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The Five Nations model for prison health surveillance: lessons from practice across the UK and Republic of Ireland

S. Perrett[1], E. Plugge[2], P. Conaglen[3], E. O'Moore[2], and S. Sturup-Toft[2]

[1]Health Protection Division, Public Health Wales, CF10 4BZ Cardiff, UK
[2]Health & Justice Team, Alcohol, Drug, Tobacco & Justice Division, Health Improvement Directorate, Public Health England. Wellington House, 133-155 Waterloo Road, London SE1 8UG
[3]Department of Public Health and Health Policy, NHS Lothian, Edinburgh, EH1 3EG UK
Address correspondence to S. Perrett, E-mail: Stephanie.perrett@wales.nhs.uk

ABSTRACT

Background Prison populations experience an increased burden of physical, mental and social health needs compared to the community, further impacted by the prison environment. Surveillance systems to monitor health and well-being trends in prisons are lacking, presenting a challenge to services planners, and policy makers who often lack evidence to inform decisions.
Method The Five Nations Health and Justice Collaboration, a body of experts on prison health across the UK and Republic of Ireland (ROI), met to share and discuss challenges and opportunities to developing robust prison health surveillance systems that could inform local provision, guide national policy and enable cross-border comparisons.
Results Challenges to robust prison health surveillance systems were shared across the UK and ROI. Methods of surveillance differed across nations and included performance indicators and outcome measures as part of local or national programs. All nations had strong public health infectious disease notification systems.
Conclusions The Five Nations Health and Justice Collaboration is proposing a new model for prison health surveillance, based on established guidelines for public health surveillance but with additional features that recognize the uniqueness of the prison environment and need for a whole prison approach, built on collaboration and sharing of data between health and justice sectors.

Keywords prisons, public health

Introduction

It is internationally accepted that people in prison experience an increased burden of health and social problems, such as chronic and infectious disease, mental health, addiction, homelessness and debt, than the general population.[1] Despite this, national systems for monitoring morbidity and mortality within custodial settings appear lacking. Similarly, local systems to routinely monitor prison health care delivery against health outcomes are sparse. Custodial settings are unique environments challenged by holding individuals with high health needs, often in crowded conditions that impact upon health. The paucity of systemic prison health surveillance creates a challenge to service planners, commissioners and policy makers who lack detail to inform decisions. Accurate understanding of health and well-being trends, and how they are influenced by the prison environment, is needed to ensure that investment follows need and that outcomes of value can be demonstrated.

In July 2017, the Five Nations Health and Justice Collaboration (see Fig. 1) met in Cardiff, Wales, to present prison health data sources available across the UK and Republic of Ireland (ROI) and to discuss challenges and opportunities in developing robust prison health data systems. Representatives from across the UK (England, Northern Ireland, Scotland and Wales) and the ROI expressed aspirations to be able to compare and contrast prison health data between nations,

S. Perrett, Lead Nurse for Health and Justice
E. Plugge, Senior Clinical Research Fellow
P. Conaglen, Consultant in Public Health Medicine
E. O'Moore, National Lead Health and Justice Team PHE & Director UK Collaborating Centre
S. Sturup-Toft, Public Health Specialist

within nations and between prisons and the wider community, something naturally driven by the shared geographical boundaries and occasional shared prison populations. Discussions revealed a vast variation in data availability across each nation but challenges were shared as was the desire to work collectively to drive improvements.

Fig. 1. Description of the Five Nations Health and Justice Collaboration

The Collaboration is a forum for discussion, debate and collaboration for health and justice partners in England, Scotland, Wales, Northern Ireland and the ROI and has been meeting regularly with a renewed approach since 2014. The Collaboration provides a coherent and authoritative voice across the Five Nations on health and wellbeing as well as health and social care of people in contact with the criminal justice system in the Five Nations. It facilitates the sharing of best practice, mutual learning and improved collective capability of health and justice partners in the Five Nations, contributing to the prevention of offending and reduction in reoffending by addressing health inequalities experienced by individuals in contact with the criminal justice system. The Five Nations Health and Justice Collaboration also informs the work of Public Health England in its role as the UK Collaborating Centre for WHO (European Region) Health in Prisons Programme. Table 1 gives some information about the prison populations and their demographics from each of the five nations for context.

