



## Invited Review

# Looking behind the bars: emerging health issues for people in prison

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## Abstract

**Introduction:** There are more than 10 million people imprisoned worldwide. These individuals experience a higher burden of communicable and non-communicable disease, mental health and substance misuse problems than the general population and often come from marginalized and underserved groups in the community. Prisons offer an important opportunity for tackling health problems in a way that can deliver benefits to the individual and to the community. This paper focuses specifically on emerging health issues for prisons across the world.

**Sources of data:** This paper uses sources of international data from published systematic reviews and research studies, the Ministry of Justice for England and Wales, the Prisons and Probations Ombudsmen Review and other United Kingdom government briefing papers.

**Areas of agreement:** Deaths in custody are a key concern for the justice system as well as the health system.

**Areas of controversy:** Suicide is the leading cause of mortality in prisons worldwide but non-communicable diseases, such as cardiovascular disease, are increasing in importance in high-income countries and are now the leading cause of mortality in prisons in England and Wales.

**Growing points:** The prison population is ageing in most high-income countries. Older people in prison typically have multiple and complex medical and social care needs including reduced mobility and personal care needs as well as poor health.

**Areas timely for developing research:** Further research is needed to understand the complex relationship between sentencing patterns, the ageing prison population and deaths in custody; to model its impact on prisons and healthcare provision in the future and to determine effective and cost-effective models of care.

Research into the health of prisoners is important in improving the health of prisoners but there is considerable variation in quantity and quality between countries. Recent innovations seek to address this disparity and facilitate the sharing of good practice.

**Key words:** prison health, research, ageing, deaths in custody

## Introduction

There are more than 10 million people imprisoned worldwide with the world prison population rate, based on United Nations estimates of national population levels, at 144 per 100 000.<sup>1</sup> The countries with the greatest absolute number of people in prison are the United States of America (with 2.2 million imprisoned people), China (1.65 million imprisoned people and an unknown number in 'administrative detention') and Russia and Brazil; both with over 600 000 people in prison.<sup>1</sup> The USA has one of the highest number of prisoners per head of population at 698 per 100 000 people; Iceland has one of the lowest rates in the world at 45 per 100 000 people. Since the year 2000, prison populations have grown by 20% across the world, which is slightly above the estimated 18% increase in the world's general population over the same period.<sup>1</sup> There are however variations in the rate of this growth across countries and continents; in Oceania there has been an increase of over 60% and in the Americas by 40%, whilst there has been a 21% decrease in Europe. The female prison population has increased by 50% since about 2000, while the equivalent figure for the male prison population is 18%.<sup>1</sup> In the UK the current prison population stands at 84 000 in England and Wales<sup>2</sup>; 7350 in Scotland<sup>3</sup> and about 1600 in Northern Ireland.<sup>4</sup>

### Prison health is public health

Reducing health inequalities is a fundamental principle of public health, with it featuring as a goal in

most public health strategies around the world including the UN's Sustainable Development Goals.<sup>5</sup> A group experiencing significant health inequalities are people in prisons and other places of detention, such as police custody suites and young offender's institutions. This group faces a higher burden of communicable and non-communicable disease, mental health and substance misuse (drugs, alcohol and tobacco) problems than the general population.<sup>6–10</sup> Members of this group often come from already marginalized and underserved groups in the wider community. Prisons and other places of detention offer an important opportunity for tackling health problems in a way that can deliver benefits to the individual but are likely also to have a potential knock-on effect in supporting their reintegration into community life and future health – providing a 'community dividend' to health interventions in prisons.

This paper focuses specifically on *emerging* health issues for prisons across the world, describing the changing prison population through the optic of deaths in custody, its evolving needs and highlighting two specific initiatives, one national and one international, which aim to support health improvements in this ever-changing setting.

### Deaths in custody

Ultimately the state is responsible for the health and wellbeing of those that have been detained under a state judicial system. Deaths in custody are therefore seen as a key concern for the justice system as

well as the health system from an ethical as well as human rights perspective. In fact, the right to health and healthcare access is a feature of several international principles and conventions (see Table 1).

