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**Review of hepatitis C screening programs for immigrants in Spain from endemic countries**

María Ester Alarcón Linares<sup>1,2</sup>, María Romay Barja<sup>3</sup>, Alberto Torres Cantero<sup>2</sup> and Ana Requena Méndez<sup>4,5</sup>

<sup>1</sup>Preventive Medicine and Public Health Teaching Unit. Hospital Nuestra Señora de La Candelaria. Sta. Cruz de Tenerife, Spain. <sup>2</sup>Social and Health Sciences Department. Universidad de Murcia. Murcia, Spain. <sup>3</sup>National Centre of Tropical Medicine. Instituto de Salud Carlos III. Madrid, Spain. <sup>4</sup>Instituto de Salud Global de Barcelona (ISGlobal). Universitat de Barcelona. Barcelona, Spain. <sup>5</sup>Department of Global Public Health. Karolinska Institutet. Stockholm, Sweden

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**Correspondence:** María Ester Alarcón Linares. Preventive Medicine and Public Health Teaching Unit. Hospital Nuestra Señora de La Candelaria. Ctra. Gral. del Rosario, 145. 38010 Sta. Cruz de Tenerife, Spain  
e-mail: draalarconorl@gmail.com

**ABSTRACT**

**Background:** hepatitis C virus (HCV) screening strategies in European countries do not usually include the migrant population from endemic countries as a target group for screening. The aim of this study is to describe and to evaluate HCV screening strategies for the migrant population residing in Spain and to compare the differences at a regional level.

**Methods:** on-line research on every Health Public Department's website of each autonomous community was carried out during 2017 and 2019.

**Results:** Aragon, Cantabria, Catalunya, Canary Islands and Madrid have HCV screening programmes and include migrants from high-endemic countries as a high-risk group

that should be targeted in the screening programme. The Valencian Community and the Basque Country have an HCV programme although migrants from high endemic countries are not included as a high-risk group. Finally, the other autonomous communities have no specific programme for HCV in place. Few of them have a screening control system and/or evaluation.

**Conclusion:** there is heterogeneity on the different HCV autonomous programs concerning the risk groups that should be targeted. A homogenization of such criteria would be recommended. HCV screening in migrant populations from endemic countries should be extended to the rest of autonomous communities. More measures for control and evaluation should be implemented in autonomous strategies with specific indicators for migrant populations.

**Keywords:** Hepatitis C. Migrants. Screening. Health policy.

## INTRODUCTION

Hepatitis C is a major public health problem worldwide. According to the World Health Organization (WHO), up to 115 million people have had an HCV infection (anti-HCV+) (1,2), there are 1.75 million new cases every year and 71 million patients were living with the chronic disease in 2015 (3). Hepatitis C has been targeted by the United Nations for elimination by 2030 in their Sustainable Development Agenda (4).

The WHO recommended in 2016 to perform serological tests in adults and adolescents from high-risk groups. This recommendation precludes the inclusion of migrant populations from endemic countries of high and intermediate endemicity as a risk group to target for screening of hepatitis C (1).

The EU/EEA received approximately two million migrants in 2016, and an estimated 80 % came from HCV-endemic countries (5). That same year, Spain had a population of six million adult immigrants, with more than one million coming from countries with an anti-HCV+ prevalence > 3 % (6).

HCV seroprevalence studies performed in migrants in Spain using small samples have always found results that are consistent with what is known about the prevalence in the region of origin. The highest prevalence values were for the Asian population,

ranging between 11 % and 15 % and between 8 % and 17 % for Sub-Saharan Africans. With regard to the migrants from North Africa, the prevalence is similar to that of the autochthonous population (1.9 %), and those from Latin American have a lower prevalence (0.4 %) (7).

The 2015 National Strategic Plan for Hepatitis Management (PEAHC, Spanish acronym) in Spain defined the population risk groups that would need to be screened. However, it did not include migrants from countries with moderate-high endemicity or those who may have received dental or medical treatment in their countries of origin (8). However, although it might be assumed that the national plan precludes action on this subject within the entire Spanish public health structure, the reality is more complex. In the Spanish Health System, public health competences belong to the Spanish Autonomous Communities (CC. AA., Spanish acronym). Therefore, it is necessary to review each autonomy's regional screening programs and policies in relation to HCV in order to have a clearer picture and more detailed perspective on what is really happening.