This article describes prison health surveillance systems currently being used across the UK and ROI, highlighting gaps in surveillance. In light of the elevated health needs within the prison environment and the lack of systemic surveillance systems in which to monitor need, a new model is proposed based on established public health surveillance guidelines but with additional considerations unique to custodial settings. This model will support discussion across the Five Nations Collaboration, and more widely, for the development of future comparable datasets.

What is already known on this topic

People in prison are recognized as underserved populations, often coming from deprived areas of society and suffering from a plethora of physical, mental and social health issues, something that is evidenced across the globe.[1,2] Improving the health of those in prison benefits not just the individual and their immediate prison community, but the wider community upon release by addressing health issues and reducing inequalities. The World Health Organization (WHO) recommends that a whole-of-government approach to prison health will have beneficial effects such as:

- Lower health risks and improved health protection in prisons
- Improved health of prisoners
- Improved performance of national health systems
- Improved health of deprived communities
- Improved public health of the whole community
- Improved integration of prisoners into society on release
- Lower rates of reoffending and reincarceration and reduction of the size of the prison population
- Increased governmental credibility based on increase efforts to protect human rights and reduce health inequalities[3]

Despite these recommendations, evidencing advancements in prison health is challenging without the existence of systems to monitor trends and detect the effect of changes to practices.[4] The European Prison Observatory highlights the need for robust monitoring in order to compare prison health standards and conditions to international norms relevant to protecting the fundamental rights of those in prison.[5] The establishment of the Health in Prisons European Database (HIPED) is a first example of bringing together comparable datasets on prison health for the European region, to understand health services and systems of prisons internationally.[6] Compilation of the HIPED also demonstrates the challenges encountered where datasets vary in quality, accessibility and where definitions of numerators and denominators differ, meaning datasets need extensive updating, cleaning and validation to be comparable. Yet, where comparable datasets are achievable, they can provide a foundation for the evaluation of quality standards to improve health outcomes and reduce inequalities.

Challenges to meeting the health needs of those in prison

Over the past decade, the demographics and related health issues of prison populations have shifted, particularly in the Western world. Across the UK and ROI, an increase in older people in prison is recognized.[7–9] As with the general community, people in prison are living longer but an increase in people receiving custodial sentences at an older age for historic offences, alongside an increase in the length of sentences, is also affecting this.[7] This inevitably presents a shift in the health issues that need to be met while in prison, the increased demand for end of life care in prisons across the UK and ROI is an example of this.[10] Robust data are needed to detect and monitor these changes, inform service planning and evaluate the effectiveness of services.

Prisons across the globe are challenged by overcrowding, something experienced across the UK and ROI.[9] While many of the negative effects of overcrowding on physical and mental health are known,[11] overcrowding coupled with an aging population, longer sentences, reduced staffing levels and changes in drug use needs to be better understood. Data sharing between health and justice services will help this.

Data on rates of chronic disease, substance use, physical activity, diet, smoking and general well-being in prisons appear limited. Evidence on the health needs of subgroups within the prison population such as younger and older people in prison, offence-specific needs (e.g. sexual offences, substance related offences) and health needs and provision based on time to serve appears limited in terms of routine identification of trends.

Many nations have seen the governance of prison health shift from departments of justice to departments of health as recommended by the WHO.[3] This has triggered a renewed requirement to understand prison health, enabling departments new to this field to make informed decisions around service provision and policy. The absence of prison health outcome measures and economic data impedes the ability to demonstrate value for investment. Ahalt et al. argue that the innovations in policy and practice to improve value in prison healthcare (i.e. achieving desired health outcomes at sustainable costs), particularly examining complex healthcare needs of prison sub-populations, have been significantly hampered by a lack of good quality data.[4]

Prisons are unique environments in which to provide healthcare services[12] and require surveillance systems sensitive to changes in demographics and the environment. In order to adopt a whole prison approach to health, surveillance programmes must be developed to better understand the interdependency between health and custodial services.

