

# **Model to Eliminate Viral Hepatitis Infection in Migrants: A Prospective Multicenter Study in Southern Italy**

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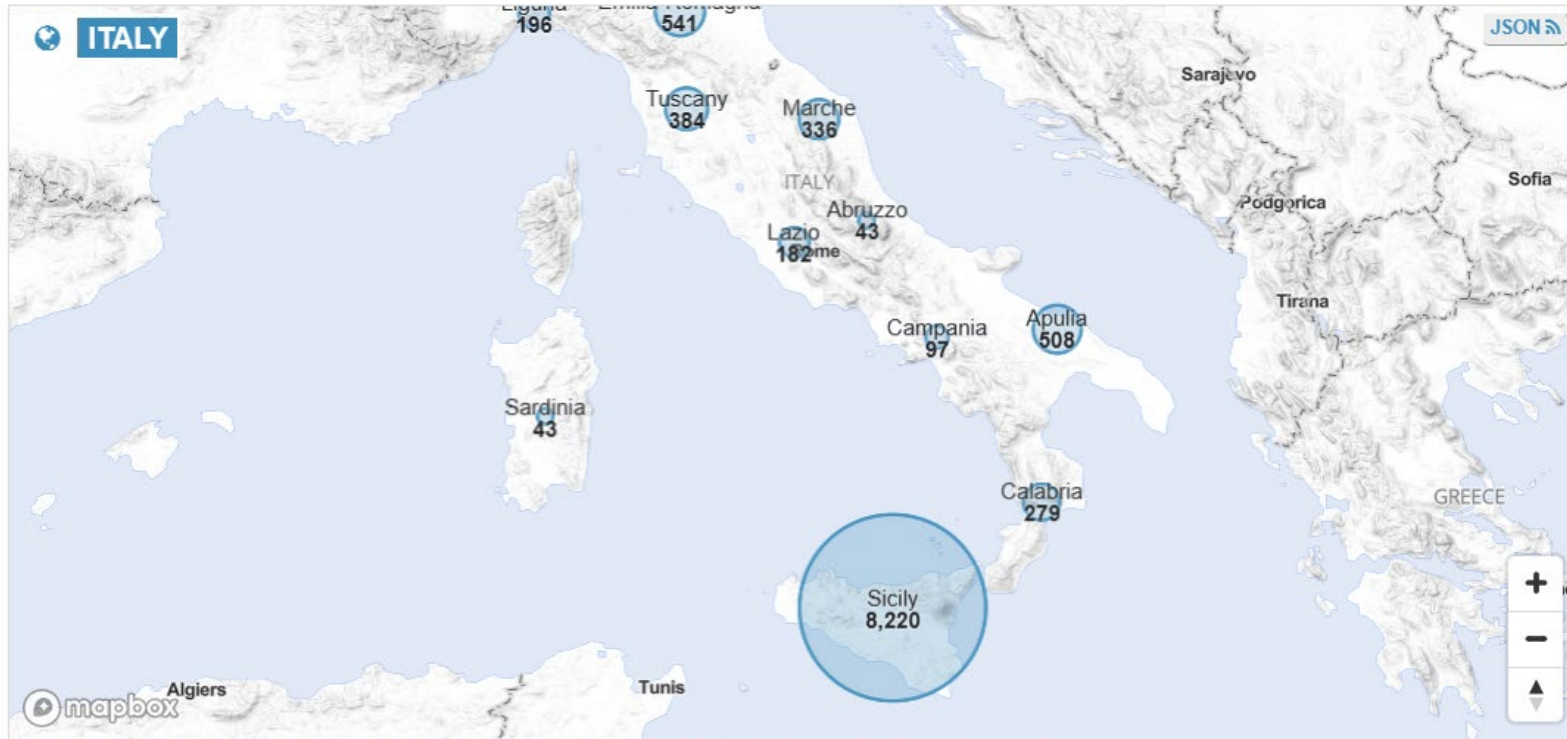
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- **Migration data In Italy**
- **Chronic viral hepatitis prevalence in general population in Italy**
- **Chronic viral hepatitis prevalence in migrants in Italy**
- **Our model to eliminate Viral Hepatitis Infection in Migrants**

...Burden of migrants in Italy...



# ...Burden of migrants in ITALY

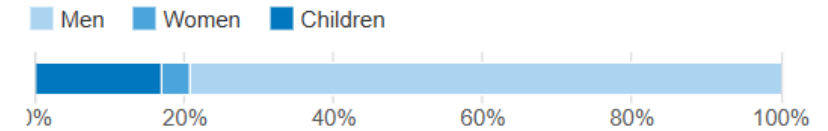


## Sea arrivals in 2024

10,829

Last updated 24 Mar 2024

## Demographics (based on data from January 2024)



- Migration of subjects coming from countries high or intermediate endemicity for HBV, HCV and HIV infections

<https://data2.unhcr.org/en/situations/mediterranean>

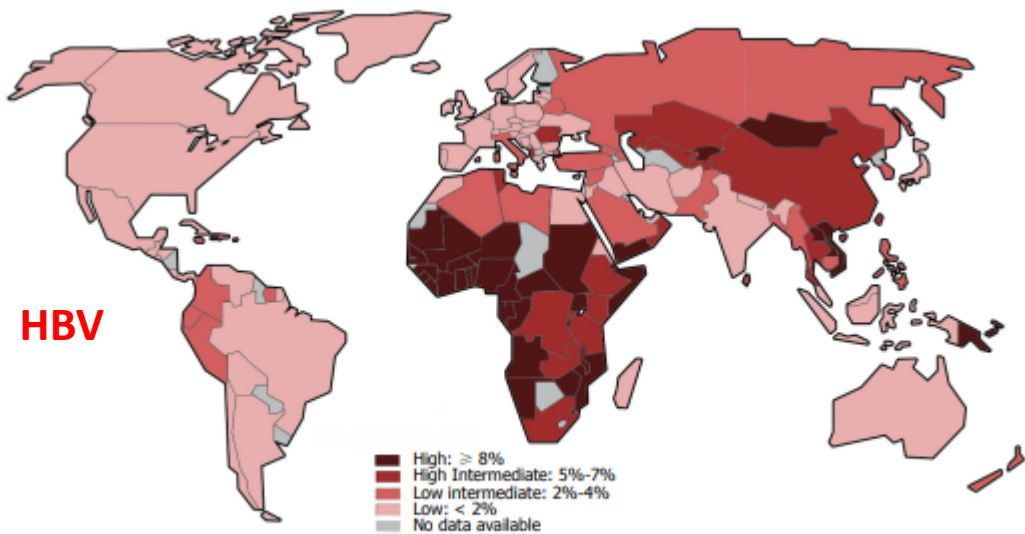
Last access March 2024

...Burden of viral hepatitis worldwide...

- **Viral hepatitis are the most common cause of liver diseases and continue to constitute a global public health challenge.**
- **The different viruses are present worldwide, but their spread varies from country to country**



# Burden of chronic viral hepatitis worldwide...

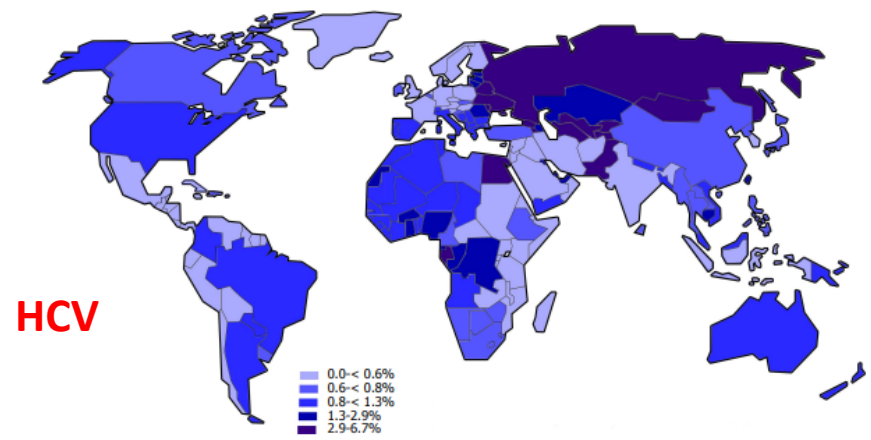


Source: Schweitzer A, Horn J, Mikolajczyk R, Krause G, Ott J. Estimations of worldwide prevalence of chronic hepatitis B virus infection: a systematic review of data published between 1965 and 2013. *The Lancet*. 2015 Jul 28; 386(10003): 1546-1555.