The Ministry of Justice for England and Wales publish figures of deaths in custody; comparing the 12 months preceding September 2016 with the same time period in 2015, there was a reported increase in deaths in prison by 21%. There was an increase in self-inflicted deaths from 90 to 119 but also an increase in natural causes from 147 to 196.<sup>11</sup>

### Mental health

Mental health is a considerable public health challenge in prisons across the world and suicide is cited as the leading cause of death in prisons around the world, accounting for about half of all prison deaths.<sup>12</sup> The prevalence rates for a range of mental health disorders are considerably higher in people in prison throughout the world than people in the general community. Well conducted systematic reviews have shown that people in prison have rates of psychotic illnesses and major depression two to four times higher, and rates of antisocial personality disorder are about 10 times higher than the general population.<sup>8</sup> In England and Wales, a survey of prisoners carried out in 1997 on behalf of the Department of Health showed that 72% of male and 71% of female sentenced prisoners were found to suffer from two or more mental disorders (including personality disorder, psychosis, neurosis, alcohol misuse and drug dependence).<sup>13</sup>

Observing the trends in England, it is important to note that the recently reported increase in numbers of suicides in prisons was preceded by a downward trend in deaths from suicide and self-harm; the increase became apparent from around 2012, and has been most noticeable in the year spanning 2015–16. For 2015–16, the Ministry of Justice reported an increase in deaths related to suicide by 13% in the same period last year and a rate of 426 self-harm incidents per 1000 prisoners, compared with 338 incidents per 1000 prisoners in the previous year.<sup>14</sup> The causes for these increases are

complex and broad, including issues such as appropriate mental health assessment and care provision both in the community and prison, staffing levels in prisons, appropriate training and support for staff working in prisons, etc. There are a series of governmental initiatives seeking to understand these factors and address them.

### Substance misuse

Although prevalence of substance misuse in prisons at reception into custody can vary widely between and within countries, a systematic review showed that people in prison were much more likely than the general population to use illicit drugs and alcohol.<sup>9</sup> Compared with figures for the general population of the United States of similar age, male prisoners have a slight excess of alcohol dependence and a two- to 10-fold excess of drug dependence. Figures for female prisoners suggest that the difference with the general population is more marked – prisoners have a two- to four-fold excess of alcohol dependence and at least a 13-fold increase in drug dependence. Using illicit drugs in prison is also strongly associated with death in custody. In Scotland, a study on relative risk of mortality for adults imprisoned in Scotland for the first time during 1996–2007 showed that the greatest number of deaths in that time period were related to substance misuse and alcohol in both males and females.<sup>15</sup>

In more recent times, there has also been the rising issue of novel psychoactive substances (NPS) in prisons which continue to pose a challenge for health and prison staff. HM Chief Inspector of Prisons, stated in September 2015 that two-thirds of prisons reported having a ‘significant issue’ with NPS in 2014–15 compared to one-third in 2013–14.<sup>16</sup> Consumption of novel psychoactive substances have been reported to produce acute adverse effects, including at the more severe end of the scale, convulsions, bizarre behaviour, temporary paralysis, rapid heart rate, aggression and psychosis. These symptoms require immediate response by health and security staff and therefore can have a huge impact on the running of the prison regime. Although there are no official mortality statistics related to novel

**Table 1** Key international documents highlighting the right to health in detention

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Key international documents highlighting the right to health in detention

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**World Health Organization, Moscow Declaration 2003: Prison health as part of public health**

**United Nations Basic Principles for the Treatment of Prisoners, Principle 9:** Prisoners shall have access to the health services available in the country without discrimination on the grounds of their legal situation.

**United Nations Principles of Medical Ethics relevant to the Role of Health Personnel, particularly Physicians, in the Protection of Prisoners and Detainees against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, Principle 1:** Health personnel, particularly physicians, charged with the medical care of prisoners and detainees have a duty to provide them with protection of their physical and mental health and treatment of disease of the same quality and standard as is afforded to those who are not imprisoned or detained.

**The United Nations Standard Minimum Rules for the treatment of prisoners, Rule 24:** Healthcare of prisoners is a state responsibility, and should be of an equal standard to that available in the community, organized in close relationship to the general public health administration.

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In addition, the statement by the **European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT)** on state obligations to prisoners even in times of economic difficulty is noted: The CPT is aware that in periods of economic difficulties (...) sacrifices have to be made, including in penitentiary establishments. However, regardless of the difficulties faced at any given time, the act of depriving a person of his liberty always entails a duty of care which calls for effective methods of prevention, screening, and treatment. Compliance with this duty by public authorities is all the more important when it is a question of care required to treat life threatening diseases.

A useful resource that brings together much of the above is the **World Health Organization's Good governance for prison health in the 21st century. A policy brief on the organization of prison health (2013)**.

