



Infezioni trasmissibili con la trasfusione:
*fattori di rischio, comunicazione e counselling
con il donatore positivo*

Epidemiologia e fattori di rischio dei virus dell'epatite B e C

Daniele Prati

Dipartimento di Medicina Trasfusionale ed Ematologia
Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico

Il sottoscritto, in qualità di Relatore
dichiara che

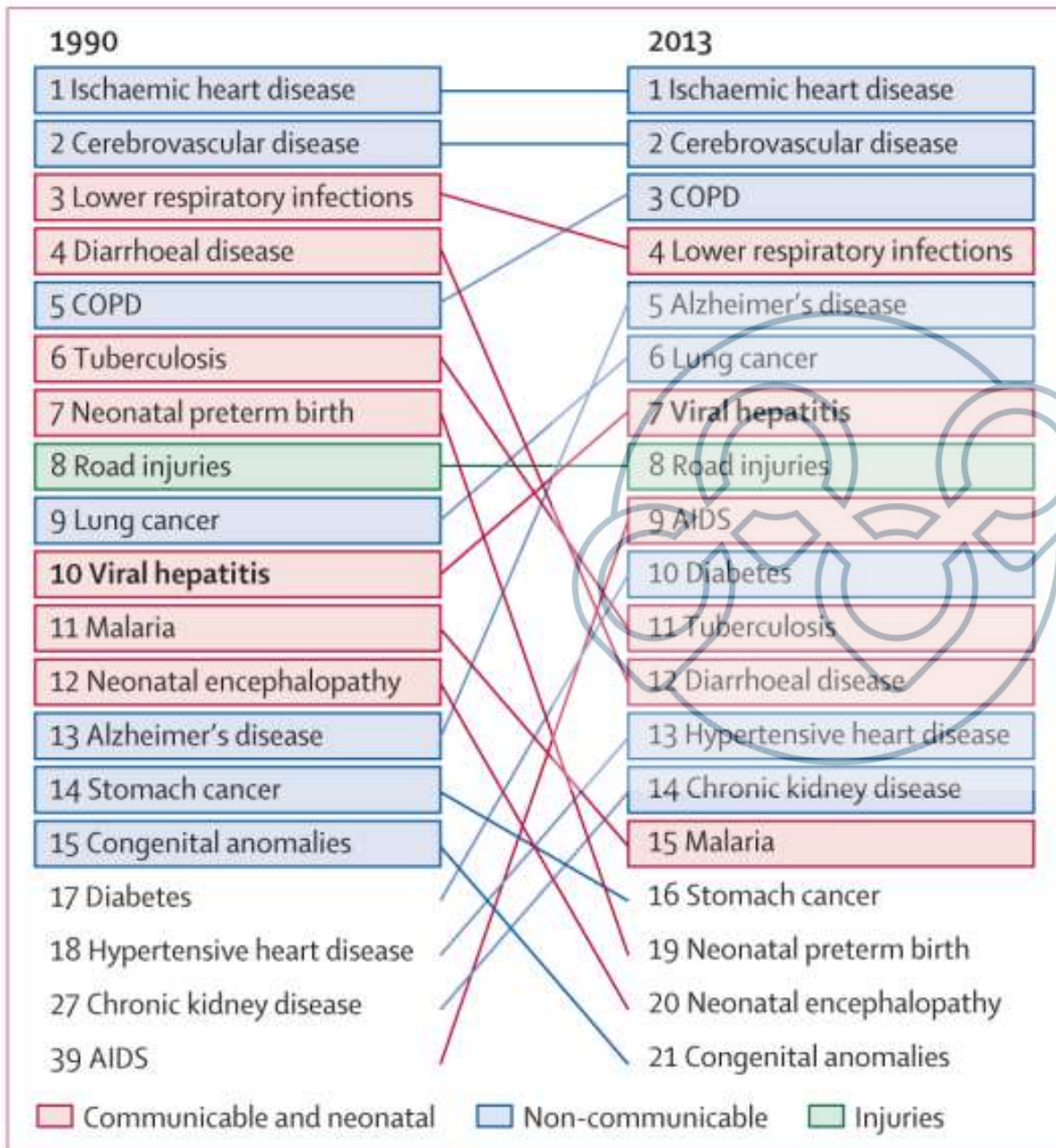
nell'esercizio della Sua funzione e per l'evento in oggetto, NON È in alcun modo portatore di interessi commerciali propri o di terzi; e che gli eventuali rapporti avuti negli ultimi due anni con soggetti portatori di interessi commerciali non sono tali da permettere a tali soggetti di influenzare le mie funzioni al fine di trarne vantaggio.



Hepatitis Epidemiology: Handle with care!

- The collection of epidemiological data on liver diseases across different regions is hindered by the lack of a specific comprehensive study.
- The fragmented current understanding is derived from various organizations' critical reviews, with the backdrop of potential commercial bias in pharmaceutical-sponsored projections.
- Inconsistent methodologies, case definitions, and report accuracies across countries add to the variability, undermining data reliability and comparability.
- Furthermore, many existing local surveys are outdated, not reflecting the latest trends or interventions, which is crucial for informed decision-making and public health policy development.

Leading causes of mortality and trends, 1990–2013



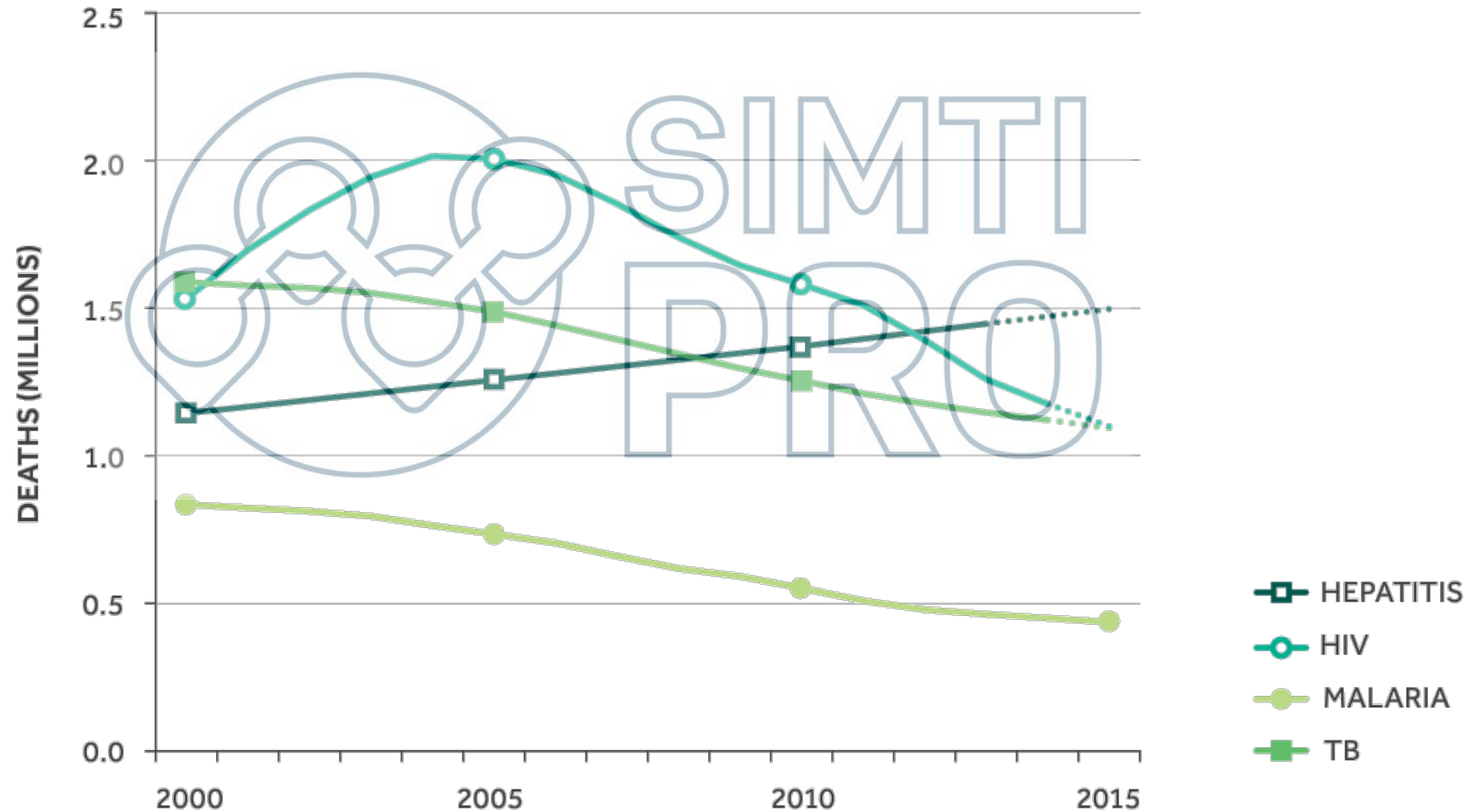
The global burden of viral hepatitis from 1990 to 2013: findings from the Global Burden of Disease Study 2013

