

Infectious diseases among foreign prisoners: results of a hospital-based management model in Palermo

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SUMMARY

Foreign prisoners have a high vulnerability in terms of morbidity and access to care in overcrowded Italian prisons. This paper presents and comments on the management model of infectious diseases in foreign prisoners at our outpatient clinic, in order to describe a model of management for these conditions. Overall, 133 subjects (mean age 35.5 years) from 29 countries were followed for a period of 15 years. The most commonly represented area of origin (54.1%) was the Maghreb region. HCV infection (40.6%), HIV (22.5%), HBV (9.8%) and co-infection (15%, HIV/HCV or HIV/HBV) were observed. Ten subjects had tuberculosis, and only 30% of them were compliant with the treatment. Only 46.3% of HCV mono-infected patients com-

pleted the entire diagnostic process and even a lower percentage (37%) of them took treatment regularly. 90% of HBV mono-infected patients and 84% of those HIV mono- and co-infected completed the diagnostic workout. 77% of patients in each group took therapy regularly. Overall, the results show limited effectiveness. Therefore, it would be necessary to improve communication between healthcare professionals and correctional systems. Moreover, it appears urgent to reduce overcrowding in prisons to limit morbidity in prisoners.

Keywords: communicable diseases, foreigners, health service accessibility, prisoners.

INTRODUCTION

Psychiatric disorders and infectious diseases are the most severe and frequent causes of illness within prisoners [1-5]. In Italy, the inmate population, in November 2015, consisted of 52,636 inmates against a regular availability of 49,605 beds. The detained foreign population is represented by 17,387 persons (32.7%), more frequently males (Table 1) [6]. Information about the capacity does not consider any transitional situations or the Identification and Expulsion Centers (CIE), which could determine temporary modifications from the above. In this difficult con-

text, non-Italian prisoners have a higher vulnerability in terms of morbidity and access to care [4, 7]. This scenario does not appear to be different from what is observed in countries other than Italy, where infectious diseases and mental disorders represent the more frequent morbidities for this fragile population [2, 4, 8-11]. Data related to a recent campaign of information and awareness about HIV and other chronic viral diseases in Italian prisons, promoted by the Italian Society of Infectious and Tropical Diseases (SIMIT) and sponsored by the Ministries of Justice and Health, highlighted an increased prevalence of infectious diseases - especially sexually transmitted infections - among prisoners compared with the general population [12].

The Italian law n. 833/1978 states that health of every individual, prisoners included, must be ensured by the National Health Service, respecting

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Table 1 - Detainees and prison's capacity in Italy, region by region. Updated in November 2015.

Region	No. of prisons	Capacity	Detainees		Foreigners
			Total	Women	
Abruzzo	8	1.580	1.696	69	211
Basilicata	3	470	464	9	104
Calabria	12	2.661	2.415	62	452
Campania	17	6.066	6.784	338	813
Emilia Romagna	11	2.802	2.889	124	1.326
Friuli V. G.	5	484	625	18	219
Lazio	14	5.259	5.744	367	2.542
Liguria	7	1.159	1.349	62	729
Lombardy	19	6.133	7.675	373	3.528
Marche	7	853	869	20	330
Molise	3	263	281	0	28
Piedmont	13	3.838	3.641	116	1.547
Apulia	11	2.364	3.180	139	478
Sardinia	10	2.724	1.988	41	465
Sicily	23	5.833	5.745	120	1.203
Tuscany	18	3.404	3.281	122	1.497
TRENTINO and South Tyrol	2	509	447	12	308
Umbria	4	1.324	1.261	36	372
Aosta Valley	1	181	152	0	90
Veneto	9	1.698	2.150	122	1.145
Total	197	49.605	52.636	2.150	17.387

Source: Modified by Ministry of Justice, data updated at 30th November 2015.

the dignity and freedom of the human being. Instead, health in prison had been a matter of the Department of Penitentiary Administration up to 1999, when law n. 230/1999 was issued. It states the passage of the health care staff and resources to the NHS. Sicily adopted the same passage 15 years later, with legislative decree n. 222/2015.

This study analyzes the model of management of infectious diseases in foreign prisoners adopted at our outpatient clinic, in the prisons of Palermo and its province (Ucciardone, Pagliarelli and Termini Imerese), Trapani and Agrigento. In more details, the aims of present study were to describe the operating management model of infectious diseases in consecutive foreign prisoners from January 1st, 2000 to June 30th, 2015 and to investigate of results obtained with this model, to ensure the right to health and care of this population.