The objective of this study was to describe, compare and evaluate HCV screening strategies in immigrant populations residing in Spain at a regional and national level.

## **METHODS**

An online search was performed on the official programs, guides, recommendations, strategies and documents on hepatitis C for each of the CC. AA., as well as its screening and prevention programs. To do this, each of the official websites of the 17 autonomous health systems were reviewed.

A first search was performed in the first quarter of 2017. In 2018, a second search was deemed necessary in the last quarter of 2019 to check whether there had been any updates. This was due to the publication by the European Centre for Disease Prevention and Control (ECDC) of the infectious disease screening guidelines in the immigrant population, which included the screening of hepatitis C in newly arrived migrants (5).

The following key terms were used: "hepatitis"; "hepatitis C", "HCV", "migration" and "migrants". The search order followed this strategy: first, confirming the existence of

an autonomous plan/clinical action guides for hepatitis C; second, reviewing other specific recommendations for hepatitis C; and finally, looking for other specific recommendations for the migrant population.

To analyze the contents of these documents, the information on screening strategies for the migrant population was evaluated according to the items listed in table 1. A survey was carried out in 2017 with key informants and experts in infectious disease screening programs, regional surveillance systems, epidemiologists, Ministry of Health, General Secretarial of Penitentiary Institutions and clinical physicians related to hepatitis C disease and hepatologists, from the 17 autonomous communities and autonomous cities. The aim was to gather more information in addition to the previous search. Their contacts were obtained through the organization charts and information on the official websites of the regional health systems and through a “snowball” system. The survey was disseminated by e-mail on two occasions: 109 emails were sent in March-April 2017, and again in May-June 2017.

## **RESULTS**

In Spain, seven autonomous communities had a guide about clinical practice, program or strategy for hepatitis C; this included Aragon, the Canary Islands, Cantabria, Catalonia, Valencian Community, Madrid and the Basque Country (Fig. 1). In addition, in early 2017, Galicia had a clinical guide about preventive measures and the management of HCV and Andalusia had a manual for the care of immigrants where HCV was included as one of the infections to consider for screening people from countries with a high endemicity. HCV screening recommendation in immigrants from endemic countries was included in the programs of Aragon, Andalusia, the Canary Islands, Cantabria, Catalonia, Galicia and Madrid (Table 2), whereas the Valencian Community and Basque Country did not include them.

### **Detailed characteristics of each program**

In Aragon, a new strategy against hepatitis C (2019) (9) includes immigrants from high-prevalence regions from Eastern European countries, especially Romania, Central and East Asia, Africa and the Middle East, and all pregnant women, regardless of their

origin.

The Canary Health System, in its “Plan for the Prevention of Hepatitis C Infection in the Canary Islands”, includes: a) migrants from countries with a high prevalence of the disease, such as Asian and African countries (the guide provides a map showing the prevalence of hepatitis C in each country); and b) people who received medical or dental treatment in countries with a high prevalence and under infection control (10). According to this plan, 84 % of the migrant population in the Canary Islands are native from Latin America or Europe, so the prevalence of the disease in those immigrants could be lower than that of the indigenous population.

An ambitious plan has been developed by the Cantabrian Health Service that might be a model to be followed by other CC. AA. in Spain and other countries (11). This plan is based on two lines of action: a) a macro-elimination strategy of hepatitis C cases, aiming to screen all people between 40 and 70 years in the general population; and b) another strategy of micro-elimination aimed to detect people with risk factors, including people from high endemic countries with a prevalence threshold in their country of origin of  $\geq 3\%$ . The program specifically mentions to screen people from Romania, Ukraine and Senegal. There is also a strategy of micro-elimination of HCV infection in pregnant women with risky practices and/or those who belong to a primary focus (although it does not specify migrant women of certain countries). There are a set of indicators defined to monitor and evaluate the program, such as a target population for each group, detection rate, or HCV prevalence in each study population. The Catalonia Health Department has a “New Prevention and Control Plan for Hepatitis C”, which is an update of their previous guide (12,13). It includes immigrants from endemic countries as a risk group, defining areas of higher prevalence countries such as the Far East, Mediterranean Basin and certain regions of Africa and Eastern Europe. The Catalan plan also includes specific indicators for monitoring the program, such as the number of people from endemic countries who have started treatment. Other indicators are related to the rate of diagnoses by the health care system.