Jeffrey D Stanaway, Abraham D Flaxman, Mohsen Naghavi, Christina Fitzmaurice, Theo Vos, Ibrahim Abubakar, Laith J Abu-Raddad, Reza Assadi, Neeraj Bhatta, Benjamin Cowie, Mohammad H Forouzanfar, Justina Groeger, Khayriyyah Mohd Hanafiah, Kathryn H Jacobsen, Spencer L James, Jennifer MacLachlan, Reza Malekzadeh, Natasha K Martin, Ali A Mokdad, Ali H Mokdad, Christopher J L Murray, Dietrich Plass, Saleem Rana, David B Rein, Jan Hendrik Richardus, Juan Sanabria, Mete Saylan, Saeid Shahraz, Samuel So, Vasiliy V Vlassov, Elisabete Weiderpass, Steven T Wiersma, Mustafa Younis, Chuanhua Yu, Maysaa El Sayed Zaki, Graham S Cooke

- Viral hepatitis is a significant contributor to mortality and morbidity globally.
- It ranks among the leading causes of death and disability worldwide.
- The annual death toll from viral hepatitis equals or surpasses that of tuberculosis, AIDS, or malaria.
- Unlike many other communicable diseases, the importance of hepatitis has increased since the initial Global Burden of Disease (GBD) Study in 1990.
- The World Health Organization (WHO) is launching a major new effort to address viral hepatitis.
- These data underscore the critical importance of viral hepatitis in shaping global health policy.

GLOBAL HEALTH SECTOR STRATEGY ON
VIRAL HEPATITIS
2016–2021

Figure 2. Estimated global number of deaths due to viral hepatitis, HIV, malaria and TB, 2000–2015





WHO Global Health Sector Strategy on Viral Hepatitis 2016–2021

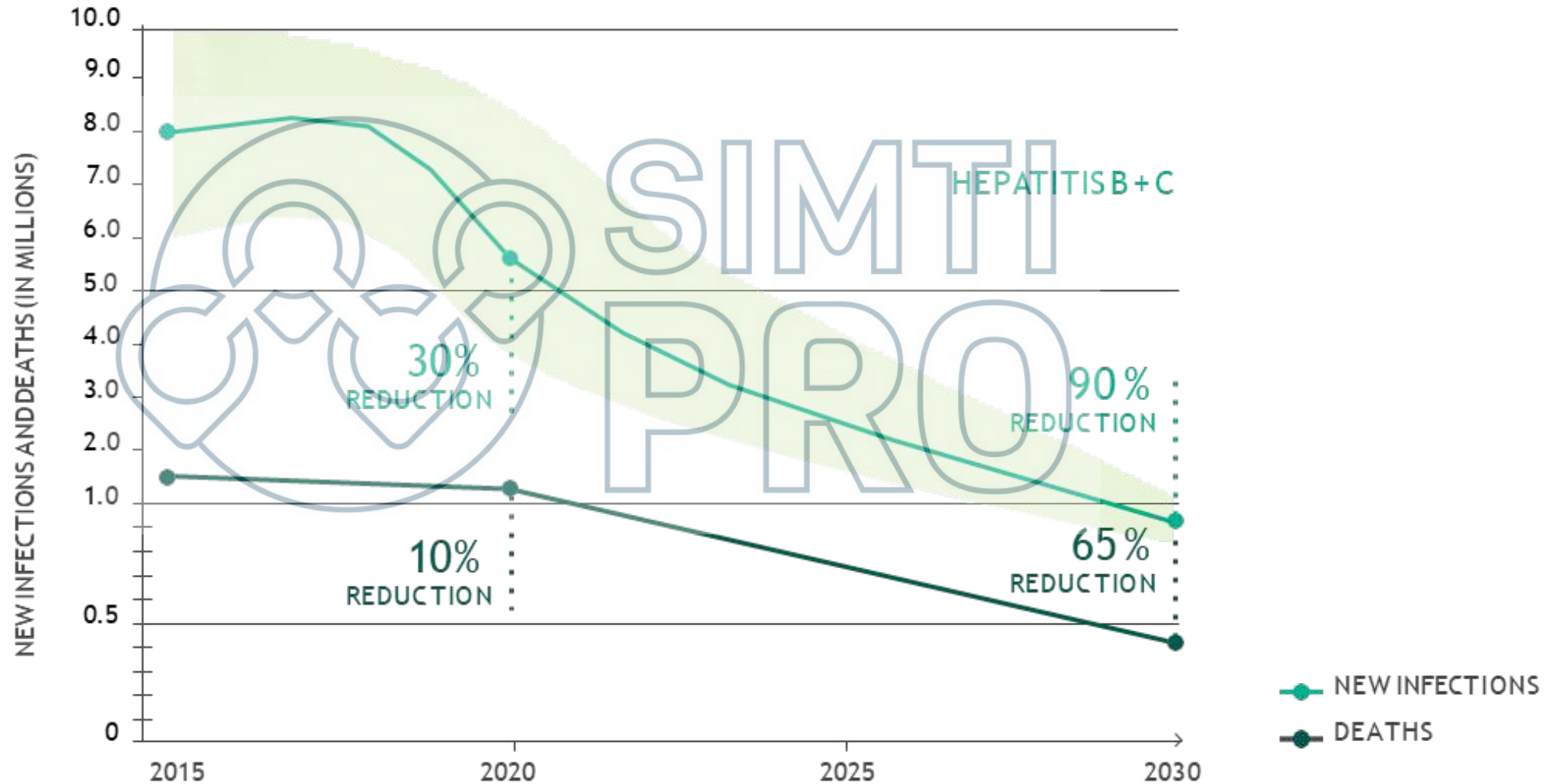


28 May 2016: The first of its kind, WHO publishes a global strategy aiming for elimination of viral hepatitis as a public health threat by 2030

Source: WHO Global Health Sector Strategy on viral hepatitis. Available at: http://apps.who.int/gb/ebwha/pdf_files/WHA69/A69_32-en.pdf?ua=1 (Accessed August 2016)

GLOBAL HEALTH SECTOR STRATEGY ON
VIRAL HEPATITIS
2016-2021

Figure 6. Targets for reducing new cases of and deaths from chronic viral hepatitis B and C infection