Hepatitis B prevalence

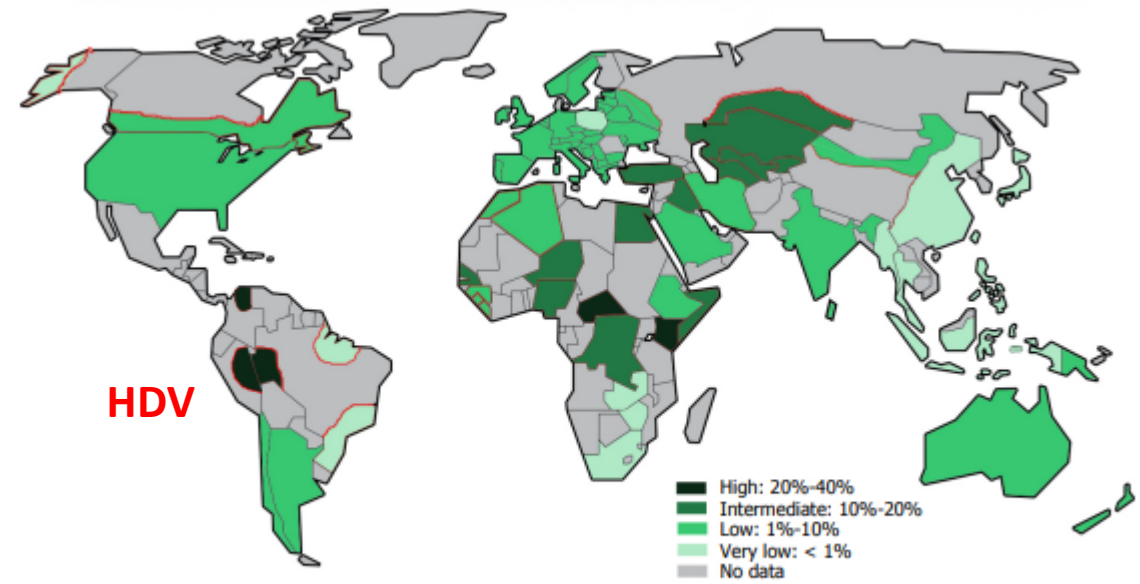
**Definition of chronic viral hepatitis endemicity levels**

	HBsAg	anti-HVC
Low	$< 2\%$	$< 1\%$
Intermediate	$< 2-7\%$	n.a.
High	$\geq 8\%$	$\geq 1\%$



Source: Gower *et al.* Global epidemiology and genotype distribution of the hepatitis C virus infection. *J Hepatol*. 2014 Nov; 61(1 Suppl): S45-57. DOI: 10.1016/j.jhep.2014.07.027. Epub 2014 Jul 30

Hepatitis C prevalence (percent of population)



Source: Wedemeyer H, Manns MP. Epidemiology, pathogenesis and management of hepatitis D: update and challenges ahead. *Nat Rev Gastroenterol Hepatol* 2010 Jan; 7(1): 31-40

Hepatitis D prevalence: percentage among hepatitis B population

...Burden of chronic HBV infection in Italy







# Italian data

## HBV and HCV prevalence

Liver, Pancreas and Biliary Tract

Low prevalence of hepatitis B and hepatitis C virus serum markers in a cohort of pregnant women from Southern Italy



Tindaro Lembo<sup>a,b,1</sup>, Francesca Saffioti<sup>a,1</sup>, Benito Chiofalo<sup>c,d</sup>, Roberta Granese<sup>c,d</sup>, Roberto Filomia<sup>b</sup>, Roberta Grasso<sup>c,d</sup>, Onofrio Triolo<sup>c,d</sup>, Giovanni Raimondo<sup>a,b,\*</sup>

a cohort of pregnant women consecutively admitted to the Division of Obstetrics and Gynecology of the University Hospital of Messina, Italy, from January 2010 to December 2015

a total of 7558 pregnant women were admitted

Yearly number of individuals tested, missing data, and prevalence of HBsAg and anti-HCV positive cases in a cohort of Italian and non-Italian pregnant women.

Year	Pregnant women, n. (%)	HBsAg		Anti-HCV		
		Missing n. (%)	Pos./tested n. (%)	Missing n. (%)	Pos./tested n. (%)	
2010	Total	1258	45 (4)	5/1213 (0.4)	705 (56)	0/553 (0)
	IT	1176 (93)	42 (4)	2/1134 (0.2)	662 (56)	0/514 (0)
	n-IT	82 (7)	3 (4)	3/79 (3.8)	43 (52)	0/39 (0)
2011	Total	1449	264 (18)	6/1185 (0.5)	324 (22)	7/1125 (0.6)
	IT	1306 (90)	244 (19)	3/1062 (0.3)	298 (23)	7/1008 (0.7)
	n-IT	143 (10)	20 (14)	3/123 (2.4)	26 (18)	0/117 (0)
2012	Total	1451	290 (20)	5/1161 (0.4)	340 (23)	0/1111 (0)
	IT	1291 (89)	259 (20)	3/1032 (0.3)	301 (23)	0/990 (0)
	n-IT	160 (11)	31 (19)	2/129 (1.6)	39 (24)	0/121 (0)
2013	Total	1332	310 (23)	4/1022 (0.4)	345 (26)	1/987 (0.1)
	IT	1203 (90)	274 (23)	0/929 (0)	306 (25)	1/897 (0.1)
	n-IT	129 (10)	36 (28)	4/93 (4.3)	39 (30)	0/90 (0)
2014	Total	799	138 (17)	5/661 (0.7)	245 (31)	1/554 (0.2)
	IT	751 (94)	130 (17)	4/621 (0.6)	228 (30)	1/523 (0.2)
	n-IT	48 (6)	8 (17)	1/40 (2.5)	17 (35)	0/31 (0)
2015	Total	1269	383 (30)	4/886 (0.5)	415 (33)	1/854 (0.1)
	IT	1120 (88)	339 (30)	1/781 (0.1)	365 (33)	1/755 (0.1)
	n-IT	149 (12)	44 (30)	3/105 (2.9)	50 (34)	0/99 (0)
2010–2015	Total	7558	1430 (19)	29/6128 (0.5)	2374 (31)	10/5184 (0.2)
	IT	6847 (91)	1288 (19)	12/5559 (0.2) <sup>a</sup>	2160 (32)	10/4687 (0.2) <sup>a</sup>
	n-IT	711 (9)	142 (20)	17/559 (3.0)	214 (30)	0/497 (0)

Abbreviations: HBsAg, Hepatitis B surface antigen; Anti-HCV, anti-Hepatitis C virus antibodies; IT, Italians; n-IT, non-Italians; Pos., positive. Values are expressed as numbers (%).

\*  $P < 0.001$ .

<sup>a</sup>  $P = n.s.$



...Burden of chronic HCV infection in Italy...



