Vaccination in the prison population. A review

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ABSTRACT

From the first day in prison, convicts are exposed to several types of diseases, many of which can be prevented by vaccination. During captivity, the risk of acquiring these types of diseases is known to be higher than outside prison. This increased risk can be explained by structural and logistical factors in prison, as well as by acquired behaviour before and during captivity. Furthermore, for many prisoners captivity is an opportunity to access the health care system and therefore a chance to update their adult vaccination status. The traditional concept suggesting that prisons are primarily designed to ensure public safety should be complemented by this aspect of health, which is a broader approach to public safety.

Key words: vaccination; prisons; communicable diseases; disease prevention; prevalence; immunization; delivery of health care; health education.

INTRODUCTION

The vast majority of prisons worldwide are conceived and structured to ensure public safety and not to reduce the incidence of communicable diseases, they are not conceived neither to provide full access of the individual deprived of freedom to the health care system. It is also known that a great deal of prisons need external support when the control of some internal epidemiological outbreak is required or in the management of communicable diseases. Often, both national and international recommendation guidelines are poorly applicable to the reality of a penitentiary facility.

The risk of acquiring a communicable disease is extremely high among the imprisoned population if compared to the community where they belong. Moreover if we consider overcrowded facilities, inadequate sanitation, rotation dynamics among the imprisoned population, together with their social heterogeneity, a high degree of individuals with spread risk behaviours and the high prevalence of communicable diseases itself, there is no denying that the access to vaccination should be appropriately enabled, therefore avoiding the spread and potential complications derived from communicable diseases during their stay in prison and after their release to the community.

VACCINATION NEEDS IN PRISONS

The number of inmates hosted at some point throughout one year in a facility is approximately five times higher than the stable population of the facility, mostly depending of the duration of sentences as well as of transfers. 5-6. The vast majority of inmates have poorly used the national health system when not deprived of freedom. 4, 7-8. 5.2% of women in North American prisons are pregnant. The prevalence of cytological cervix abnormalities is higher than among the general population. 10-11. 25 % of individuals infected by HIV has been in prison at some point and there is also an important percentage of inmates with chronic diseases, not necessarily infectious, and a considerable number of individuals over 65 years old, who will need, as well as HIV positive patients, specific vaccination.
The prevalence of illegal drug use in prison ranges between 22 and 48% according to studies based on the reports of inmates themselves in prisons of United Kingdom, Ireland, United States, Brazil or Iran. Intravenous use ranges between 6 and 26% 4, 14, 15, 19, 21, and 23.

The prevalence of viral hepatitis within prison is much higher than in the general population 30. In the US 40% of individuals with chronic hepatitis has been imprisoned at some point 2, 9. With regards to hepatitis B, after several countries have implemented systematic vaccination for this disease in their national vaccination schedules, most of the cases affect adults 25 but in countries where this vaccination was included later this disease affects people under 25 years old 4 to 5 times more than those over 35 14. Nevertheless, the prevalence of HBV in prisons ranges between 1.8% and 62% worldwide; in Brazil depending on the state it can reach up to 26.4% 26-28; in Taiwan 21.7% 29, 13.9% in UK 31, 11.3% in Croatia 34, 8.7% in Ireland 20; 6.1% in Iran 32; 3.9% in Germany 35 and 2.6% in Spain 31. This prevalence, as aforementioned, is higher among adult inmates, thus the age is an indicator of accumulative risk, due to a longer exposure period: due to sexual activity or percutaneous exposure 14.

The serological prevalence of HCV in prisons in Spain is 22.7% 33. In the US, in some of its Federal States this figure can be close to 40% of inmates with a similar distribution between male and female inmates 36, 37. In other countries such as UK, Ghana, Croatia, Iran or Brazil the prevalence reaches 24.2%, 18.7%, 8.3%, 6.1% and 3.1% respectively 32, 34, 38-39. In all cases it is always higher than in the general population (see figure II).

All these features are regarded without considering other aspects such as poor sanitation structural conditions in some of the facilities due to overcrowding or impaired ventilation of cells, sanitary fittings, etc. which must also be considered risk factors related to vaccine preventable communicable diseases.

**VACCINES**

As with other groups of the adult population, the vaccine status of the imprisoned population should be first updated by providing when necessary the corresponding vaccines such as tetanus, diphtheria, etc.

**MMR Immunization**

Young adults who have not been vaccinated against MMR (measles-mumps-rubella) should complete this immunization. Although there have been prison outbreaks, serological screening is only recommended for pregnant inmates. The experience gathered in Canada and Switzerland suggests that a dose should be administered specially to young adult immigrant inmates 63-65.

