Il modello HCV: tra passato e futuro
- I risultati fin oggi ottenuti-

Nicola Coppola
University of Campania, Luigi Vanvitelli, Naples, ITALY
Infectious Diseases Unit, AOU Vanvitelli
nicola.coppola@unicampania.it

Disclosures

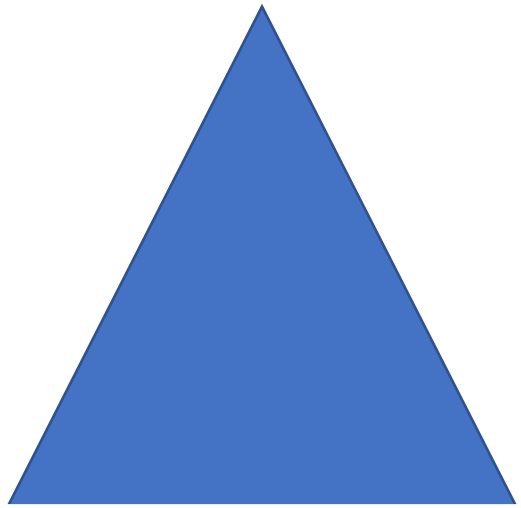
NC reports:

-grants from ViiV Healthcare, Janssen-Cilag and Gilead Science

-personal fees from Gilead Sciences, Abbvie, Bristol-Myers Squibb, Correvio, Merk-Sharp & Dohme, Angelini

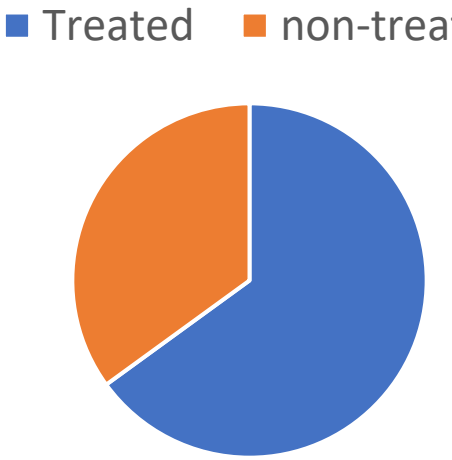
HCV

2014-2018



Treatment of the patient

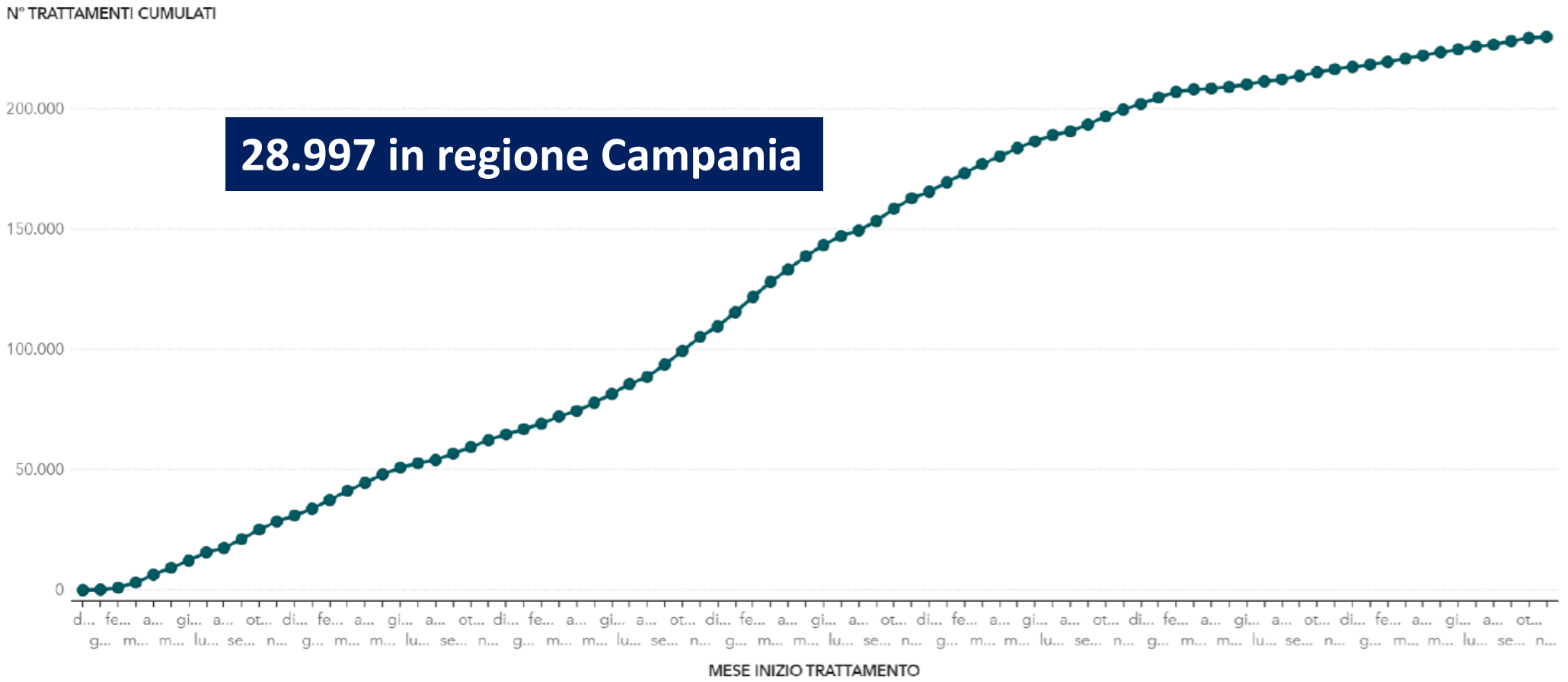
Strategy target → Target population



Disease control

Tx of patients with liver disease

Trend cumulativo dei trattamenti avviati

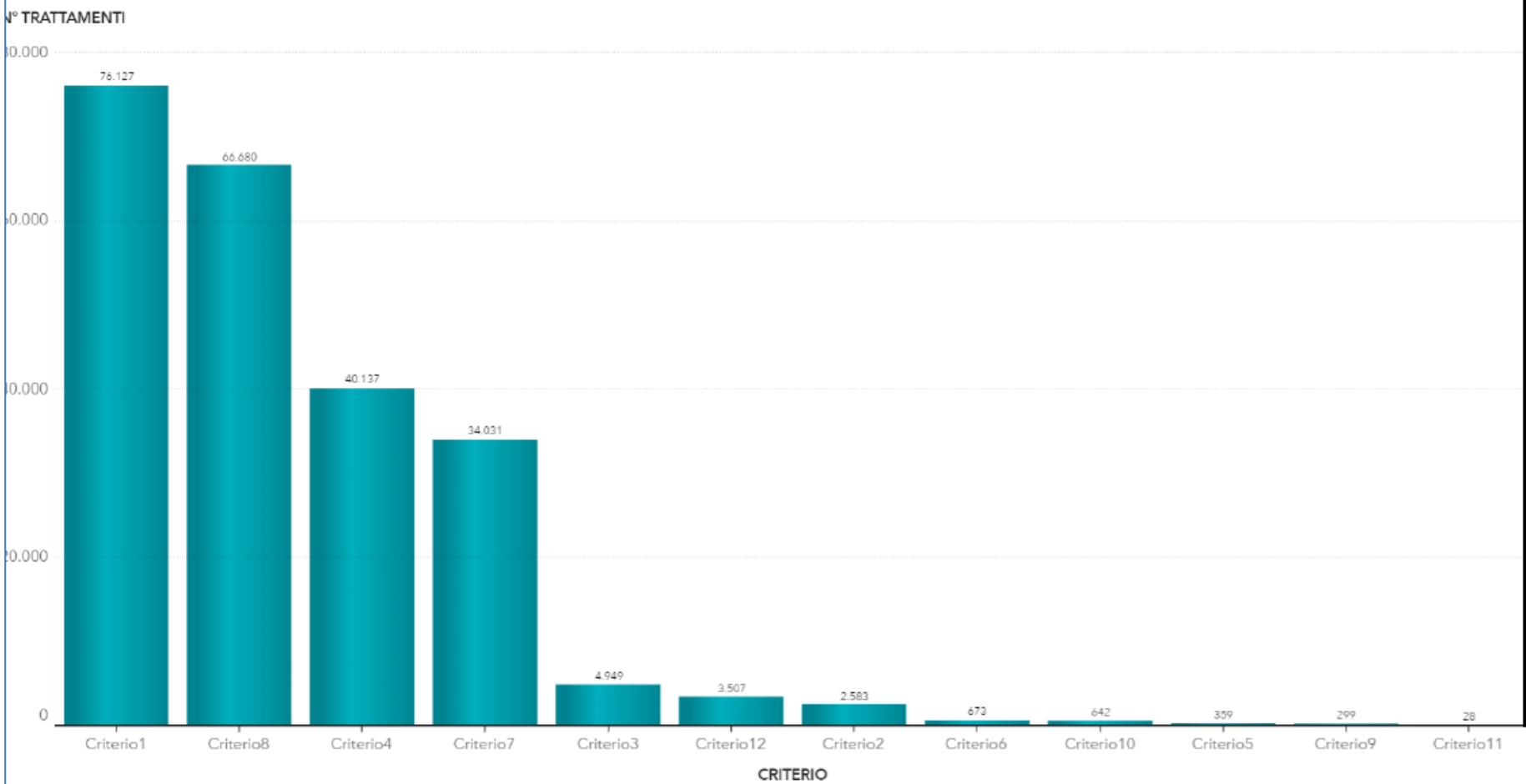


28.997 in regione Campania

230.015 «avviati» sono i trattamenti (solo pazienti eleggibili) con almeno una scheda di dispensazione farmaco

AIFA 15/11/2021

Trattamenti avviati per criterio

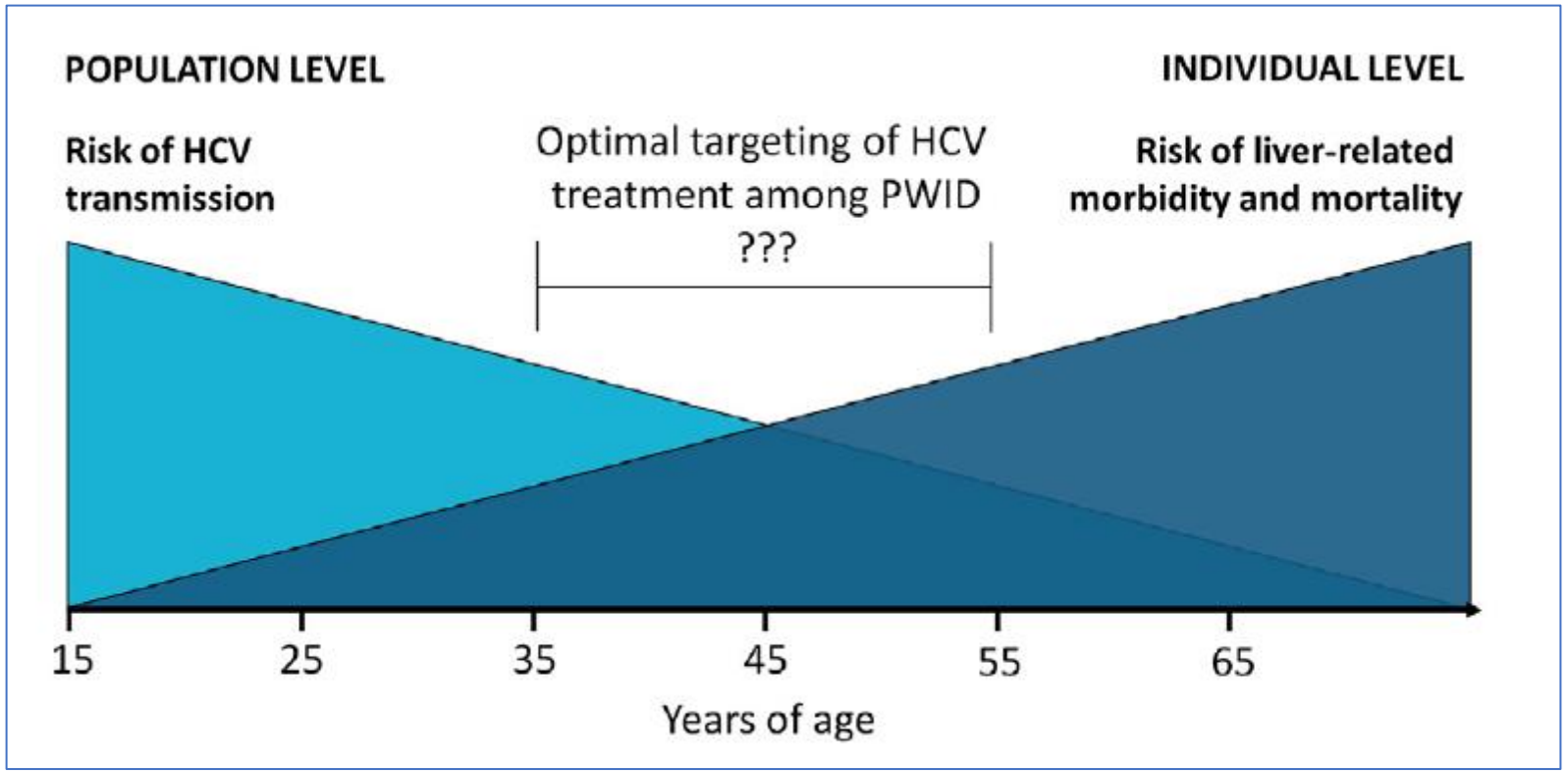


Criterio	N° Trattamenti
1	76.127
8	66.680
4	40.137
7	34.031
3	4.949
12	3.507
2	2.583
6	673
10	642
5	359
9	299
11	28

NB: I trattamenti avviati con il precedente criterio 7 sono stati distribuiti, sulla base della stadiazione METAVIR, nei nuovi criteri 7 e 8

AIFA 15/11/2021

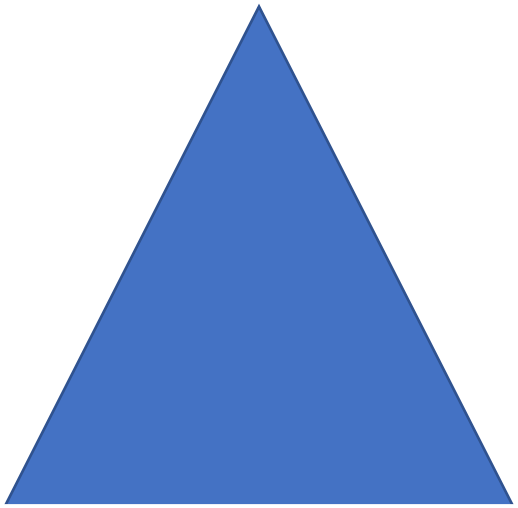
HCV treatment as prevention



Grebely J, Antiviral Research 2014

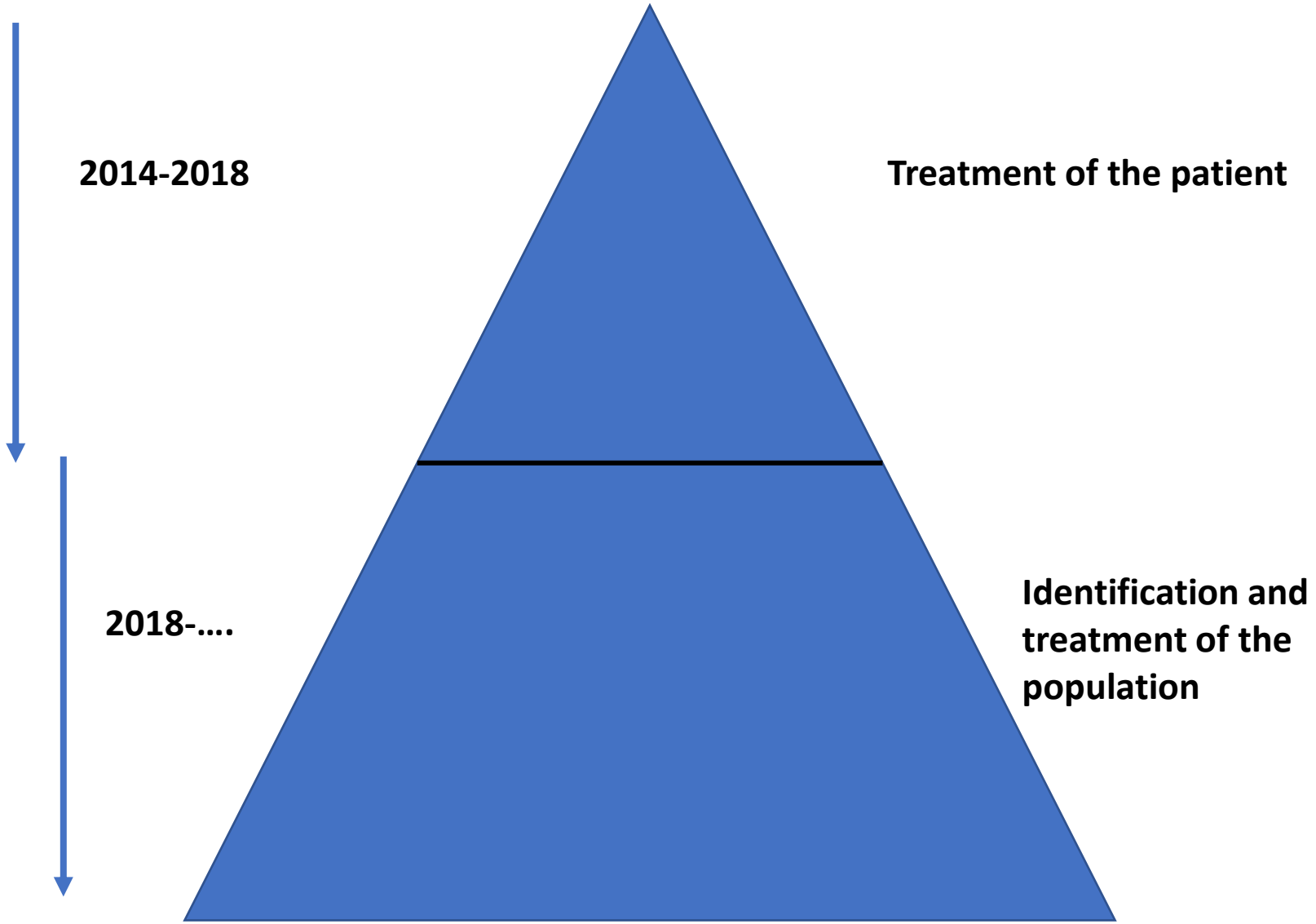
HCV

2014-2018

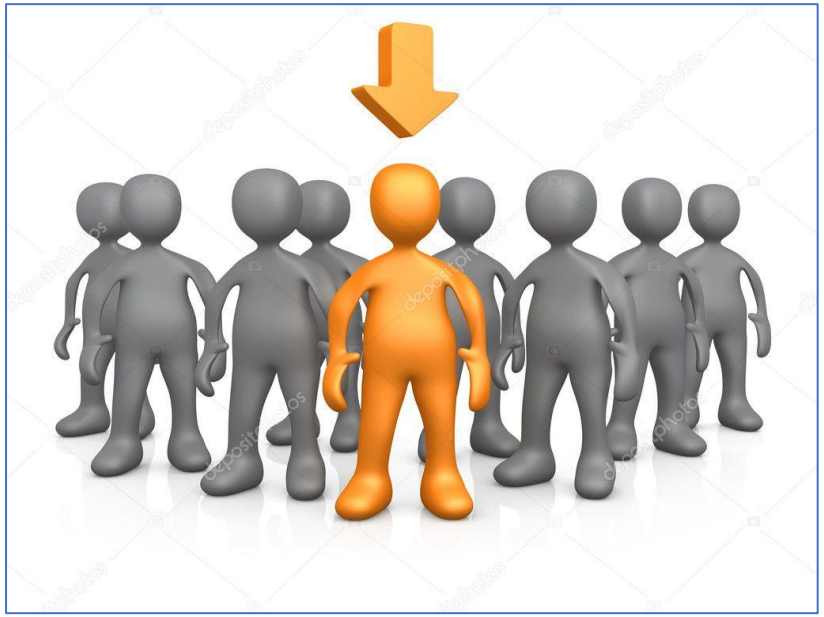


Treatment of the patients

HCV

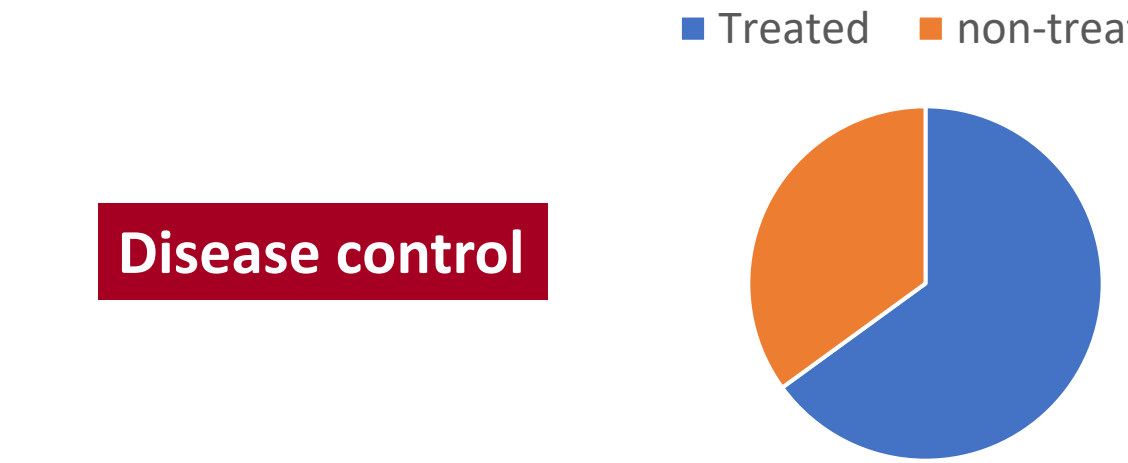

2014-2018
Treatment of the patient
2018-….
Identification and treatment of the population

Individualized HCV treatment



Population-based approch

Strategy target → Target population



Disease control — Tx of patients with liver disease

HCV microelimination — Tx of high-prevalence population

HCV eradication — Tx of all HCV subejcts

Coppola N, personal opinion

Global Call for HCV Elimination

WHO vision: "*A world where viral hepatitis transmission is stopped and everyone has access to safe, affordable, and effective treatment and care*"

2030 Targets

90% **Diagnosed**

80% **Treated**

65% **Reduced mortality**

Feasible by scaling up **key interventions**:

- Hepatitis B vaccination and treatment
- Safe injection practices and safe blood
- Harm reduction for PWID
- Safer sex (including condom promotion)
- Hepatitis C cure

US HBV/HCV Elimination Strategy developed by National Academies of Sciences, Engineering, and Medicine: "elimination" = 90% reduction in incidence by 2030

WHO. Draft WHO Global Hepatitis Strategy, 2016-2021. NASEM. A national strategy for the elimination of hepatitis B and C. Washington, DC: The National Academies Press; 2017.