Prison health surveillance systems across the UK and ROI

There was great variability in the prison health data systems held across the UK and ROI, a reflection of the differing organizational and governance structures for prison health across these nations. The ROI has its own arrangements for health and justice. England, Wales, Northern Ireland and Scotland are the constituent nations of the UK. England and Wales share a justice service but operate different health systems. Both Northern Ireland and Scotland have their own health and justice systems. Movement of people in prison is common between England and Wales, occasional movement of people in prison takes place between all nations of the UK and ROI.

Table 1 describes the prison health demographics of each administration within the UK and ROI. An outline of prison health metrics routinely collected across the UK and ROI is presented in Table 2. All nations had some data that were real-time. The strongest, most robust data system for all nations seemed to be public health communicable disease notification. Such systems were the most historic and had originated in line with community notification systems. All nations recognized the priority of infectious disease management within the close confinement of the prison environment.

Prison health activity data (Table 3) were variable across the UK and ROI. The use of performance indicators was mixed, although all nations recognized the value in such measures and were either working on or aspired to develop indicators for their nation. Indicators were being used to monitor substance use, communicable disease and screening programmes. Data collection methods used across the UK and ROI were inconsistent hampering direct comparisons between nations.

Prison health outcome data appeared to be in its infancy across the UK and ROI, although England demonstrated progress through the use of Public Health Outcome Indicators and drug treatment outcome measures. England use unique national prison health outcome measures, whereas in Wales and Scotland prison health reporting is most frequently part of national reporting programs or is collected at a local level with systems unique to each establishment or healthcare service according to their local needs.

All nations included some areas of prison health within wider national reporting programmes (such as prescribing data in Scotland or screening data in England and Wales). All nations recognized the value in ensuring prison data are captured within national community datasets to ensure equivalence of provision but acknowledged the need to be able to disaggregate these data from national figures. The prison environment presents unique challenges in terms of service delivery dictating, that services will need to be tailored to the setting and this may necessitate separate monitoring systems as demonstrated by the Health and Justice Indicators of Performance in England.[12]

Across all nations, differences existed between data that were available and data that were being reported. These suggested systems for data collection often exist but, for many reasons, are not routinely interrogated. All nations hold

Table 1 Demographics of prison populations across the UK and ROI

Country	*Prison population(n)*	*Female*	*Male*	*Ethnicity (by largest ethnic groups)*	*Prison population rate (flux/year)*	*Number of institutions*	*Occupancy level*	*Average custodial sentence length*	*Custodial staff to prisoner ratio*	*Ministry dept. responsible for prison health*
England	82 345[13] (as of September 2018)	3829[13]	78 516[13]	73%—White; 13%—Black[13]	71 495 released; 140 687 admitted. (2017)[14]	112[15]	94%[15]	17.1 months (for all offences)[16]	1:3.1 (26 236:82 345)[17]	Department of Health
Wales	4346[18] (as of 30th June 2018)	0	4346[18]	As above for England and Wales	4340 released (determinate and indeterminate sentences); 5052 first receptions (2017)[19]	6	93%[14]	As above for England and Wales	As above for England and Wales	Health and Social Services, Welsh Government
Scotland	7464[20] (2017–18)	371[20]	7093[20]	96.4%[21]white	9662[22] individuals liberated; 11 337 liberation movements; 21 820 admissions (2016)	15 *(prisons)*	96.6%[23]	318 days (2017–18)[24]	1:2.2 (3403:7464)	Health and Social Care Integration Directorate, Scottish Government
Northern Ire-land[25]	1415 (2017–18)	48	1367	94.56%—White; 2.05% Irish Traveller; 1.06%—Chinese; 0.92%—other ethnic groups; 0.71%—Black	3895 released; 3857 committals (2016)	4	Certified normal accommoda-tion 74.08%	6.1 years (sentenced population—1076) 4.37 months (on remand population—339)	1:1.4 (602:832) Maghaberry Hydebank to follow—Estate includes both Ash House/Female prison and Hydebank Secure College (Young Offenders) 1:1.7 (257:445) Magilligan	Department of Health
ROI	3646[26] (as of 31st December 2017)	150	3496	76.5% Irish, 14.2% Other EU, 3.2% African, 2.7% Asian, 3.2% other European, 1% Central/South American	7484 persons committed in 2017 (9287 committals). 7810 persons accounted for, 9332 releases in 2017	12	85% (as of 31st December 2017)	10 months	1:1.14 (3186:3646)	Department of Justice, Irish Prison Service