## Prevalence of hepatitis C virus estimates of undiagnosed individuals in different Italian regions: a mathematical modelling approach by route of transmission and fibrosis progression with results up to January 2021

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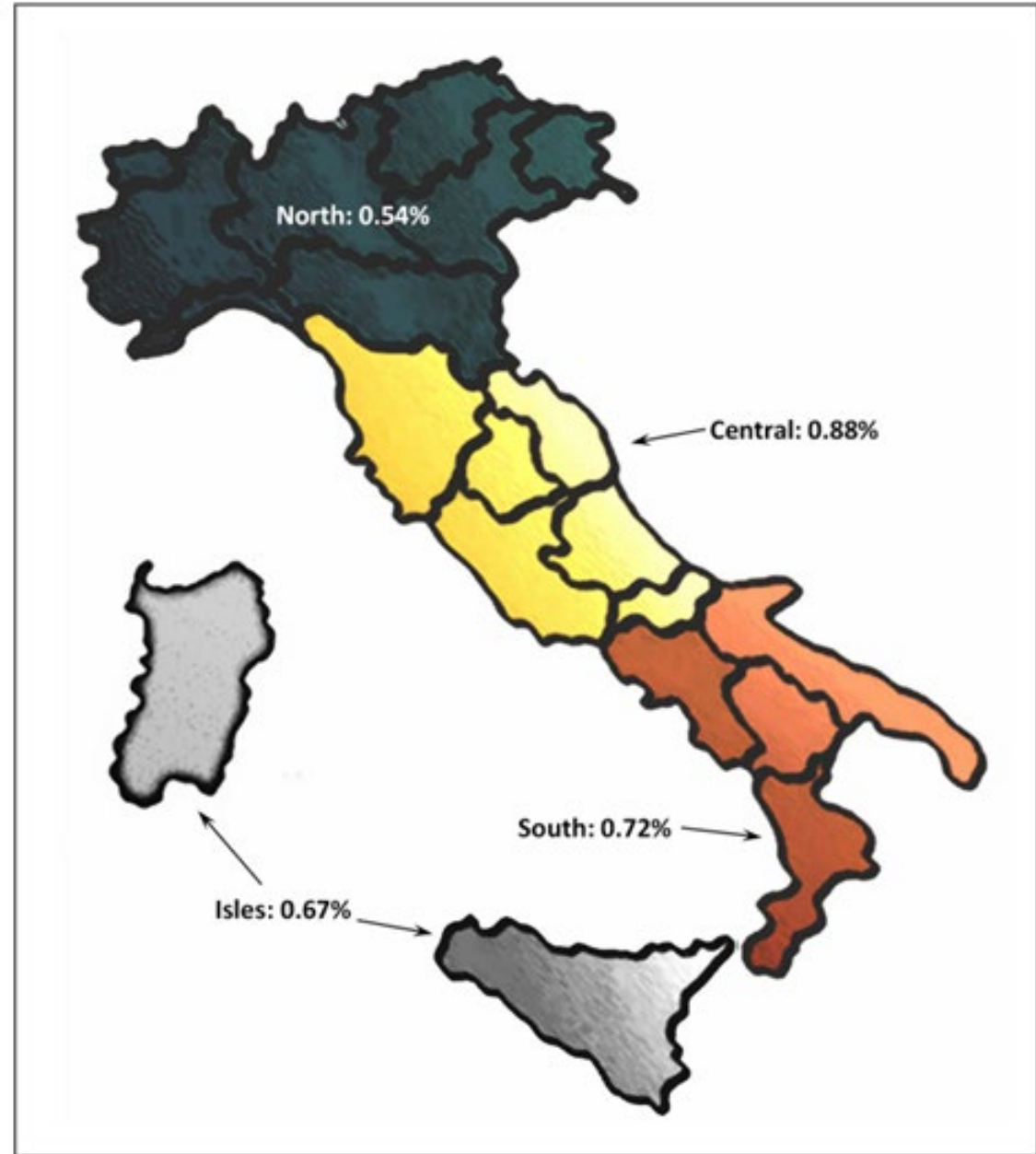
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<sup>6</sup>Medical Department AbbVie Italy, Rome Italy;

<sup>7</sup>Gastroenterology and Liver Unit, DiBiMIS, University of Palermo, Italy

Map showing the estimated prevalence of active HCV infection in the 4 macroareas of Italy up to January 2021.



...Burden of chronic viral hepatitis  
in migrants in Italy...



# Epidemiology of viral hepatitis in migrants in Italy

- Fragmented data
- Research group initiatives
- There is a lack of structured surveillance data

Authors	Period of enrollment	Geographical area of study	Sample size	HBV prevalence	HCV prevalence	HDV prevalence
Colucci et al	2019-2020	Milano	362	2%	1.7%	
ISSA-AL-Hammal	2006-2010	Brescia	3720	6%	3.6%	
Piffer et al	2009-2018	Trento	45000		6%	
Cuomo et al	March-December 2016	Modena	304	12.2%	3.3%	
Donisi	Jan December 2015	Piacenza	316	5.3%	1.9%	
Majori et al	March december 2005	Verona	182	9.3%		
Del Pinto et al	July december 2015			22%	20%	
Buonfrate	2015			11.6%	0.8%	
Donisi et al	2020			5.3%	1.9%	
Malagnino et al	2013-2015			15%	2.2%	
Mazzitelli et al	2015-2018			7%		
Scotto et al.	Jan december 2015			11.2%	3.9%	
Prestileo et al	2015-2017	Agrigento,Palermo, Trapani	2639	9,7%	0.9%	
Prestileo	200-2015	Palermo	133	40%	9.8%	
Stroffolini	Jan-June 2019	Nord-Centro-Sud	140			23%
Quaranta et al	Coorte Piter	Coorte Piter Nord-Centro-Sud	301	3.8%		
Totalo et al	Jan 2020-Jan 2021	Puglia	309		2.9%	
Zermiani et al	2012	North East Italy	345	3.5%	0.9%	
Coppola et al	Jan-June 2013	Napoli Caserta	882	8.8%	4%	
Coppola et al	Jan 2012-June 2018	Campania Puglia Calabria	3839	10%	3.5%	
Marrone et al	2020	Roma	836	10.8	1.1%	
Pisaturo et al	Jan2012- February 2020	Napoli, Caserta. Foggia	319			2.5%
Colucci et al	March 2019 February 2020	Milan	362	2.0	1.7%	0
Tafuri et al	May-June 2008	Bari	529	9.7%	2.2%	
Scotto et al	Jan 2003-March 2009	Foggia	1623	11%		

**HBV: 2-40%**  
**HCV: 0,8-20%**

**HBV, HCV and HDV prevalence in migrants in Italy**

## BACKGROUND

Data on the prevalence of hepatitis C virus (HCV) and hepatitis B virus (HBV) in migrants living in Italy are scanty and there are few screening and linkage-to-care programs for this target.