Released at AASLD November 10th 2019

Call to Action for Liver Associations to Advance Progress Towards Viral Hepatitis Elimination: A Focus on Simplified Approaches to HCV Testing and Cure.

AASLD
AMERICAN ASSOCIATION FOR THE STUDY OF LIVER DISEASES

Asian Pacific Association for the Study of the Liver

EASL™
The Home of Hepatology

ALEH
ASOCIACION LATINOAMERICANA PARA EL ESTUDIO DEL HIGADO | ASSOCIAÇÃO LATINO-AMERICANA PARA O ESTUDO DO FÍGADO

CLINTON
HEALTH ACCESS INITIATIVE

Journal Pre-proof

EASL recommendations on treatment of hepatitis C – Final update of the series

European Association for the Study of the Liver

Indication for DAA treatemtn

Recommendations

- All treatment-naïve and treatment-experienced patients with recently acquired or chronic HCV infection must be offered treatment without delay **(A1)**.
- Urgent treatment should be considered: in patients with significant fibrosis or cirrhosis (METAVIR score F2, F3 or F4), including compensated (Child-Pugh A) and decompensated (Child-Pugh B or C) cirrhosis; in patients with clinically significant extrahepatic manifestations (*e.g.* symptomatic vasculitis associated with HCV-related mixed cryoglobulinaemia, HCV immune complex-related nephropathy and non-Hodgkin B cell lymphoma); in patients with HCV recurrence after liver transplantation; in patients at risk of a rapid evolution of liver disease because of concurrent comorbidities (non-liver solid organ or stem cell transplant recipients, HBV and HIV coinfections, diabetes); and in individuals at risk of transmitting HCV (PWIDs, men who have sex with men with high-risk sexual practices, women of childbearing age who wish to get pregnant, patients on haemodialysis, incarcerated individuals) **(A1)**.
- Treatment is generally not recommended in patients with limited life expectancy due to non-liver-related comorbidities **(B2)**.

Challenges in HCV Case Finding and Linkage to Care

- General population
- Populations with high HCV prevalence

Challenges in HCV Case Finding and Linkage to Care

- General population
- Populations with high HCV prevalence

Incarcerated populations

People living with HCV/HIV coinfection

Men who have sex with men

Migrants

Persons who inject drugs

Challenges in HCV Case Finding and Linkage to Care

- General population
- Populations with high HCV prevalence

Incarcerated populations

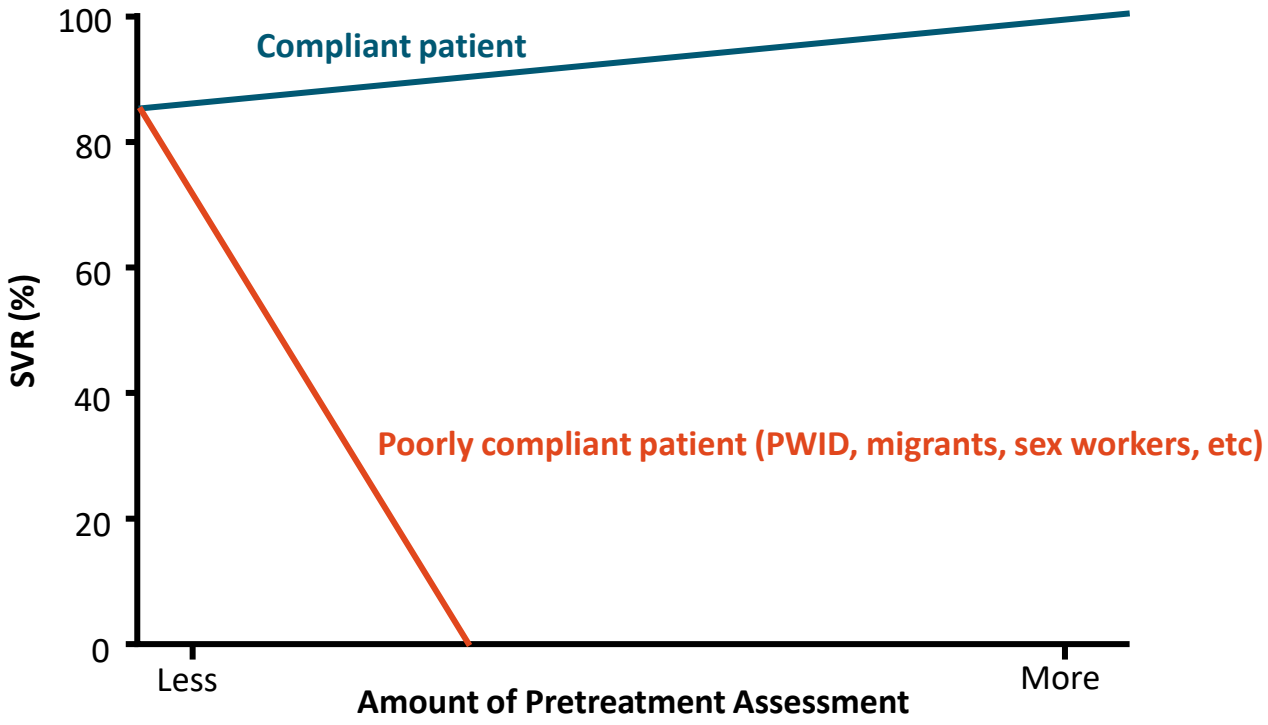
People living with HCV/HIV coinfection

Men who have sex with men

Migrants

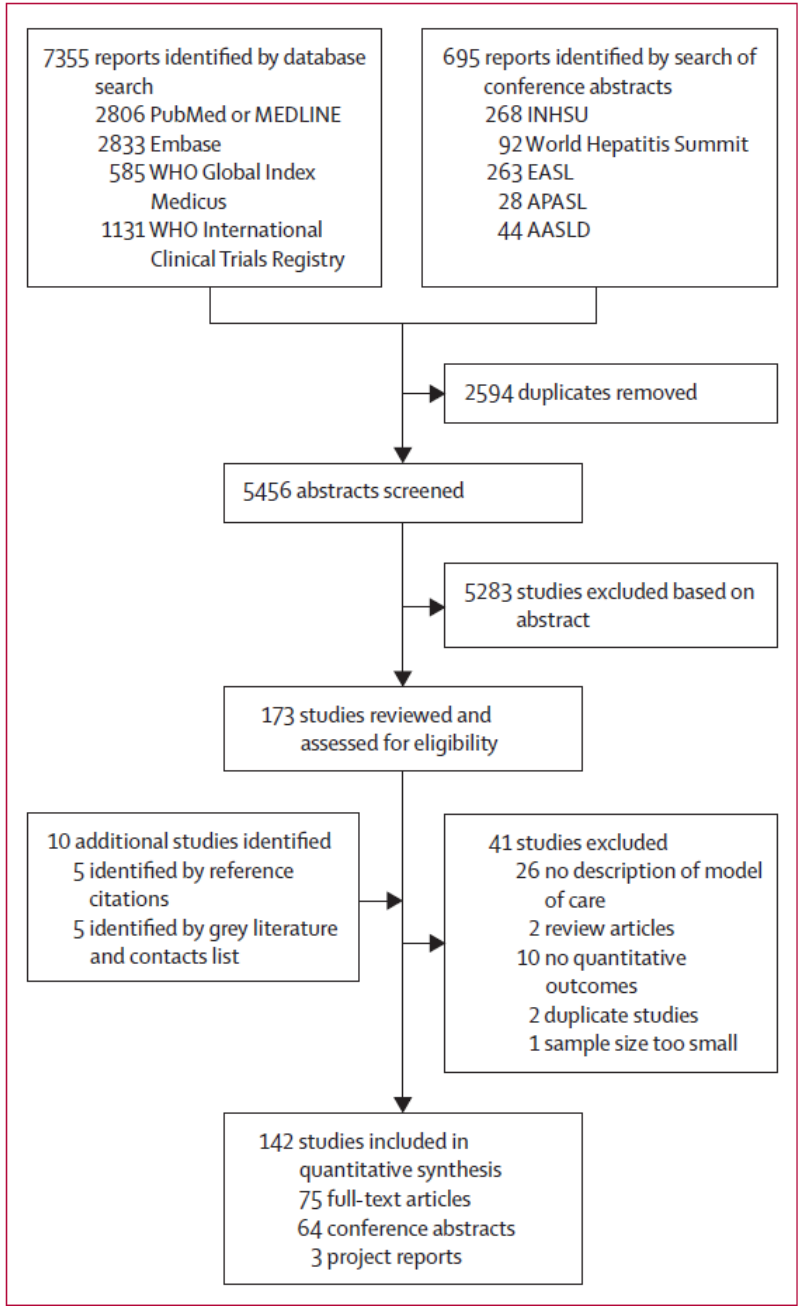
Persons who inject drugs

Illustrating the Danger of Too Many Tests



Decentralisation, integration, and task-shifting in hepatitis C virus infection testing and treatment: a global systematic review and meta-analysis

Ena Oru, Adam Trickey, Rohan Shirali, Steve Kanters, Philippa Easterbrook

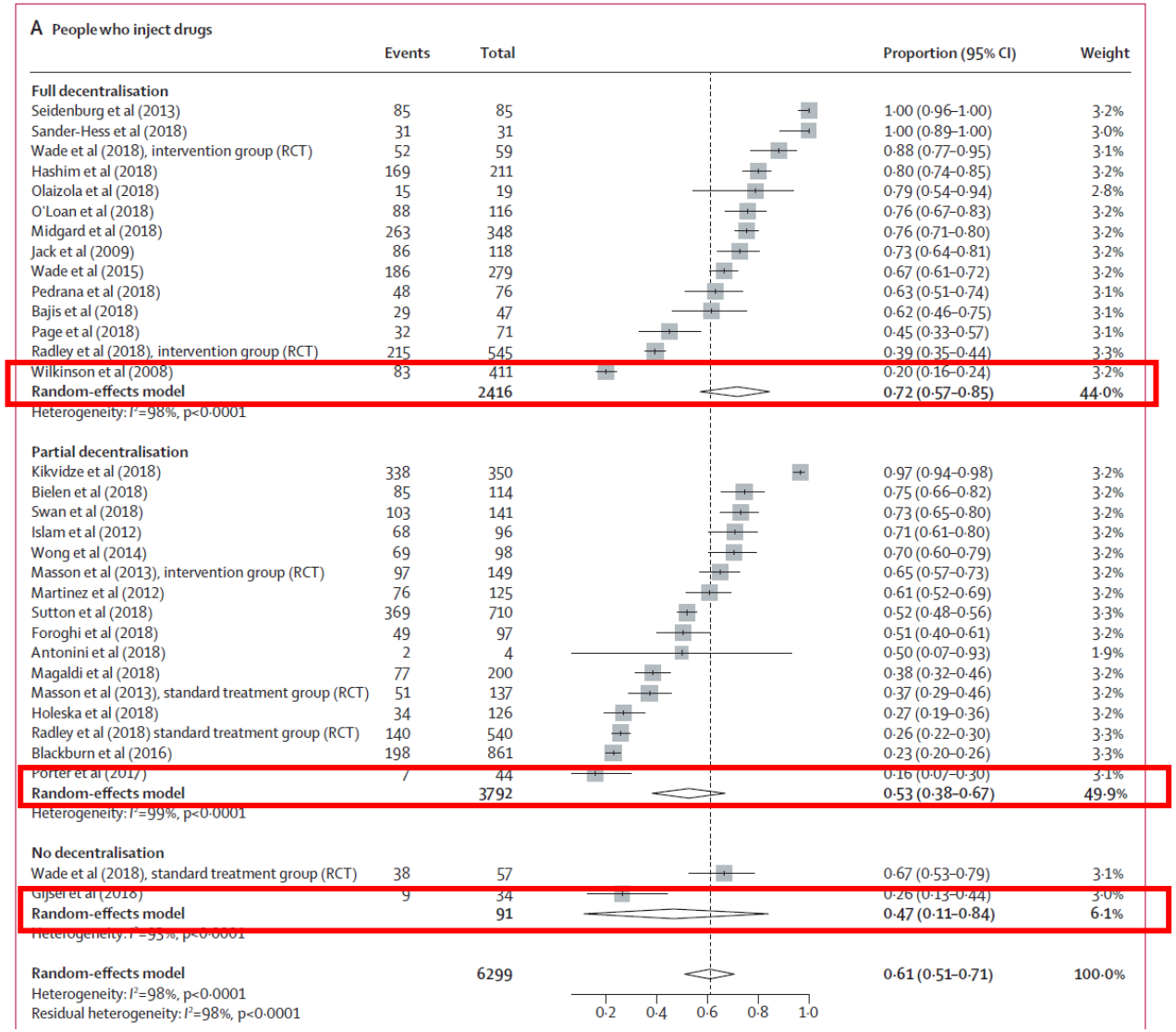


Lancet Glob Health 2021

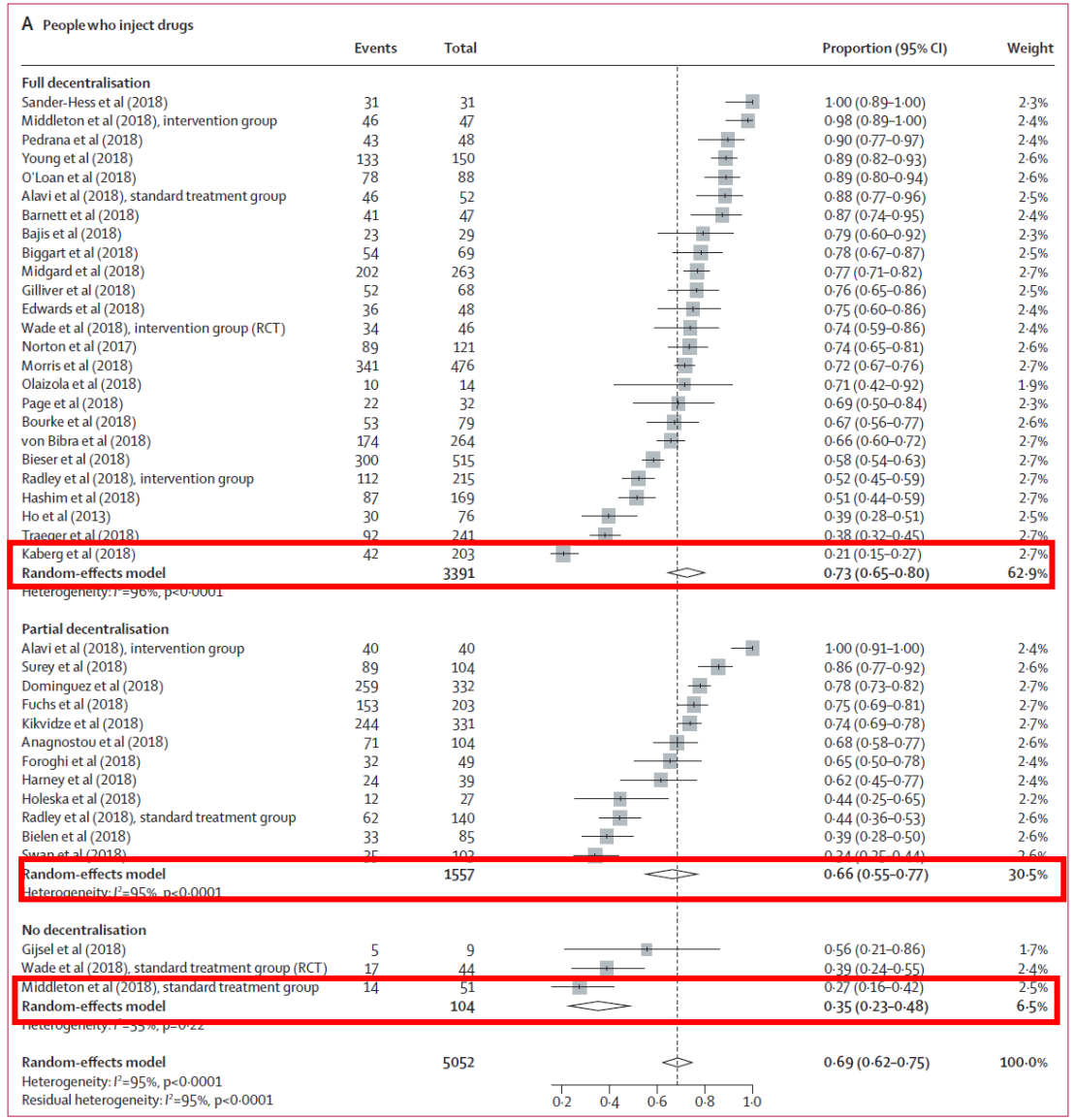
Decentralisation, integration, and task-shifting in hepatitis C virus infection testing and treatment: a global systematic review and meta-analysis