The official website of the Concierge of Health of the Autonomous Community of Galicia includes a “Guide to Clinical Practice of Hepatitis C (2014)” (7). This guide considers the screening, among other high-risk groups, of migrants from countries with

a high prevalence of HCV infection and dental/medically treated persons from countries where HCV prevalence is high and with poor methods of infection control. A link to the National Plan is accessible from their website.

The Autonomous Community of Madrid, in its “White Book of Hepatitis C” (14), proposes that people from countries with a high prevalence from Central and East Asia, Africa-Middle East are among the risk groups to be screened. One of the goals to be achieved for 2016-2019 was the development of a protocol for early HCV detection of all high-risk people. However, for the evaluation of this objective, it only specifies HIV and other STDs co-infections as high-risk populations.

In the 2004 guide “Hepatitis C, Guide to Clinical Action” of the Government of Valencia (15), the screening indications for serology (anti-HCV+) do not include migrants from endemic countries nor people who received some type of interventional or dental treatment in those countries. Likewise, the Basque Country has its own “Strategy for Hepatitis C Care” from 2015, which plans a periodic and permanent evaluation of the health outcomes (16). However, this does not include risk groups of migrants from high-prevalence countries.

In Andalusia, in the first review, a “Manual of Attention to Immigrants” (2007) (17) was accessible on the website. In the HCV section of this manual, a serological test was recommended to migrants from countries with a high prevalence. A map indicating which countries were recommended for screening and their prevalence was provided to users of health facilities. In the second review, no documents related to migrant screening were found.

With regard to the surveys carried out, only 12 responses were obtained from 109 surveys sent to experts from nine CC. AA.: Andalusia, Canary Islands, Cantabria, Basque Country, Navarra, Castilla y León, Principality of Asturias, La Rioja and Murcia. An additional survey was received from the General Secretarial of Penitentiary Institutions. The data received in the surveys supported what was already covered in the review of the documents. Nonetheless, they were mainly useful to provide additional information on less covered aspects, such as screening of pregnant migrant women. Although some communities, such as La Rioja, Navarra or Basque Country, do not have a specific plan against HCV. Key informants highlighted that HCV screening is

performed in all pregnant women in the general population. However, according to the “Andalusia Handbook of Childbirth and Puerperium” (2014), HCV screening is not routinely carried out in pregnant women in the general population. In fact, screening is based on other risk factors, and coming from high endemic HCV country is not one of them.

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## DISCUSSION

Despite the fact that migrant HCV screening is not included in the National Strategic Plan against Hepatitis C (8), some regions in Spain have their own regional plans or programs, and most include migrants from countries with a high prevalence as high-risk groups. However, there is heterogeneity between these regional programs in some significant aspects.

HCV guidelines and strategies in other EU member countries also present a heterogeneous outlook (18). Only six out of 21 (29 %) countries include migrants from endemic countries as a risk group in their national HCV screening guidelines and five out of 21 (24 %) include people who had received dental or medical treatment in countries of high HCV endemicity. The ECDC recently published a European guide on screening for infectious diseases in the new arriving migrant population, including hepatitis C (5). This guide recommends to offer screening to detect anti-HCV+ to populations in endemic countries ( $\geq 2\%$ ) that arrived in the EU in the last five years. Thus, testing the viral load of those who have antibodies is recommended to continue the health care cascade and treatment (5).

In Spain, associations such as the Spanish Association for the Study of the Liver (AEEH) have also positioned themselves, recommending the inclusion of immigrants from high prevalence countries in the screening strategies (19). In addition, an active search for cases in these vulnerable populations is recommended, at both hospital and Primary Care (PHC) levels. In this respect, the role of Primary Care is key and should have the capacity to act based on updated prevalence data, both on the migrant population as well as in their country of origin.

The ECDC (5) also proposes the integration of the HCV serological test with other infectious diseases (e.g., HIV or HBV) into a multiple disease-screening program. This strategy could increase the effectiveness of these screening programs in migrants. Other authors also propose to integrate these multi-diseases screening programs for migrants into Primary Health Care, including infectious diseases, mental health disorders and female genital mutilation (20).