■ PATIENTS AND METHODS

The management of prisoners affected by infectious diseases coming from the prisons of West-

ern Sicily (Palermo - Ucciardone, Pagliarelli and Termini Imerese -, Trapani and Agrigento), was designed and programmed outside of penal institutions to:

- ensure space and time for care outside the prison setting;
- protect and preserve privacy;
- prioritize the relationship between the patient and health professionals;
- monitor patient compliance;
- facilitate access and availability of health facilities and the continuity of care while in detention, during transfers and after release.

The management model comes from a *post hoc* analysis of a *modus operandi* implemented in previous years.

Friday was the day of the week dedicated exclusively to the observation of detainees who, according to the judgment of the responsible physician or follow-up schedule, are accompanied to our outpatient clinic in order to perform laboratory and instrumental tests, to establish a diagnosis or to continue their follow-up. A linguistic and cultural mediation service was offered, as neces-

sary, to improve communication and mutual understanding.

For each type of infection and their related clinical diseases, we analyzed the overall clinical effectiveness of the intervention by assessing three specific endpoints:

- end of the diagnostic process;
- regular taking of therapy or end of treatment;
- drop-out (absence for two consecutive appointments in the clinic).

The diagnostic process began with screening for infections by HIV, HBV, HCV and tuberculosis through physical examination, serological markers, and Mantoux tuberculin skin test or, from 1999, the TB blood test. In the case of new diagnosis of HIV infection or patients with known infections, we studied lymphocyte sub-populations, determining viral load and genotypic resistance test.

In all patients with active HBV and/or HCV infection, liver function tests (serum enzymes aspartate transaminase, alanine transaminase, alkaline phosphatase, and γ -glutamyl transferase, total, direct, and indirect serum bilirubin, serum albumin), a complete blood count with platelets, a prothrombin time test, viral load (HBV-DNA, HCV-RNA), and abdominal ultrasound were performed.

In patients with HCV infection, HCV genotype was determined. Since 1999, the liver elastography for assessment of liver fibrosis (FibroScan) was also performed. In patients with active HBV infection, also alpha-fetoprotein (AFP) for the screening of the hepatocellular carcinoma and

antibodies of the IgM and IgG class (anti-HDV) were measured. Patients with positive Mantoux tuberculin skin test or TB blood test underwent a complete medical evaluation with medical history (TB exposure, infection, or disease). Chest X-ray was used as necessary.

In case of suspected lung lesions, CT scan was also performed to overcome the low sensitivity of chest X-rays. The sputum smear examination for BK for three consecutive days was performed. From 1999, due to the low sensitivity of direct smear examination with Ziehl-Neelsen (ZN), and low specificity of chest X-rays, we also used molecular techniques, which rapidly identify mycobacterial DNA in sputum smear.

All patients received treatment for the specific infection according to main national and international guidelines.

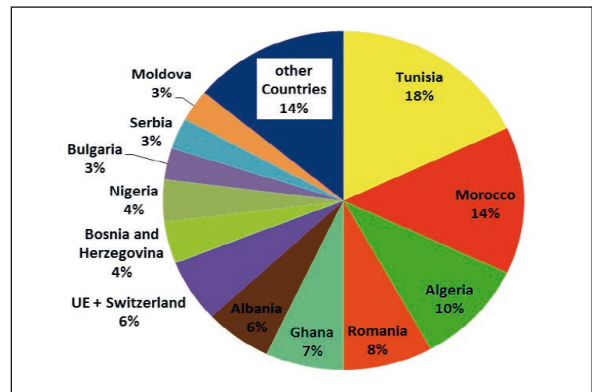
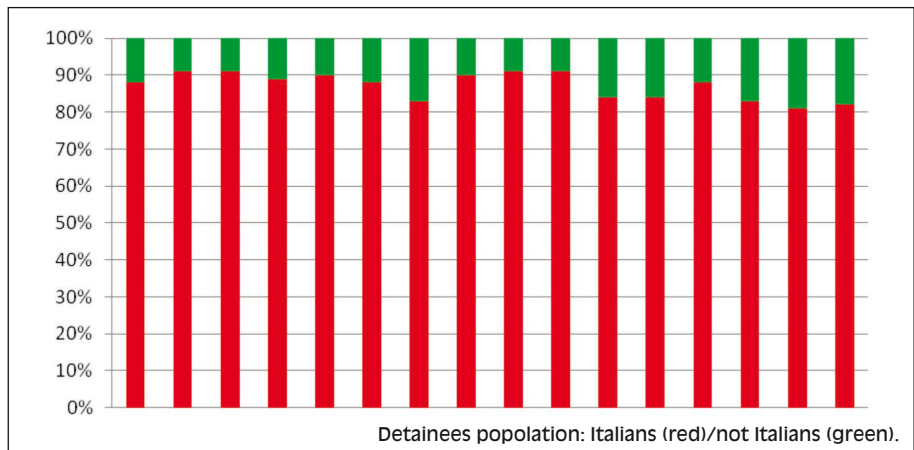


Figure 1 - Countries of origin.