Ena Oru, Adam Trickey, Rohan Shirali, Steve Kanters, Philippa Easterbrook

Effect of decentralisation and integration on linkage to care



Effect of decentralisation and integration on DAA intake

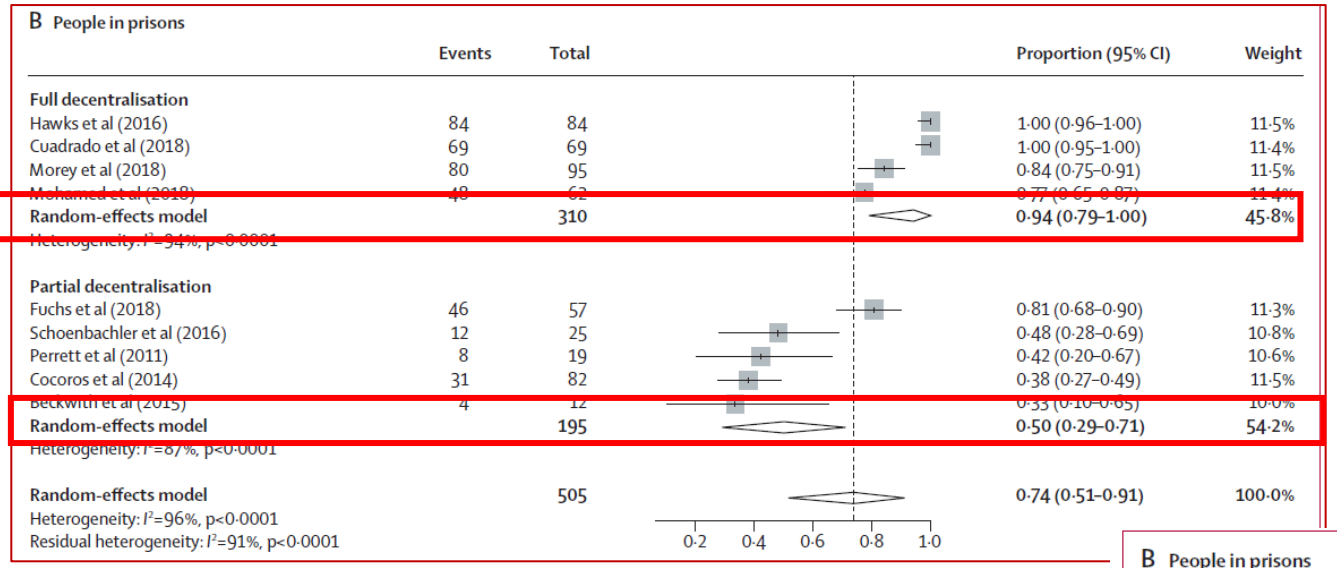


Lancet Glob Health 2021

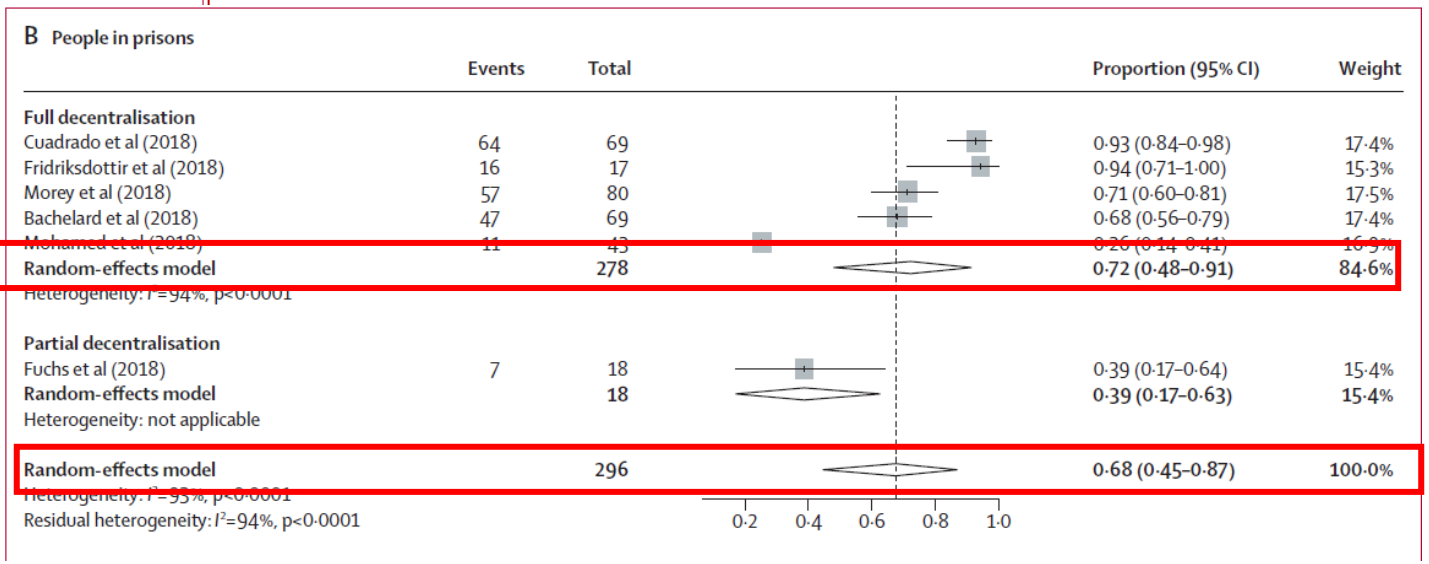
Decentralisation, integration, and task-shifting in hepatitis C virus infection testing and treatment: a global systematic review and meta-analysis

Ena Oru, Adam Trickey, Rohan Shirali, Steve Kanters, Philippa Easterbrook

Effect of decentralisation and integration on linkage to care



Effect of decentralisation and integration on DAA intake



Lancet Glob Health 2021

ORIGINAL ARTICLE

JVH WILEY

Innovative procedures for micro-elimination of HCV infection in persons who use drugs

Vincenzo Messina[1] | Antonio Russo[1,2] | Enrico Parente[3] | Giovanni Russo[3] | Tiziana Raimondo[3] | Angela Salzillo[1] | Filomena Simeone[1] | Lorenzo Onorato[1] | Giovanni Di Caprio[1] | Mariantonietta Pisaturo[1,2] | Nicola Coppola[1,2]

A prospective, interventional, before and after study, based on audits performed by Infectious Diseases physicians in a SUD facility in Piedimonte Matese, in southern Italy, was performed.
Pre-intervention period: January-December 2017 and
Post-intervention period: January-December 2018.

6 SerD following about 300 PWUD and acts in the northern area of Caserta with about 151 000 inhabitants

JVH 2020

ORIGINAL ARTICLE

JVH WILEY

Innovative procedures for micro-elimination of HCV infection in persons who use drugs

Vincenzo Messina[1] | Antonio Russo[1,2] | Enrico Parente[3] | Giovanni Russo[3] | Tiziana Raimondo[3] | Angela Salzillo[1] | Filomena Simeone[1] | Lorenzo Onorato[1] | Giovanni Di Caprio[1] | Mariantonietta Pisaturo[1,2] | Nicola Coppola[1,2]

A prospective, interventional, before and after study, based on audits performed by Infectious Diseases physicians in a SUD facility in Piedimonte Matese, in southern Italy, was performed.
Pre-intervention period: January-December 2017 and
Post-intervention period: January-December 2018.

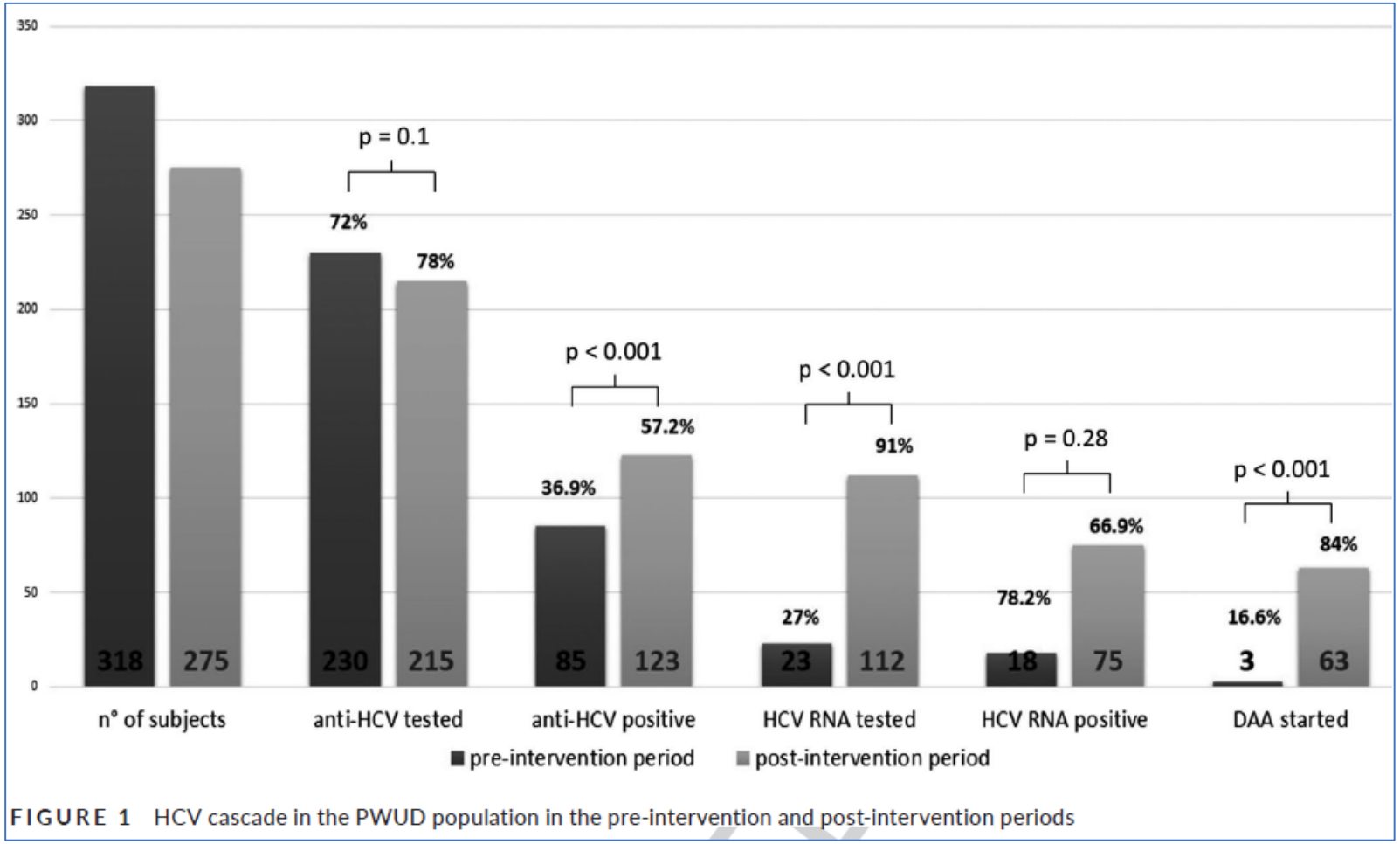


FIGURE 1 HCV cascade in the PWUD population in the pre-intervention and post-intervention periods

JVH 2020

Liver, Pancreas and Biliary Tract

Hepatitis C virus infection in jail: Difficult-to-reach, not to-treat. Results of a point-of-care screening and treatment program

Mario Masarone[a], Rosa Caruso[a,b], Andrea Aglitti[a], Carmine Izzo[a,b], Giuseppe De Matteis[b], Maria Rosaria Attianese[b], Antonio Maria Pagano[b], Marcello Persico[a,*]

A prospective observational study in two phases:

- first, all the prisoners' clinical records were reviewed, to verify HCV-Ab execution.
- Second, a universal point-of-care screening and treatment program we re performed

First phase

Second phase

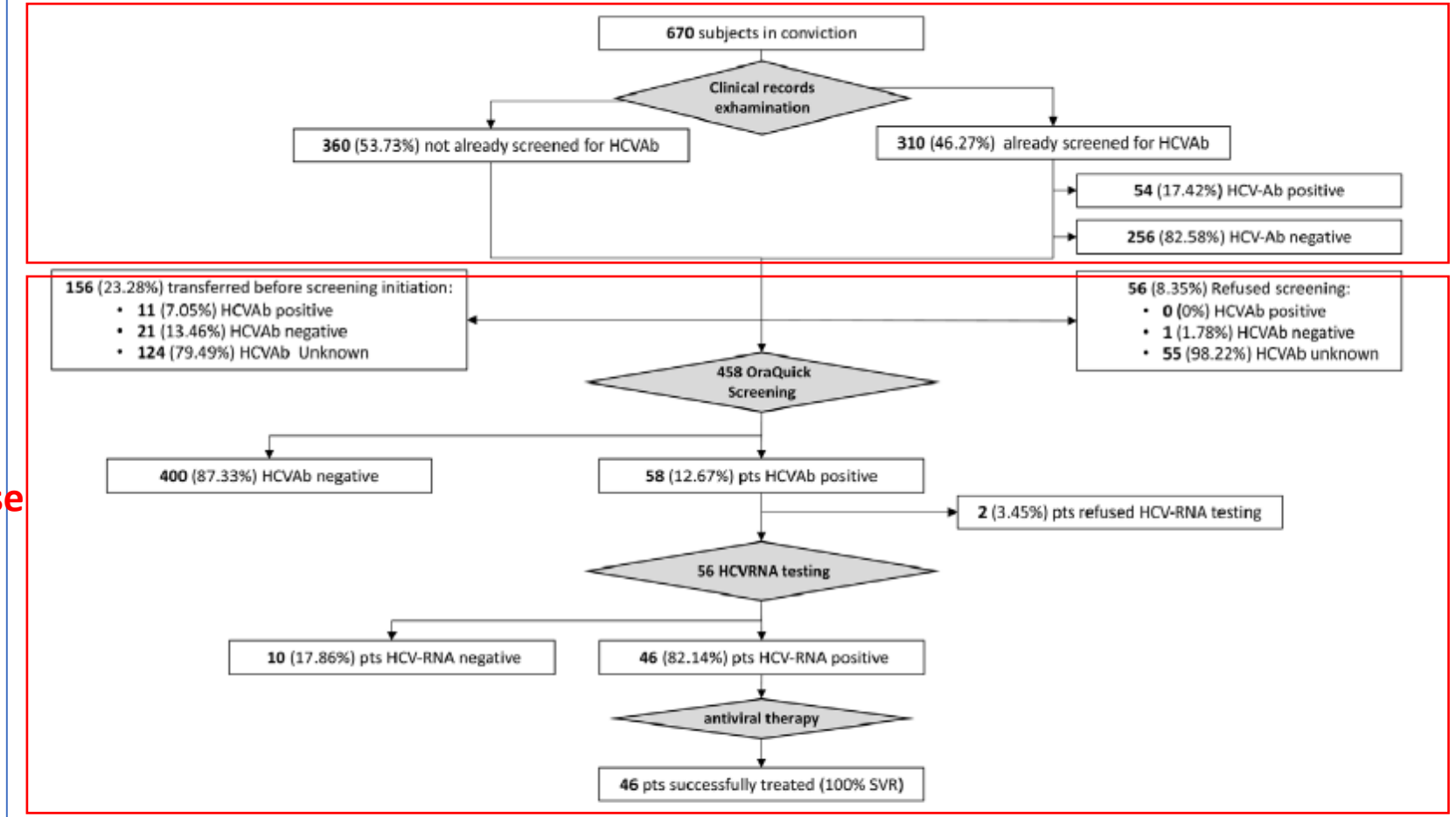


Fig. 1. Flow-chart of the point-of-care screening and treatment program.

Challenges in HCV Case Finding and Linkage to Care

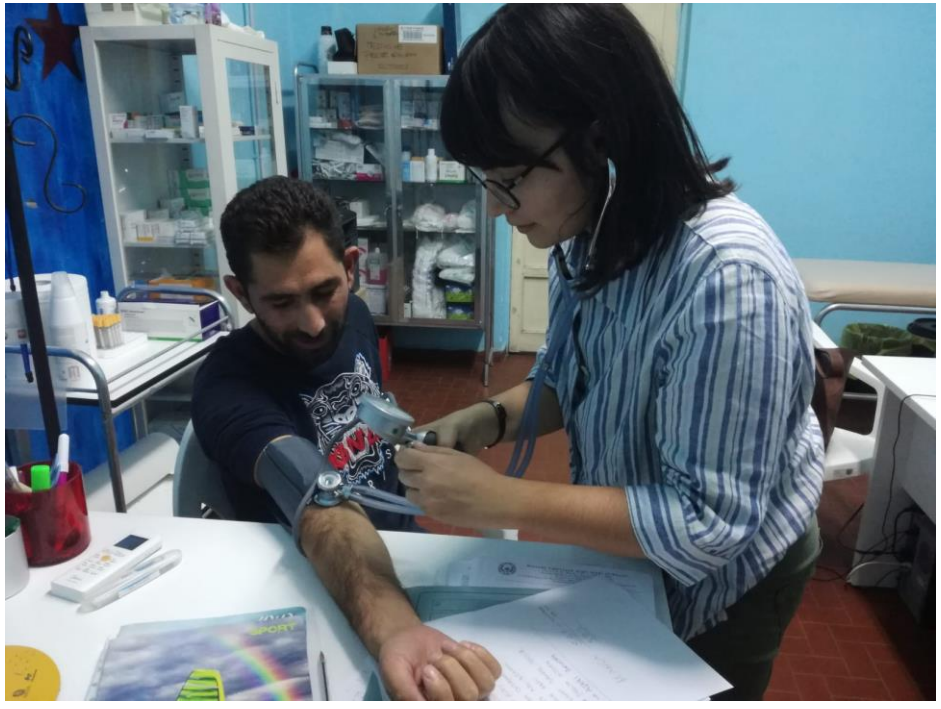
- General population
- Populations with high HCV prevalence

Incarcerated populations
People living with HCV/HIV coinfection
Men who have sex with men
Migrants/homeless
Persons who inject drugs

Medical points I livello

(parrocchie, centri sociali, punti caritas, ARCI)

NAPOLI **CASERTA** **POTENZA** **FOGGIA** **LAMEZIA TERME**



Personal data

Medical points I livello
(parrocchie, centri sociali, punti caritas, ARCI)

NAPOLI **CASERTA** **POTENZA** **FOGGIA** **LAMEZIA TERME**

Laboratorio di malattie infettive

Centri di secondo livello
(per approfondimenti diagnostici ed eventuale terapia)

UOC Malattie Infettive, Vanvitelli, Napoli

UOC Malattie Infettive, AO Caserta

UOC Malattie Infettive, Foggia

Servizio Malattie Infettive, Lamezia terme

Personal data

Contents lists available at ScienceDirect

Travel Medicine and Infectious Disease

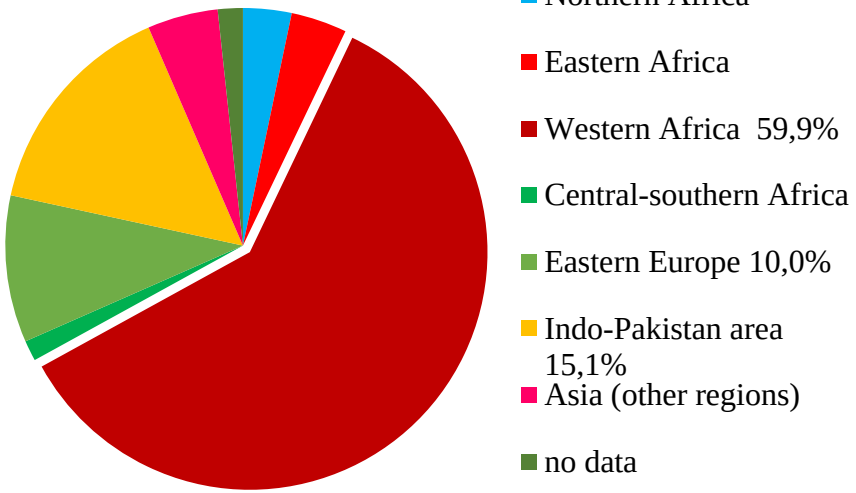
journal homepage: www.elsevier.com/locate/tmaid