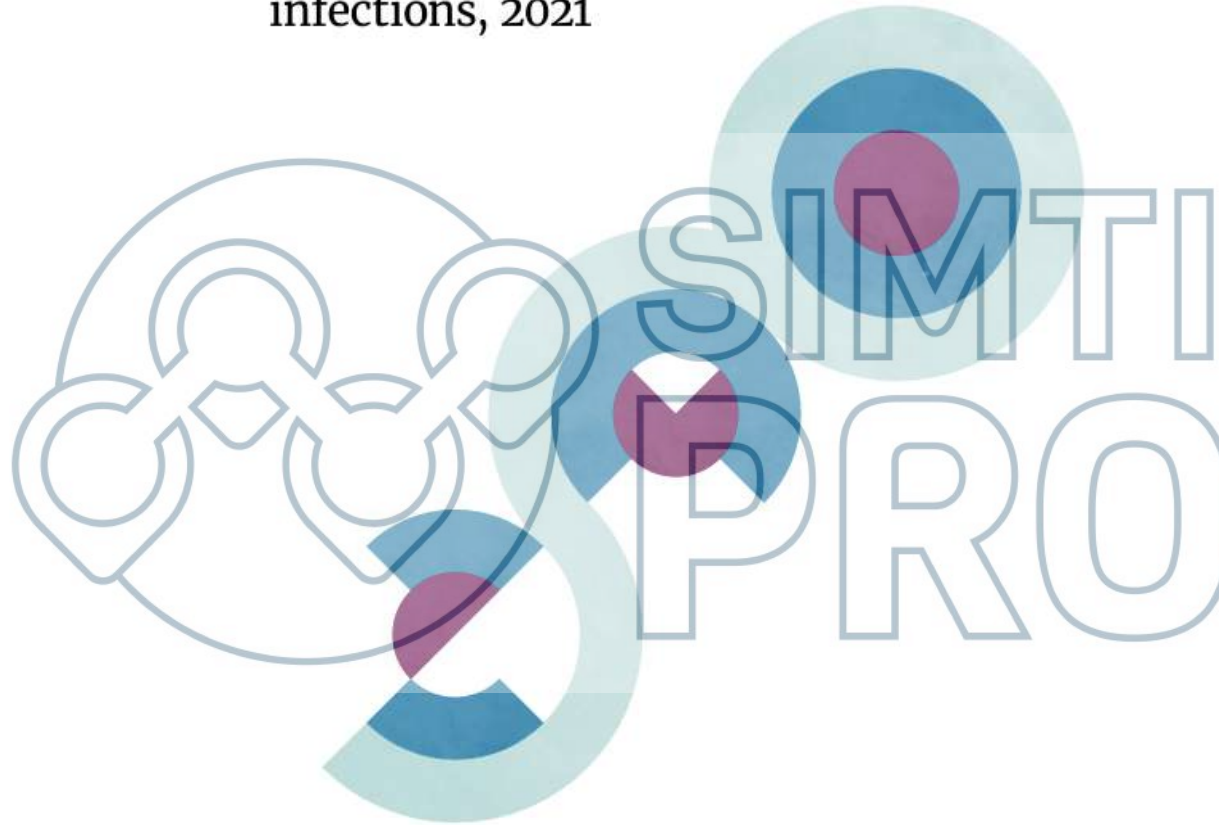


HEPATITIS STRATEGY, 2016: ELIMINATION BY 2030

	Interventions	2030 targets
1. Service coverage	1. Three dose hepatitis B vaccine	90%
	2. HBV prevention of mother to child transmission	90%
	3. Blood and injection safety	100 % screened donations
		90% reuse-prevention devices
	4. Harm reduction	300 injection sets/PWID/yr
	5. Treatment	90% diagnosed
		80% eligible treated
2. Impact	A. Incidence reduction	90%
	B. Mortality reduction	65%

A che punto siamo?

Global progress report
on HIV, viral hepatitis
and sexually transmitted
infections, 2021



Accountability for the global health
sector strategies 2016–2021: actions
for impact

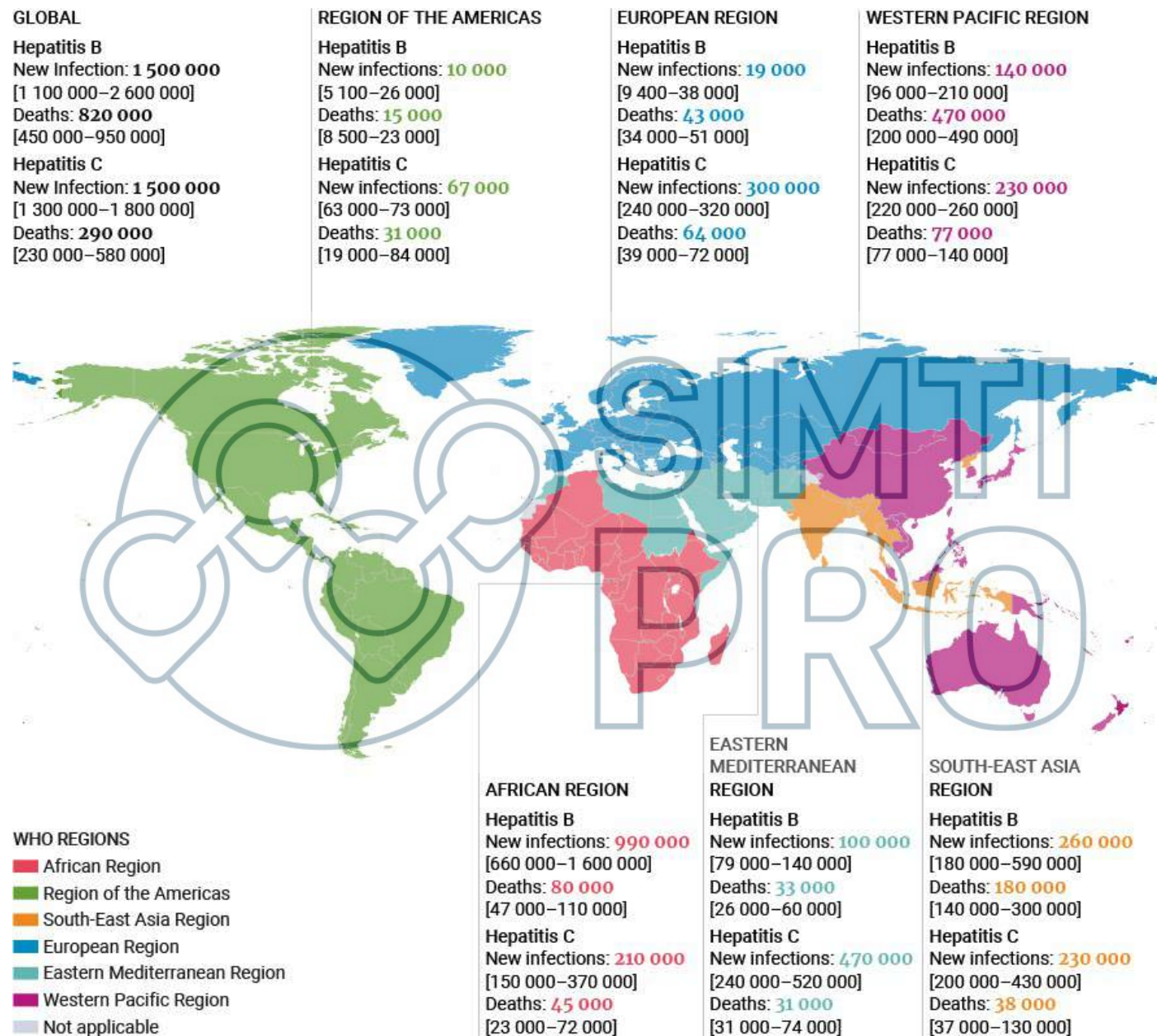


Key facts

The World Health Organization (WHO) estimates that during 2019:

- 296 million people worldwide are living with hepatitis B (90% unaware)
- 58 million people worldwide are living with hepatitis C (80% unaware)
- 1.5 million people were newly infected with chronic hepatitis B
- 1.5 million people were newly infected with chronic hepatitis C
- Both hepatitis B and hepatitis C can lead to lifelong infection. WHO estimates that 1.1 million deaths occurred in 2019 due to these infections and their effects including liver cancer, cirrhosis, and other conditions caused by chronic viral hepatitis

Hepatitis B and C new infections and mortality by WHO region, 2019



Coinfections and comorbidities related to HIV and viral hepatitis

Diseases	Summary of the evidence
HIV and viral hepatitis	<p>2.7 million people are coinfecting with HIV and hepatitis B virus (2015) (5).</p> <p>2.3 million people are coinfecting with HIV and hepatitis C virus (2015) (5).</p>
HIV and viral hepatitis	<p>Among people living with HIV, untreated hepatitis coinfection promotes more rapid progression of hepatitis B- and/or C-related liver disease, hepatocellular cancer and untimely death, undermining the gains of effective HIV treatment.</p> <p>HIV coinfection doubles the risk of mother-to-child transmission of viral hepatitis (5).</p> <p>More than half of all people coinfecting with HIV and hepatitis C are people who inject drugs.</p> <p>Men living with HIV who have sex with men are at substantially higher risk of hepatitis C infection (17).</p>

Summary: The WHO Progress Report 2021

While significant strides have been made in the expansion of treatments, particularly for hepatitis C, challenges persist.

Notably, 1.5 million people annually contract hepatitis B despite the availability of an effective vaccine.

A high mortality rate from hepatitis B and C persists, amounting to 1.1 million deaths in 2019, primarily due to chronic liver disease and liver cancer.

The data emphasizes the need for an accelerated response to improve diagnosis, prevention, and treatment to meet the 2030 targets for elimination.