Figure 2 - The ratio and trend of foreigner to Italian detainees in our study (2000-2015).



Detainees population: Italians (red)/not Italians (green).

RESULTS

Demographic data

From 1st January 2000 to 30th June 2015, 133 subjects (132 males, 1 female), aged between 20 and 55 years (mean age 35.5) and coming from 29 foreign countries (Figure 1) were followed. The foreign population, accounted for 15.1% of the prison population in the same interval (Figure 2). The most represented region was the Maghreb (Tunisia, Morocco and Algeria), that accounted for 72/133 observed patients (54.1%); 27% were from Eastern Europe (Romania, Albania, Bosnia, Bulgaria, Serbia, Moldova). Ukraine, Tanzania, Slovenia, Somalia, Liberia, Congo, South Africa, China, Ivory Coast, France, Portugal, Syria were less represented (only one patient from each country listed above). 70 patients (52.6%) of the whole cohort reported a recent or past history of intravenous illicit drug abuse.

Clinical features and outcome (Tables 2 and 3)

The clinical picture presented by this population was: chronic viral hepatitis or liver cirrhosis re-

lated to isolated HCV infection (40.6%) or HBV infection (9.8%). HIV infection or AIDS (22.5%), co-infections (HIV/HCV and HIV/HBV) were detected in 12% and 3%, respectively. Tuberculosis infection was found in 10 subjects (7.5%). In 6 out of 10 cases, we observed latent tuberculosis infection (LTBI); in the last 4 cases, active pulmonary TB. A limited proportion (30%) of patients with TB active or latent infection took therapy regularly and/or completed the prescribed therapy for the treatment or for the prophylaxis. Other sexually-transmitted diseases were observed in 6 patients (4.5%).

With respect to the management of HCV infection, a limited number of subjects (46.3%) completed the diagnostic workout and an even lower proportion (37%) of patients took therapy with regularity. The distribution of HCV genotypes was evaluated in only 34 patients. The most frequent genotype was 3 (50%), followed by 1a (20.5%), 4 (14.7%), 1b (8.8%) and others (5.9%).

Overall, 90% and 84% of patients affected by HIV and HBV completed their diagnostic workout, respectively. Treatment was regularly taken in 77%.

Table 2 - Clinical endpoints related to infections observed in our cohort.

Infection	No. patients	Full diagnosis No (%)	Full therapy No (%)	Drop out No (%)
HCV	54	25 (46.3%)	20 (37%)	34 (63%)
HIV	50*	45 (90%)	41 (77%)	9 (23%)
HBV	13	11 (84%)	10 (77%)	3 (23%)
TBC	10	3 (30%)	3 (30%)	7 (70%)

*Isolated HIV infection, 30 patients; HIV-HCV co-infection, 16 patients; HIV-HBV co-infection, 4 patients.

Table 3 - Infections and diseases observed in our cohort.

Diagnosis	No.	(%)
HCV infection	54	(40.6)
HIV infection	30	(22.5)
Co-infection HIV/HCV	16	(12.0)
HBV infection	13	(9.8)
Tuberculosis infection	10	(7.5)
Co-infection HIV/HBV	4	(3.0)
Other infections	6*	(4.5)
Total	133	(100)

*Human Papillomavirus: 4 patients; gonorrhea: 1 patient; *Chlamydia trachomatis* infection: 1 patient.

DISCUSSION

Dolan estimated that among the 10.2 million prisoners worldwide in 2014, 15.1% have HCV infection, 3.8% have HIV, 4.8% have chronic HBV and 2.8% have active TB (13).

This global estimation overall reflects the prevalence we found in our study and in SIMIT study. Comparing our results with those of the SIMIT study, HCV infection (both chronic viral hepatitis and liver cirrhosis) emerged as the most frequent communicable disease among detainees (40.6% in our cohort and 32.8% in the SIMIT study). The difference between percentages may be due to our study population, consisting of foreigner prisoners coming from countries with high HCV prevalence (54.1% were North African), while the SIMIT study evaluated the general population detained, both Italian and non-Italian [14]. In both studies, HIV infection and AIDS were highly prevalent, accounting for 22.5% of our population and 5.6% in the SIMIT study.