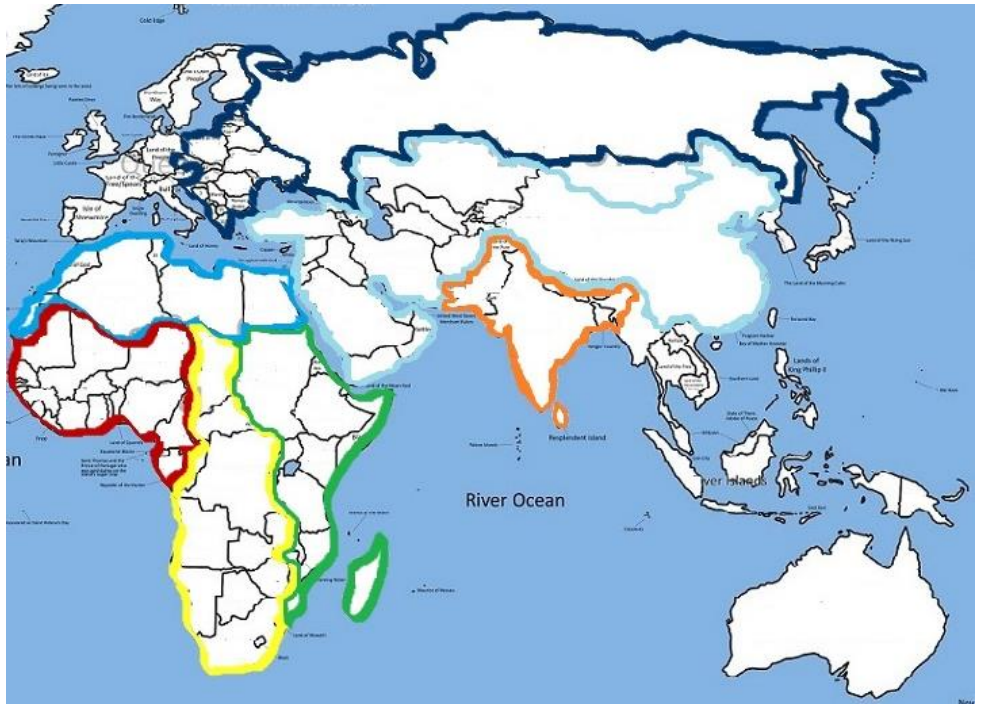
Blood-borne chronic viral infections in a large cohort of immigrants in southern Italy: A seven-centre, prospective, screening study

Nicola Coppola[a,b,*], Caterina Monari[a,b], Loredana Alessio[b,c], Lorenzo Onorato[a,d], Luciano Gualdieri[e], Caterina Sagnelli[a,f], Carmine Minichini[a], Evangelista Sagnelli[a], Giovanni Di Caprio[b,c], Lorenzo Surace[g], Gaetano Scotto[h], Margherita Macera[a,c], Gianfranco Griffo[g], Italo Francesco Angelillo[i], Mariantonietta Pisaturo[a,d]

- **4125 subjects enrolled: 3839 (93.1%) accepted the screening**
- **Mean age 28 years ±10 SD**
- **84.0% males, 15.9% females, 0.1% unknown**

Geographical areas of origin: 7 macro-regions





Travel Medicine and Infectious Dis 2020

Contents lists available at ScienceDirect

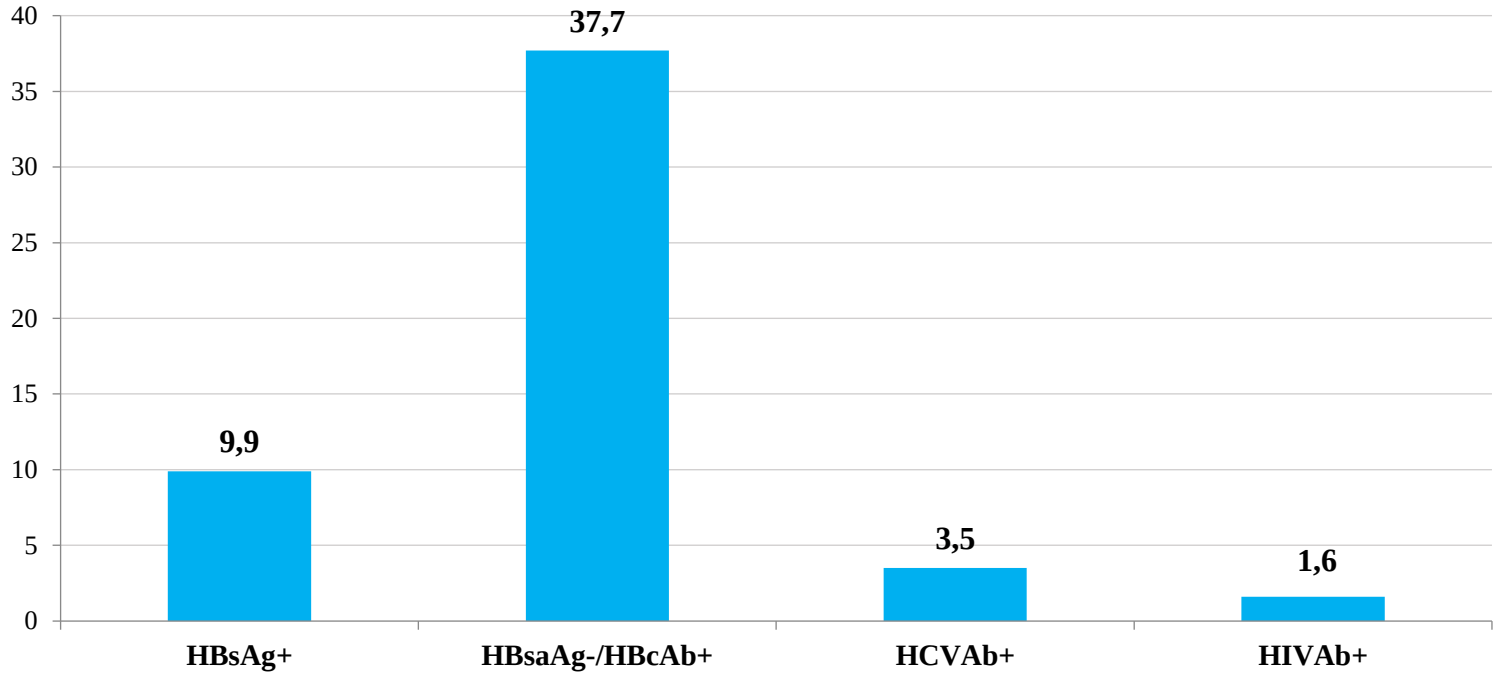
Travel Medicine and Infectious Disease

journal homepage: www.elsevier.com/locate/tmaid

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

Nicola Coppola[a,b,*], Caterina Monari[a,b], Loredana Alessio[b,c], Lorenzo Onorato[a,d], Luciano Gualdieri[e], Caterina Sagnelli[a,f], Carmine Minichini[a], Evangelista Sagnelli[a], Giovanni Di Caprio[b,c], Lorenzo Surace[g], Gaetano Scotto[h], Margherita Macera[a,c], Gianfranco Griffo[g], Italo Francesco Angelillo[i], Mariantonietta Pisaturo[a,d]

Overall serological markers in 3,839 subjects



Travel Medicine and Infectious Dis 2020

Contents lists available at ScienceDirect

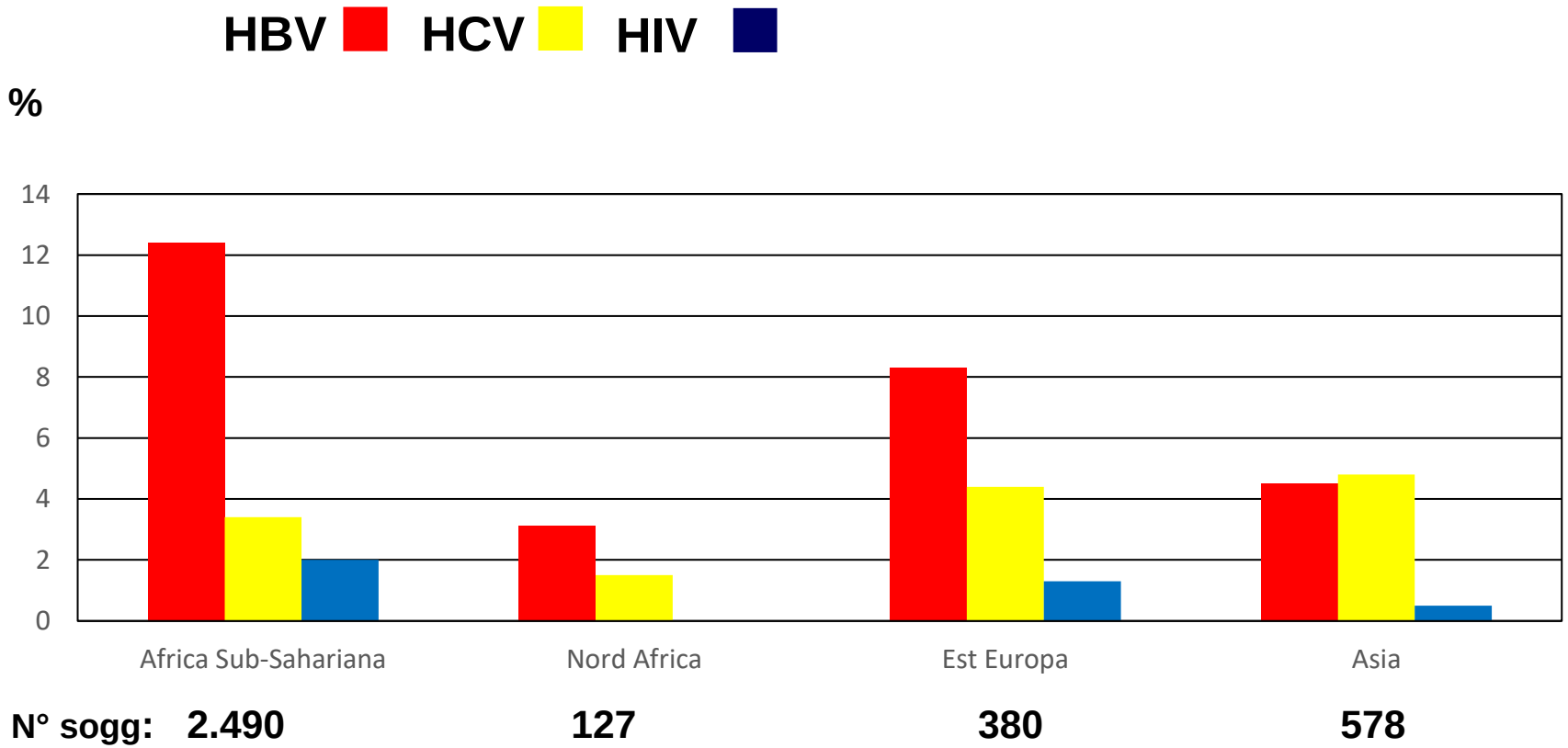
Travel Medicine and Infectious Disease

journal homepage: www.elsevier.com/locate/tmaid

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

Nicola Coppola[a,b,*], Caterina Monari[a,b], Loredana Alessio[b,c], Lorenzo Onorato[a,d], Luciano Gualdieri[e], Caterina Sagnelli[a,f], Carmine Minichini[a], Evangelista Sagnelli[a], Giovanni Di Caprio[b,c], Lorenzo Surace[g], Gaetano Scotto[h], Margherita Macera[a,c], Gianfranco Griffo[g], Italo Francesco Angelillo[i], Mariantonietta Pisaturo[a,d]

3.839 immigrants



N° sogg: 2.490 127 380 578

Coppola N, Travel Med Infect Dis 2020

Case finding and linkage to care in migrants
Interventations

Questionnaires

Meeting

Brochures

Burocratic tutor

Personal data

Personal data

Personal data

Vieni a trovarci presso i nostri Centri Clinici!!

Il test del sangue è completamente gratuito

A Caserta presso:

"ex Centro Sociale Liberato", viale Ellittico 9

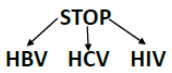
A Napoli presso:

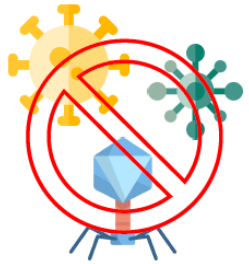
"Tutela della Salute degli Immigrati", via Egiziaca a Forcella 34

"Centro di accoglienza vicolo Verticoeli ", via Tribunali

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

STOP VIRUS!!!



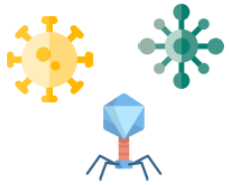


Cosa sono i virus HBV e HCV?

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

Cos'è l'HIV?

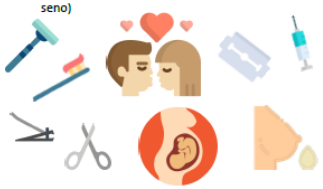
L'HIV è il virus responsabile dell'AIDS (Sindrome da Immunodeficienza Acquisita) e consiste in una progressiva diminuzione delle difese del corpo. Nel tempo compaiono altre malattie infettive e non, anche molto gravi.



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

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, tagliaunghie, spazzolino da denti, etc) contaminati da sangue
- Da madre infetta al bambino (durante gravidanza, parto e allattamento al seno)



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

Nei primi mesi dopo il contagio il test può essere negativo, perciò è bene ripeterlo, fino a 3 mesi dopo il contagio.

Come si può prevenire il contagio dai 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: sottoporsi 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.

Uje kwenye zahanati yetu!

Kipimo hakina gharama yoyote

Caserta:

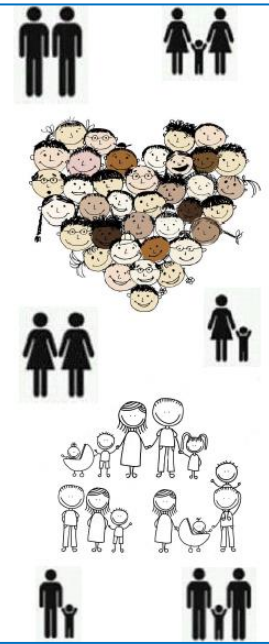
"ex Centro Sociale Liberato", viale Ellittico 9

Napoli:

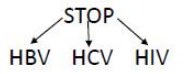
"Tutela della Salute degli Immigrati", via Egiziaca a Forcella 34

"Centro di accoglienza vicolo Verticoeli ", via Tribunali

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



STOP VIRUSI!!!

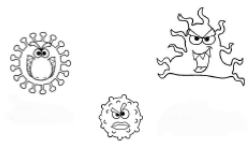


HBV na HCV ni nini?

HBV na HCV ni virusi vinavyoshambulia ini na kusababisha ugonjwa wa homa ya ini (Hepatitis B), virusi hivi vinaweza pia kusababisha sirosisi (Cirrhosis yaani mabadiliko ya umbo na kazi za ini) na/au saratani ya ini.

HIV ni nini?

HIV, VVU ni virusi vinavyosababisha ugonjwa wa **UKIMWI** (Upungufu wa Kinga Mwilini) na kuharibu mfumo wa kingamwili. Magonjwa mengine ya kuambukiza na yasiyo ya kuambukiza huweza kushambulia mwili kwa urahisi kutokana na maambukizi ya VVU.



Mara nyingi magonjwa haya hayana dalili. Magonjwa haya huweza kuanza kama kichefuchefu, kutapika na kuhara.

HBC, HCV na HIV huambukizwaje?

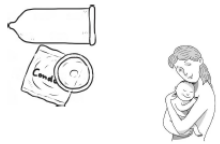
- Kwa njia ya ngono zembe (iwe kwa njia ya uke au kwa njia ya haja kubwa)
- Damu: kuchangia sindano ambayo haijachemshwa baada ya mtu mwingine kuitumia, kutumia vifaa vya kuchorea bombwe na kupenyeza piercing mwilini vilivyochafuliwa na damu yenye maambukizi, kubadilishana vitu binafsi (kama wembe, mashine ya kukatia kucha, mswaki n.k)
- Kutoka kwa mama aliye na maambukizi ya virusi kwenda kwa mtoto wakati wa ujauzito, kujifungua au kunyonyesha.

Uchunguzi wa kimaabara (kipimo cha damu) wa kingamwili kwenye damu huweza kuashiria kama mtu ameambukizwa virusi hivi.

Miezi ya mwanzo baada ya kuambukizwa kipimo kinaweza kisionyeshe uwepo wa maambukizi wa virusi, hivyo ni vema kupimwa baada ya miezi mitatu ya maambukizi.

Kuzuia maambukizi ya virusi vya HBC, HCV na HIV

- Tumia kondomu wakati wa kujamiiana (ngono kwa njia ya uke, njia ya haja kubwa, na mdomoni)
- Tumia sindano iliyochemshwa
- Hakikisha kwamba vyombo vya kuchorea bombwe na kupenyeza piercing mwilini vinatumiwa mara moja tu
- Epuka kugusa au kuloanishwa na damu
- Maradhi mengi husambaa kutoka kwa mama aliye na virusi kwenda kwa mtoto wakati wa ujauzito, kujifungua na kunyonyesha: kupima ni njia bora ya kuepusha maambukizi kwa mtoto wako.



Chanjo ya kuzuia VVU ipo, na vile vile madawa dhidi ya HCV na HIV.

Personal data

Case finding and linkage to care in migrants
Interventations

Questionnaires

Meeting

Brochures

Burocratic tutor

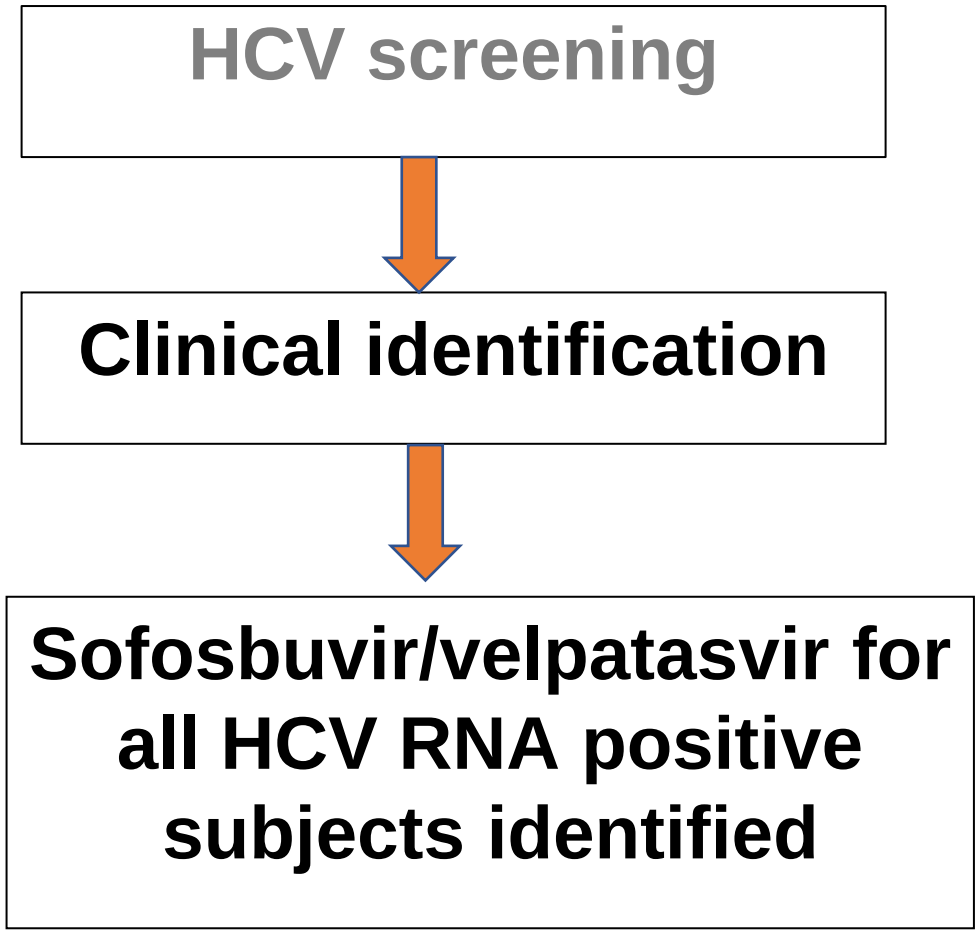
Personal data

GILEAD
Advancing Therapeutics.
Improving Lives.