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psychoactive substances, the impact on healthcare services and the increased risk of death from using these substances remains a constant concern in prisons. The Five Nations Health and Justice Collaboration of the UK nations and the Republic of Ireland have recently issued a statement on the prevalence of novel psychoactive substances in prisons aimed at raising awareness of the challenge NPS cause for the criminal justice system as a whole and the particular burden they impose, indirectly, on NHS resources and on emergency services, primary care and mental health services in particular.<sup>17</sup>

### Communicable diseases

Harms associated with some forms of substance misuse include blood borne viruses (e.g. HIV, Hepatitis B and C) for injecting drug users, as well as being associated with other behaviours demonstrated in the prison setting such as tattooing and unprotected sex. The prevalence of hepatitis C is considerably higher in the prison population than in the general population.<sup>6</sup> Communicable diseases associated with living in close quarters with others are also particularly problematic

in prisons especially if infection control measures maybe variable. Factors linked with increased transmission rates in prison settings seem to be proximity (exacerbated by overcrowding), diet and hygiene, which can be heightened by a lack of awareness of infection status. Primary, secondary and tertiary prevention offered in prison settings, especially if coupled to adequate linkage to care, could be effective in lowering infection rates. An opt-out approach to testing for blood borne viruses and also an accelerated vaccination schedule for Hepatitis B has been introduced in English prisons in the last 3 years which has shown a doubling of testing compared to before the introduction of the policy.<sup>18</sup>

Dolan *et al.* found that estimates of active tuberculosis in prison populations were higher than in the general population and in one study in Brazil, the prevalence of tuberculosis was 40 times higher than in the general population.<sup>6</sup> Multidrug resistant TB is also a considerable problem. This is for a number of reasons including low treatment completion rates, as treatment is disrupted when people leave prison and return to the community and are lost to follow up.<sup>6</sup> Clearly however, the

overcrowded, cramped conditions in which many people in prison are confined across the world, particularly in low and middle-income countries, is an important environmental factor in the transmission of TB and MDRTB.

### Social determinants of health

Underpinning much of these high levels of poor health are the social and economic conditions in which many people in prison were born and raised. The social determinants of crime are broadly similar to the social determinants of health; most people in prison come from community populations that are economically deprived, experiencing poor housing conditions and with low levels of education and employment prior to entering prison.<sup>19</sup> Adverse childhood experiences (ACEs) which are associated with a range of negative outcomes in adulthood, including physical and mental health disorders and aggressive behaviour, have also been shown to be directly associated with adult offending behaviour<sup>20</sup> as well as being associated with poor health outcomes.<sup>21</sup>

The prison environment itself is often not conducive to healthy behaviours, with access to nutrition, physical activity and sleep often controlled to varying degrees by the prison regime, requiring public health advocacy at an organizational level for a healthy prisons approach<sup>19</sup> as well as creative design of interventions to take into account the limitations of the environment (e.g. physical activity that can be done in-cell). These lifestyle factors, influenced by the environment amongst other things, are being shown to be having a detrimental effect, as discussed below.

#### Growing point 1: The biggest killer in prisons – cardiovascular disease

Although the above health issues remain key issues for the prison population across the globe, increasingly there is acknowledgement that addressing the ‘natural’ causes of death (defined by the Ministry of Justice as deaths as a result of a naturally occurring disease process) is essential in reducing deaths in custody. Natural causes are now the leading cause of mortality in prisons in England and Wales, over

and above mental health and substance misuse.<sup>14</sup> Further examination by the Prison and Probations Ombudsmen<sup>22</sup> of 402 natural cause deaths in prison over the period of 2007–10 in England and Wales, showed that the leading causes of death are diseases of the circulatory system (including coronary artery disease and strokes: 43% of all deaths in the sample) followed by neoplasms (cancers: 32%).

Indeed, there have been many studies looking at the risk factors for cardiovascular disease in the prison population which also point to cardiovascular disease being a problem for this population. Tobacco-smoking prevalence has been decreasing in many high-income countries, but not in prison. Smoking prevalence in prisons has been shown to vary between 64% and 91.8%, and was shown to be more than three times as high as in the general population,<sup>11</sup> with few studies available on the prevalence of smoking in women prisoners.

In regards to alcohol, studies have shown that the prevalence of substance abuse and dependence, although highly variable, is typically much greater in prisoners than the general population, particularly for women with drug problems.<sup>9</sup> For example, compared with figures for the general population of the United States of similar age, male prisoners have a slight excess of alcohol dependence, whilst figures for female prisoners suggest that the difference with the general population is more marked: female prisoners have a two- to four-fold excess of alcohol dependence.