Regarding TB, we can compare our population to that studied by Crepet et al., under MSF supervi-

sion [15]. The aim of their study was the identification of active cases through the administration of self-questionnaire to migrants detained in four Centers of Identification and Expulsion (CIE) in Italy. Overall, they reported that only 0.1% of 3588 screened individuals had tuberculosis, compared with 10 subjects in our cohort, that accounted for 7.5% of the entire study population (15). This difference can be due, at least in part, to the longer detention period of patients in our study, compared with the CIE cohort (maximum detention period for a migrant, 18 months) [16]. This is in line with the characteristics of tuberculosis, as the persistent contact with a contagious patient increases the probability of infection - and this likelihood further increases with the overcrowding of prison cells in Italy [17].

In our study, 52.6% of inmates were intravenous drug abusers, in line with other Italian and European studies (42-64%) [18, 19].

Our results show poor regularity of treatment uptake for TB (30%) and HCV-infected (37%) patients. A slightly-higher percentage of HCV patients (46.3%) completed the diagnostic workout. This large number of dropouts, both in the diagnostic workout and treatment, is attributable to the many barriers present at different levels, as suggested by Yap L. et al.: barriers at individual, organizational and community level as well as in the relationship with prisoners' families can in fact be identified (20).

To our knowledge, no management process similar to ours exists. Anyway, we have found different ones, which reached a better outcome. Skipper et al. investigated a prison outreach clinic for the diagnosis and treatment of HCV. Over their study period, they offered information to all new inmates, finding a higher prevalence of positive anti-HCV test (42%) compared with another study based on prisoners volunteering for testing, in which this prevalence was 7% (21). This study showed well-used resources for both prisons and communities providing good healthcare inside the prisons.

■ CONCLUSIONS

The management of infectious diseases in prison is not just a problem of diagnosis and treatment of detainees, because they will be free citizens

in the future. This concept is well-known by the WHO European Health in Prisons Project (HIPP), established in 1995 when two emergences about prisons rose: new independent East European nations, who were facing a reorganization of their justice system and prisons; and the emergence of HIV/AIDS epidemic and its consequent recrudescence of TB. Indeed, communicable diseases, together with mental disorders and drugs, are the priorities of HIPP (22).

Therefore, a concern exists for obtaining the rights to health and care for the individual and the entire community. This is not a simple and rapidly-solvable problem; the difficulty and the evidence uncovered in the context of the Strasbourg European Court monitoring controls were sanctioned in January 2013 for violating Article 3 of the Convention on Human Rights, which prohibits inhuman and degrading treatment and torture (23).

Our intervention is a precursor of the Sicilian law n. 222/2015, because we have designed it to address the health needs of this specific population since 2000.

It attained some of the goals but, at the same time, it highlighted problems that have often prevented proper treatment of infectious diseases and the protection of health.

In our experience, it was possible to provide adequate space and time to care; protect privacy and privilege the relationship and communication between the patient detained and health professionals. The achievement of these important goals, that represents the cornerstone of our model, has always found support in the collaboration with healthcare providers inside the prisons, whose availability has allowed, in the wide majority of cases, to meet scheduled visits and ensure supply and administration of drugs even in difficult and complex situations.

Important issues concerning the other objectives remained:

- proper monitoring of patient's compliance;
- promoting access and availability of health facilities after detention;
- ensure the continuity of care while in detention, during transfers and after release.

From our experience, the reasons for these critical issues can be due mainly to two factors:

- the overcrowding of prisons, which represents the most evident obstacle to the health of prisoners, not only for the proper management of

infectious diseases but also for the psychological problems that, as reported above, are important elements of morbidity for this population [24-29].

- lack of planning detention depending on the detainee's pathology. From this point of view, it seems paradoxical to say that the return to freedom, without adequate and correct information on the access and availability of health facilities, as well as the sudden transfer from one institution to another, or worse, to a CIE, almost always causes disorientation and obstacles that will inevitably be associated with care and treatment interruption [30].

More now than ever, following the famous aphorism of Fyodor Dostoyevsky saying that "the degree of civilization of a society is measured by its prisons", we believe that our experience will help governors in focusing their attention on the problem of prison overcrowding. Moreover, it may help promote communication among professionals involved to provide adequate health care to the needs of prisoners, through specific strategies that combine the requirements of the detention path with the equally important and inalienable right to health and care.

■ AUTHORS' CONTRIBUTIONS

All authors listed on the manuscript have contributed significantly to the experimental design, its implementation, or analysis and interpretation of the data. All authors have been involved in the writing of the manuscript at draft and any revision stages, and have read and approved the final version.

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