Hepatitis in the EU



By Chat GPT

The burden of viral hepatitis B and C in the EU/EEA

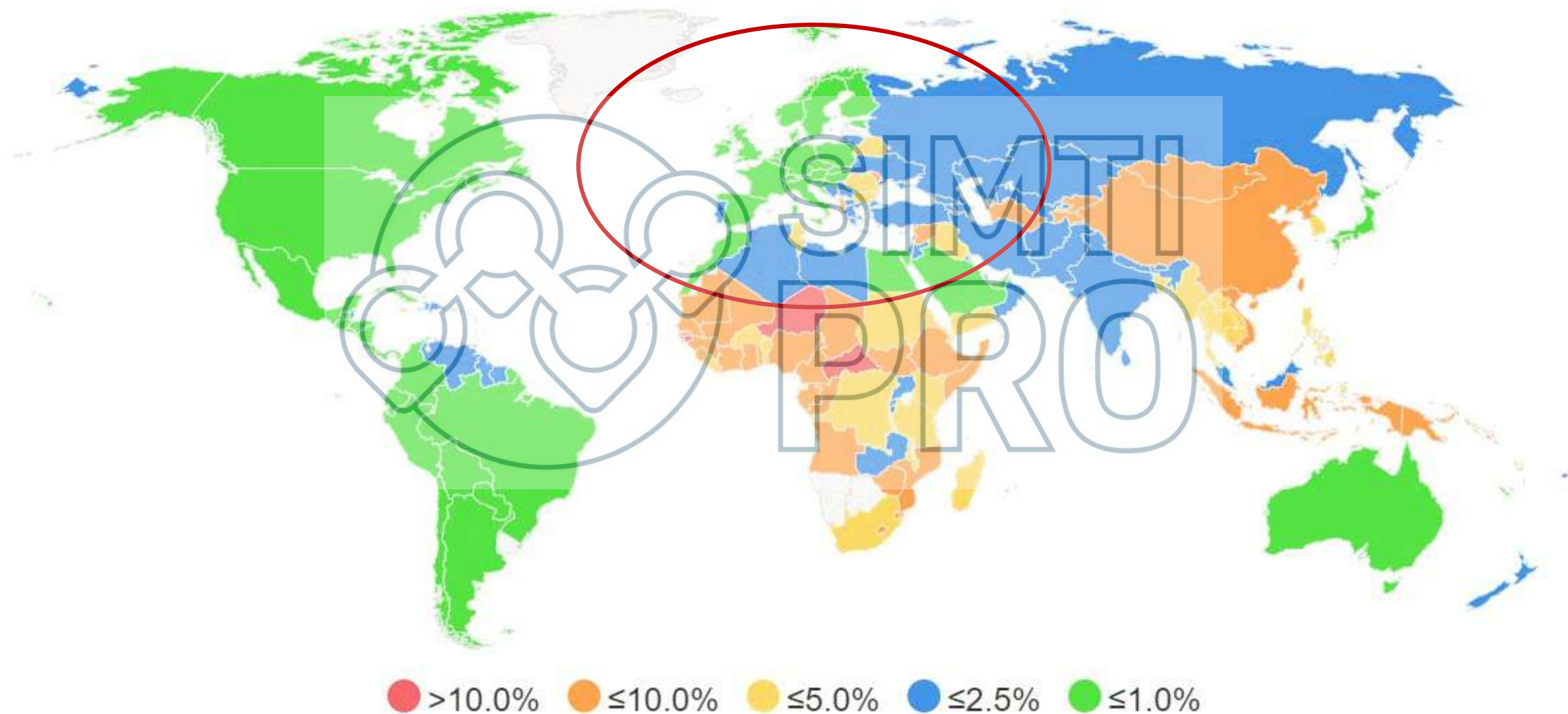
Estimated numbers with chronic infection

3.6 million people living
with chronic HBV
(2016 estimate)

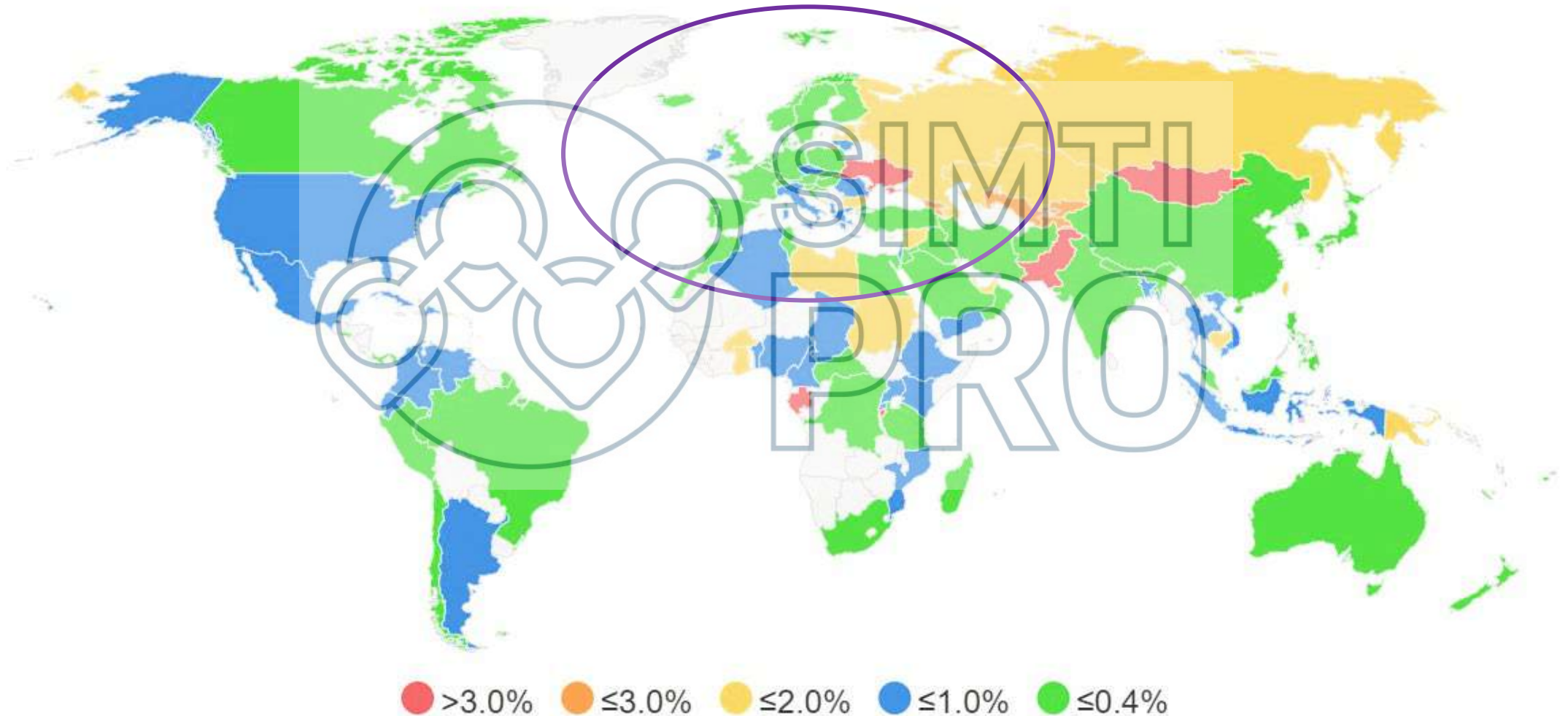
2.4 million people living
with chronic HCV
(2022 estimate)

Variation in disease burden across countries and between different population groups