Diet and physical activity of people in prison are key modifiable risk factors for cardiovascular disease. With the exception of the USA, male prisoners have been found to be less likely to be obese than the men in the wider community of similar age and sex, although prevalence rates of obesity were still unacceptably high.<sup>7</sup> Furthermore, data also suggests that, as with the general population, rates are increasing in low-income and middle-income countries. Again gender inequalities are unambiguous: female prisoners are more likely to be overweight and obese than the general population of similar age and sex.<sup>7</sup>

Hebert *et al.*'s review examined the food available in prisons and analysed it for its nutritional value, which may go some way in explaining the variation

in obesity and overweight prisoners. Whilst male diets in high-income countries provided an appropriate calorie intake, female diets provided a substantial excess of total energy – a reflection on women in prison being supplied the same diet as men despite having different nutritional needs. Other nutritional factors such as salt was shown to be over twice the recommended level in diets for both men and women and the diets analysed were also high in carbohydrates with an excess of percentage energy intake as fat. This poor diet is exacerbated by the fact that in many higher income countries, people in prison can supplement their dietary intake with pre-packaged snacks that can be bought in the prison, which can be high in sugar, fat and salt.<sup>23</sup>

In terms of physical activity, although researchers were able to access a limited number of studies on this, mainly from the UK and Australia, the review showed that UK prisoners were less likely to achieve recommended guidelines for physical activity, both by comparison with Australian prisoners and with the general UK population. It is suggested that there is something inherent in the structure of the prison environment that enables Australian prisoners to exercise.<sup>7</sup>

### Growing point 2: the ageing prison population

Another population factor that is having a huge impact on prison healthcare is the ageing population in prisons. Across the European region, the proportion of the prison population over the age of 50 years is 11.7%, with a range of 44% in Lichtenstein and 3% in Russia.<sup>24</sup> Older prisoners are the fastest growing group within the prison population in many high-income countries. In England and Wales for example, the number of those aged over 60 grew by 120% and those aged 50–59 by 100% between 2002 and 2013.<sup>25</sup> There are several reasons for this increase; partly prisoners are serving longer sentences, but more are now being convicted and sentenced to custody at an older age, including for historic offences that took place 20 or 30 years ago.

There is much debate over what constitutes an older prisoner, with some agencies recognizing that people in prison experience health difficulties in line with those 10 years their senior in the community. This

‘premature ageing’ could be attributed to the impact of a previous chaotic lifestyle, sometimes involving addictions and/or homelessness, as well as the increased prevalence of risk factors in lifestyle behaviours as discussed above. Another interesting argument for classifying those from the age of 50 as older, is that changes in national demographics and numbers of sentenced people in prison mean that the prison service will have to work with people on their preparation for old age, and on preventative health measures, which require services and policies to consider what needs to be in place to support people as they reach old age. The Prisons and Probation Ombudsmen Report<sup>22</sup> challenged the assumption that those who die in custody from natural causes will have been in prison for a very long time: 30% of the prisoners in the sample had been in custody for more than 5 years whilst almost half had been in custody for less than 2 years. There is a complex relationship between sentencing patterns, the age of the prison population and deaths in custody and the Prisons and Probation Ombudsmen suggests that this warrants further research and modelling on its potential impact on prisons and their healthcare providers in the next decade.

Older people in prison typically have multiple and complex medical and social care needs including reduced mobility and personal care needs as well as poor health. The majority (85%) of prisoners over the age of 60 have been found to have one or more major illness reported in their medical records.<sup>26</sup> The most common illnesses reported were cardiovascular-related (35%), musculoskeletal (24%) and respiratory-related (15%). Complimentary data from over a decade later, shows increased records of major illnesses with more than half of those aged over 60 years in prison experiencing cardiovascular and musculoskeletal diseases and nearly a third diagnosed with respiratory illnesses.<sup>27</sup>

Mental health is also an increased issue for older people in prison, with studies showing 45% of those of 60 having a mental disorder and 90% of those aged between 50 and 59 years having a mental disorder.<sup>27</sup> Estimates of dementia have been particularly difficult to ascertain, but there is some evidence of people in prisons living with dementia

and it is acknowledged that rates of dementia in prisons are likely to increase as the prison population grows older.<sup>25</sup> Given that dementia and Alzheimer disease has replaced ischaemic heart diseases as the leading cause of death in England and Wales in the general population<sup>28</sup> it may be safe to assume that this trend may also manifest itself in the prison population over time.

People in prison die significantly younger in prison compared to the general population, even when it is from natural causes. The Prisons and Probation Ombudsmen Report on natural causes of death in people of prison, of the 402 cases investigated 24% of them were in the age group 65–74. However, 23% of the sample was in the age group of 55–64 years and another 23% in the group 45–54 years.<sup>22</sup> This suggests some kind of inequality in assessment, healthcare provision and primary prevention of contributing risk factors, such as smoking, drinking, poor diet and physical activity as described above.