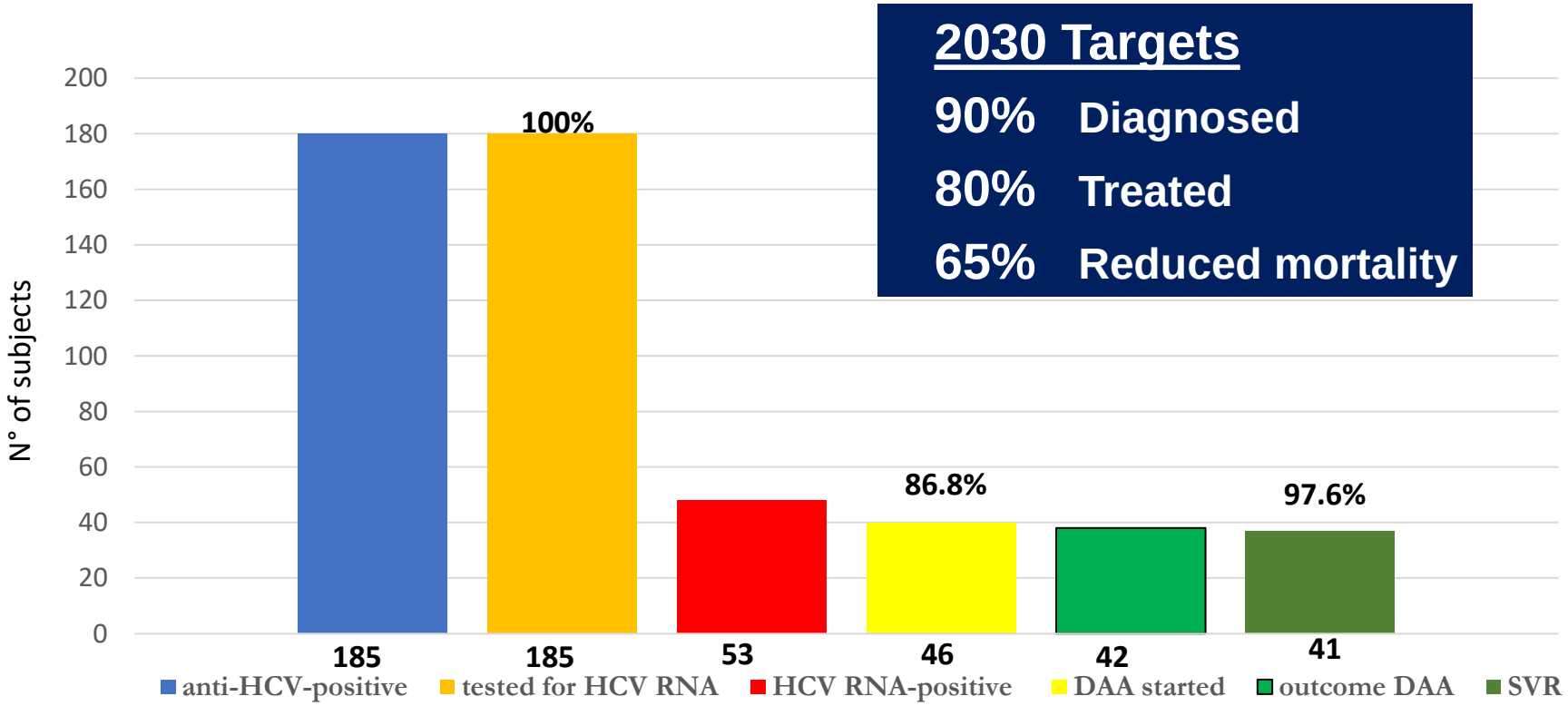
Milan, 17 February 2017

Department of mental health and public medicine
Second University of Naples
Largo Madonna delle Grazie
80133 Napoli - Italy

RE: EVALUATION OF AN INNOVATIVE MODEL TO ELIMINATE HCV INFECTION IN A HIGH-RISK POPULATION OF UNDOCUMENTED MIGRANTS AND LOW-INCOME REFUGEES



HCV care cascade in immigrants



Coppola N, Abs 734 CROI 2020

diagnostics

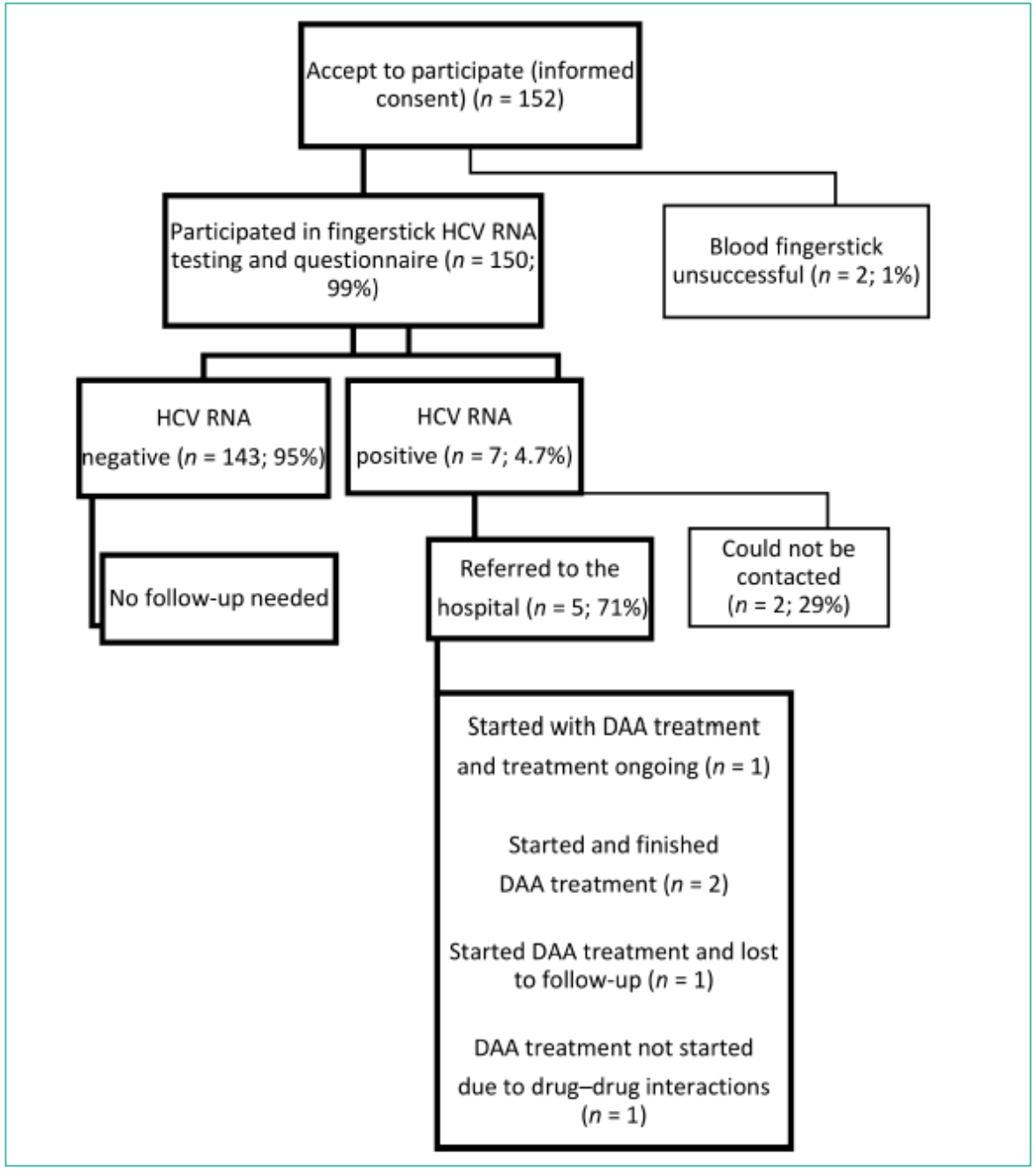
MDPI

Article

A Feasibility Study to Increase Chronic Hepatitis C Virus RNA Testing and Linkage to Care among Clients Attending Homeless Services in Amsterdam, The Netherlands

Ellen Generaal [1,*], Hilje Logtenberg van der Grient [2], Eberhard Schatz [2], Daniela K. van Santen [1,3], Anders Boyd [1,4], Sara K. Woods [5], Bert L. C. Baak [6] and Maria Prins [1,7]

To improve HCV case finding, the feasibility of rapid HCV RNA testing in homeless services in Amsterdam was evaluated.



Diagnostics 2021

Challenges in HCV Case Finding and Linkage to Care

- General population
- Populations with high HCV prevalence

Incarcerated populations

People living with HCV/HIV coinfection

Men who have sex with men

Migrants

Persons who inject drugs

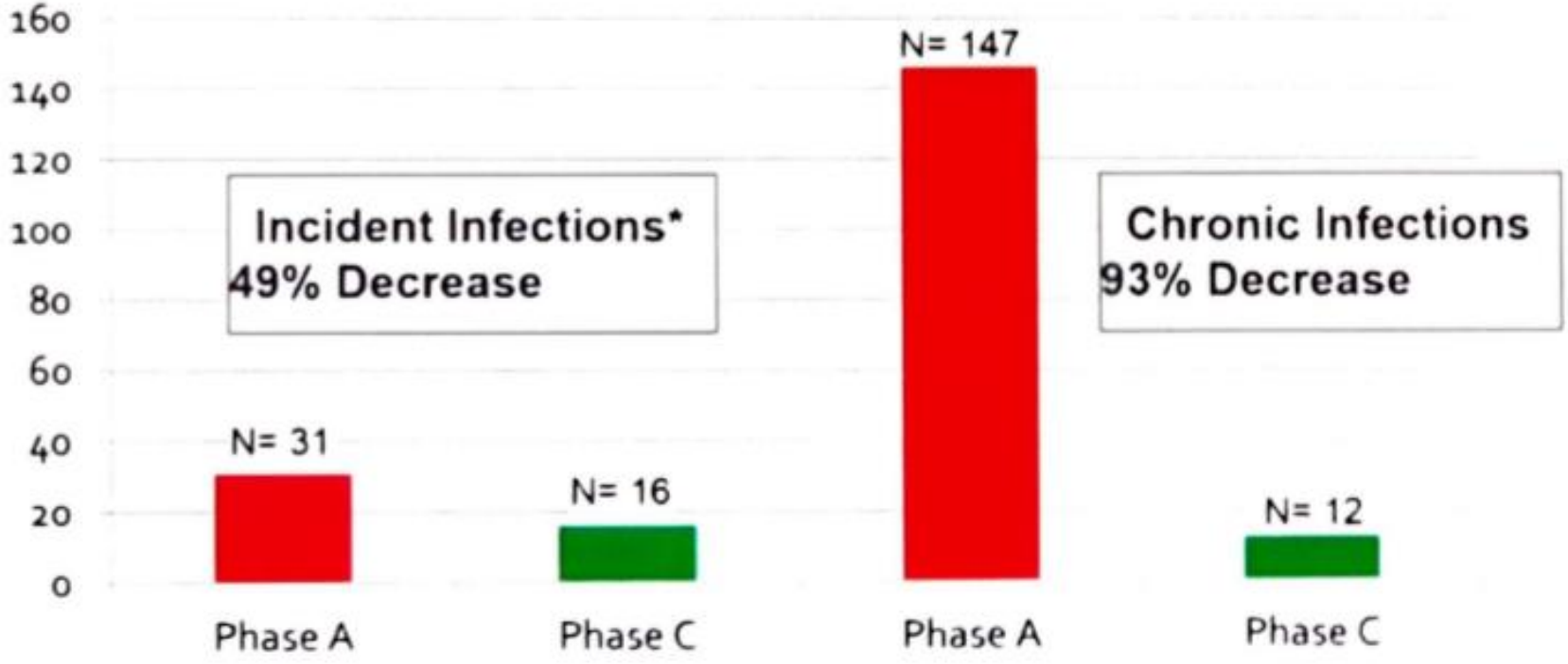
Treatment as Prevention to Eliminate HCV in HIV-infected MSM

Phase A (10/2015-06/2016): a population-based and systematic screening for HCV-RNA among MSM
Phase B (06/2016-02/2017): DAAs treatment for MSM identified with a replicating HCV infection.
Phase C (03/2017-11/2017): re-screen to all MSM for HCV-RNA

Braun DL, CID 2020

Treatment as Prevention to Eliminate HCV in HIV-infected MSM

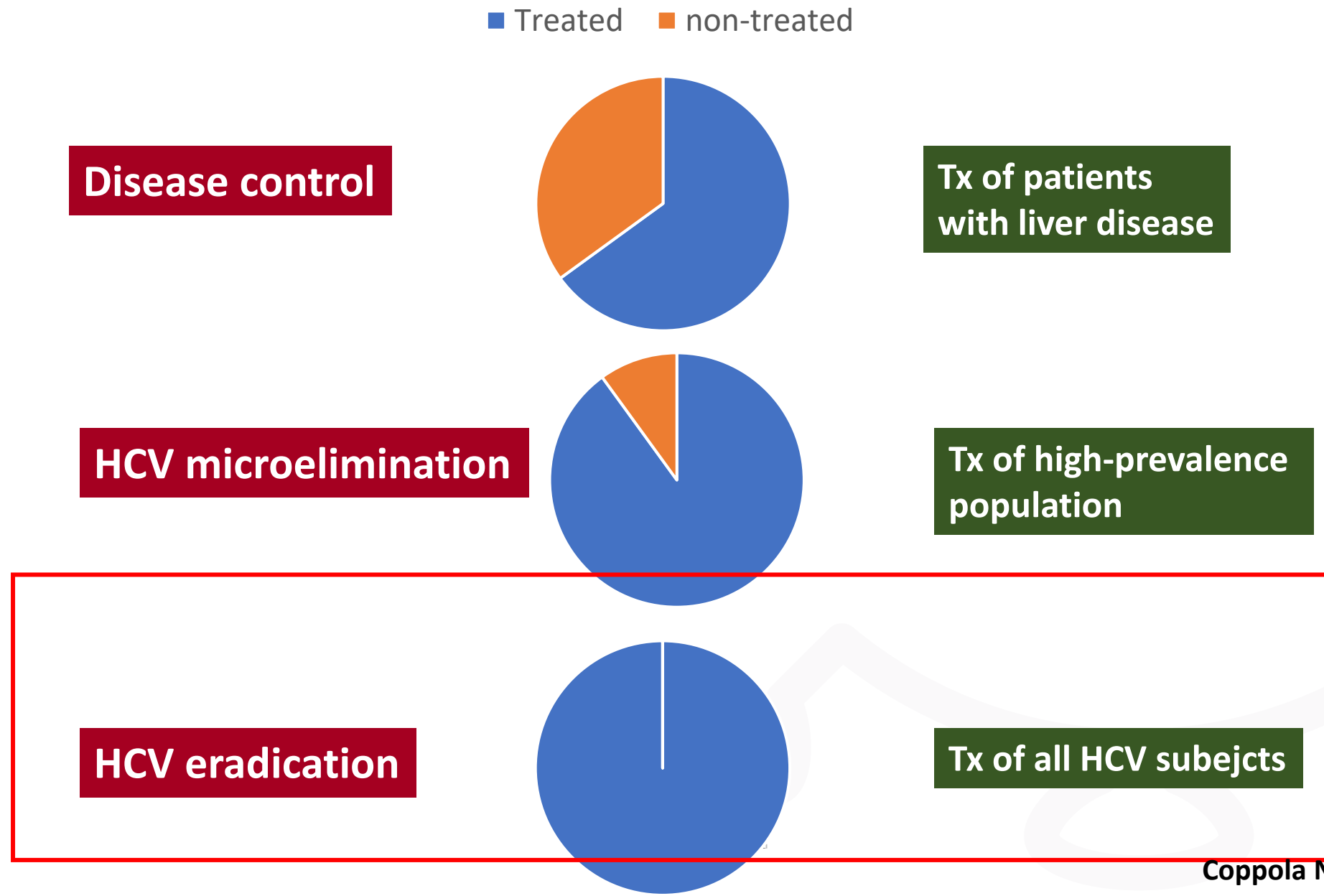
Phase A (10/2015-06/2016): a population-based and systematic screening for HCV-RNA among MSM
Phase B (06/2016-02/2017): DAAs treatment for MSM identified with a replicating HCV infection.
Phase C (03/2017-11/2017): re-screen to all MSM for HCV-RNA



* Negative serologic assay before 2015

Braun DL, CID 2020

Strategy target → Target population

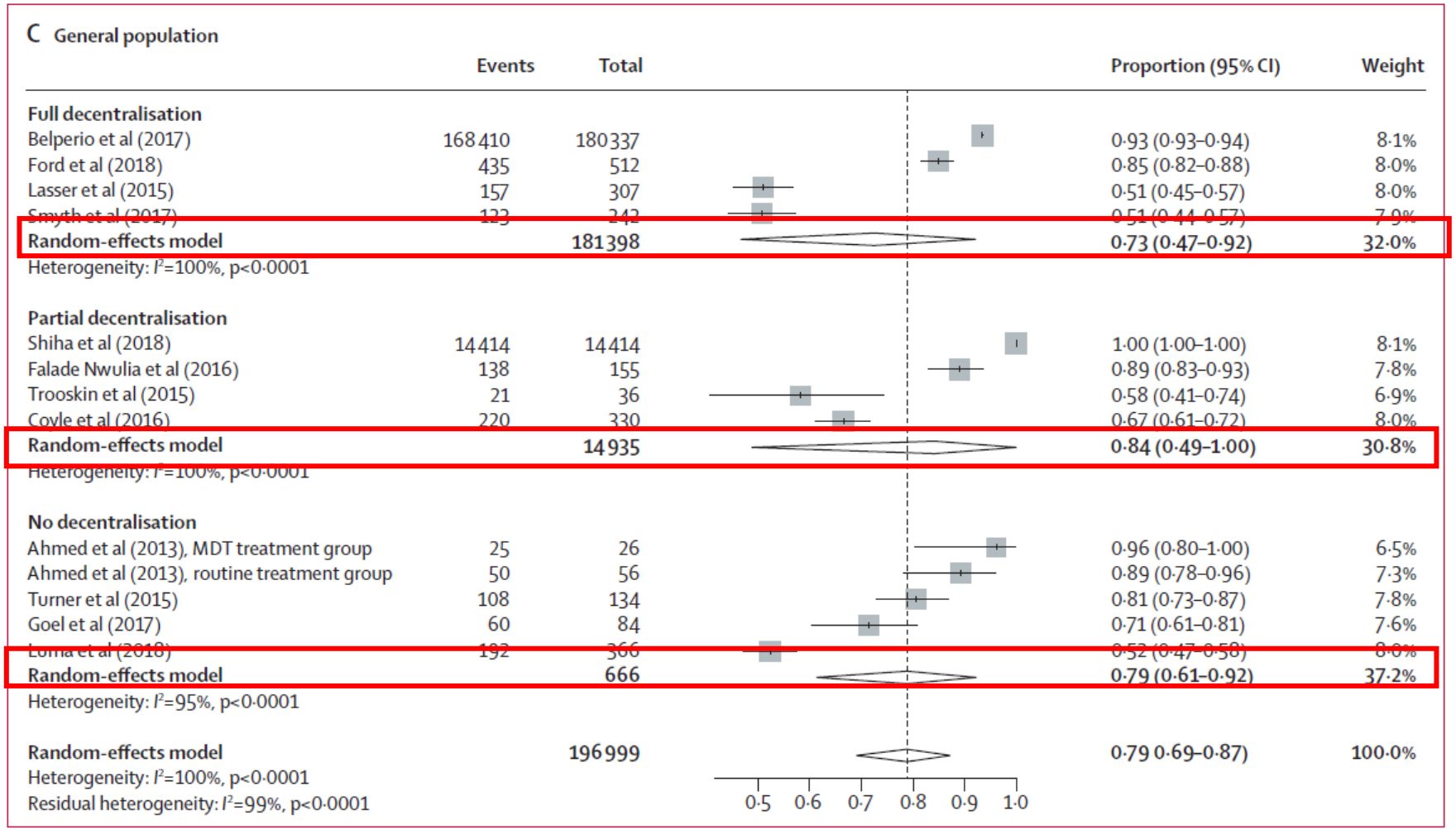


Coppola N, personal opinion

Decentralisation, integration, and task-shifting in hepatitis C virus infection testing and treatment: a global systematic review and meta-analysis