AIMS

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**To validate an innovative elimination model for diagnosis and treatment of viral hepatitis in migrants in Italy**





## Study design

**A prospective, multicenter, collaborative study based on the long-term active cooperation between 2 third-level units of infectious diseases and 4 first-level clinical centers in southern Italy was designed.**

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TARGET  
POPULATION

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**MIGRANTS**

# Geographical areas of the study

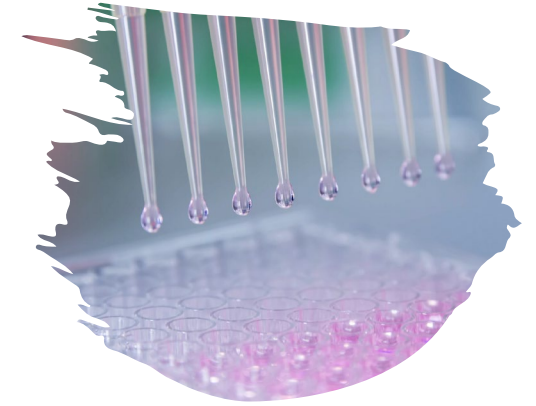


# Study design

**All >18-year-old migrants consecutively evaluated for clinical consultation at one of the first-level centers were enrolled and organized in 4 phases: educational, screening, linkage to care, and treatment phase**

**The first-level clinical centers are general practice clinics that are attended mainly by migrants for low back pain, headache, hypertension and allergy symptoms; thus, they have proven experience in managing vulnerable groups and are greatly appreciated by the migrants.**

**These first-level centers are linked with the Italian humanitarian organizations "which welcome migrants who need help offering refuge even if temporary, hot meals, and medical and legal assistance. The migrants willingly frequent these associations because they know they can find help to obtain temporary documents, in order to find work and to join their families in other European countries**



# Study design

All >18-year-old migrants consecutively evaluated for clinical consultation at one of the first-level centers were enrolled and organized in 4 phases: educational, screening, linkage to care, and treatment phase

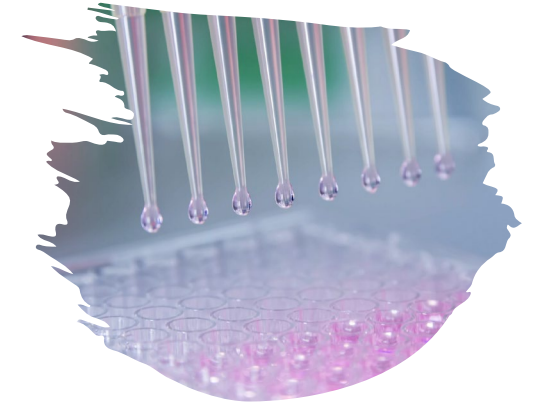
Each migrant who agreed to join the study signed a consent written in the immigrant's own language and in the English language and filled out an anonymous questionnaire on the epidemiologic data administered by the researchers with the assistance of a cultural mediator

All participants included in the study were screened for hepatitis B surface antigen (HBsAg), anti-HCV, and anti-HIV. The sera of HBsAg-positive participants were tested for serum HBV DNA (tested twice) and anti-delta.

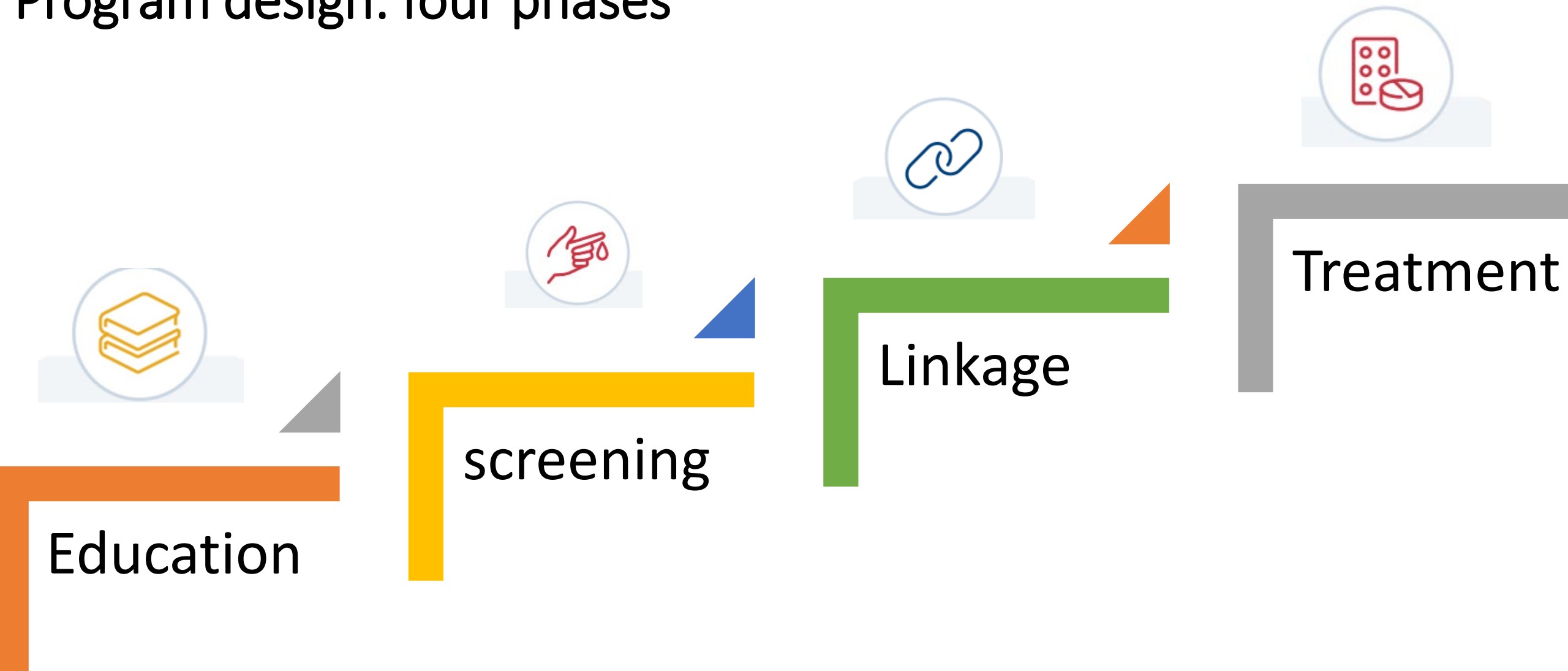
An anonymous serologic screening for HBV, HCV, and HIV was offered

The mediator guaranteed that the migrant had understood the type of study and specified that participation in the study did not in any way guarantee permanence in Italy.

The sera of anti-HCV-positive participants were tested for HCV-RNA (tested twice). The participants who were positive for viral hepatitis infection and/or for HIV were referred for linkage to care at one of the tertiary units of infectious diseases



# Program design: four phases





# Program design first phase: education



## Education

- Information and illustrated brochure on transmission and prevention of viral infections, related diseases and treatment

**Vieni a trovarci presso i nostri Centri Clinici!**

**Il test del sangue è completamente gratuito**

A Caserta presso:  
"ex Centro Sociale Liberato", viale EBittico 9

A Napoli presso:  
"Tutela della Salute degli Immigrati", via Egitlica a Forcella 34

"Centro di accoglienza vicolo Verticelli", via Tribonati

"Centro di accoglienza femminile", via Tommasoni, villa Tommasoni, Saviano (NA)

**STOP VIRUS!!!**

STOP  
HBV HCV HIV

**Come sono i virus HBV e HCV?**

HBV e HCV sono virus che colpiscono il fegato. Quando l'epatite virale, possono progredire nel tempo provocando la cirrosi epatica (alterazione di forma e funzione del fegato) e/o il tumore del fegato.

**Come si trasmettono i virus HBV, HCV e HIV?**

- Rapporti sessuali non protetti (vaginali e anali)
- Sangue: scambio di siringhe infette, strumenti per tatuaggi e piercing contaminati con sangue infetto, uso in comune di oggetti personali (rasoi, tagliarenghe, spazzolino da denti, ecc.) contaminati da sangue
- Da madre infetta al bambino (durante gravidanza, parto e allattamento al seno)

**Come si può prevenire il contagio del virus HBV, HCV e HIV?**

- Usare sempre il profilattico durante i rapporti sessuali genitali, anali e orali
- Usare soltanto siringhe sterili
- Assicurarsi che gli strumenti utilizzati per piercing e tatuaggi siano utilizzati una volta sola (monouso)
- Evitare il contatto diretto con il sangue
- Molte infezioni possono trasmettersi durante gravidanza, parto e allattamento dalla madre al bambino sottoposti al test del sangue e ai controlli per le infezioni è la migliore protezione per i bambini

**Esiste un vaccino per proteggersi dall'HBV, e farmaci contro HCV e HIV.**

**Con il test specifico (con prelievo di sangue) per la rilevazione degli anticorpi nel sangue è possibile sapere se si è stati contagiati da questi virus.**

**Non puoi mai dire il contagio è stato più o meno ingenuo, perché il bene dipende, non è il caso dopo il contagio.**

Specie queste malattie sono asintomatiche. Altre volte si possono manifestare con malaise generale, nausea, vomito e diarrea.