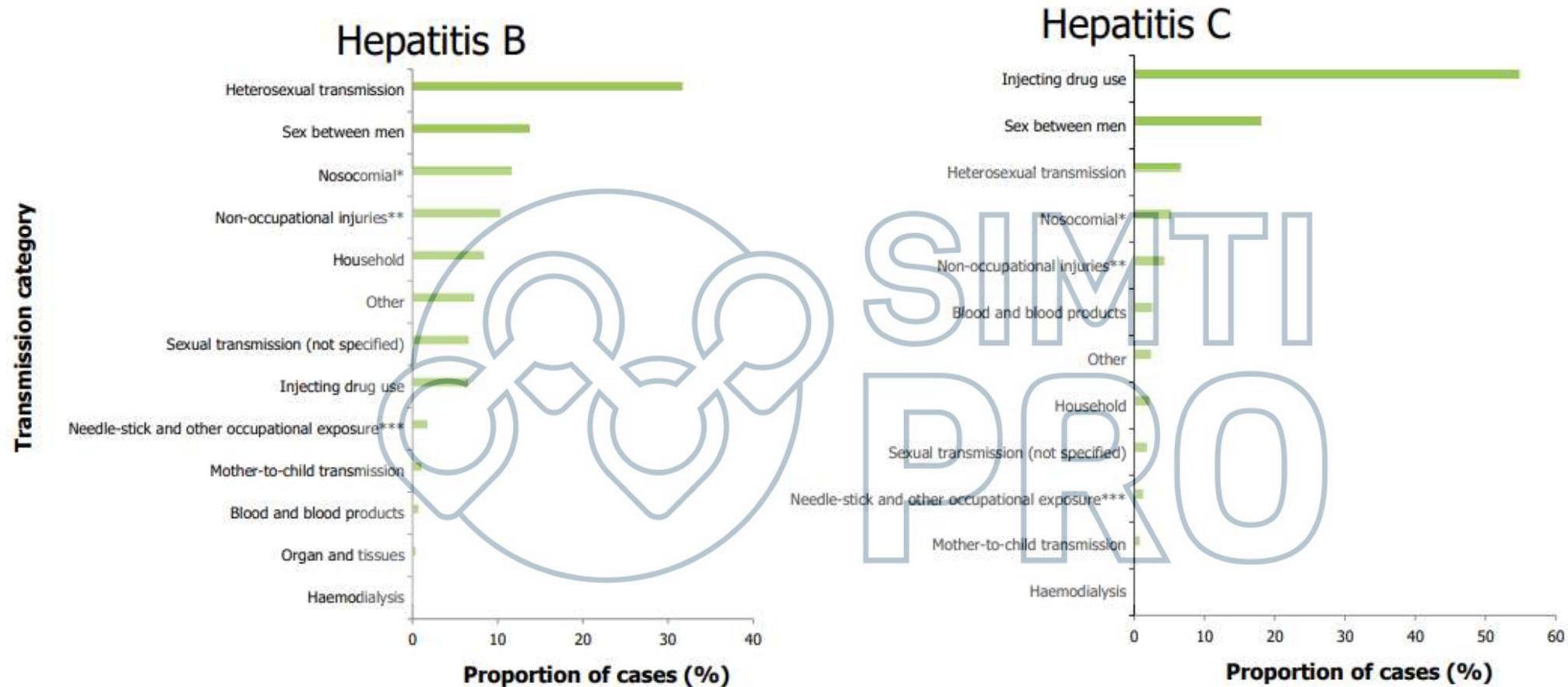
HBsAg Prevalence — 2022



Hepatitis C Viremic Prevalence — 2022



Transmission category of acute hepatitis B and C cases, EU/EEA, 2020



Source: European Centre for Disease Prevention and Control (ECDC). Hepatitis B: Annual Epidemiological Report for 2020; European Centre for Disease Prevention and Control (ECDC). Hepatitis C: Annual Epidemiological Report for 2020.

* Nosocomial refers here to patient infections in healthcare settings

** 'Non-occupational injuries' include needle sticks that occur outside a health care setting, bites, tattoos, piercings

*** Occupational exposure includes needle-stick and other occupational injuries

Prevalence of hepatitis B and C in different population groups



Hepatitis B (HBsAg prevalence)	Hepatitis C (anti-HCV)
Migrant populations 0.9 - 31.7%	People who inject drugs 15.4 – 96.8% (RNA prevalence 15.0 – 64.2%)
People who inject drugs 0 - 16.9%	People in prison 2.3 – 82.6%
People in prison 0.3 - 8.3%	Migrant populations 0 – 16.8%
Men who have sex with men 2.3 - 4.3%	Men who have sex with men 0.6 – 4.8%

Source: Bivegete S TA, et al. Estimates of hepatitis B virus prevalence among general population and key risk groups in EU/EEA/UK countries: a systematic review. Submitted for peer review publication 2022; ECDC HCV MPES modelling work – publication pending; EMCDDA Viral Hepatitis Elimination Barometer https://www.emcdda.europa.eu/publications/html/viral-hepatitis-elimination-barometer_en; ECDC hepatitis C prevalence data base <https://www.ecdc.europa.eu/en/infectious-disease-topics/z-disease-list/hepatitis-c/tools/hepatitis-c-prevalence-database>; Nakitanda et al. Hepatitis C virus infection in EU/EEA and United Kingdom prison: opportunities and challenges for action https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7650151/pdf/12889_2020_Article_9515.pdf.

Hepatitis B and C among migrant populations

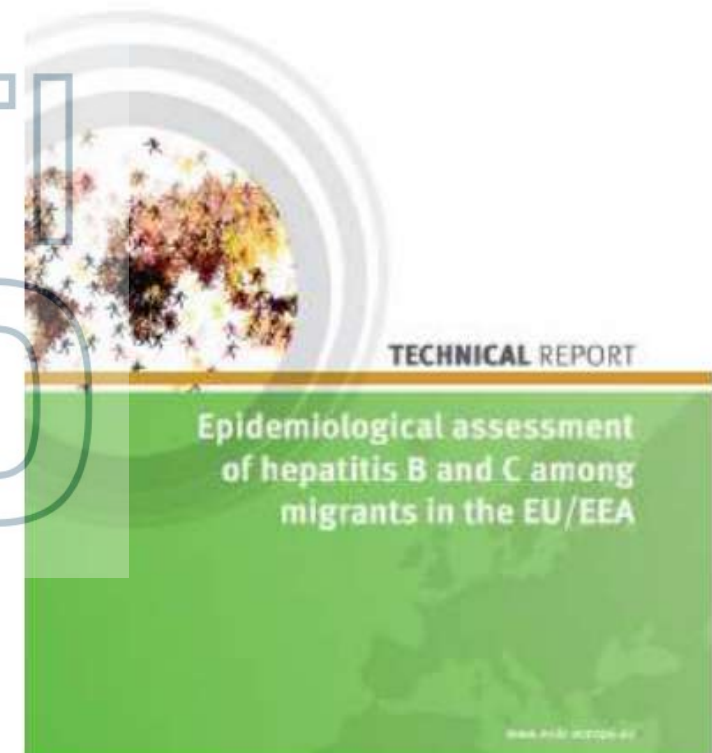
ECDC report in 2016 to estimate burden of hepatitis B and C among migrant populations in Europe

Based on:

- Number of migrants in EU countries
- Prevalence in country of origin

Estimated 25% of the chronic hepatitis B burden in the EU/EEA was among migrant populations and for hepatitis C this was 14%

Proportion of migrants in the total population at that time was considerably lower (5%)



Hepatitis B and C in Europe: an update from the Global Burden of Disease Study 2019

GBD 2019 Europe Hepatitis B & C Collaborators*

- **HBV-Related Cirrhosis and Liver Cancer:** In the period 2010-2019, despite reduced cirrhosis rates, HBV-related liver cancer remains stable, highlighting persistent challenges in control.
- **HCV Dynamics:** Slight decline in acute HCV (-3.24%) with significant mortality rate drop (-35.73%). Yet, only minor decrease in HCV-related cirrhosis prevalence (-6.37%) and a concerning rise in liver cancer cases (+16.41%), underscoring the urgent need for better HCV management strategies.
- **DALYs:** Both HBV and HCV show DALY reductions, with more pronounced improvements in HBV, indicating effective control measures and emphasizing the necessity for augmented HCV efforts.
- **Public Health Implications:** Data calls for improved surveillance, vaccination, treatment access, and tailored public health policies to curb these infections' incidence and mortality, particularly regarding the uptick in HCV-related liver cancer.

Hepatitis in Italy



By Chat GPT

Caterina Sagnelli, Antonello Sica, Massimiliano Creta, Armando Calogero, Massimo Ciccozzi, Evangelista Sagnelli

1. Major Factors for Decline of HBV infection over the past 50 years:

- Improved socio-economic and hygiene conditions.
- Effective educational campaigns and uninterrupted HBV vaccination since 1991.
- Reduction in major HBV risk factors, including vertical transmission and household contacts.
- Mandatory HBV screening for blood donations and the elimination of improperly sterilized medical instruments.

2. Current Statistics:

- HBV chronic carrier prevalence: 0.8%.
- Acute HBV (AHB) incidence: 0.21 per 100,000 inhabitants, higher among males and individuals over 41.

3. Transmission Trends:

- Sexual transmission is now the primary mode of HBV spread in Italy, attributed to infrequent condom use.

4. Migrant Population:

- Higher HBV acquisition risk compared to Italian citizens, prompting WHO to recommend HBV vaccination protocols for all unvaccinated migrants.