Ena Oru, Adam Trickey, Rohan Shirali, Steve Kanters, Philippa Easterbrook

Effect of decentralisation and integration on linkage to care

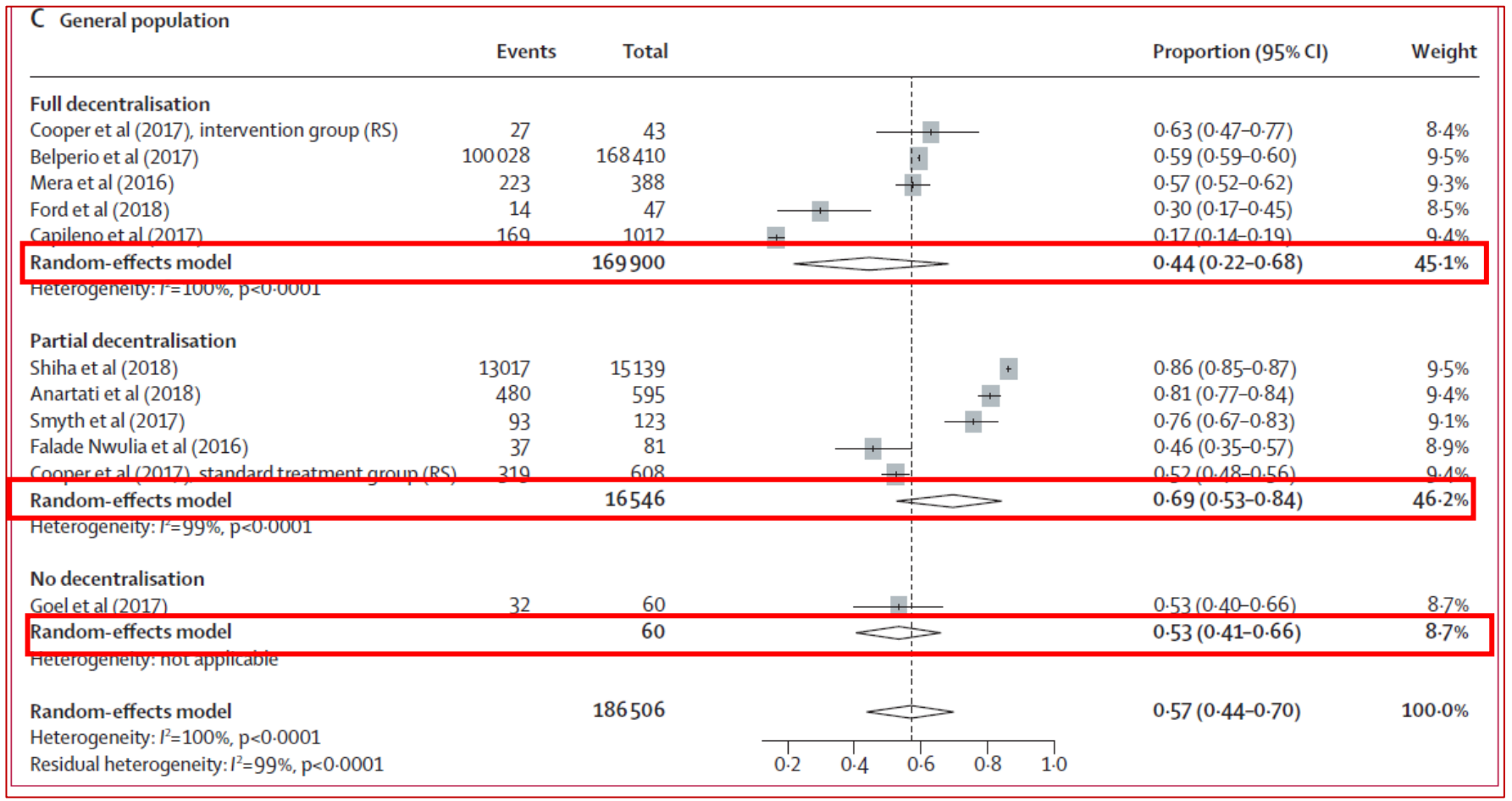


Lancet Glob Health 2021

Decentralisation, integration, and task-shifting in hepatitis C virus infection testing and treatment: a global systematic review and meta-analysis

Ena Oru, Adam Trickey, Rohan Shirali, Steve Kanters, Philippa Easterbrook

Effect of decentralisation and integration on DAA intake



Lancet Glob Health 2021

Challenges in HCV Case Finding and Linkage to Care

- General population
- Populations with high HCV prevalence

- **Opportunistic case-finding**
- **Case finding in specific setting**
- **Case finding in general population**

HCV screening during Flu-vaccination, season 2019/2020

Case finding dei soggetti HCV-positivi non noti tra la popolazione che accede al medico di medicina generale per la vaccinazione anti-influenzale, stagione 2019-2020

10 studi di medicina generale del distretto 35, ASL Caserta

Soggetti anti-HCV non noti che eseguono vaccinazione anti-influenzale

Vaccinazione anti-influenzale

Test rapido per anti-HCV

personal data

HCV screening during Flu-vaccination, season 2019/2020

Case finding dei soggetti HCV-positivi non noti tra la popolazione che accede al medico di medicina generale per la vaccinazione anti-influenzale, stagione 2019-2020

850 soggetti screenati

8 soggetti anti-HCV pos

2 soggetti HCV RNA pos trattati con DAA

personal data

Associated screening for HCV and SARS-Cov2 infection in an urban area of Southern Italy: A cohort study

Carmine Coppola[1] | Mario Masarone[2] | Marco Bartoli[3] | Laura Staiano[1] | Roberta Coppola[2] | Pietro Torre[2] | Massimiliano Conforti[3] | Daniela Amoruso[1] | Ivan Gardini[3] | Marcello Persico[2]

A prospective observational cohort study was set up with the aim of testing for both SARS-CoV2 and anti-HCV antibodies using rapid blood tests in all the available populations of Casola Di Napoli, a small town in the southern province of Naples

Variable	Overall (% on overall)	quick HCV-Ab negative (%)	quick HCV-Ab positive (%)	*p*
N (%)	2738 (100%)	2684 (98.03%)	54 (1.97%)	
Age mean (SD)	45.57 (19.45)	45.19 (19.34)	64.46 (14.73)	<0.0001
Sex % (M/F)	45.5/54.5	45.8/54.2	33.3/66.7	0.074
Not Italian (%)	0.6% (n16)	0.59%	0	0.56
HCV rapid test positive	54 (1.97%)	-	54	-
HCVAb confirmation positive	41 (1.49%)	-	41	-
HCV Already Known	36/41(87.8%)	-	36/54 (66.67%)	
HCVRNA positive	5 (0.18%)	-	5/54 (9.26%)	-
HCVRNA positivity not already known	3 (0.11%)	-	3/54 (5.55%)	
SARS-COV2 Ab positive	39 (1.4%)	38 (1.41%)	1/54 (1.9%)	0.54
IgM+IgG	17 (0.6%)	16 (0.59%)	1/54 (1.9%)	0.75
IgM	20 (0.7%)	20 (0.74%)	0	0.53
IgG	2 (0.1%)	2 (0.07%)	0	0.17
SARS-Cov2 NS swabs (PCR)	0	0	0	-
Age classes	Overall population	SARS-Cov2 IgM/IgG rapid blood test positive	HCV-Ab quick blood test positive	
<20 years	348 (12.7%)	0 (0%)	1 (0.3%)	
21–40 years	721 (26.3%)	2 (0.3%)	2 (0.3%)	
41–60 years	996 (36.4%)	14 (1.4%)	14 (1.4%)	
61–80 years	604 (22.1%)	20 (3.3%)	33 (5.5%)	
>81 years	69 (2.5%)	3 (1.4%)	4 (5.8%)	

JVH 2021

Challenges in HCV Case Finding and Linkage to Care

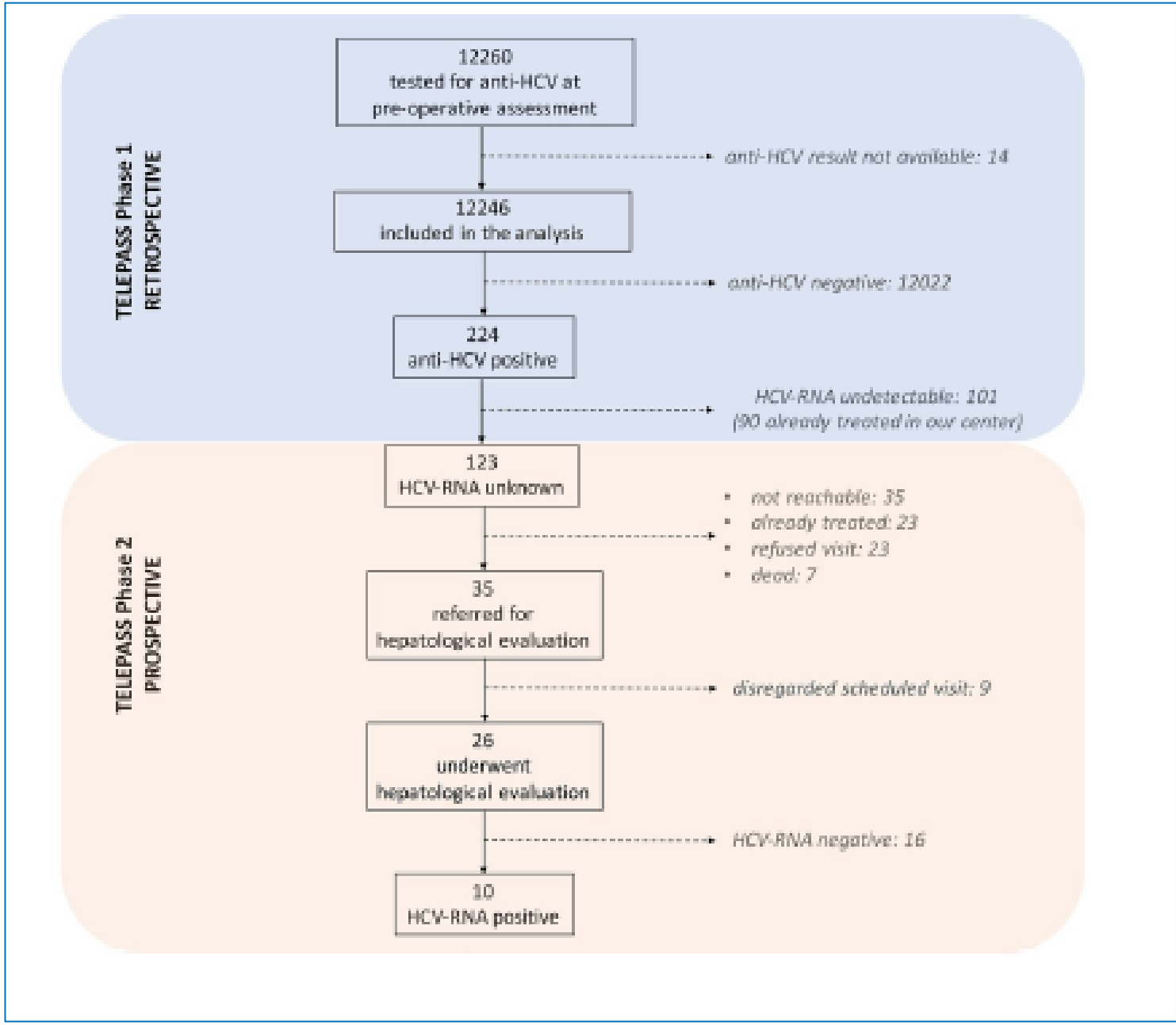
- General population
- Populations with high HCV prevalence

  - **Opportunistic case-finding**
  - **Case finding in specific setting**
    - **Hospital setting**
    - **Emergency department**
  - **Case finding in general population**

Missed linkage to care for patients who screened positive for Hepatitis C in a tertiary care centre: Results of the Telepass project

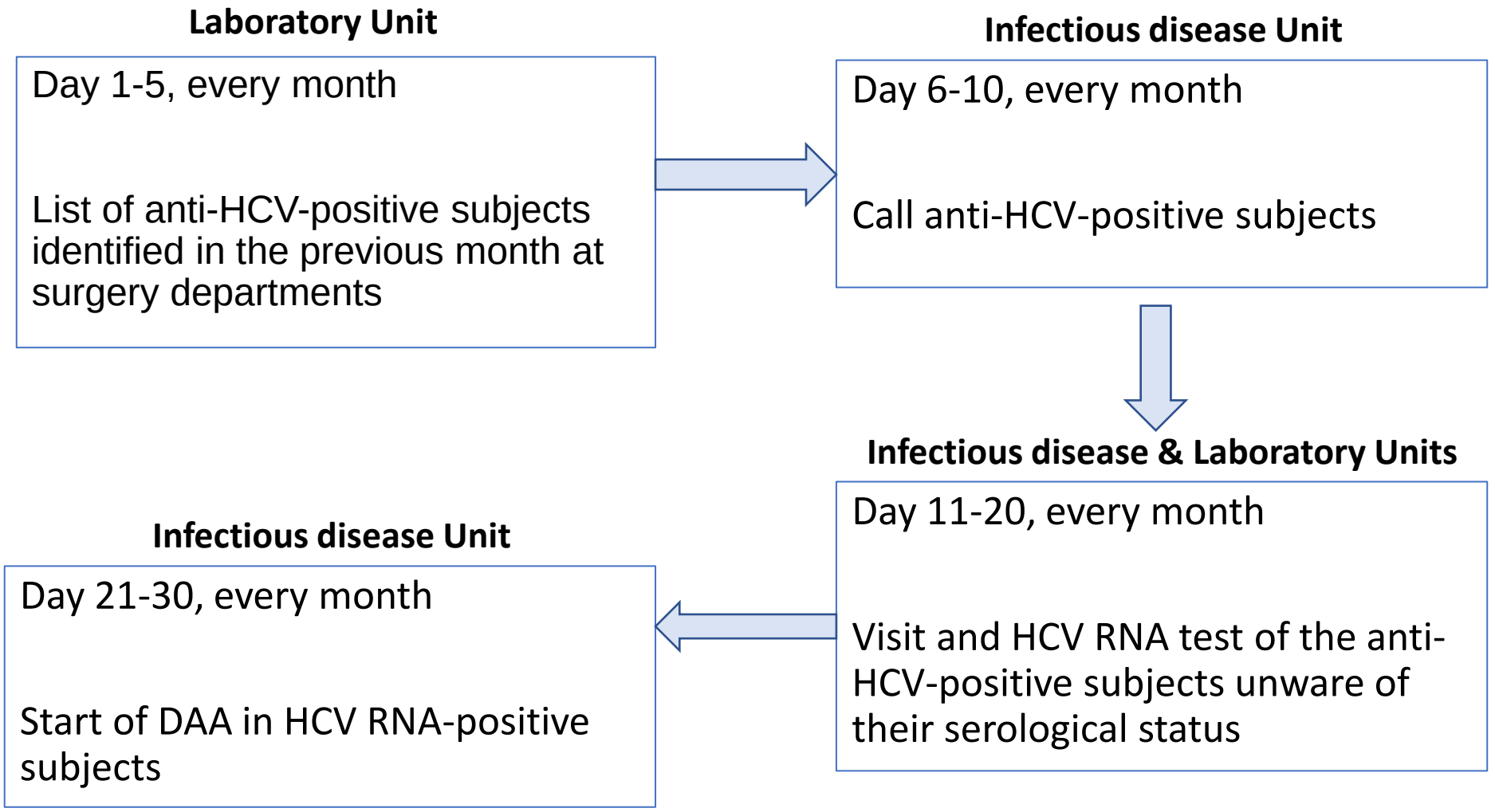
Francesca Romana Ponziani[1] | Francesco Santopaolo[2] | Massimo Siciliano[1] | Antonio Giulio De Belvis[3] | Annalisa Tortora[2] | Vincenzina Mora[1] | Caterina Fanali[1] | Alisha Morsella[4] | Fulvio Balducci[5] | Giuseppe Vetrugno[6] | Maria Elena D'Alfonso[7] | Andrea Cambieri[8] | Roberto Cauda[9] | Rocco Bellantone[10] | Maurizio Sanguinetti[11] | Maurizio Pompili[1] | Antonio Gasbarrini[1]

The 'Telepass' project was structured in two phases:
- a retrospective analysis first identified all anti–HCVpositive subjects among patients who underwent pre-operative assessment in the facility in the course of one year;
- a following prospective phase, aimed to recall patients in need either of further diagnostic tests (ie HCV-RNA) or treatment