It is also necessary to evaluate the role of other care levels outside the formal health system, such as the community level, to facilitate access to hepatitis C diagnosis and to

help with monitoring and surveillance of the HCV epidemic. Different regional plans for HCV, such as those in Cantabria, Aragon or Catalonia, raise the need for help from other institutions, agencies organizations and NGO that work with these more vulnerable populations. An example could be the HepC-link Study (Barcelona), which aims to provide the antibody rapid test and the collection of blood samples to migrants from Pakistan at the community level (21).

There are different proposals and methods to improve the coverage of hepatitis C screening programs that can be found in the literature. As an example, a study of seroprevalence in the general population in Valencia in 2017 (22) used the postal mail to address more than 5,800 people (ages 25-70), of which 2,600 accepted to participate. Several studies piloted in Europe (23) showed that screening programs specifically targeting migrant populations, at both PHC and other levels of care, were feasible and acceptable for migrants in different places and countries. In Barcelona, a passive and opportunistic-way strategy in PHC centers (23) was compared with an active one, performed by outreach talks in sociocultural centers, associations of immigrant centers, etc. They concluded that the active strategy was more effective in reaching hidden populations that often have no links with health care services. They also claimed that people who were recruited with the active strategy were the most vulnerable migrants, often unemployed or without a health insurance card or a residence permit. Another pilot study performed in London reached high-risk migrants by contacting them through the Primary Care registry. However, it was discontinued due to the low response rate (23).

The screening recommendations of most of the regional plans in Spain that include migrant populations as a high-risk group do not usually specify which are the endemic countries. Migrant high-risk groups are usually defined as large areas or regions of the world (e.g., continents), which may not guide the professional to efficiently detect the most high-risk groups. Since the health data record systems of all the autonomous communities are digitized, it is feasible to design tools integrated into the electronic patient record system that recommend screening based on an individual risk assessment, according to the country of origin of the patient for a disease (e.g., HCV) or set of diseases. Other authors have already proposed this type of electronic warning

tools for the improvement of HCV diagnosis and screening (24).

An observational and multicenter study carried out (25) at the Primary Care level in 2008 in Catalonia among healthy immigrants who had lived in the EU for less than five years showed a prevalence of anti-HCV+ of 6.1 % (95 % CI: 4.3-7.8). This was particularly high in people from Eastern Europe (19.6 %) and the Indostan Peninsula (14.9 %). The Latin American group had the lowest prevalence (1.4 %).

In addition, there are no available data in Catalonia on the prevalence of chronic HCV in other high-risk migrant groups that may have a special epidemiological interest, such as people working in the sex industry, transgender women (a group with a high percentage of immigrants), or pregnant women and their babies (13). Pregnant women from endemic countries would also be targeted in the regional plans that include migrants from high endemic countries as risk groups for screening, such as Catalonia, Cantabria, Aragon or the Canary Islands. This would also include all pregnant women in the general population (e.g., La Rioja, Navarra or Basque Country).

A recently published study in 2019 (6) was based on data on the migrant population living in Spain and on the HCV prevalence in the country of origin. This study provided the estimation of anti-HCV+ cases in immigrant population for each region and province. This epidemiological study can guide regional public health departments to develop initial strategies on which countries of origin of migrant population should be included for hepatitis C screening. In addition, information on which countries are endemic should be reviewed and updated if these countries achieve their HCV elimination objective in their territory as the Sustainable Development Agenda, and decrease the prevalence of hepatitis C in their home territory. Something similar could happen in Spain; the results of the latest general population seroprevalence survey performed at the state level reported a prevalence in Spain of 0.85 % (95 % CI: 0.64-1.08 %) (26). However, some international public health agencies such as the Canadian one considered Spain as an endemic country for hepatitis C in 2017 (27). Therefore, the Spanish population migrating to Canada would be a target population according to their recommendations.

In Spain, the distribution of the immigrant population according to their country of origin is not homogeneous among the different provinces (6). Therefore, each region

should consider this heterogeneity and adapt their HCV screening programs to the type of immigrant population residing in each region, as designed in the Cantabria plan.

In addition, monitoring of diagnosed and treated cases among the total number of migrants screened by country of origin would help to update the prevalence in these groups within the Spanish territory. This could also serve as a tool and indicator to assess the effectiveness of the measures implemented, as registered in England through a sentinel (28) surveillance. This could allow the measurement of the trends of prevalence over time in these risk groups. In addition, it would allow to rework and redirect the policies according to the updated seroprevalence data that are obtained at a national level, especially by sharing the results of the studies and monitoring the screenings carried out in other regions of Spain, with data by country of origin.