Ministero della Salute

Lo screening nazionale gratuito per l'HCV Risultati preliminari – Rendicontazione al 31/12/2022

Popolazione generale '69-89

ESTENSIONE = INVITATI/ TARGET	COPERTURA = TESTATI/ TARGET	ADESIONE = TESTATI/ INVITATI	POSITIVI test ricerca Ab (%)	ADESIONE AL TEST DI CONFERMA (%)	POSITIVI test di conferma (%)	DETECTION RATE (%) = INF. ATTIVA/ TESTATI*1000	SOGG. CON INF. ATTIVA AVVIATI AL TRATTAMENTO (%)
18,0	4,1	22,9	0,7	86,2	29,1	1,8	32,7

Identificati n. 892 soggetti con infezione attiva da HCV

Totale soggetti screenati: 488.571

~0.18%

Lo screening nazionale gratuito per l'HCV Risultati preliminari – Rendicontazione al 31/12/2022

Utenti SerD

ESTENSIONE = INVITATI/ TARGET	COPERTURA = TESTATI/ TARGET	ADESIONE = TESTATI/ INVITATI	POSITIVI test ricerca Ab (%)	ADESIONE AL TEST DI CONFERMA (%)	POSITIVI test di conferma (%)	DETECTION RATE (%) = INF. ATTIVA/ TESTATI*1000	SOGG. CON INF. ATTIVA AVVIATI AL TRATTAMENTO (%)
57,4	34,0	59,3	25,4	95,2	44,8	108,3	54,1

Identificati n. 5.439 soggetti con infezione attiva da HCV

Totale soggetti screenati: 50.205

~ 11%

Lo screening nazionale gratuito per l'HCV Risultati preliminari – Rendicontazione al 31/12/2022

Detenuti in carcere

ESTENSIONE = INVITATI/ TARGET	COPERTURA = TESTATI/ TARGET	ADESIONE = TESTATI/ INVITATI	POSITIVI test ricerca Ab (%)	ADESIONE AL TEST DI CONFERMA (%)	POSITIVI test di conferma (%)	DETECTION RATE (%) = INF. ATTIVA/ TESTATI*1000	SOGG. CON INF. ATTIVA AVVIATI AL TRATTAMENTO (%)
72,2	55,6	77,0	9,6	92,6	61,5	53,9	52,6

Identificati n. 1.324 soggetti con infezione attiva da HCV

Totale soggetti screenati: 24.571

~ 5.4%

HCV Screening in Italy: Updated Figures

"Nel complesso lo **#screening** nazionale gratuito per l'infezione da **#HCV** ha finora permesso di testare quasi **#1milione** di persone e di identificare quasi **#10000** casi di **#infezione** attiva, permettendo l'avvio alla cura dei **#pazienti**", questi i dati presentati dalla drssa Valle, **#Ministerodellasalute**

Il prof. **Francesco Saverio Mennini, PhD** ha ribadito quanto lo **#screening** sia **#costsaving** per il **#ssn**

ACE - Alleanza contro le Epatiti e le **#Regioni** **#Toscana** **#Lombardia** **#Puglia** **#Piemonte** intervenute in tavola rotonda hanno sottolineato importanza della **#proroga** e dell' **#ampliamento** dello **#screening**



HCV, scoperte oltre 10.000 infezioni attive. ACE prorogare e allargare fascia screening