Uje kuvanye zahanani yetu!

**Kipimo hakina gharama vovote**

Caserta:  
"ex Centro Sociale Liberato", viale EBittico 9

Napoli:  
"Tutela della Salute degli Immigrati", via Egitlica a Forcella 34

"Centro di accoglienza vicolo Verticelli", via Tribonati

"Centro di accoglienza femminile", via Tommasoni, villa Tommasoni, Saviano (NA)

**STOP VIRUS!!!**

STOP  
HBV HCV HIV

**HBV, HCV na HIV buambukirwaya!**

**HBV na HCV ni virus?**

HBV na HCV ni virus zivavotambuka ku ne kuvabwala uganga wa homa ya ibi (hepatiti B), virus hvi zinavote pia kuvabwala jenasi (jenasi vyanji mawabwala ya urubu na test za ibi mbili zinavote ya ibi).

**HIV ni virus?**

HIV, VVU ni virus zivavotambuka uganga wa UNIMWI (ijungufu wa Vinga Mwanji) na kutaribu mifumo wa kiganga-viti. Maganga mengine ya kuvabwala na uganga ya kuvabwala huwaka kutaribu-bwala mwa mwa unaji kutakana na maambukizi ya VVU.

Mara nyingi maganga haya hayana dalili. Maganga haya huwaka kuwaka kama kuvabwala, kutakana na kutaribu.

**HBV, HCV na HIV buambukirwaya!**

- Kwa njia ya njano zando (kwa njia ya uke au kwa njia ya hapa kubwa)
- Damu kuchangwa sindano ambayo hujachemhwa bawala ya mtu mwingine kutakana, kutakana viba vya kuchwama bumbura na kupanama piercing maalumu vilivyochafuka na damu yanayo maambukizi, kudakikiana viba vinavyo (damu wambili, mwanja ya kutakana kucha, mwanja k.k.)
- Kutakana kwa majina aliyen na maambukizi ya virusi kwa njia kwa mtu wakati wa uganga, kuhifungua au kupanama.

Uchunguzi wa kibwawa (kipimo cha damu) wa kiganga-viti kwenye damu huwaka kutakana kama mtu amambukirwaye virusi hivi.

Mara nyingi maganga haya hayana dalili. Maganga haya huwaka kuwaka kama kuvabwala, kutakana na kutaribu.

**Kuziwa maambukizi ya virusi vya HBV, HCV na HIV**

- Tumia kondomo wakati wa kupanama (njano kwa njia ya uke, njia ya hapa kubwa, na madonno)
- Tumia sindano bichemhwa
- Maikisha kwa njia vya kuchwama bumbura na kupanama piercing maalumu zinatumwa mara moja tu
- Egusa kugusa au kutakana na damu
- Mirathi mweni huambuka kutika kwa njia ya njano au virusi kwa njia kwa mtu wakati wa uganga, kuhifungua au kupanama. Kugama ni njia bora ya kupanama maambukizi za njia moja moja.

Chango ya kutakana VVU ipo, na vile vile madawa aliyen ya HCV na HIV.

Mara nyingi maganga haya hayana dalili. Maganga haya huwaka kuwaka kama kuvabwala, kutakana na kutaribu.

Mara nyingi maganga haya hayana dalili. Maganga haya huwaka kuwaka kama kuvabwala, kutakana na kutaribu.



# Program design

## second phase: screening



### Education

- Information and illustrated brochures on transmission and prevention of viral infections, related diseases and treatment



### Free HBsAg, anti-HCV, and anti-HIV screening

- offered to all undocumented migrants and low-income refugees
- Review by a physician and cultural mediator at 1st-level clinical center



# Program design third phase: linkage



## Education

- Information and illustrated brochures on transmission and prevention of viral infections, related diseases and treatment



## Free HBsAg, anti-HCV, and anti-HIV screening

- offered to all undocumented migrants and low-income refugees
- Review by a physician and cultural mediator at 1st-level clinical center



## Linkage

- for viral hepatitis infection and/or for HIV were referred for linkage to care at one of the tertiary units of infectious diseases.



Study design

Key partners/stakeholders



Physicians



Community  
mediators



Volunteer associations dealing  
with disadvantaged people

- 
- The present study program was facilitated by the work of cultural mediators, professionals who facilitate the communication between people speaking different languages and from different cultural backgrounds.

our data



**Blood-borne chronic viral infections in a large cohort of immigrants in southern Italy: A seven-centre, prospective, screening study**

Nicola Coppola<sup>a,b,\*</sup>, Caterina Monari<sup>a,b</sup>, Loredana Alessio<sup>b,c</sup>, Lorenzo Onorato<sup>a,d</sup>, Luciano Gualdieri<sup>a</sup>, Caterina Sagnelli<sup>a,f</sup>, Carmine Minichini<sup>a</sup>, Evangelista Sagnelli<sup>a</sup>, Giovanni Di Caprio<sup>b,c</sup>, Lorenzo Surace<sup>g</sup>, Gaetano Scotto<sup>h</sup>, Margherita Macera<sup>a,c</sup>, Gianfranco Griffo<sup>h</sup>, Italo Francesco Angelillo<sup>l</sup>, Mariantonietta Pisaturo<sup>a,d</sup>



**Supplementary table 1: Demographics and serum viral markers of the study participants**

	<b>Total</b>
<u>Number of subjects</u>	3,839
<u>Mean Age, years (±SD)</u>	28 (±10)
<u>Males, n (%)*</u>	3,224 (84.0)
<u>Females, n (%)*</u>	610 (15.9)
<u>Serological status, n (%):</u>	
- <u>HBsAg+</u>	381 (9.9)
- <u>HBsAg-/anti HBc+</u>	1,448 (37.7)
- <u>Anti-HCV+</u>	136 (3.5)
- <u>Anti-HIV+</u>	62 (1.6)
- <u>HBsAg-/anti-HBc-/anti-HCV-/anti-HIV -</u>	1,933 (50.6)
<u>With multiple infection, n (%):</u>	
- <u>HBsAg+/anti-HCV+</u>	9 (0.2)
- <u>HBsAg+/anti-HIV+</u>	9 (0.2)
- <u>Anti-HCV+/anti-HIV +</u>	8 (0.2)
- <u>HBsAg+/anti-HCV+/anti-HIV+</u>	2 (0.05)
<u>Geographical area of origin, n (%)**:</u>	
- <u>northern Africa</u>	127 (3.3)
- <u>western Africa</u>	2,299 (59.9)
- <u>eastern Africa</u>	146 (3.8)
- <u>central-southern Africa</u>	54 (1.4)
- <u>India-Pakistan Subcontinent</u>	578 (15.1)
- <u>eastern Asia</u>	185 (4.8)
- <u>eastern Europe</u>	383 (10.0)

- A prospective screening program was performed in seven clinical centers operating in Campania, Apulia and Calabria regions in southern Italy
- 3,839 agreed to be screened for serum HBsAg, anti-HBc, antiHCV and anti-HIV and were enrolled in the present study (January 2012 and June 2018)

Demographic and serum viral markers of the study participants, by the geographical area of origin.