The search and updates performed for this study in 2019 highlight the efforts by some regions such as Catalonia, Cantabria or Aragon, to update and develop new plans against HCV in accordance with the recommendations of the WHO (2016) (1) and the ECDC (2018) (5). The need to include this immigrant population as a target group in screening strategies was also highlighted. It was also interesting to have data from studies or reports with results and conclusions of the implementation and monitoring over the years of all these different plans (old and more current) in each region.

Finally, despite having a National Strategic Plan, it is still necessary to standardize screening criteria in the various regional hepatitis C programs. All regions should be encouraged to include migrants from endemic countries as a risk group for HCV screening. Strategies for an active search of the most vulnerable populations and monitoring and evaluation of HCV should also be developed, including specific indicators for the migrant population.

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## REFERENCES

1. Version U. Recommendations for WHO guidelines for the screening, care and treatment of persons with chronic hepatitis C infection: a 2016 update. 临床肝胆病杂志 2016;7(32):1248-9.
2. Gower E, Estes C, Blach S, et al. Global epidemiology and genotype distribution of the hepatitis C virus infection. J Hepatol 61(1):S45-S57. DOI: 10.1016/j.jhep.2014.07.027
3. European Union. Prevalence H. Global hepatitis report; 2017.
4. Organización de las Naciones Unidas. Transformar nuestro mundo: la Agenda 2030 para el Desarrollo Sostenible. Asam Gen 2015;A/70/L.1:40. Disponible en: [http://www.un.org/ga/search/view\\_doc.asp?symbol=A/70/L.1&Lang=S](http://www.un.org/ga/search/view_doc.asp?symbol=A/70/L.1&Lang=S)
5. European Centre for Disease Prevention and Control (ECDC). Public health guidance on screening and vaccination for infectious diseases in newly arrived

migrants within the EU/EEA; 2018.

6. Alarcón-Linares ME, Torres-Cantero A, Subirá C, et al. Geographic analysis and estimation of hepatitis C cases in migrant populations living in Spain: is a country-based screening strategy appropriate? *Rev Esp Enferm Dig* 2019;111(8):615-25. DOI: 10.17235/reed.2019.6117/2018
7. Consellería de Sanidad, Xunta de Galicia. Guía de práctica clínica: hepatitis C. Consellería de Sanidad; 2013. pp. 91-3. Disponible en: <https://extranet.sergas.es/catpb/Docs/cas/Publicaciones/Docs/AtEspecializada/PDF-2360-es.pdf>
8. Ministerio de Sanidad, Igualdad y Asuntos Sociales. Plan estratégico para el abordaje de la hepatitis C en el Sistema Nacional de Salud. Ministerio de Sanidad, Servicios Sociales e Igualdad; 2015. Disponible en: <https://www.msbs.gob.es/ciudadanos/enfLesiones/enfTransmisibles/hepatitisC/PlanEstrategicoHEPATITISC/home.htm>
9. Departamento de Sanidad, Gobierno de Aragón. Plan estratégico para la eliminación de la hepatitis C en Aragón. Departamento de Sanidad; 2019. Disponible en: <https://www.aragon.es/documents/20127/3827794/PLAN+ESTRAT%C3%89GICO+PARA+LA+ELIMINACI%C3%93N+DE+LA+HEPATITIS+C+EN+ARAG%C3%93N.pdf/6fa98ceb-b31e-db5e-0e5b-0b6e21ac59e1?t=1562230046536>
10. Servicio Canario de Salud, Gobierno de Canarias. Plan de prevención de la infección por hepatitis C en Canarias. Servicio Canario de Salud; 2010. Disponible en: <http://www3.gobiernodecanarias.org/sanidad/scs/contenidoGenerico.jsp?idDocumento=25f382f5-46d9-11e3-a0f5-65699e4ff786&idCarpeta=1c2ee4b1-a745-11dd-b574-dd4e320f085c>
11. Servicio Cántabro de Salud, Gobierno de Cantabria. Estrategia para la eliminación de la hepatitis C en Cantabria. Servicio Cántabro de Salud; 2019. Disponible en: <http://www.scsalud.es/documents/2162705/2529917/Hepatitis+C.pdf/089a743c-d758-2383-6d1b-0ab059f5887a>
12. Departament de Sanitat i Seguretat Social, Generalitat de Catalunya. Guia per a la prevenció i el control de l'Hepatitis C. *Quad Salut Pública* 2003;15:1-157.