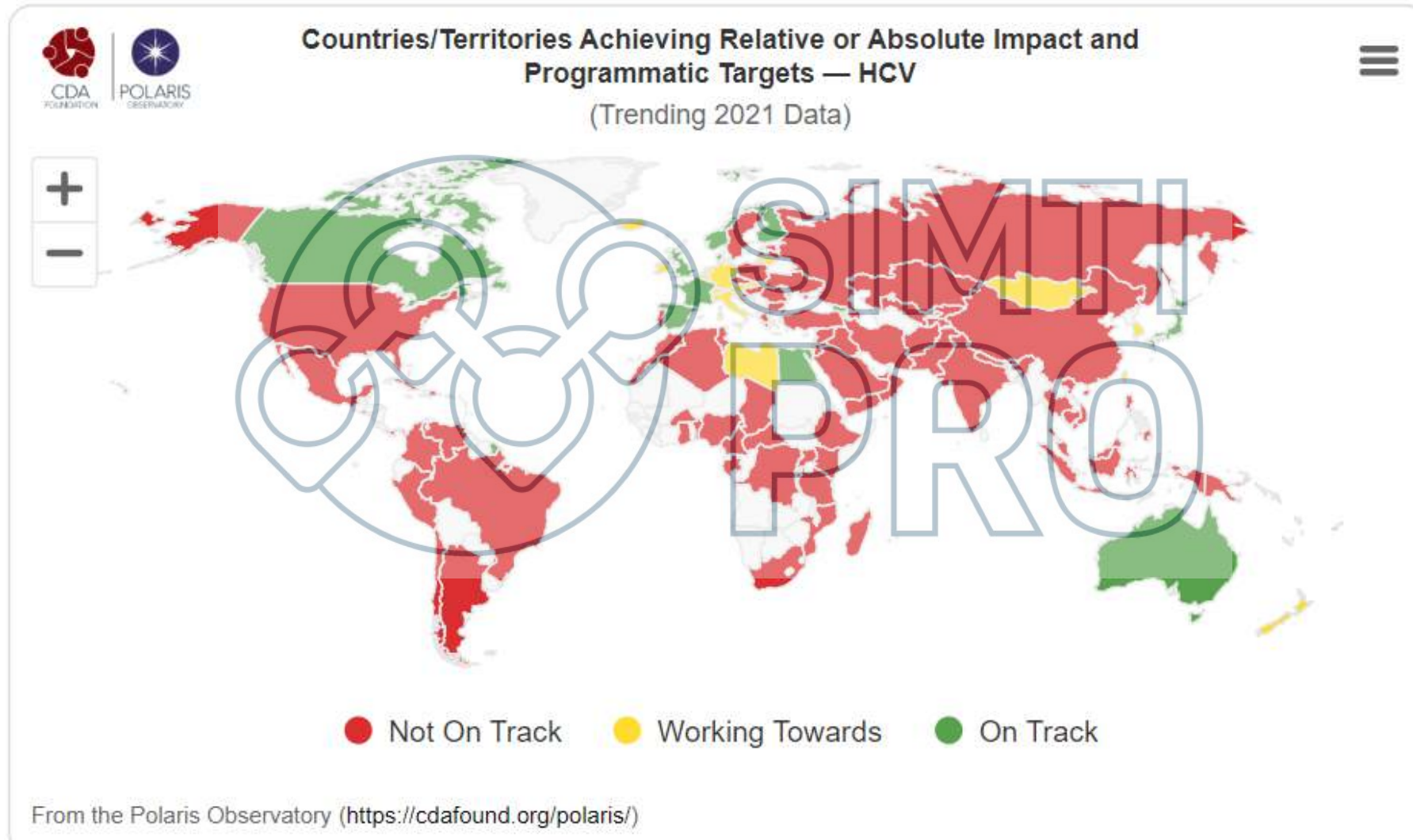
SANITÀ

22 Novembre 2023 |

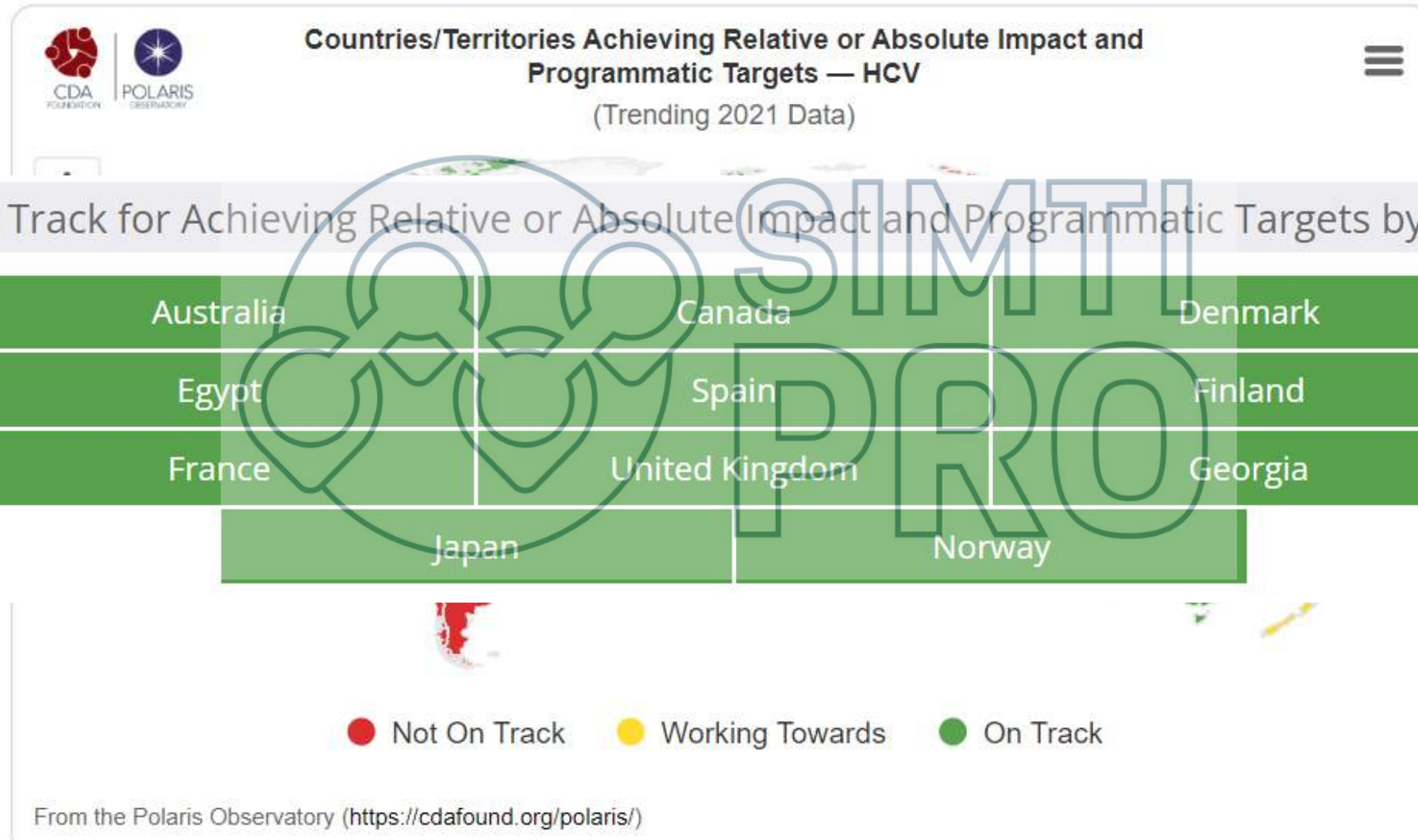
AP Da redazione



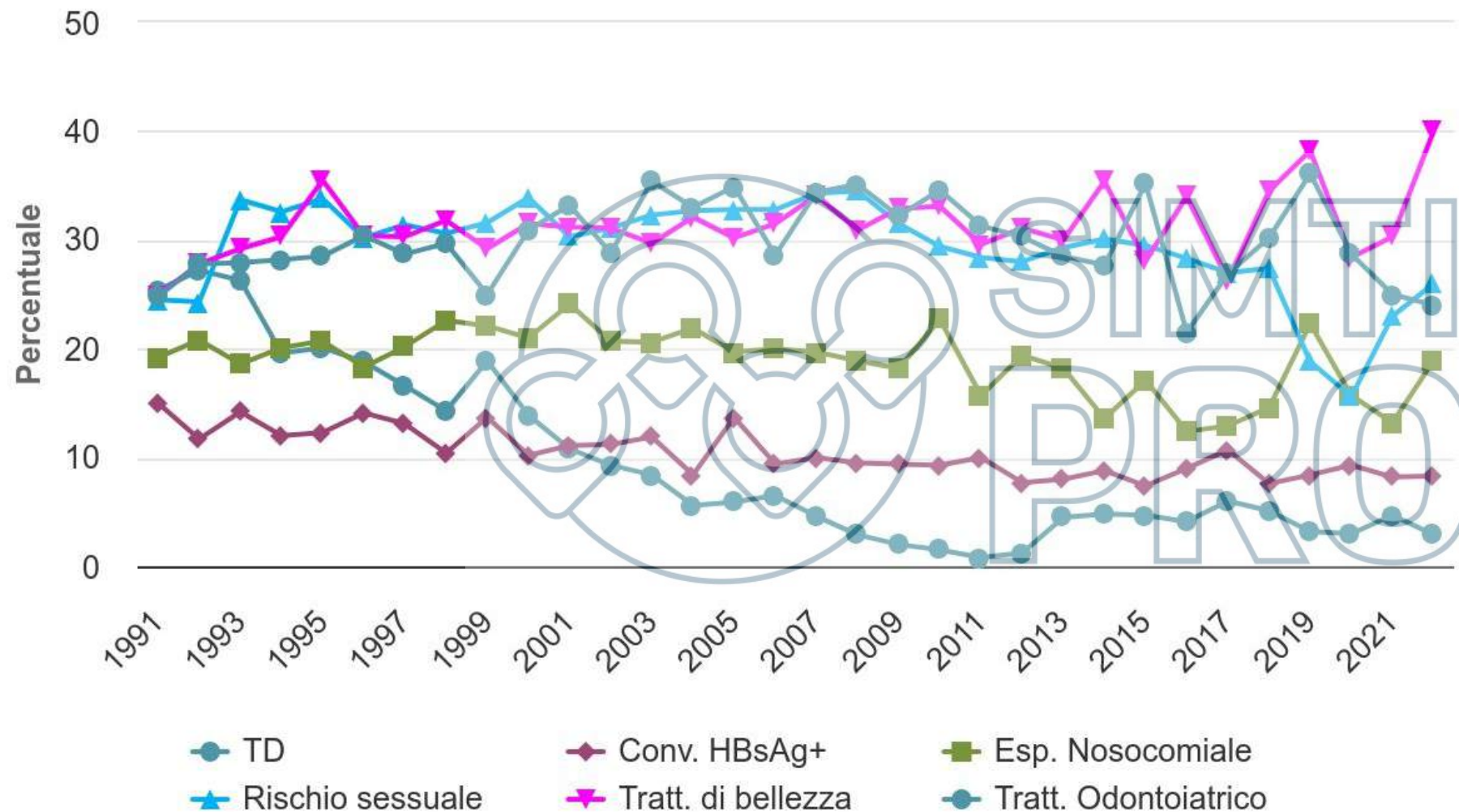
Italy is Not on Track to Achieve HCV Elimination



Italy is Not on Track to Achieve HCV Elimination

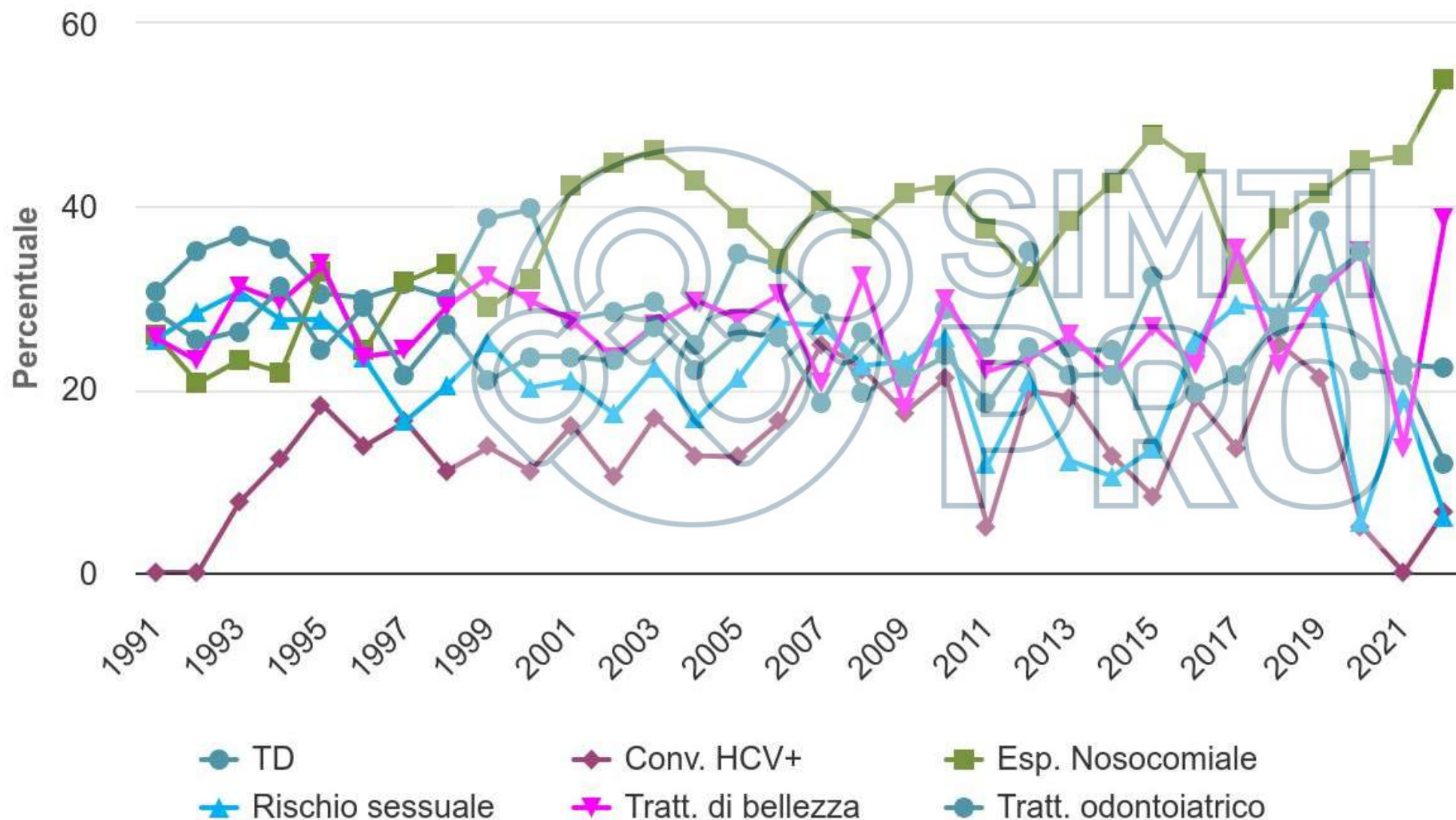


Casi di epatite B acuta per fattore di rischio (2022)



