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# Prison health is a public health: Management of Sars-CoV-2 outbreak in an Italian prison

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## SUMMARY

■ *The Covid-19 emergency in prisons is a public health warning due to overcrowding, poor structural conditions, and life promiscuities.*

*Worldwide a lot of prisoners were Sars-CoV-2 positive and in Italy several outbreaks occurred in many prisons. This paper examines, using a clinical audit, a Covid-19 outbreak occurred in an Italian prison during the spring 2021.*

*The study showed that the best measures to mitigate the outbreak negative consequences both in prisoners and in the staff are the preventive actions, the hygiene and disinfection of the common detention areas; the reduction of overcrowding; the stop of the working activities during the quarantine period.*

*Only an improvement of living conditions inside the prisons may reduce the risk of infection among inmates. ■*

**Keywords:** Covid-19, Prison, Outbreaks, Overcrowding.

**Parole chiave:** Covid-19, Carcere, Focolai, Sovraffollamento.

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## Introduction

The novel coronavirus 2019, officially termed as SARS-CoV-2, causes the coronavirus disease 2019 (Covid-19) by affectioning the respiratory system (Coronaviridae Study Group of the International Committee on Taxonomy of viruses, 2020).

The disease was first detected and reported in Wuhan, China, in December 2019 (Zhu *et al.*, 2020) and it has now spread worldwide.

The fatality rate of the disease is particularly high among patients who are older and who have underlying health issues, such as cancer, diabetes, and compromised lung function or lung disease. The most vulnerable place for the spread of the infection are the communities, including the prisons.

The prison is an incubator of infection diseases, including Covid-19 (Kinner *et al.*, 2020). Overcrowding, poor structural condi-

tions, life promiscuities make the prisons a place where may be impossible to control outbreaks and infection diseases.

In the 16<sup>th</sup> century typhus ("goal fever") was responsible for high mortality in English prisons and community outbreaks when it "jumped the fence" (Howard *et al.*, 1973).

Also during Spanish influenza of 1918 most of inmates in California prisons contracted the disease during all waves of the infection with thousands of deaths (Hawks *et al.*, 2020; Stanley, 1919). Russian prison amnesties in 1997 and 2001 to relieve overcrowding released many prisoners with tuberculosis, contributing to an upturn in incidence in the community that subsequently linked to disease's global re-emergence (Coker, 2001; Mercer *et al.*, 2003; Stern, 1999).

The World Health Organization's (WHO) guidelines on responding to Covid-19 in prisons recommend that custodial and health agencies jointly engage in risk management, prevention and control, treatment, and information sharing (WHO, 2020).

The evidence suggest that the main actions to prevent Covid-19 outbreaks in prisons and to protect those in custody, staff and the wider community is the reduction of overcrowding (Institute for crime and justice policy research, 2020; Simpson, butler, 2020).

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Several studies show that the crowding is linked to adverse health outcomes and transmission of infections (Simpson *et al.*, 2019). According to the evidence the most important measures to reduce the impact of Covid-19 infection inside prison is flattening the curve for incarcerated population (Akiyama *et al.*, 2020).

Prisons are places able to amply infectious diseases including the Sars-CoV-2 infection. The impact of Covid-19 on detainees should be a strong stimulus for a progressive criminal justice reform able to improve living condition inside jails (Nowotny *et al.*, 2020; Servick, 2020).

Covid-19 outbreaks in custodial settings are a public health concern, for at least two reasons: first, the explosive outbreaks in these setting have the potential to overwhelm prison health-care services and quality of care for inmates; second, with an estimated 30 million people released from custody each year globally, prisons may be a vector for community transmission of the virus (Kinner *et al.*, 2020).

In Italy starting from march 2020 several "Covid-19 waves" overwhelmed the prisons with thousand prisoners infected. At the beginning of the first waves several riots with deaths among inmates and wounded among policemen occurred in some Italian prisons (Brucale, 2020).