Table 2 Prison health metrics routinely collected across the UK and ROI

Country	*Data systems using health information available*	*Regular data collection, analysis and application from these systems (Y/N)*	*Reporting schedule*	*Data reported*	*Primary data source*
England	Health and Justice Indicators of Performance (HJIPs)	Yes	Quarterly	Cancer and non-cancer screening; infectious diseases testing and treatment (incl. BBVs. TB, STIs, etc.); vaccine coverage; management of long-term conditions; mental health and suicide; alcohol and drug treatment; dental health; smoking behaviour; medicines management	SystmOne
	National Drug Treatment Monitoring Service (NDTMS)	Yes	Quarterly	Numbers in treatment, interventions delivered, treatment completions and outcomes	The NDTMS Data Entry Tool (DET) or local case management systems.
	Public Health Outcome Indicators (PHOF)	Yes	Quarterly	Reoffending levels—percentage of offenders who reoffend, first time offenders, self-harm	Various
	PHE Health and Justice Surveillance System	Yes	Near to 'real-time'	Notifications of reportable diseases/outbreaks	Reports received from regional health protection teams
Wales	Public Health Wales surveillance	Yes	Weekly to annually	Hepatitis B and flu vaccination uptake, BBV screening uptake and results, TB risk assessment on admission to prison, screening data (abdominal aortic aneurysm and bowel), notification of reportable diseases/outbreaks	SystmOne, national screening reporting, Laboratory Information Management System (LIMS)
Scotland	N/A	—	—	Some health-related activities in prison will be incorporated within national reporting as part of wider (non-prison specific) programmes of work (smoking cessation activity;[27] national naloxone programme [also reports number of drug-related deaths post prison release][28]; drug and alcohol treatment waiting times[29]; alcohol brief interventions). Pharmaceutical data (e.g. dispensing data) exist nationally although are not routinely published. 'NHS Health Protection Scotland gathers needle exchange surveillance data which includes self-reported imprisonment in the last 6 months—although this aspect is not routinely reported'[30]	Some ad hoc sources from individual services. Healthcare records in Scottish prisons are managed using software called *Vision*. Presently, this is not routinely interrogated at a national level.

Table 2 Continued

Country	*Data systems using health information available*	*Regular data collection, analysis and application from these systems (Y/N)*	*Reporting schedule*	*Data reported*	*Primary data source*
Northern Ireland	Public Health Outcome Indicators	Yes	Monthly	Cancer and non-cancer screening; infectious diseases testing and treatment (incl. BBVs. TB, STIs, etc.); management of long-term conditions; alcohol and drug treatment medicines management; assessments; transfer screening; emergency care; allied health reception screening at committal and 72-hour comprehensive health assessment	EMIS Regional screening reporting via Public Health Agency
	Service Budget Agreement (SBA) Performance Indicators	Yes	Monthly	Mental health, addictions and psychiatry services—waiting times and activity; dental health activity Clinic appointments booked, attendances, DNA and CNA rates for GP, AHP, dental, psychiatry, MH and addictions; population, committals, discharges and transfer figures.	EMIS Regional screening reporting via Public Health Agency
ROI	Prisoner Healthcare Management System (PHMS)	Some analysis but resources not available for regular analysis/review		Complete healthcare record, including diagnosis; prescribing data; drug administration records; self-harm data; risks and alerts; incidents and injuries; vaccination history and treatment; clinics, appointments, allergies; special observations; dental assessments and completed dental treatment and data reported on committal	PHMS
	Central Treatment List (Not IPS database)	Yes	Monthly	Numbers on methadone treatment	PHMS
	Public Health	Not by IPS	As necessary	Notification of infectious diseases	PHMS