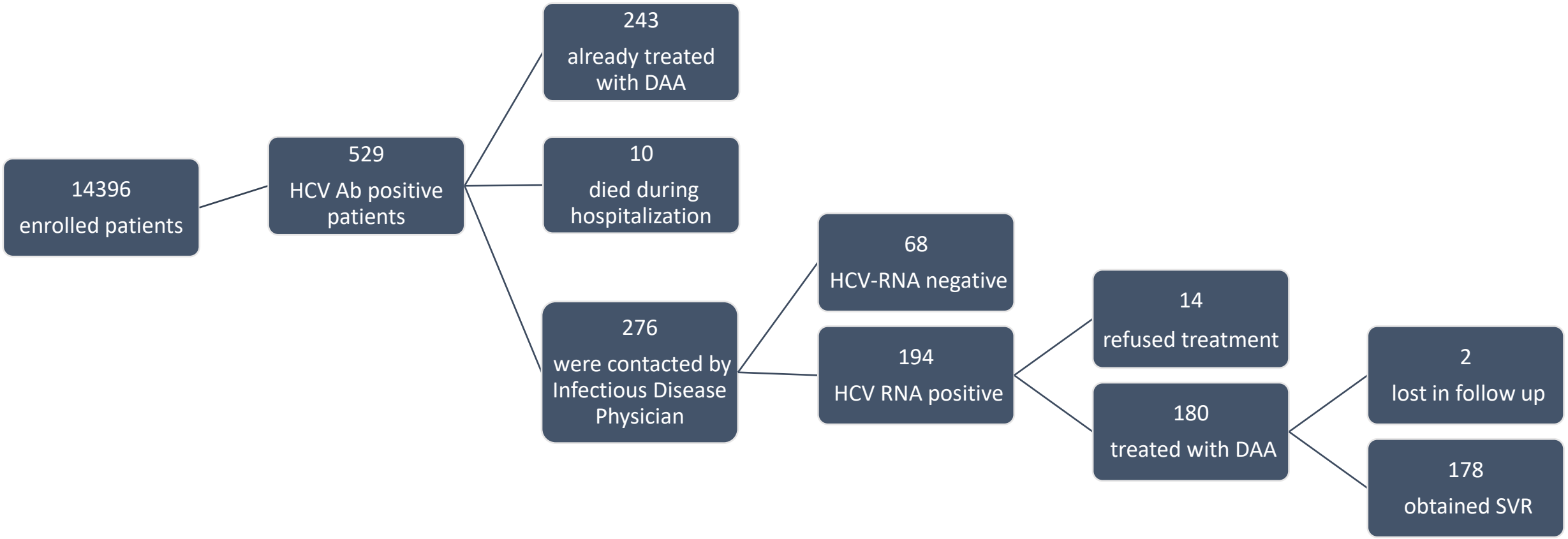
JVH 2020

HCV-free Caserta-Hospital project, January-December 2019



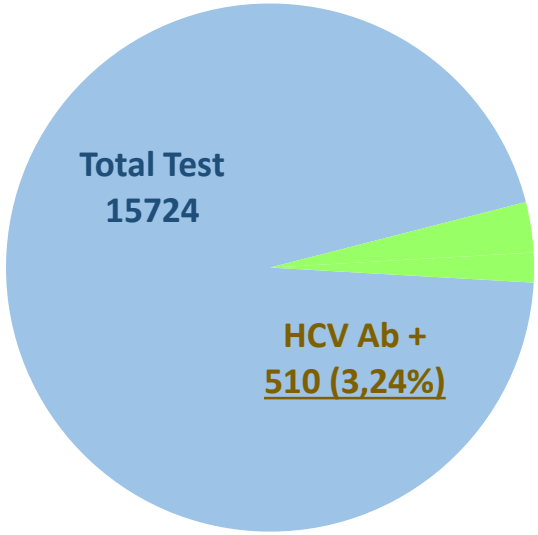
Messina V, submitted

HCV-free Caserta-Hospital project, January-December 2019



Messina V, submitted

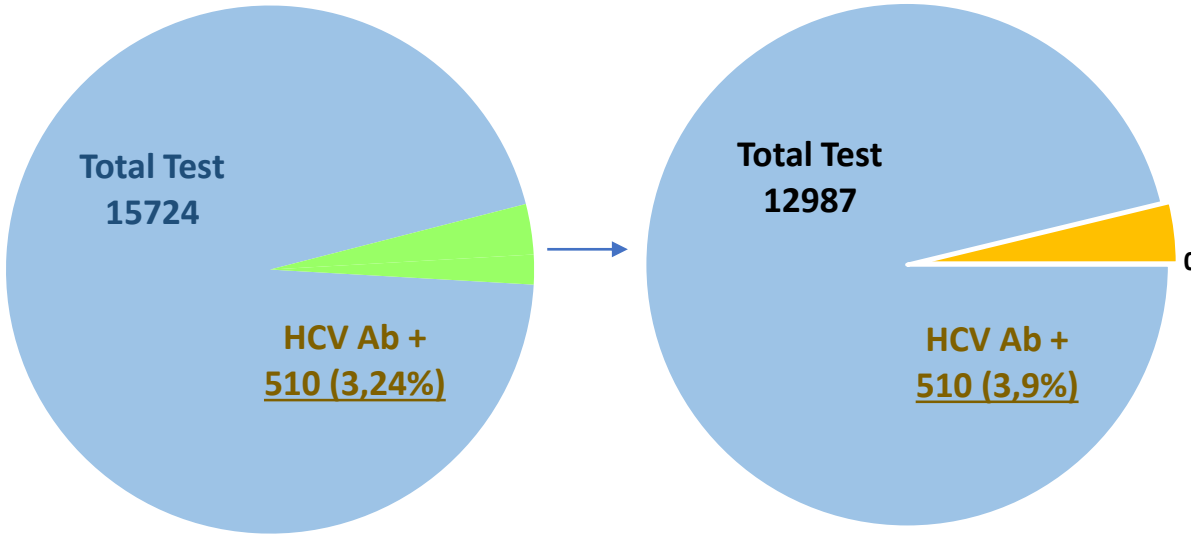
Periodo Gennaio 2020 - giugno 2021



Analisi sul
totale dei pazienti

E. Claar, Personal communication

Periodo Gennaio 2020 - giugno 2021

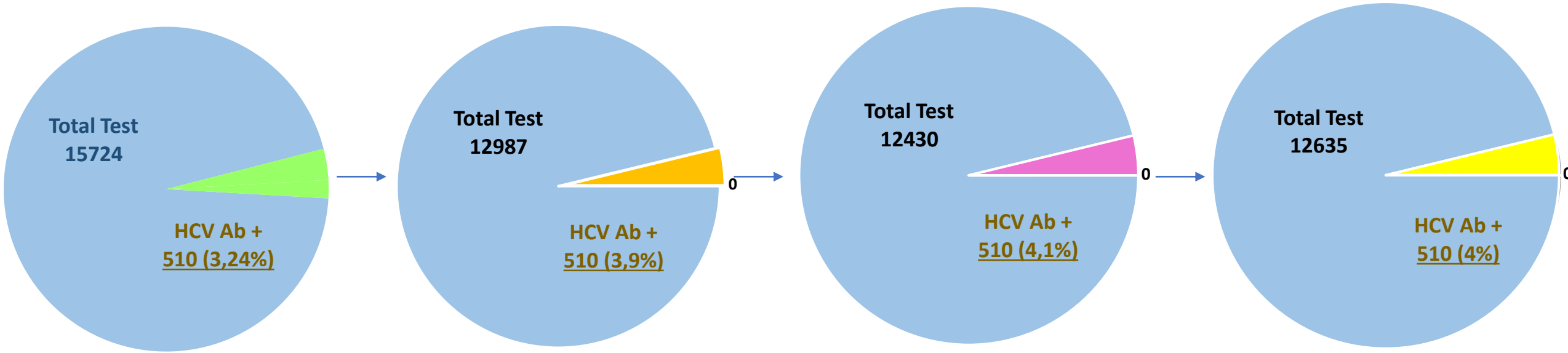


Analisi sul totale dei pazienti

Esclusi i pazienti neonati (Ostetricia + TIN)

E. Claar, Personal communication

Periodo Gennaio 2020 - giugno 2021



Analisi sul
Totale dei pazienti

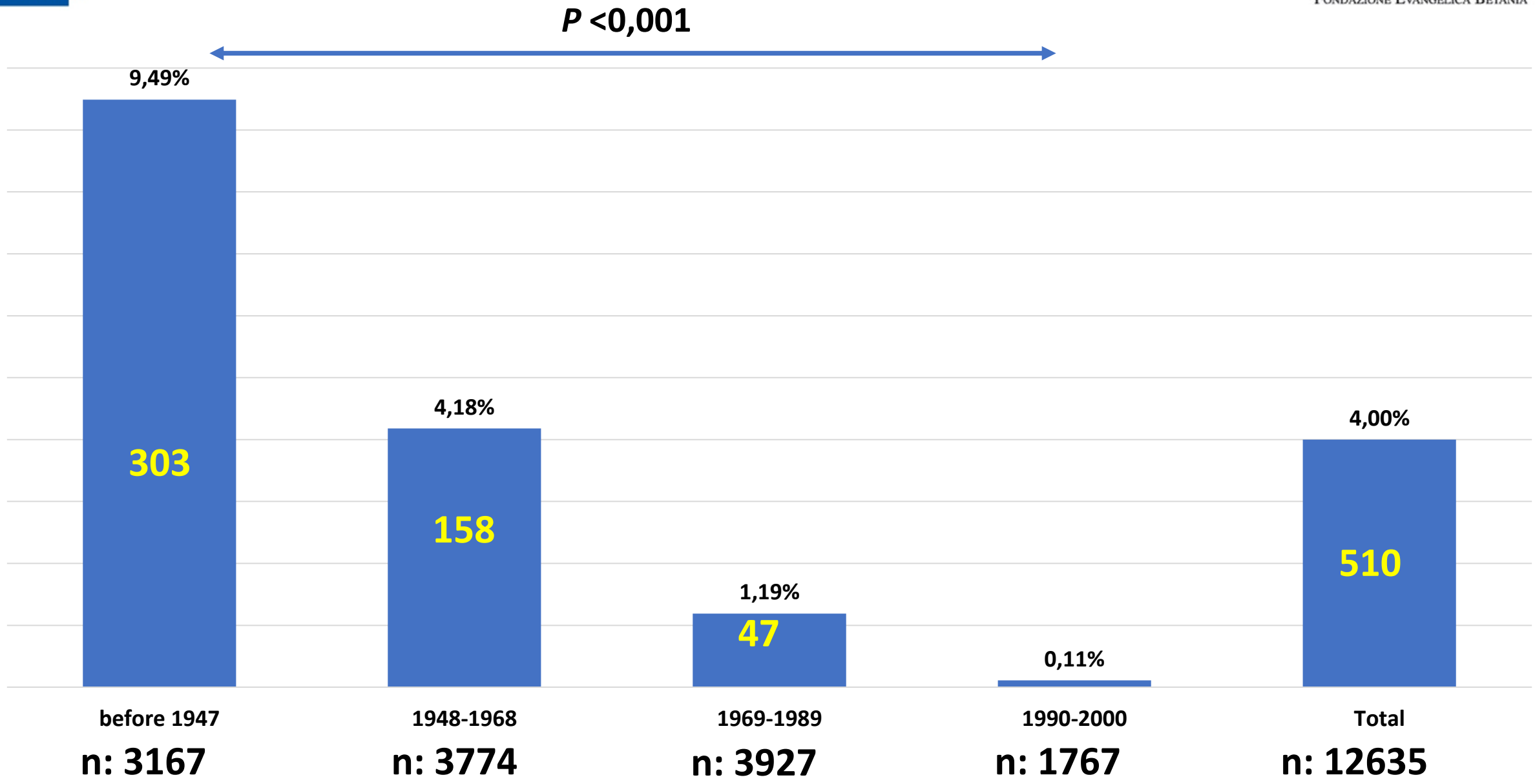
Esclusi i pazienti neonati
(Ostetricia + TIN)

Esclusi i pazienti
0 – 23 anni

Esclusi i pazienti nati dopo 2000

E. Claar, Personal communication

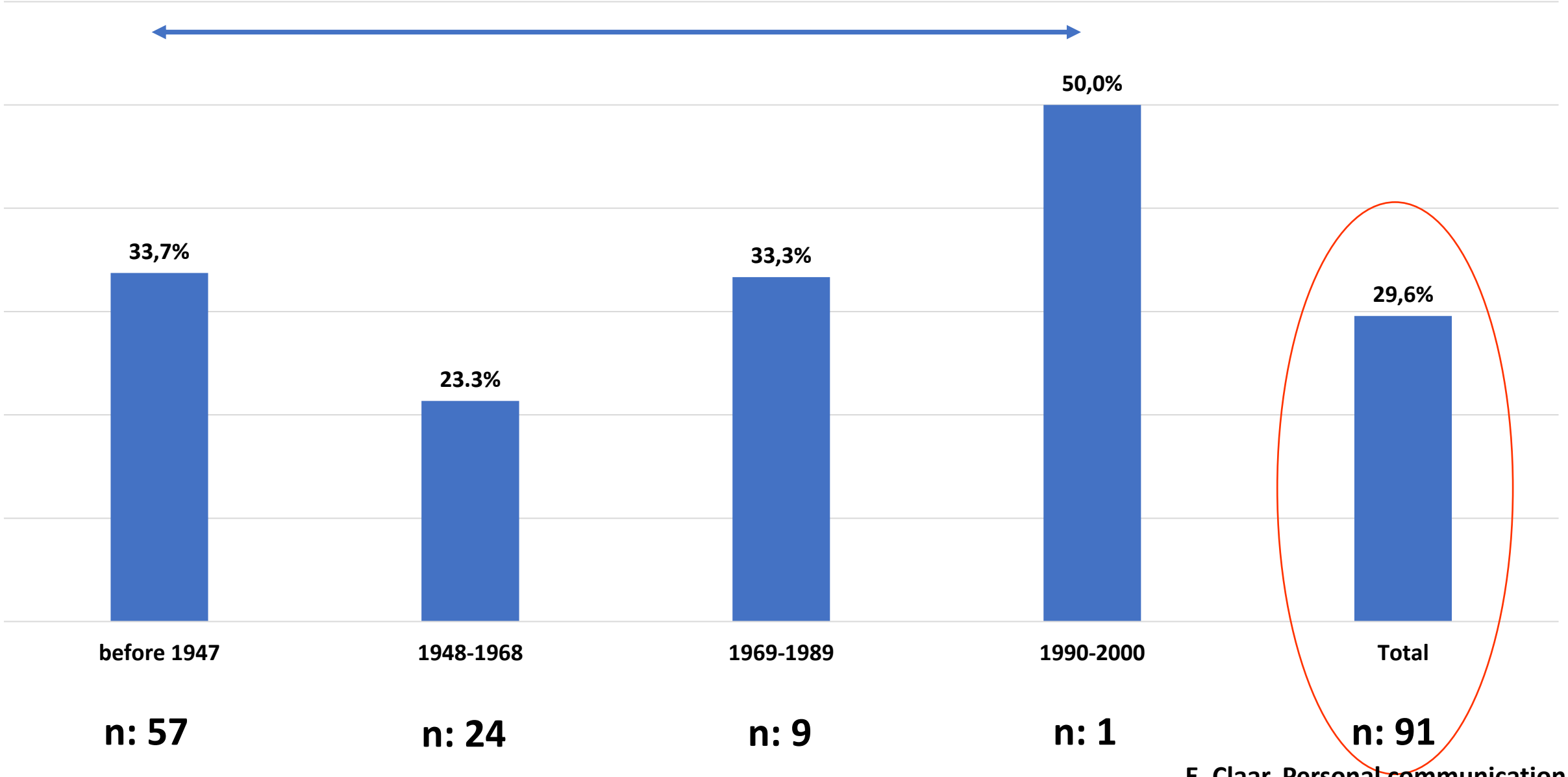
HCV ab prevalence matched by age of birth



E. Claar, Personal communication

HCV RNA prevalence on HCV ab matched by age of birth

P : N.S.

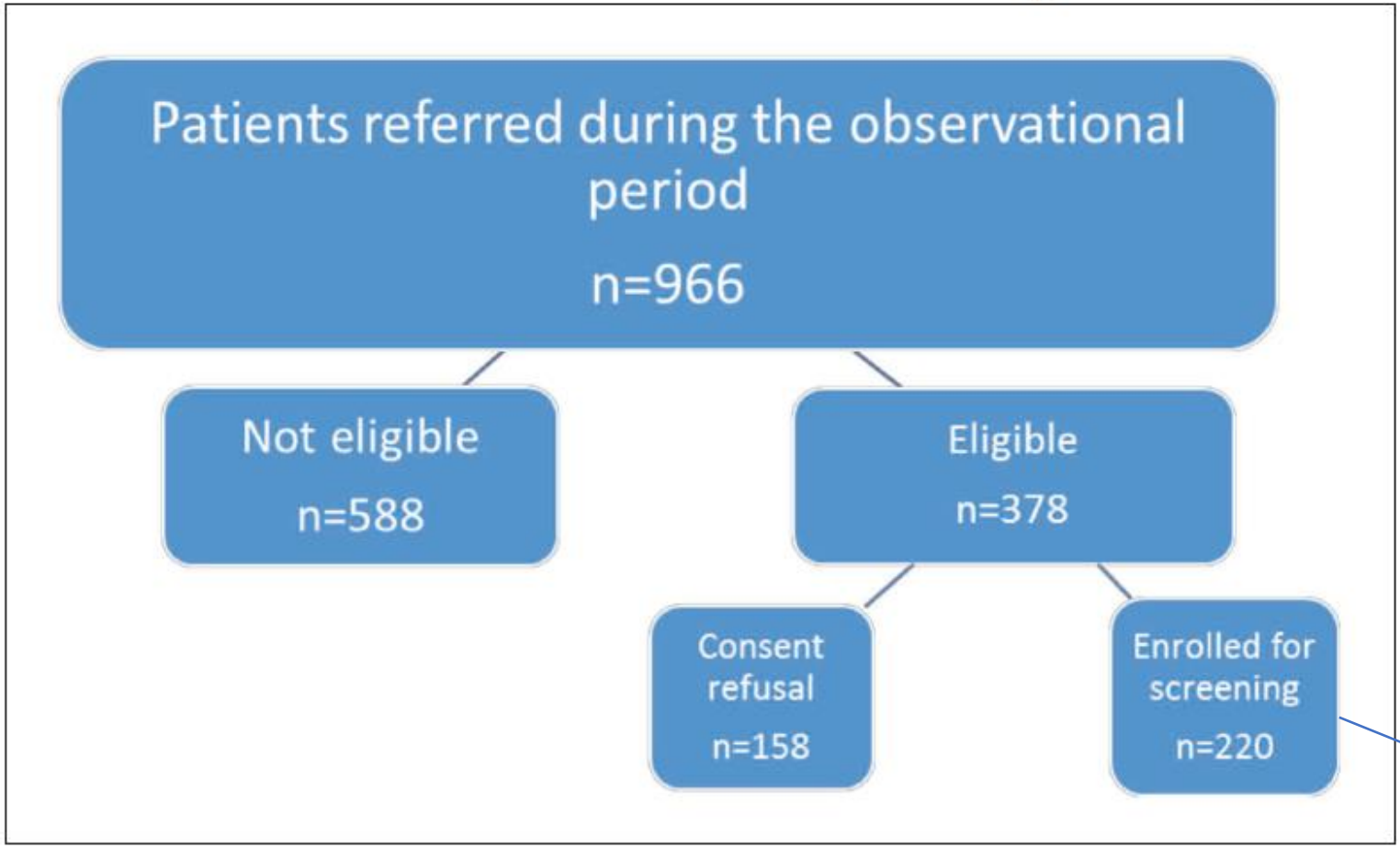


E. Claar, Personal communication

Hepatitis C screening in the Emergency Department of a large hospital in Southern Italy: results of a pilot study

Ivan Gentile[1], Biagio Pinchera[1], Giulio Viceconte[1], Manuel Crispo[1], Davide Simeone[1], Riccardo Scotto[1], Emanuela Zappulo[1], Alberto Enrico Maraolo[1], Fiorella Paladino[2], Raffaella Tortora[2], Giovanni Giuseppe Di Costanzo[2], Antonio Riccardo Buonomo[2], Guglielmo Borgia[1]

To evaluate the feasibility of a rapid salivary, point-of-care assay for anti-HCV, performed in patients aged between 45 and 80 years old who were referred to the emergency department from May to August 2017 and were all unaware of their HCV serostatus



2 anti-HCV-positive

0 linkaged-to-care

Infez Med 2019

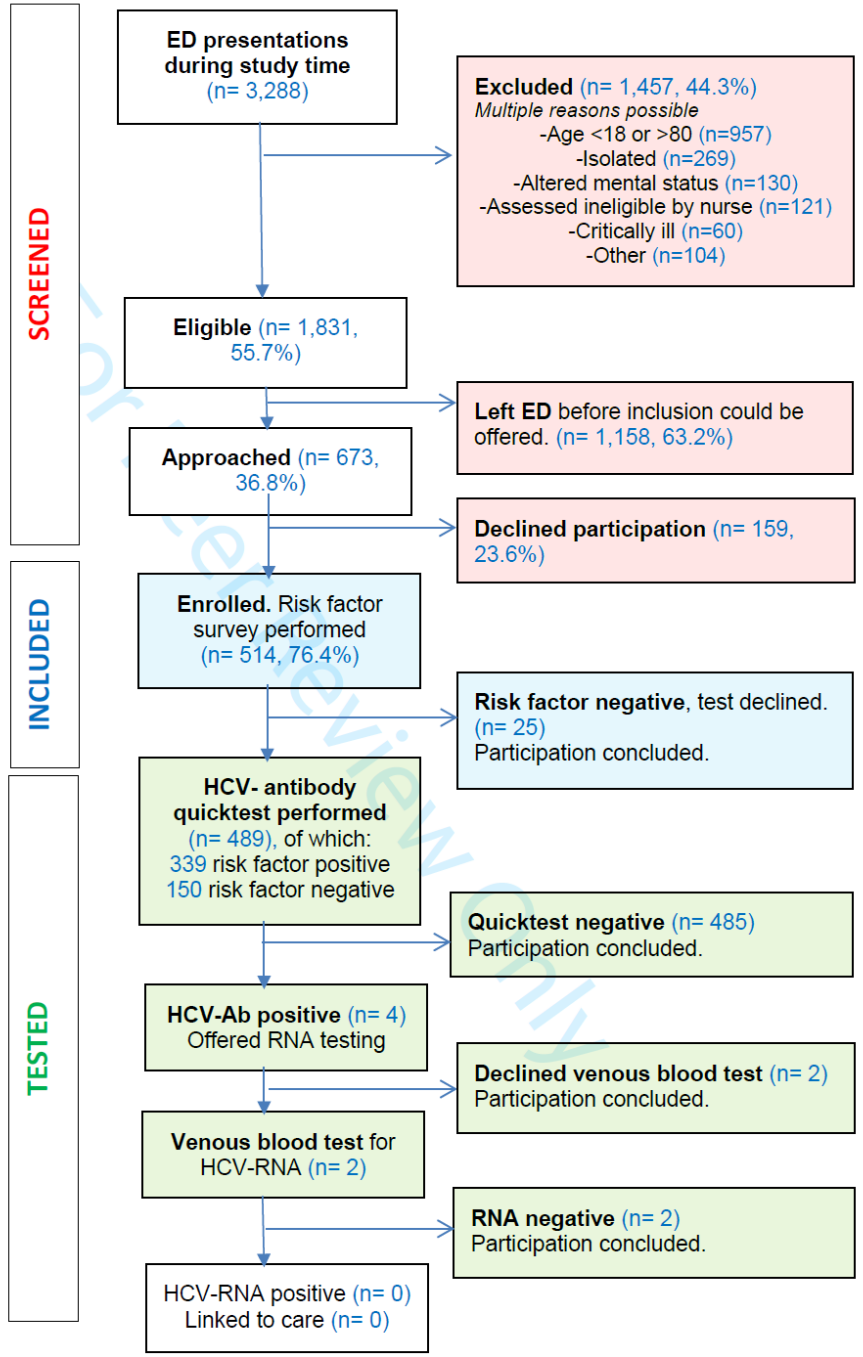
Emergency department testing is feasible but ineffective to eliminate Hepatitis C in Denmark