13. Generalitat de Catalunya. Plan de prevención y control de la hepatitis C en Catalunya; 2018. Disponible en: <https://web.gencat.cat/es/actualitat/detall/Pla-de-prevencio-i-control-de-lhepatitis-C-a-Catalunya>
14. Consejería de Sanidad, Comunidad de Madrid. Libro blanco de la hepatitis C en la Comunidad de Madrid 2016-2017. Consejería de Sanidad; 2017. Disponible en: <http://www.madrid.org/bvirtual/BVCM017974.pdf>
15. Primo Vera J, Diago Madrid M, Pascual de la Torre M. Guía de actuación clínica. Hepatitis C. Conselleria de Sanitat, Generalitat Valenciana; 2004. Disponible en: <http://publicaciones.san.gva.es/publicaciones/documentos/V.2724.2004.pdf>
16. Departamento de Salud, Gobierno Vasco. Estrategia para la atención de la hepatitis C en Euskadi. Departamento de Salud; 2015. pp. 1-37. Disponible en: [https://www.osakidetza.euskadi.eus/contenidos/informacion/hepatitis\\_c/es\\_def/adjuantos/estrategia-hepatitis\\_c-es.pdf](https://www.osakidetza.euskadi.eus/contenidos/informacion/hepatitis_c/es_def/adjuantos/estrategia-hepatitis_c-es.pdf)
17. Baraza Cano MP, et al. Manual de atención sanitaria a inmigrantes. Consejería de Salud; 2007. pp. 390. Disponible en: [http://www.juntadeandalucia.es/salud/sites/csalud/galerias/documentos/p\\_4\\_p\\_2\\_promocion\\_de\\_la\\_salud/materiales\\_publicados\\_inmigrantes/manualatencioninmigrantes.pdf](http://www.juntadeandalucia.es/salud/sites/csalud/galerias/documentos/p_4_p_2_promocion_de_la_salud/materiales_publicados_inmigrantes/manualatencioninmigrantes.pdf)
18. European Centre for Disease Prevention and Control (ECDC). Hepatitis B and C testing activities, needs, and priorities in the EU/EEA. ECDC; 2017. DOI: 10.2900/05014
19. Crespo J, Albillos A, Buti M, et al. Elimination of hepatitis C. Positioning document of the Spanish Association for the Study of the Liver (AEEH). Rev Esp Enferm Dig 2019;111(11):862-73. DOI: 10.17235/reed.2019.6700/2019
20. Sequeira-Aymar E, DiLollo X, Osorio-López Y, et al. Recommendations for the screening for infectious diseases, mental health, and female genital mutilation in immigrant patients seen in Primary Care. Aten Primaria 2020;193-205. DOI: 10.1016/j.aprim.2019.02.005
21. Associació Catalana de Malalts d'Hepatitis. Fármacos disponibles para el tratamiento de la hepatitis C; 2018. Consultado el 12 de junio de 2019. Disponible en: <https://asscat-hepatitis.org/hepatitis-viricas/hepatitis-c/tratamiento-de-la-hepatitis-c/farmacos-disponibles-para-el-tratamiento-de-la-hepatitis-c/>