Table 3 Measures of prison health service activity across the UK and ROI

Country	*What health service activity is collected? (e.g. DNAs, staffing ratios, clinic waiting times, staff absence/sickness, staffing quotas, etc.)*	*What justice service activity is collected?*	*Are these data sources shared between health and justice partners, and where?*
England	HJIPs: Clinic wait times in prison for GP, dental, substance misuse, mental health; clinic 'did not attend' (DNA) rates; clinic patient numbers—booked, seen, cancelled; escorts and bedwatches; mental health secure transfers	Ministry of Justice statistics: 1.) Offender management statistics 2.) Prison and probation trusts performance statistics 3.) Safety in custody statistics	Yes. MoJ stats are publically available. Health information can be accessed by justice partners through partnership agreements in place.
Wales	Individual activity monitoring by prison—none monitored nationally	As per England but not disaggregated for Wales	Not formally
Scotland	Some service monitoring via wider programmes as per Table 2 above (e.g. drug and alcohol treatment waiting times) but no prison specific suite of health service data are gathered nationally beyond that. Some individual activity monitoring by Integration Joint Boards (IJB)/Health Boards at prison and/or IJB/Health Board level.	NB: There will be differences between data which are collected and used internally within the justice system and those elements of this which are reported. In terms of routinely/periodically published data around justice activity in prison settings: 1. The Scottish Prison Service publishes periodic reports including an annual report[20]; the Scottish Prisoner Survey[31] (conducted every 2 years—include validated metrics, e.g. AUDIT and WEMWBS); Addiction Prevalence Testing[32] (annual). 2. Scottish Government periodically publishes crime and justice reports, including *inter alia:* • Prison statistics[33] • Criminal proceedings in Scotland[24] 3. HM Inspectorate of Prisons for Scotland publishes an annual report, thematic reports and establishment specific reports.[34] Independent prison monitoring reports can also be found on HMIPS website.	Some justice data are published as per the previous column. Reports are periodically shared between health and justice through various networks.
Northern Ireland	Clinic waiting times in prison for GP, addictions, mental health, psychiatry, AHPs and dental; clinic attendances, seen, DNAs, CNAs; elective referrals to hospital by speciality; emergency transfers to hospital; staffing quotas (WTE, staff turnover) Population, committals, discharges and transfers	As per England	Population, committals, discharges and transfer figures only Work ongoing to agree further shared metrics

Continued

computerized prison health records presenting the opportunity for interrogation even if reporting systems were not yet established. Frequency of reporting varied from weekly to annually depending on need and resources. Challenges around collecting electronic data were shared across the UK and ROI. All nations experienced difficulties with the use of multiple electronic systems across organizations that are unable to communicate with each other. Even where the same electronic systems were used, data were collected in different ways and for different purposes. The need for consistent coding was expressed in order for data to be robust and of value.

Overall, the Five Nations Collaboration felt that current systems were limited in their ability to provide timely and accurate detection of health and well-being trends in prison. The use of electronic records offers great potential to improve reporting, and it was agreed that collaboration between nations around how this takes place was of value. All nations aspired to a whole prison approach to health and thus recognized the need to share data between health and justice services. As nations aspired to improve surveillance systems locally and to enable cross-border comparisons, it was felt a new model of prison health surveillance would be of benefit.

Main finding of this study

A new model for a prison health surveillance system

The Five Nations Health and Justice Collaboration is proposing a new model for a prison health surveillance system that would address current gaps in understanding of health and well-being in prisons across the UK, ROI and globally. The proposed model (Fig. 2) is based on the established and tested Centers for Disease Control and Prevention (CDC) guidelines for public health surveillance.[36] According to the CDC guidelines, public health surveillance has been defined as 'the ongoing systemic collection, analysis, and interpretation of outcome-specific data for use in the planning, implementation, and evaluation of public health practices'.[37] As prison health has long been described as public health,[36] there is much that can be learnt from this field in terms of monitoring the whole health spectrum of those in prison. Indeed CDC acknowledge that their guidelines on public health surveillance can be used for other health information systems at local, national and international levels.