	Northern Africa, n° (%)	Eastern Africa, n° (%)	Western Africa, n° (%)	Central-southern Africa, n° (%)	Eastern Europe, n° (%)	India- Pakistan area, n° (%)	P value
<u>N° of subjects</u>	127	146	2,299	54	383	578	
<u>Mean age, years +SD</u>	34.3 ± 11.1*	27.2 ± 10.3	26.0 ± 8.1	28.7 ± 10.9	38.2 ± 12.7§	28.1 ± 8.9	< 0.0001§
<u>Males</u>	117 (92.1)	117 (80.1)	2051 (89.2)	39 (72.2)	141 (36.8)§	565 (97.8)	< 0.0001§
<u>Serological status</u>							
- <u>HBsAg+</u>	4 (3.1)	9 (6.2)	297 (12.9)*	4 (7.4)	32 (8.4)	26 (4.5)	< 0.0001*
- <u>HBsAg-/antiHBc+</u>	19 (15.0)	45(30.8)	1,067(46.4)*	21(38.9)	120(31.3)	129(22.3)	< 0.0001*
- <u>Anti-HCV+</u>	2 (1.6)	3 (2.1)	79 (3.4)	3 (5.6)	17 (4.4)	28 (4.8)ç	0.07ç
- <u>Anti-HIV +</u>	0 (0.0)	3 (2.1)	48 (2.1)*	1 (1.9)	5 (1.3)	3 (0.5)	0.004*

RESEARCH ARTICLE

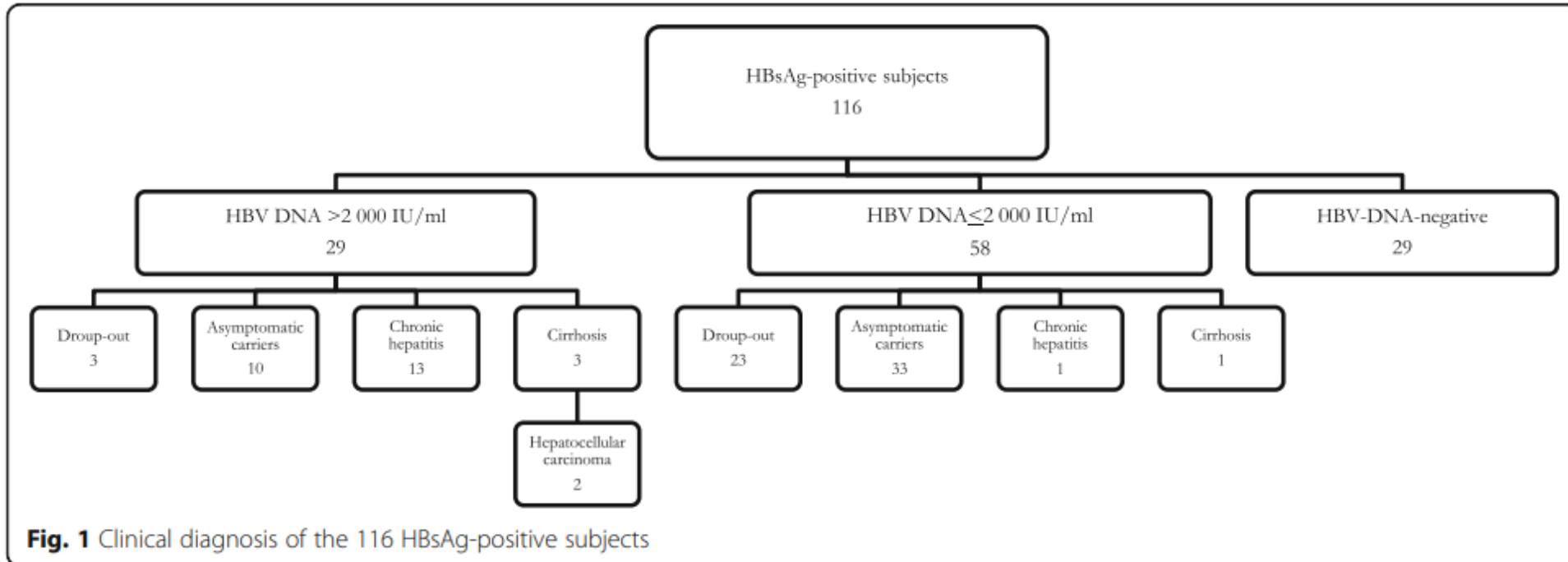
Open Access



# Hepatitis B virus infection in undocumented immigrants and refugees in Southern Italy: demographic, virological, and clinical features

Nicola Coppola<sup>1\*</sup>, Loredana Alessio<sup>1,2</sup>, Luciano Gualdieri<sup>3</sup>, Mariantonietta Pisaturo<sup>4,5</sup>, Caterina Sagnelli<sup>6,7</sup>, Carmine Minichini<sup>1</sup>, Giovanni Di Caprio<sup>1,2</sup>, Mario Starace<sup>1</sup>, Lorenzo Onorato<sup>1,2</sup>, Giuseppe Signoriello<sup>8</sup>, Margherita Macera<sup>1</sup>, Italo Francesco Annelli<sup>9</sup>, Giuseppina Pascuale<sup>1</sup> and Evannelicta Sannelli<sup>9</sup>

**Of the 1 212 immigrants, 116 (9.6%) were HBsAg positive, 40 (3.6%) were anti-HCV positive, 14 (1.3%) were anti-HIV positive, 2 HDV ab Positive (1,7%)**



1212 enrolled subjects, mostly young (median age 32 years, range 12–74 years), prevalently males (75.2%), and had been living in Italy for a mean period of 50.3 months (SD ± 53.0).

Of the 1,212 immigrants, 668 (55.1%) came from SSA

Of the 47 genotyped patients, 11(23.4%) had HBV genotype A, 7 (14.9%) had genotype D, 28 (59.6%) had genotype E, and only one (2.1%) had genotype C.



# Program design

## fourth phase: treatment



### Education

- Information and illustrated brochures on transmission and prevention of HCV, related diseases and treatment



### Free HCV screening

- offered to all undocumented migrants and low-income refugees
- Review by a physician and cultural mediator at 1st-level clinical center



### Linkage

- of anti-HCV-positive patients to 3rd-level ID units (HCV RNA and genotyping)



### Treatment

- All the HCV-RNA-positive participants were offered antiviral treatment with sofosbuvir/velpatasvir.
- The HBV-DNA-positive participants with a viral load higher than 2,000 IU/mL were offered antiviral treatment with nucleos(t)ide analogue (NA) according to international guidelines;
- all HIV- positive participants were offered antiviral treatment.

# RESULTS

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3,501 migrants  
observed in the study  
period

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3417 (98%) agreed to  
be screened



<b>Number of patients</b>	3,417
<b>Age, median (IQR)</b>	27 (18-74)
<b>Males, n ° (%)</b>	2,805 (61)
<b>Months of stay in Italy, median (SD)</b>	28.3 (±45.
<b>Geographical area of origin n ° (%)</b>	
Eastern Europe	310 (9,07
India-Pakistan	642 (18.7
North Africa	141 (4.12
Sub-Saharan Africa	2,066 (60,
South America	34 (0.99)
Not known	224 (6,5)
<b>Serological marker n° (%)</b>	
HBsAg-positive, anti-HCV-negative, anti-delta-negative, anti HIV-negative	300 (8.7
HBsAg negative/ anti-HCV positive/anti-HIV-negative	161 (4.7
HBsAg-positive, anti-HCV-positive, anti-delta-negative, anti HIV negative	16 (0.5)
HBsAg-positive, anti-delta-positive, anti-HCV-negative, anti HIV negative	8 (0.2)
HBsAg-negative, anti-HBc-positive, anti HIV negative, anti HCV negative	1,332 (3'
HBsAg positive/anti-HIV positive/anti-HCV negative	8 (0.2)
HBsAg positive/anti-HIV positive/anti-HCV positive	2 (0.05)
HBsAg negative /anti-HCV positive/anti-HIV positive	6 (0.1)
HBsAg negative/ anti- HIV positive/anti-HCV negative	60 (1.7,
HBsAg /anti-HCV /anti-HIV/anti-HBc negative	1,524 (4.