22. Viejo LG-E, Herola AG, Lloret IS, et al. Screening of hepatitis C virus infection in adult general population in Spain. *Eur J Gastroenterol Hepatol* 2018;30(9):1077-81. DOI: 10.1097/MEG.0000000000001190
23. Fernández M, Manzanares S, Jacques C, et al. Screening for chronic viral hepatitis in migrant populations - Report on Four HEPscreen Pilot Studies screening for chronic viral hepatitis in migrant populations. EU-HEP-SCREEN. Project No. 20101105. European Union; 2014.
24. Morales-Arráez D, Hernández-Guerra M. Electronic alerts as a simple method for amplifying the yield of hepatitis C virus infection screening and diagnosis. *Am J Gastroenterol* 2020;115(1):9-12. DOI: 10.14309/ajg.0000000000000487
25. Valerio L, Barro S, Pérez B, et al. Seroprevalence of chronic viral hepatitis markers in 791 recent immigrants in Catalonia, Spain. Screening and vaccination against hepatitis B recommendations. *Rev Clin Esp* 2008;208(9):426-31. DOI: 10.1157/13127602
26. Grupo de Trabajo del Estudio de Prevalencia de la Infección por Hepatitis C en Población General en España; 2017-2018. Resultados del 2º Estudio de Seroprevalencia en España (2017-2018). Ministerio de Sanidad, Consumo y Bienestar Social; 2019. Disponible en: [https://www.msbs.gob.es/ciudadanos/enfLesiones/enfTransmisibles/sida/docs/INFO\\_RME\\_INFECION\\_VHC\\_ESPANA2019.pdf](https://www.msbs.gob.es/ciudadanos/enfLesiones/enfTransmisibles/sida/docs/INFO_RME_INFECION_VHC_ESPANA2019.pdf)
27. CMAJ. Prevalence of Hepatitis C Virus Worldwide; 2017. Disponible en: <https://www.cmaj.ca/content/cmaj/suppl/2017/04/18/189.16.E594.DC1/161521-guide-6-at.pdf>
28. Public Health England. Hepatitis C in England 2018. Report About Public Health England. 2018:9. Available from: <http://www.hcvaction.org.uk/sites/default/files/resources/Hepatitis%20C%20in%20England%202018%20report.pdf>

**Table 1. Items have been evaluated in the different documents of the programs, strategies and clinical reference guides of hepatitis C for every Region (CC. AA.)**

- Availability (yes/no) of any reference guide or recommendations for hepatitis C screening in your Region
- If so, please mention the official document, e.g., Autonomous Community Plan, screening local strategies, clinical practice guidelines, recommendations, guidelines, other
- Inclusion of immigrants from endemic countries as a screening group risk
- Mention in the indications of countries with a high prevalence
- Indication of the threshold prevalence for the screening strategy
- Capture or invitation method
- Inclusion of pregnant women from endemic countries as a screening group risk
- Inclusion of citizens with dental or medical treatment in endemic countries as a screening group risk
- Screening access method or institution: Primary Care, specialized attention center, Emergency department, penal institutions.
- Control measures and results follow-up

**Table 2. Characterizing the different HCV regional plans in Spain for the immigrant population risk group from endemic countries**

Autonomous Community*	Risk group		Capture/acquisition			Screening access			Control measures	
	Immigrant population from endemic countries	Dental or medical treatment in endemic countries	Primary Care	Hospital care	NGOs, foundations, others	Primary Care	Specialized attention center	Others	Implementation of indicators for immigrant population	Screening specific indicators for immigrant population
Aragon	?		?	?	?	?	?			
Andalusia	?		?			?	?			
Canary Islands	?	?	?	?		?	?			
Cantabria	?		?	?	?	?	?	?		?
Cataluña	?		?		?	?		?		?
Galicia	?	?								
Madrid	?		?			?				
Basque Country			?			?				
Valencia			?			?				

\*The missing regions (CC. AA.) in the table do not possess a strategy different to that of the National Plan (PEACH).

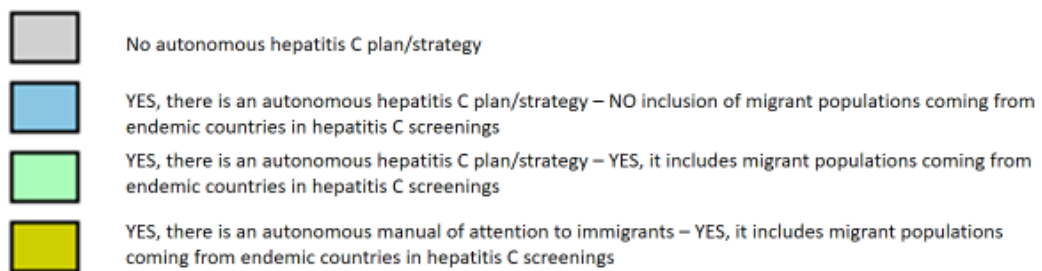


Fig. 1. Map of autonomous communities based on their autonomous programs for HCV prevention and screening in early 2017 and by the end of 2019.