The most intense outbreaks inside Italian prisons occurred on spring 2021 (Sesana, 2021). They were favoured by an increased prevalence of the infection in the community and by the presence of novel and more infective circulating virus variants (Lorusso *et al.*, 2021).

The National Department of Prisons (Dipartimento dell'Amministrazione Penitenziaria – DAP) has released several indications aimed to limit the infection between inmates, suggesting preventive and monitoring actions inside prisons (Circolari del DAP per l'emergenza Covid-19, 2021). Conversely, no strong political actions were done to reduce the number of people inside prisons and to promote incisive alternative measures of incarceration (Antigone, 2021).

The Italian Conference of Regions released healthcare guidelines for the mitigation of infection and the development of outbreaks inside prisons following some important principles such as the needs: to respect the quarantine for all new-arrivals in prisons; to isolate the asymptomatic people arriving in prisons; to organize the prisons in special areas for positive, non-positive and close-contact people; to permit to adopt the preventive measure of distancing in all custodial settings; to furnish both to detainees and policemen the most appropriate personal protective equipment (PPE); to reduce the transfer of detainees from a prison to another; to implement the cleaning of the detention sections, and to promote the alternative measures of incarceration in order to reduce the overcrowding (Conferenza delle Regioni, 2020). Similar guidelines were released from single Regions such as Veneto Region that has developed appropriate measure to mitigate Covid-19 inside prisons (Regione del Veneto, Sanità penitenziaria, 2021).

The main aim of this work is to indicate the actions to follow to reduce the negative consequences of Covid-19 infection in prisons in order to best protect both detainees and staff.

## Methods

A clinical audit was organized by the healthcare staff to examine an outbreak of 100 positive persons occurred in an Italian prison of about 500 detainees during the spring 2021. The main

methodology used during the clinical audit was the root cause analysis of the spread of infection occurred inside the prison during the outbreak (ABS Consulting, 2008; Soliman, 2018).

## Results

The infection likely started from prison kitchen during the so called "third wave" of the infection in the spring 2021. The outbreak inside the prison blocked the beginning of the vaccination campaign.

The spread of infection inside a detention section of the prison is represented in Fig. 1. During on zero day the infection was detected in a kitchen worker and consequently the healthcare staff traced and isolated each "close contact" of the positive subject. On day 1 all "close contacts" of the positive subject were tested with the molecular diagnosis testing. Among the "close contacts" was identified a detainee living in the "X section". On day 3 the detainee living in the "X section" was confirmed as positive subject. Consequently, all detainees of the "X section", consisting in 44 people (allocated twice for cell), were in quarantine for a period of 14 days. On day 4 the healthcare staff programmed a molecular diagnosis testing for all detainees of the section. All people tested resulted negative for the Sars-CoV-2 infection. On day 18 another molecular diagnosis testing round was performed to all detainees of the section. The test revealed two positive people that were immediately transferred in the section for positive subjects. In the light of the positive tests the "X section" continued to be "closed" for another period of quarantine. On day 26 a detainee living inside the section reported some symptoms related to Covid-19 infection. The patient was tested with a "rapid test" that resulted positive. The test was also done to the cellmate that resulted positive. Both positive subjects were immediately allocated in the "positive" section. On day 31 another molecular diagnosis testing round was performed in all people inside section and 10 persons resulted positive. All positive subjected were immediately allocated in the special section for positive detainees. The people of "X section" were subjected to another period of quarantine. At term of the last quarantine period nobody in the section was found positive.

Fig. 1 - Spread of infection inside the "X section"



Tab. 1 - Living rules in isolation detention section during the quarantine period

- The detainees found positive are immediately located outside the section (in the “positive section”);
- The detainees live two per cell (with no potential contact with the other people of the section);
- The detainees use the personal protective equipment (PPE);
- The showers that are located in a common area in the section are alternatively used by detainees;
- The detainees take advantage of the hour of airs by going alternatively cell by cell;
- The service detainees (e.g. for food service) can go outside the section (using the appropriate PPE);
- The working detainees after the first negative molecular testing can go outside the section to work (using the appropriate PPE).