Jessica Jennifer Wentworth[1,2], Anne Lindebo Holm Øvrehus[1,2], Janne Fulgsang Hansen[1], Peter Biesenbach[3], Peer Brehm Christensen[1,2]

During a three-month period (May-August 2020), emergency department patients at Odense University Hospital were screened for risk factors and offered point-of-care HCV-Antibody testing

Infectious Diseases 2021

Figure 1: Flow of Participants



For Peer Review Only

Challenges in HCV Case Finding and Linkage to Care

- General population
- Populations with high HCV prevalence

  - **Opportunistic case-finding**
  - **Case finding in specific setting**
  - **Case finding in general population**

life

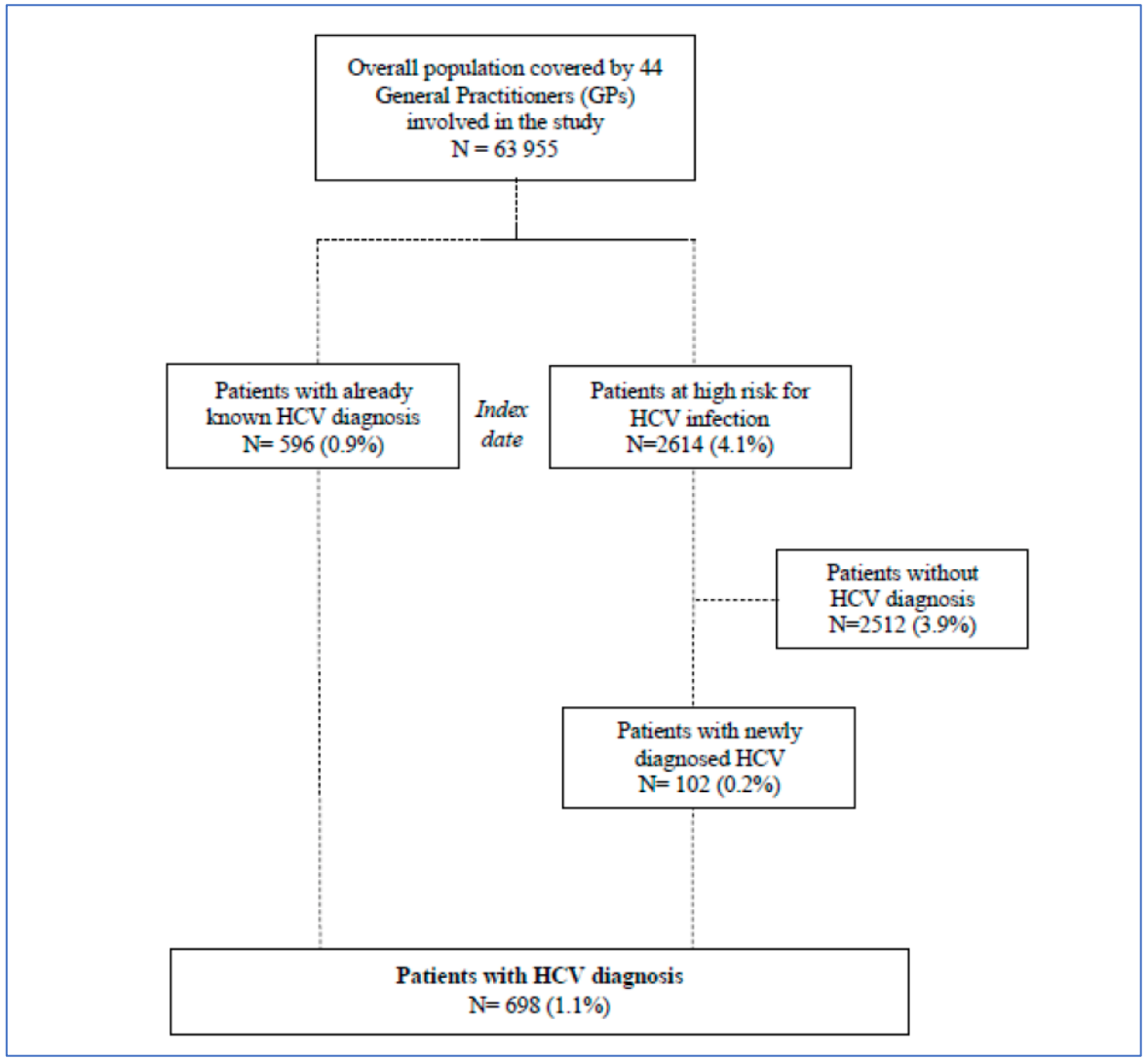
MDPI

Article

Screening, Linkage to Care and Treatment of Hepatitis C Infection in Primary Care Setting in the South of Italy

Anna Citarella [1,*,†], Simona Cammarota [1,†], Francesca F. Bernardi [2], Carmine Coppola [3], Maria D'Antò [4], Marianna Fogliasecca [1], Elio Giusto [5], Mario Masarone [6], Angelo Salomone Megna [7], Carmine Sellitto [8], Rosa Servodio [9], Massimo Smaldone [10], Laura Staiano [3], Ugo Trama [2], Valeria Conti [8,‡] and Marcello Persico [6,‡]

A retrospective cohort study of 44 general practitioners (GPs) who managed 63,955 inhabitants in the Campania region.
Adults with already known HCV diagnosis or those with HCV high-risk profile at June 2019 were identified and reviewed by GPs to identify newly diagnosed of HCV and to assess the linkage to care and treatment for the HCV patients.



Life 2020

life

MDPI

Article

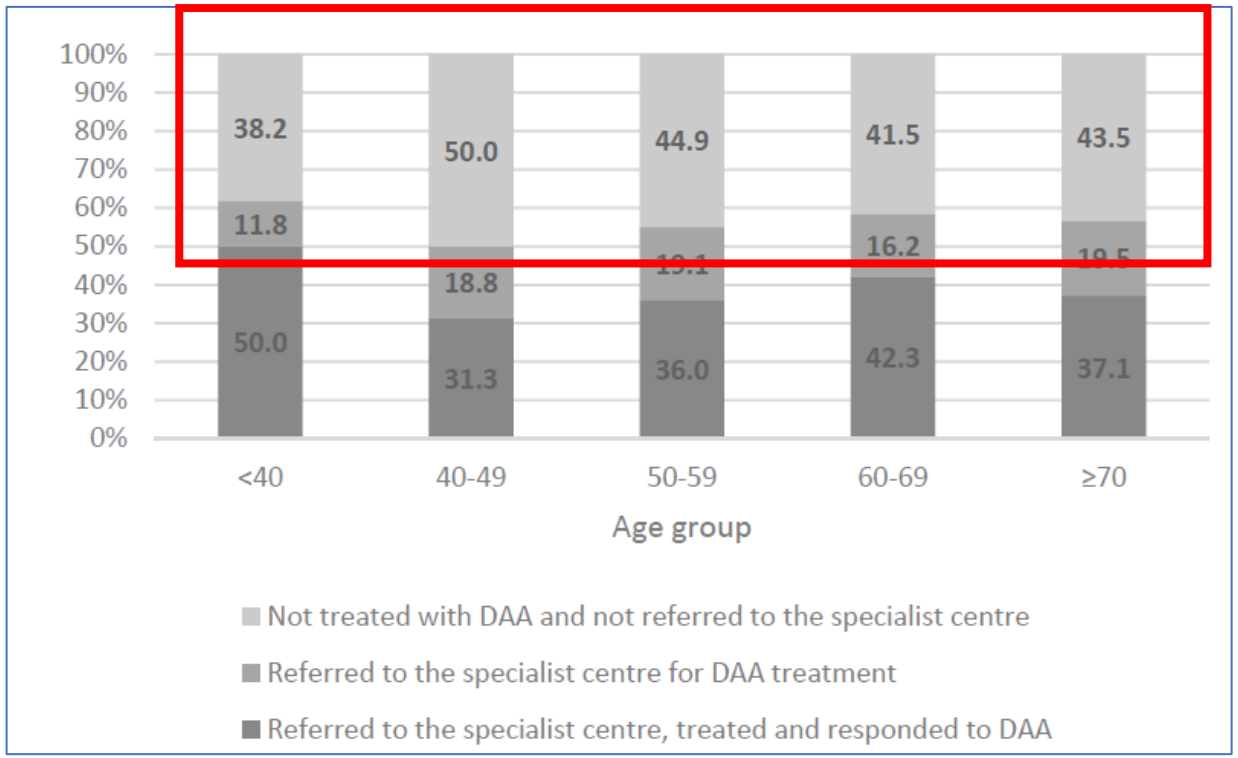
Screening, Linkage to Care and Treatment of Hepatitis C Infection in Primary Care Setting in the South of Italy

Anna Citarella [1,*,†], Simona Cammarota [1,†], Francesca F. Bernardi [2], Carmine Coppola [3], Maria D'Antò [4], Marianna Fogliasecca [1], Elio Giusto [5], Mario Masarone [6], Angelo Salomone Megna [7], Carmine Sellitto [8], Rosa Servodio [9], Massimo Smaldone [10], Laura Staiano [3], Ugo Trama [2], Valeria Conti [8,‡] and Marcello Persico [6,‡]

A retrospective cohort study of 44 general practitioners (GPs) who managed 63,955 inhabitants in the Campania region.
Adults with already known HCV diagnosis or those with HCV high-risk profile at June 2019 were identified and reviewed by GPs to identify newly diagnosed of HCV and to assess the linkage to care and treatment for the HCV patients.

Table 1. Demographic and clinical characteristics of patients with hepatitis C virus (HCV) diagnosis.

	Overall (N = 698)%	Patients with Already Known HCV Diagnosis (N = 596)%	Patients with Newly Diagnosed HCV (N = 102)%	*p* Value
Age Groups				
<40	5.2	5.4	3.5	0.13
40–49	9.7	10.0	8.0	
50–59	13.7	12.4	21.8	
60–69	21.5	22.4	16.1	
≥70	49.9	49.8	50.6	
Gender				
Male	48.9	47.4	57.6	0.06
Female	51.1	52.6	42.4	
Comorbidities				
Diabetes	14.7	14.3	16.7	0.54
CKD	4.9	4.2	8.8	0.05
Obesity	4.3	3.7	7.8	0.06

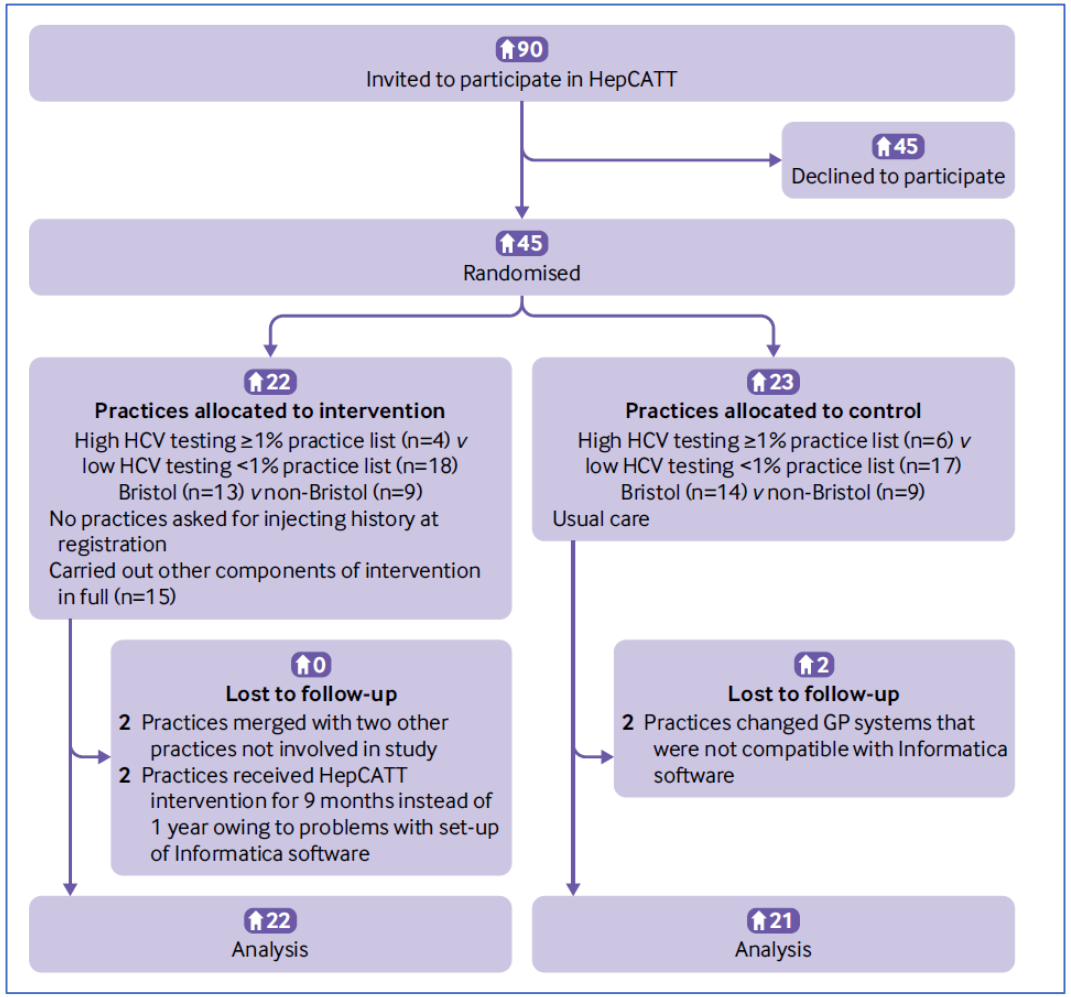


Life 2020

Cost effectiveness of an intervention to increase uptake of hepatitis C virus testing and treatment (HepCATT): cluster randomised controlled trial in primary care

Kirsty Roberts,[1] John Macleod,[1,2] Chris Metcalfe,[1,3] Will Hollingworth,[1] Jack Williams,[4,5] Peter Muir,[6] Peter Vickerman,[1,2] Clare Clement,[2] Fiona Gordon,[7] Will Irving,[8] Cherry-Ann Waldron,[9] Paul North,[6] Philippa Moore,[6] Ruth Simmons,[5,10] Alec Miners,[4,5] Jeremy Horwood[1,2] Matthew Hickman[1,2]

Electronic algorithm and flag on practice systems identifying patients with HCV risk markers (such as history of opioid dependence or HCV tests with no evidence of referral to hepatology), staff educational training in HCV, and practice posters/leaflets to increase patients' awareness. Flagged patients were invited by letter for an HCV test (with one follow-up) and had on-screen pop-ups to encourage opportunistic testing.



BMJ 2020

Cost effectiveness of an intervention to increase uptake of hepatitis C virus testing and treatment (HepCATT): cluster randomised controlled trial in primary care

Kirsty Roberts,[1] John Macleod,[1,2] Chris Metcalfe,[1,3] Will Hollingworth,[1] Jack Williams,[4,5] Peter Muir,[6] Peter Vickerman,[1,2] Clare Clement,[2] Fiona Gordon,[7] Will Irving,[8] Cherry-Ann Waldron,[9] Paul North,[6] Philippa Moore,[6] Ruth Simmons,[5,10] Alec Miners,[4,5] Jeremy Horwood[1,2] Matthew Hickman[1,2]

Electronic algorithm and flag on practice systems identifying patients with HCV risk markers (such as history of opioid dependence or HCV tests with no evidence of referral to hepatology), staff educational training in HCV, and practice posters/leaflets to increase patients' awareness. Flagged patients were invited by letter for an HCV test (with one follow-up) and had on-screen pop-ups to encourage opportunistic testing.

Table 3 | Hepatitis C virus (HCV) antibody testing, HCV positive test yield, polymerase chain reaction (PCR) tests for chronic infection, and referral to secondary care in intervention and control practices, with intervention effect estimated as rate ratio from random effects Poisson regression model that accommodates any variations in testing between practices

	Number (%)			
	Intervention (n=13 097)	Control (n=11 376)	Rate ratio (95% CI)	P value
Tested				
Crude	2071 (15.8)	1163 (10.2)	1.57 (1.18 to 2.09)	0.002
Adjusted*			1.59 (1.21 to 2.08)	<0.001
Subgroup analysis†:				
Opioid/injecting drug use	189/2930 (6.5)	80/3315 (2.4)	2.73 (1.95 to 3.82)	-
No opioid/injecting drug use	1882/10 167 (18.5)	1083/8061 (13.4)	1.45 (1.08 to 1.95)	-
Ratio of rate ratios‡	-	-	1.91 (1.45 to 2.52)	<0.001
Antibody test positive				
Crude	129 (1.0)	51 (0.4)	2.30 (1.41 to 3.75)	0.001
Adjusted*			2.24 (1.47 to 3.42)	<0.001
PCR test positive				
Crude	43 (0.3)	13 (0.1)	3.17 (1.38 to 7.31)	0.007
Adjusted*			2.96 (1.34 to 6.58)	0.008
Referred/positive antibody and PCR tests				
Crude	20 (0.2)	3 (<0.1)	6.25 (1.67 to 23.38)	0.007
Adjusted*			5.78 (1.55 to 21.61)	0.009
Referred/positive antibody test (sensitivity analysis)				
Crude	27 (0.2)	7 (<0.1)	3.43 (1.36 to 8.65)	0.009
Adjusted*			3.40 (1.35 to 8.52)	0.009

*Adjusted for practice location (Bristol versus elsewhere) and historical HCV testing rate (low versus high, as indicated by Public Health England).
†Subgroups defined by history of opioid/injecting drug use.
‡Estimated ratio of rate ratios in two subgroups (opioid/injecting drug use and no opioid/injecting drug use, and control practices as reference within each), with interaction test P value estimated from model with covariates as in above*.

BMJ 2020

Cost effectiveness of an intervention to increase uptake of hepatitis C virus testing and treatment (HepCATT): cluster randomised controlled trial in primary care

Kirsty Roberts,[1] John Macleod,[1,2] Chris Metcalfe,[1,3] Will Hollingworth,[1] Jack Williams,[4,5] Peter Muir,[6] Peter Vickerman,[1,2] Clare Clement,[2] Fiona Gordon,[7] Will Irving,[8] Cherry-Ann Waldron,[9] Paul North,[6] Philippa Moore,[6] Ruth Simmons,[5,10] Alec Miners,[4,5] Jeremy Horwood[1,2] Matthew Hickman[1,2]

Electronic algorithm and flag on practice systems identifying patients with HCV risk markers (such as history of opioid dependence or HCV tests with no evidence of referral to hepatology), staff educational training in HCV, and practice posters/leaflets to increase patients' awareness. Flagged patients were invited by letter for an HCV test (with one follow-up) and had on-screen pop-ups to encourage opportunistic testing.

Table 4 | Cost effectiveness of hepatitis C virus (HCV) case finding

Task	Intervention (n=12 922)	Control (n=10 974)	Difference (95% CI)
Training cost	£1.22	£0	-
Screening cost	£2.06	£0	-
Mean HCV antibody test cost per patient	£3.54	£2.33	£1.21 (£1.02 to £1.40)
Mean HCV PCR test cost per patient	£0.89	£0.41	£0.48 (£0.28 to £0.68)
No (%) HCV related consultations: no; yes	12 187 (94); 735 (6)	10 467 (95); 507 (5)	
Mean HCV related consultation cost per patient	£2.27	£2.10	£0.17 (−£0.09 to £0.44)
Mean hepatology referral cost per patient	£0.44	£0.12	£0.32 (£0.12 to £0.52)
Total mean case finding cost per patient	£10.42	£4.96	£7.10 (£4.75 to £9.45)*
No (%) patients referred to hepatology for treatment	20 (0.15)	3 (0.03)	-
Cost per additional patient referred to hepatology for treatment	-	-	£5569

PCR=polymerase chain reaction.
*Adjusted mean difference from mixed effects linear regression, clustered by practice, adjusted for previous HCV testing, Bristol practice, and length of follow-up.

CONCLUSION

HepCATT had a modest impact but is a low cost intervention that merits optimisation and implementation as part of an NHS strategy to increase HCV testing and treatment.

BMJ 2020

Conclusions

- HCV treatment is safe and efficacious
- Today case finding and linkage to care are the milestones in the HCV management
- Delocalization approach may be useful in special population
- In general population case new finding and linkage-to-care approaches are needed