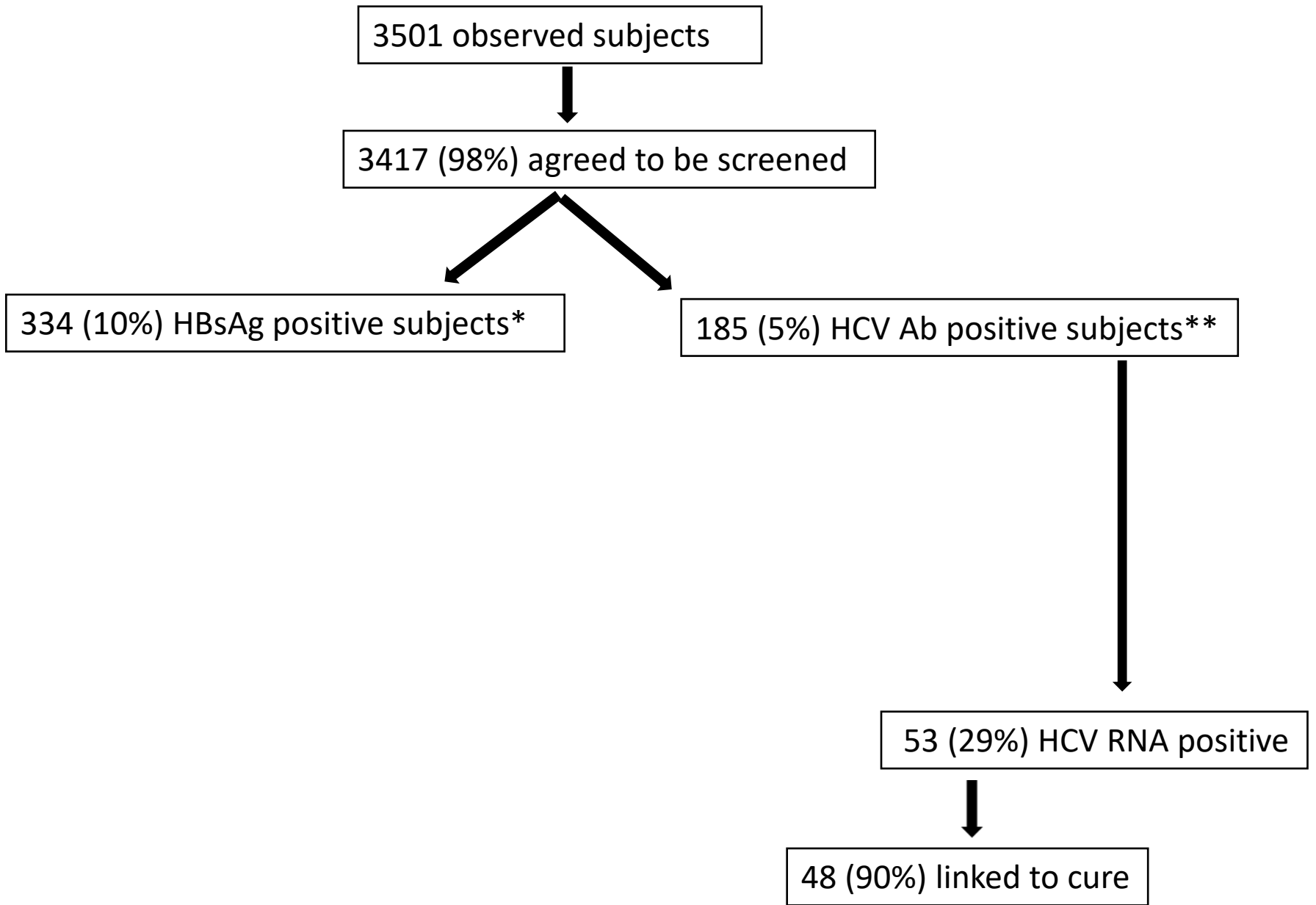
characteristics of the 3417 participants screened.