**Hepatitis B Vaccination**

In the last 20 years the recommendation that the imprisoned population should be immunized against hepatitis B is the only one to have achieved major in-
ternational consensus. Currently the discussion regarding this vaccination concerns mostly the adherence of different facilities to such recommendation, what pattern should be followed and what the right time is to vaccinate those deprived from freedom\(^3\)\(^-\)\(^2\). It has been proved that every dollar invested in this vaccination saves 2.13 dollars of potential treatment and care derived expenses\(^4\). Despite this consensus, a lot of prisons (federal prisons) in United States do not systematically provide this vaccine\(^4\). In France for the last three years “the last barriers are being broken down”\(^4\) to provide universal vaccination in all prisons. Vaccination schedule against HBV in Spanish prisons, which was implemented over 20 years ago and where serological screening is previously carried out, still remains in force and has good results\(^3\),\(^4\),\(^4\),\(^5\),\(^6\).

In countries with average and poor income this vaccination—despite some interesting experiences—is far from being systematically implemented\(^1\),\(^4\),\(^4\),\(^7\),\(^8\),\(^9\). The most commonly used immunization schedule is 0, 1-2 and 6 months, since it is the one to have proved better sero-conversion\(^4\). International recommendations suggest that a short schedule (0, 1 and 2 months) should be adopted mainly due to the dynamics of the type of population\(^4\),\(^5\),\(^6\). In England accelerated schedules are being implemented (0, 7, 21 days and 12 months)\(^4\). Post-vaccination serological determination is not recommended.

Hepatitis A Vaccination

There are few reports on HAV outbreaks in prisons\(^1\),\(^4\),\(^9\) and HAV immunization is generally not recommended for all those deprived from freedom, it is only recommended alike the general population— for men who have sex with men\(^4\),\(^5\) and for those with risk factors which could entail complications such as fulminant hepatic failure or even death. This would be the case of illegal drug users—whether injecting or not—patients infected by HIV, HCV, or those suffering from some chronic hepatic disease\(^4\),\(^5\),\(^6\),\(^7\). All these features are difficult to identify without serological testing and self-reporting upon imprisonment.

The recommended vaccination schedule is 0 and 6 months and the level of antibodies created after the first dose is over 90%, yet a system should be implemented so that the second dose is granted whether inside prison or in the community\(^2\).

Some studies suggest that the combined Hepatitis A and B vaccine should be administered with the pattern 0, 1-2 and 6 months, but the estimated expense derived from its implementation could be high\(^4\),\(^5\),\(^6\).

Seasonal Influenza Vaccination

The main objective of seasonal influenza vaccination is to reduce the risk of complications among old adults, those with chronic pathologies, immunosuppression of any kind and pregnant women\(^2\),\(^5\). After several outbreaks in prison being described, this measure is recommended for all those hosted within\(^3\),\(^4\),\(^5\). The estimation of cost-benefit of influenza vaccination in the imprisoned population is higher than not vaccinating such population\(^7\). Despite this fact, over half of the prisons in United States did not provide seasonal influenza vaccination during the 2009 pandemics\(^8\). European recommendations still do not include routine influenza vaccination every year for all those hosted in prisons.

Varicella (Chickenpox) Vaccination

Vaccination against VZV is recommended for all the imprisoned population who is not already immunized\(^2\),\(^9\). The experiences of prison outbreaks both in Italy and Switzerland concluded that serological screening is not necessary for vaccination, and that self reports of having had chickenpox had a positive predictive value of over 90% and can be safely used to decide the administration of the vaccine when indicated\(^6\),\(^7\),\(^8\).

Human Papillomavirus Vaccination

Both in Canada and in the US over half of the prisons offer this vaccine for women for whom it is indicated\(^6\),\(^6\),\(^6\). There are no specific European recommendations to this regard.

OTHER CONSIDERATIONS

23-valent pneumococcal vaccination and meningococcal C vaccination (which is already observed by prison vaccination schedules in England) must be recommended for inmates according to their belonging to specific risk groups with precise indication\(^6\).

In the United Kingdom one of the quality indicators of prison health care is that over 80% of inmates be immunized against HBV 30 days after imprisonment\(^6\). Yet there is controversy regarding whether offering immunization immediately after imprisonment is the most appropriate strategy since the mood and anxiety of those who have just been imprisoned may alter the adherence to vaccination. Vaccination is
less likely to be refused if continuously offered after imprisonment, when the attitude of the inmate may be different and the environment can seem more familiar 1.

A considerably important group of the population lives and works in prison. If immunization in prison is conceived as a preventive intervention strategy with a “high risk” approach, this opportunity —sometimes the only one for these people to access a healthcare system— must count upon a permanent and active vaccination schedule. First the vaccination schedule recommended for adults should be completed and after immunization against the inherent risks of imprisonment should be provided. This is how the prevention of communicable diseases among the imprisoned population, among its staff and even their families and the community will be enforced, therefore benefitting the whole general health system. Therefore, including prisons in a public healthcare plan can considerably enable the control of preventable infections to all the population through vaccination 56.

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