- Manicure, pedicure, piercing e tatuaggi: 40%↑
- Comportamenti sessuali promiscui: 26,0%↑
- Rischio di trasmissione nosocomiale: 18,9%↑

Casi di epatite C acuta per fattore di rischio (2022)



- Esposizione nosocomiale: 54,0%↑
- Trattamenti estetici (manicure, piercing, tatuaggi): 38,8% dei casi
- Esposizione sessuale andamento altalenante, con un calo nel periodo pandemico.

The Incidence and Risk Factors of Community-Acquired Hepatitis C in a Cohort of Italian Blood Donors

DANIELE PRATI,¹ CARMEN CAPELLI,¹ CARLA SILVANI,¹ CLAUDIA DE MATTEI,¹ PATRIZIA BOSONI,¹ MARCO PAPPALATTERA,¹
FULVIO MOZZI,¹ MASSIMO COLOMBO,² ALBERTO ZANELLA,³ AND GIROLAMO SIRCHIA¹

The incidence of hepatitis C virus (HCV) infection in a cohort of Italian blood donors at low risk for blood-borne diseases was 1 per 10,000 person-years, with nosocomial exposure being a significant risk factor.

TABLE 1. Biochemical, Virological, and Clinical Data of the Subjects Showing Anti-HCV Seroconversion During the Study Period

Case	Sex	Age (yr)	No. of Donations*	ALT (U/L)			HCV RNA			HCV Type	Liver Histology	Risk Factors
				Presero-conversion	At Onset	During Follow-up†	Presero-conversion	At Onset	During Follow-up			
1	M	24	7	9	15	64 (20-118)	pos	pos	pos	1b	Chronic persistent hepatitis	Minor surgery
2	M	59	26	13	23	22 (15-44)	neg	pos	neg‡	2a	Not done	Frequent venipuncture
3	M	32	8	10	1,246	273 (38-1,430)	neg	pos	pos	2a	Mild chronic active hepatitis	Major surgery
4	M	55	20	11	71	59 (28-122)	neg	pos	pos	2a	Chronic persistent hepatitis	Minor surgery
5	F	27	9	19	44	47 (32-73)	neg	pos	pos	3a	Chronic persistent hepatitis	HCV-infected partner

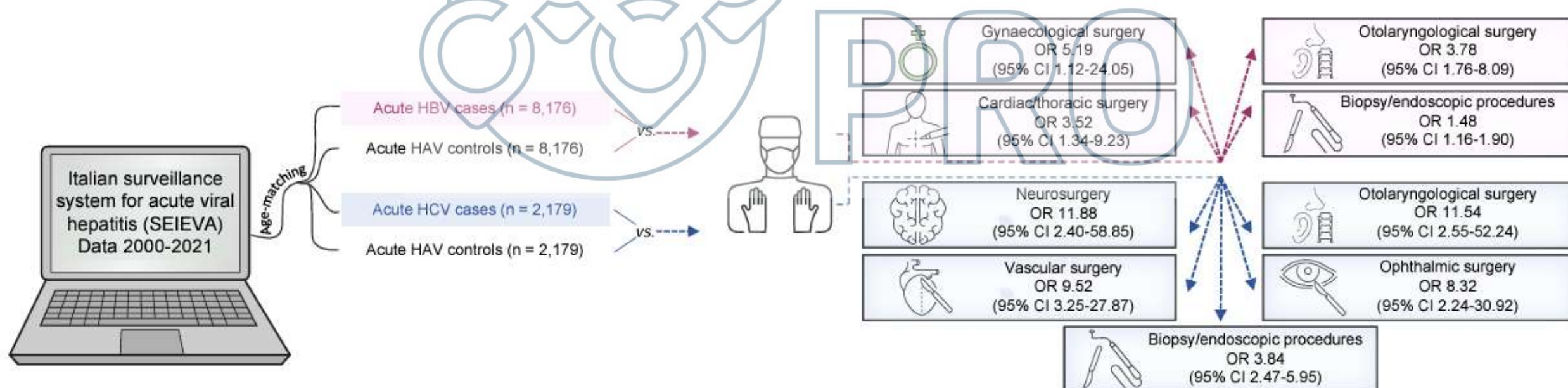
Risk of parenterally transmitted hepatitis following exposure to invasive procedures in Italy: SEIEVA surveillance 2000-2021

Susanna Caminada¹, Annamaria Mele^{1,2}, Luigina Ferrigno³, Valeria Alfonsi⁴, Simonetta Crateri³, Giuseppina Iantosca³, Marise Sabato¹, Maria Elena Tosti^{3,*}, the SEIEVA Collaborating Group[†]

Journal of Hepatology 2023, vol. 79 | 61-68

Overview:

Utilizing data from SEIEVA surveillance, this study investigates the association between specific types of invasive procedures and the risk of acute HBV and HCV infections in Italy.



Risk of parenterally transmitted hepatitis following exposure to invasive procedures in Italy: SEIEVA surveillance 2000-2021

Susanna Caminada¹, Annamaria Mele^{1,2}, Luigina Ferrigno³, Valeria Alfonsi⁴, Simonetta Crateri³, Giuseppina Iantosca³, Marise Sabato¹, Maria Elena Tosti^{3,*}, the SEIEVA Collaborating Group[†]

Journal of Hepatology 2023. vol. 79 | 61–68

Key Findings

- Significant risk of acquiring hepatitis B and C following exposure to invasive procedures.
- Strongest associations for HBV linked to gynecological, otolaryngological, and cardiac/thoracic surgeries.
- Highest risks for HCV found in neurosurgery, otolaryngological surgery, and vascular surgery.
- Minor surgeries, biopsy, and endoscopy also showed a significant association with both HBV and HCV infections.

Risk of parenterally transmitted hepatitis following exposure to invasive procedures in Italy: SEIEVA surveillance 2000-2021

Susanna Caminada¹, Annamaria Mele^{1,2}, Luigina Ferrigno³, Valeria Alfonsi⁴, Simonetta Crateri³, Giuseppina Iantosca³, Marise Sabato¹, Maria Elena Tosti^{3,*}, the SEIEVA Collaborating Group[†]

Journal of Hepatology 2023. vol. 79 | 61–68

Conclusions and Healthcare Implications

- Despite advancements in healthcare, invasive procedures remain a significant risk factor for transmitting hepatitis viruses.
- Necessity of strict adherence to universal precautions in healthcare settings.
- Importance of minimizing iatrogenic transmission risks during all medical procedures, including minor ones.
- Need for further education and training on infection control practices among healthcare professionals.

Summary

- HBV and HCV remain significant public health challenges, with millions living with these infections globally and a substantial annual death toll.
- While advancements in treatment, especially for HCV, have been made, the persistence of new infections underscores the need for improved vaccination, diagnosis, and treatment strategies.
- Achieving the WHO's target of eliminating viral hepatitis requires an accelerated and coordinated global response, emphasizing the need for comprehensive public health policies, enhanced surveillance, and increased access to prevention and treatment services.
- Data from Italy highlight the importance of tailored strategies. The continuing spread due to preventable causes (nosocomial, unprotected sex) is of concern.

Credits

- WHO (https://www.who.int/health-topics/hepatitis#tab=tab_1)
- ECDC (<https://www.ecdc.europa.eu/en/viral-hepatitis>)
- Polaris Observatory (<https://cdafound.org/polaris/>)
- SEIEVA (<https://www.epicentro.iss.it/epatite/seieva>)
- **Prof. Alessio Aghemo, Humanitas University, Milan**