# Program design

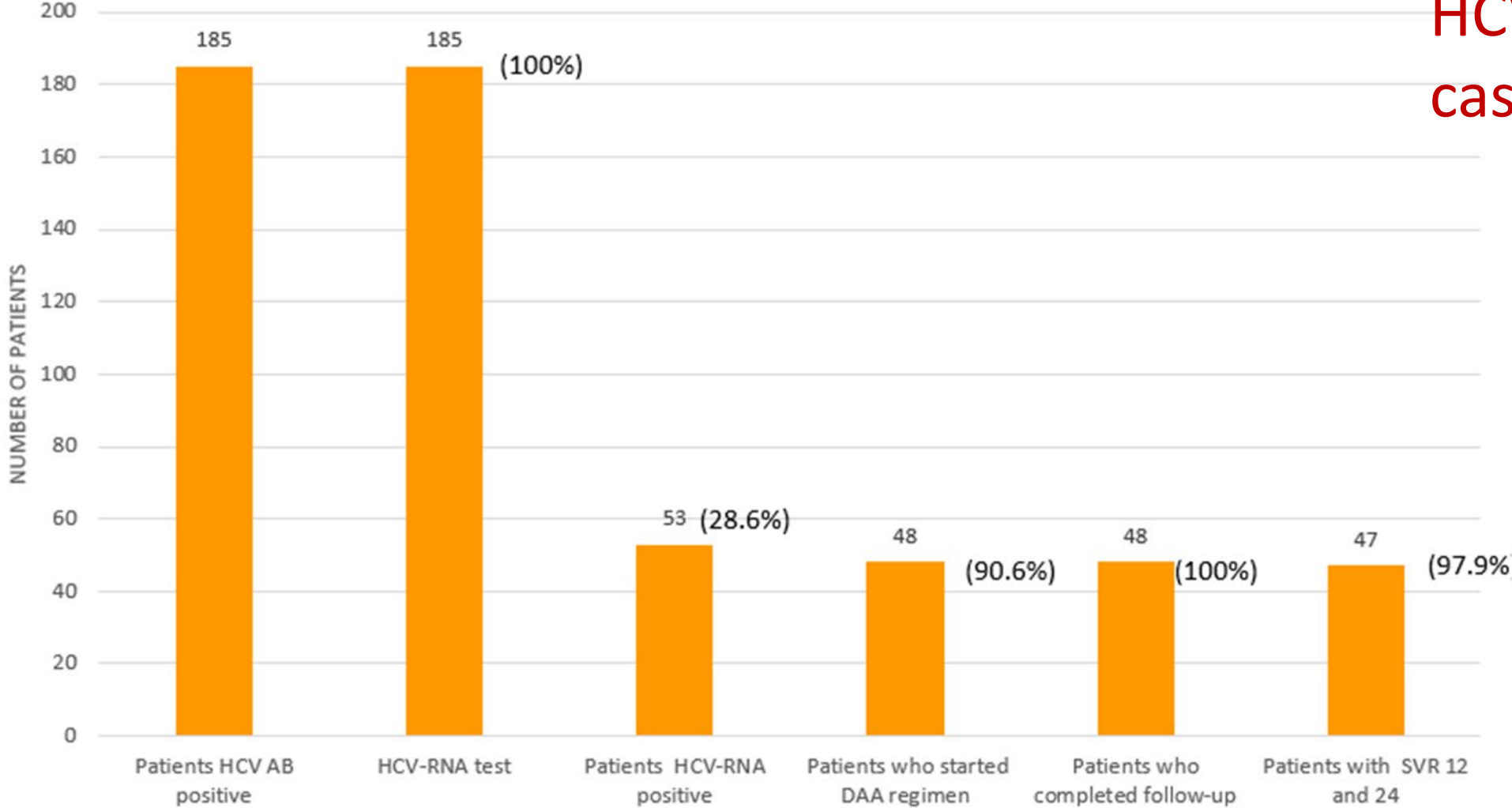


## Treatment

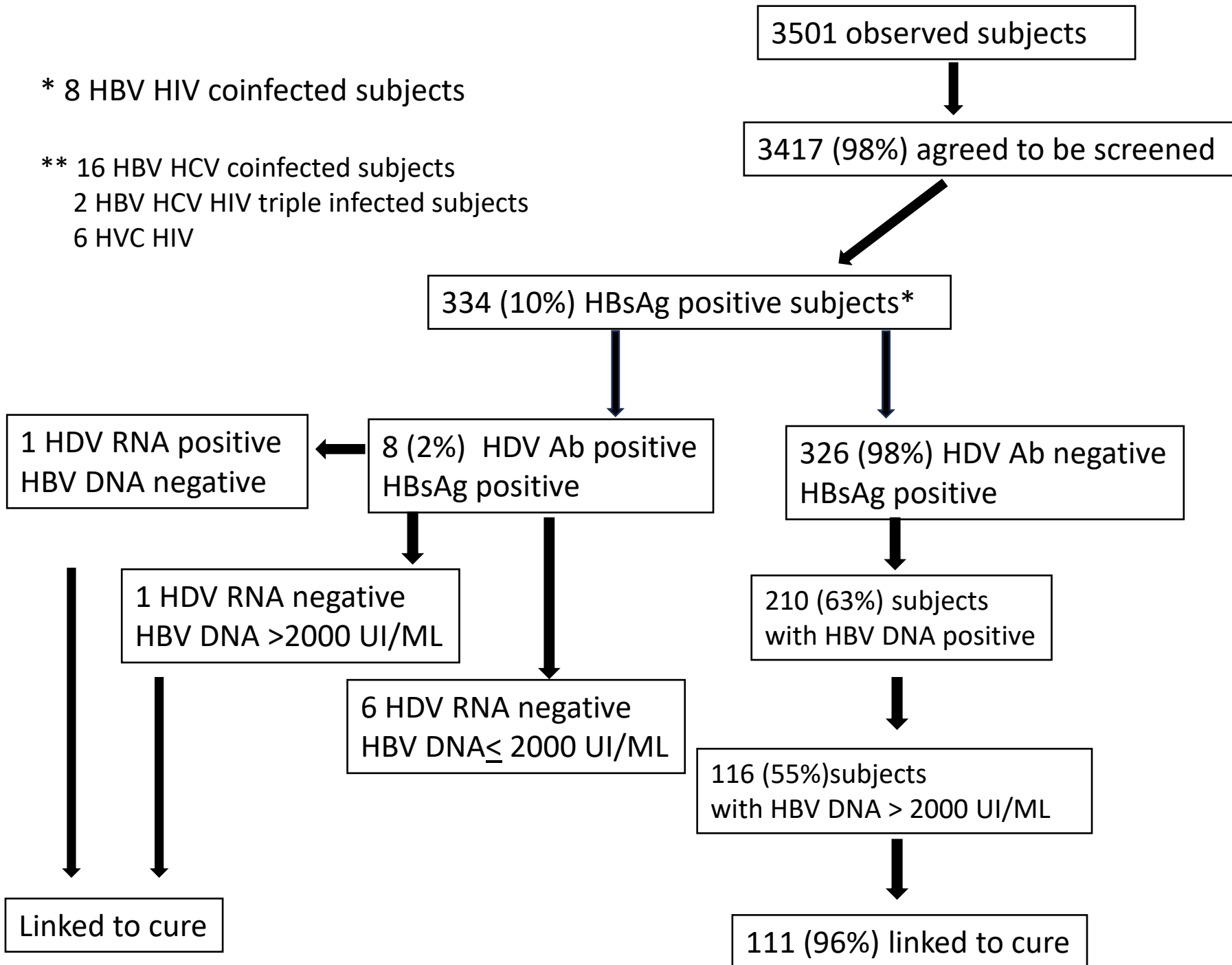
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# HCV cure cascade



# HBV Cure Cascade



\* 8 HBV HIV coinfecting subjects

\*\* 16 HBV HCV coinfecting subjects  
2 HBV HCV HIV triple infected subjects  
6 HVC HIV



# Conclusions

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- **With the present model, we enrolled about 3500 migrants.**
- **Migrants lack access to optimal health care services because of different barriers, such as patient–physician communication, language problems, legal and bureaucratic barriers, and inadequacies arising from socioeconomic problems including a lack of family support.**



# Conclusions

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**After an educational phase on the route of transmission and treatment availability, nearly 98% of participants agreed to be screened and evaluated for hepatitis virus infections**

**The protagonist of this success was the cultural mediator**



# Conclusions

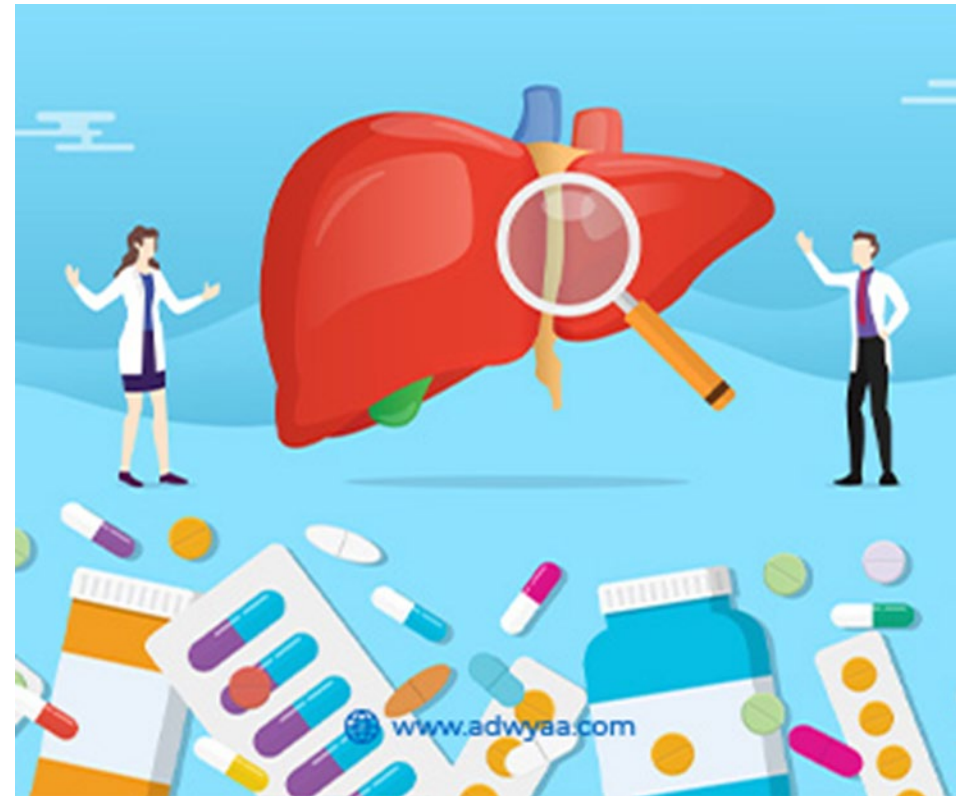
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- **The rate of linkage to care and of start of antiviral treatment was more than 90% for both viruses.**
- **Therefore, our model seems useful in viral hepatitis screening, linkage to care, and treatment in a difficult-to-treat population, such as the migrant population.**



## Key message

**Eliminating viral infections among migrants will have a positive long-term impact, societally from a public health perspective and economically on healthcare resource utilization**





# Thanks for the attention