As a Five Nations Collaboration, we agree that the usefulness of a public health surveillance system should be judged by its timely detection of trends and effect on policy decisions and health care delivery.[36] With this in mind, our proposed

Table 3 Continued

Country	*What health service activity is collected? (e.g. DNAs, staffing ratios, clinic waiting times, staff absence/sickness, staffing quotas, etc.)*	*What justice service activity is collected?*	*Are these data sources shared between health and justice partners, and where?*
ROI	All healthcare information is recorded on PHMS, including clinic attendances	The Irish Prison Services publishes an Annual Report[26] and an Annual Report of Prison Visiting Committees[35] The Inspector of Prisons (IOP) publishes an annual report,[26] reports on deaths in custody and prison inspection reports. Other periodic reports include Healthcare in Irish Prisons and Review of Complaints Procedure	

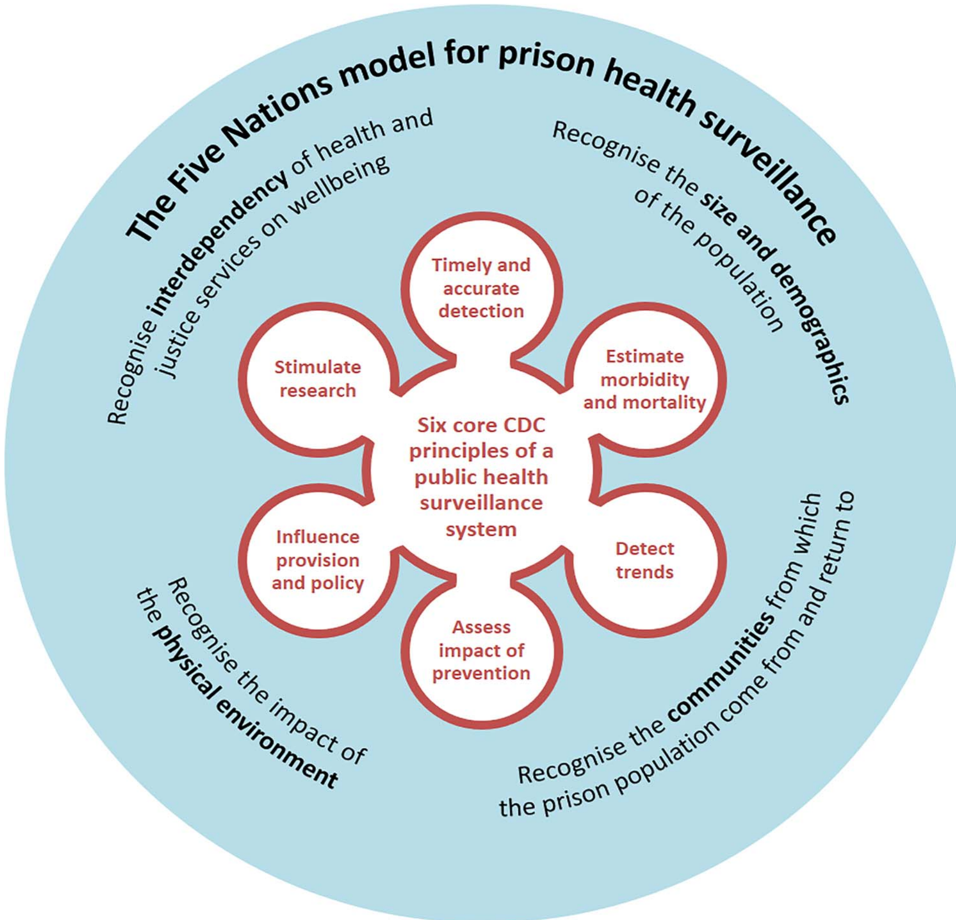

Fig. 2 The Five Nations model for prison health surveillance: this model proposes the augmentation of the six core Centre for Disease Control and Prevention principles of a public health surveillance system (in the centre of the figure) with four additional features of a prison health surveillance system (depicted here surrounding the core principles).

model has adopted the core principles of a useful public health surveillance system as defined by CDC. Encompassing these core principles, the Five Nations Collaboration propose four additional features that a prison health surveillance system should be able to detect:

- The interdependency of health and justice services on wellbeing (e.g. levels of under/overcrowding, staffing levels, security of estate, availability of contraband, availability of services addressing offending behaviour, pastoral support)
- The size and demographics of the population being held (e.g. age, gender, ethnicity, offence type, criminogenic need, sentence length; admissions in and out of establishments)
- The impact of the physical environment (e.g. availability and uptake of exercise, education, purposeful activity, social visits, time out of cell, closed or open prison conditions)
- The communities from which the prison population come from and return to (e.g. area of residence before and after imprisonment, knowledge of health needs and trends of those communities)

What this study adds

The proposed model can be used to design new systems or to evaluate existing surveillance systems, highlighting gaps for improvement. The adaptable nature of the model enables it to be used locally, regionally or nationally. At a local level, it can support monitoring of activity levels, timely detection of local trends, impact of service changes and development of local performance measures. At a national level, it can monitor national population trends, detect the impact of organizational system changes and support development of national indicators or quality standards. As a starting point, the Five Nations Collaboration would recommend nations use the model to support evaluation of minimum public health datasets for the prison setting. This would provide a platform for evaluation between prison and community, driving quality improvement through comparability.

The model provides flexibility for users as implementation can be achieved by a variety of data collection methods varying from straightforward performance indicators to more complex meta-metrics that can read across multiple systems. Both health and performance outcome indicators have a role within the proposed model, which can also be used to inform health needs assessments and evaluations of policy changes or interventions.

WHO advocates a 'whole-of-government approach' to prison health care, recognizing that prisons are a setting in which to address health inequalities, improve health and thereby reduce reoffending. The Five Nations Collaboration supports the WHO recommendation that service design is informed by research evidence and that service delivery is evaluated by appropriate implementation data.[38] A whole government approach requires the sharing of data. Collaborative working between health and justice services needs to become embedded regardless of which ministry governs the prison health service. The Five Nations Collaboration recommends the use of their model to support a whole government approach to prison healthcare, developing breadth to data collection beyond communicable disease.

The Five Nations model for prison health surveillance is based on the assumption of the sharing of data between health and justice services in the knowledge that both benefit considerably from prisons becoming healthier places. The model assumes the use of digitized systems and would aspire to communication between digital systems to improve the precision and responsiveness of prison health surveillance. Agreed procedures and policies are needed between organizations to ensure the safe sharing of data and to protect the privacy and confidentiality of individuals.

The WHO Non-Communicable Disease Surveillance Strategy recommends the use of standardized and validated methods at country level to oversee various disease/health measures, improving a country's capacity to respond to diseases as well as contributing to the global evidence on burden of disease to inform public health decision-making. The Five Nations Collaboration agrees that implementation of a universal model for prison health surveillance, as proposed, would work towards this—improving visibility of prison health globally and enabling national and international prison health comparisons.

Limitations of this study

The Five Nations model for prison health surveillance is based on the well-established CDC guidance for public health surveillance. The proposed model requires testing to refine it for both local and national use as well as utility across different settings and countries to test its ability to produce comparable information across systems. The model assumes implementation as a digitized system but recognizes the variability in digital advancements across the globe. The concepts of the model could still be useful in non-digital systems. Future development of the model is needed to encompass broader health issues such as social care and housing.

Conclusion

Improvements to surveillance systems that can identify trends in health and well-being in prisons are required across the UK, ROI and globally. The strongest prison health surveillance systems appear to be those monitoring infectious diseases. Lessons from these public health systems can be applied to wider areas of health and well-being in prison. The prison environment greatly affects health; therefore, effective surveillance systems must encompass a whole prison approach, including the sharing of datasets from both health and justice sectors and, perhaps most importantly, with both sectors working together to improve outcomes. Collaboration is imperative to a well-functioning prison healthcare system.

Challenges to prison health surveillance were shared across the UK and ROI and are likely to be shared globally. The Five Nations model of prison health surveillance will improve the effectiveness of prison health surveillance systems while recognizing the unique prison environment and encompassing a whole prison approach. As a Five Nations Collaboration, we recommend other nations test the model as they develop their own surveillance systems. With many prison populations increasing in size and complexity of health needs, the Five Nations Collaboration believes this model will be a valuable tool to detect health and justice trends, allowing health needs to inform policy decisions, service design and appropriate investment.

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