Tab. 2 - Risk contacts during quarantine

- Section’s policemen;
- Healthcare personnel;
- Service detainees;
- Working detainees.

After the results of the third molecular testing round the health-care staff made an internal clinical audit using the methodology of root cause analysis in order to identify the causes of the diffusion of the infection in the “X section” and to define the improvement actions to develop in order to mitigate the negative consequences of outbreak for both detainees and staff.

The first aim of the clinical audit was to analyse the rules adopted to reduce the spread of the infection in the “X section” during the quarantine period. The rules during the quarantine period are shown in Tab. 1.

The second aim of the clinical audit was to identify the potential “risk contacts” for the detainees inside section during quarantine (Tab. 2).

The third aim of the clinical audit was to analyse the risk factors of the spread of infection inside the detention section in order to determine the best actions able to mitigate the negative consequences of the outbreak for both detainees and staff (Tab. 3).

The analysis suggests that the most appropriate actions to mitigate the outbreaks inside the prisons are: the improvement of preventive measures both for detainees and staff; the respect of

Tab. 3 - Outbreak control measures suggested in “isolated section”

Concerns	Risk factors grading <sup>1</sup>	Risk factors reduction	Changing complexity <sup>2</sup>	Suggested actions during outbreak	Changing of risk factor grading <sup>2</sup>
<b>Lining rules:</b>					
Not correct isolation of positive	5	Space compartmentation	■	Planning	2
Two people per cell	4	Reduction overcrowding	■	Detainees’ deflation measures	2
Sharing shower per cell	4	Increasing cleaning;	■	Disinfection after use	2
Sharing hour air per cell	4	PPE and prevention;	■	Education and supervision (RM)	3
		Clean-dirt path	■	Planning & reduction activity	
<b>Risk contacts:</b>					
Section policemen	4	PPE and prevention	■	Education and supervision (RM)	2
Healthcare personnel	3	PPE and prevention	■	Education and supervision (RM)	2
Service detainees	5	PPE and prevention	■	Education and supervision (RM)	3
		Clean-dirt path	■	Planning	2
		Section activity	■	Reduction	4
				Stop	2
<b>Working detainees</b>	5	PPE and prevention	■	Education and supervision (RM)	2
		Clean-dirt path	■	Planning	2
		Work activity	■	Reduction	4
				Stop	2

<sup>1</sup> 1 = very low; 2 = low; 3 = moderate ; 4 = high; 5 = very high

<sup>2</sup> ■ = easy; ■ = not easy ; ■ = hard

RM = Risk manager

the hygiene and disinfection of the common detention areas (including the cleaning of the showers after each use); the allocation of the detainees one for cell; the stop of the working activities during the quarantine period (both for working and “service” detainees).

## Conclusions

The Sars-CoV-2 infection and the outbreaks are a relevant concern of public health inside prisons.

Our study shows how an outbreak inside prisons may induce a rapid spreading of infection in detainees.

The study suggests that the most important general measures to mitigate the infection inside the prisons are: prevention and distancing; reduction of overcrowding; and organization of the prison in “compartments” for positive, non-positive and “close contacts”. The analysis also indicates how during the outbreak the “sections of close contacts” should adopt the same rules followed from “the sections of positive subjects”, stopping every work activities both inside and outside the section, and assuming for both detainees and staff the most severe measures of personal protection.

The study shows that during the outbreak the most important healthcare actions are: the contact tracing; the rigid quarantine for both positive subjects and “close contacts”; and the use of molecular testing diagnosis.

The vaccination campaign should represent a priority in the custodial setting both for detainees and staff, although it may not be considered “the only solution” able to mitigate the risk of infection inside the prisons. Only a custodial reform will be able to improve the life conditions inside the prisons and will permit to develop the conditions to realize an “equal” healthcare for detainees.

Finally, the study confirms how the spread of infection inside prisons cannot be considered a simple “healthcare problem” but an issue of “justice and fundamental rights” that only a custodial reform can solve reducing overcrowding and improving the life conditions inside prisons.

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