830–838. https://doi.org/10.2105/AJPH.2012.300961

Woolthuis, R. G., Wallinga, J., & Van Boven, M. (2017). Variation in loss of immunity shapes influenza epidemics and the impact of vaccination. BMC Infectious Diseases, 17(1), 632. https://doi.org/10.1186/s12879-017-2716-y

Wright, N., Bleakley, A., Butt, C., Chadwick, O., Mahmood, K., Patel, K., & Salhi, A. (2011). Peer health promotion in prisons: A systematic review. International Journal of Prisoner Health, 7(4), 37–51. https://doi.org/10.1108/17449201111256899

Zhang, X.-S., Smith, A., Patel, B., Anderson, C., Pomeroy, L., Higgins, G., O'Moore, É., Chow, Y., & Atchison, C. (2020). New approaches to controlling an outbreak of chickenpox in a large immigration detention setting in England: The role of serological testing and mathematical modelling. Epidemiology and Infection, 148, e25. https://doi.org/10.1017/S095026882000014X

Further information here