### **The physical health check in prison**

Prison authorities need to address the changing health needs of their populations. Whilst these needs will differ between countries, here we describe one initiative designed to address the emerging issues of the ageing prison population and the need to address non-communicable disease in prisons in England and Wales. Public Health England, NHS England and Her Majesty's Prison and Probation Service (formerly the National Offender Management Services) who commission health care in prisons, have committed to implementing an adapted version of the NHS Health Check available to the general population in the community. The NHS Health Check is a national risk assessment and prevention programme available in the community and commissioned through local government, mainly in GP practices.<sup>29</sup> Everyone attending NHS Health Checks will have their risk of developing heart disease, stroke, diabetes and kidney disease assessed through a combination of their personal details, family history of illness, smoking, alcohol consumption, physical activity, body mass index (BMI), blood pressure and cholesterol. People are then provided with individually tailored advice to

motivate them and support any necessary lifestyle changes to help them manage their risk. Where additional testing and follow up is needed, people are referred to primary care services. People aged 65–74 will be told about the signs and symptoms of dementia and informed about memory clinics if needed.

In order to deliver a healthcare service which is as equitable as possible, offering NHS Health Checks in prisons required certain adaptations on the eligibility criteria.<sup>30</sup> As in the community, individuals not offered an NHS Health Check in the previous 5 years are eligible for what is now defined as the Physical Health Check in Prison. However, given the arguments for a prematurely ageing prison population, the age criteria has been amended to 35–74 years instead of 45–74 years, reflecting the notion that the biological age of people in prison is 10 years greater than their chronological age. The systematic application of this intervention in prisons should identify those with cardiovascular risks to their health earlier and introduce them to treatment options and care plans that can mitigate or manage those risks, either through medication and/or lifestyle changes. There will be a thorough evaluation of this innovation in the future.

### **Developing global research to meet local health needs**

There needs to be a continuous development of research into health needs and effective practice in order to ensure effective and appropriate care for the changing population in prisons across the world. Whilst there has been a considerable increase in prison health research in recent years from countries such as USA, Canada and Australia, the evidence base for developments in health service provision within prison settings has not been uniform. Improving research into the health of prisoners plays an important role in improving the health of prisoners and thus, reducing health inequalities.

Research into health and justice varies in quantity and in quality; it can often be of poor quality or remains inaccessible and unpublished. With prison populations growing across the world, some of this evidence will not be as relevant to other prison systems and countries. As noted by Herbert *et al.* in

their review of risk factors for NCDs in prison populations,<sup>7</sup> there is an absence of Latin-American studies and a paucity of studies of low-income and middle-income countries despite the fact that these countries bear 80% of the total disease burden of non-communicable diseases.<sup>31</sup> Indeed, many systematic reviews note the lack of data from low and middle income countries.

In order to achieve the goals of equitable care between the prison setting and the community setting, as set out in the World Health Organization's (WHO) Good Governance in Prison Health for the 21st century,<sup>32</sup> there needs to be a better understanding of the factors involved in health in the prison setting, as well as developing the concept of prison being a useful setting for impactful public health interventions for very vulnerable people in our society. The WHO's Health in Prisons Programme and Public Health England have recently launched an international research and professional development network to facilitate this. The Worldwide Prison Health Research and Engagement Network (WEPHREN) will provide a forum for all stakeholders interested in prison health across the world to exchange ideas and develop collaborative multi-centre research. It will be a means of disseminating important research findings and a platform for developing the skills of health professionals and researchers ([www.wephren.org](http://www.wephren.org)).

## Conclusions

The global prison population is not only growing but changing too. There remain some constants – that those in prison are still from the poorest, most underserved sections of society and that they have considerable health needs. However, the nature of those needs has changed as the population in prison becomes increasingly elderly and increasingly likely to experience non-communicable diseases. Infectious diseases remain an issue in prisons and so it is clear that the 'double burden' of disease is being seen in prisons across the world. Non-communicable diseases are now the leading cause of deaths in prison in England and Wales and this may represent the start of a global trend. Those responsible for prisons and

prison healthcare must respond rapidly to these changes if the needs of this vulnerable population are to be effectively met in the future. Politicians and policy makers have an equally important longer-term role in addressing the structural determinants of crime and ill-health, creating the social and economic conditions where people flourish.

## Conflict of interest statement

The authors have no potential conflicts of interest.

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