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Data for Action: Health and economic impact of emergency department blood-borne virus opt-out testing in urban centres in Belgium, Greece, and Poland

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Disclosure of interests

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Aquarius Population Health: LB, XP, AP, ER, and HH were employed by Aquarius Population Health at the time of writing and received funding for the study. The team developed the model, conducted the analysis, and developed the presentation materials.

Clinical experts: MP, GP, NM, DP, and CG provided expert input to inform model parameters and assumptions, and each received an honorarium from Gilead Sciences for their involvement in the study. MP has received research funding from Gilead Sciences, and advisory board fees and travel support from Gilead Sciences, GSK and MSD. GP has served as an advisor and lecturer for Gilead Sciences, Integris, and Ipsen and has received research grants from Gilead Sciences. CG has received consulting fees, honoraria, travel support, and advisory board fees from Pfizer, Gilead Sciences, MSD, GSK-ViiV, and 3M. NM and DP have declared no relevant competing interests. WV has received research funding and/or speaker fees from Gilead Sciences, AbbVie, and Bristol-Myers Squibb. AL has received research funding, consultancy fees, and/or honoraria from Gilead Sciences, ViiV Healthcare, Janssen/Janssen-Cilag, and MyCartis. RF has received research funding, consultancy/advisory fees, speaker honoraria, and/or travel support from AbbVie, Adamed, Bausch, Gilead Sciences, Janssen, Merck/MSD, Moderna, Novo Nordisk, Pfizer, and Roche. JK has served as a consultant, advisor, and/or speaker for Gilead Sciences, GSK, Janssen, MSD, Roche, and ViiV Healthcare. AF has received honoraria from Sanofi for participation as a scientific expert. MaR has declared no relevant competing interests.

Gilead Sciences: JJ and MuR are employed by Gilead Sciences Europe.

Epidemiology and diagnosis gaps

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Although epidemiology differs by country, all three countries show persistent diagnosis gaps across HIV, HBV, and HCV, supporting the need for broader and more systematic testing approaches.

National BBV prevalence

Belgium			Greece			Poland		
0.2%	**0.5%**	**0.2%**	**0.3%**	**1.9%**	**0.4%**	**0.1%**	**0.9%**	**0.5%**
HIV[1]	HBV*[2]	HCV*[2,3]	HIV[1]	HBV*[2]	HCV*[2]	HIV[4]	HBV*[5]	HCV*[6]

*All national HBV/HCV prevalence estimates refer to chronic infection

Diagnosis gaps

Belgium		Greece		Poland	
93%	of people with **HIV** know their status[7]	**91%**	of people with **HIV** know their status[7]	**81%**	of people with **HIV** know their status[7]
54%	of people with **HBV** are undiagnosed[8]	**~50%**	of people with **HBV** are undiagnosed[9]	**39%**	of people with **HBV** are undiagnosed[11]
>50%	of people with **HCV** are undiagnosed[8]	**70-80%**	of people with **HCV** are undiagnosed[10]	**95%**	of people with **HCV** are undiagnosed[11]

Abbreviations: BBV – blood-borne virus; ED – emergency department; HBV – hepatitis B virus; HCV – hepatitis C virus; HIV – human immunodeficiency virus.

References: [1] UNAIDS factsheets, 2024; [2] CGHE, 2025; [3] Statbel report, 2025; [4] EpiBaza data, 2020; [5] Razavi-Shearer et al, 2023; [6] Pyziak-Kowalska, 2019; [7] ECDC continuum of care report, 2025; [8] Bielen et al, 2019; [9] Papatheodoridis et al, 2015; [10] Papatheodoridis et al, 2019; [11] Polaris Observatory, 2026

Testing landscape

BBV testing is delivered differently across the three countries, spanning targeted/risk-based approaches, community outreach, and primary-care integration; routine BBV testing is not embedded in ED care.

Belgium

Testing is predominantly targeted/risk-based, with HIV testing focused on higher-risk groups and HBV/HCV screening recommended for defined populations[1,2].

Verbal consent is currently recommended for HIV testing[7], while opt-out or verbal consent is permitted for HBV and HCV testing[8].

Greece

Testing is also targeted, with additional community-based rapid testing and outreach through polyclinics, checkpoints, and mobile services[3].

HIV requires verbal consent, while HBV/HCV testing can be opt-out[8].

Poland

Testing is integrated into primary care, with free HIV testing introduced in 2025[4] and anti-HCV and HBsAg testing already established[5,6].

Verbal or written consent is required for HIV, HBV, and HCV testing, depending on the setting[8].

Definition of opt-out testing (OOT): testing is routinely offered unless the patient actively declines

Abbreviations: BBV – blood-borne virus; ED – emergency department; HBV – hepatitis B virus; HCV – hepatitis C virus; HIV – human immunodeficiency virus.

References: [1] Belgium HIV Plan, 2020-26; [2] Sciensano, 2026; [3] Medecins du Monde Greece, 2026; [4] Polish Ministry of Health, 2025; [5] Regulation of the Minister of Health, 2022; [6] Polish Ministry of Health, 2017; [7] Expert opinion; [8] Stengaard et al, 2026

Why this matters now

Elimination goals require broader testing strategies that reach people missed by conventional pathways, and routine combined ED BBV OOT can provide an equitable, high-value approach to case finding.

Reach
Integration
Scale

Diagnose early
Re-diagnose
Reduce late diagnosis

Re-activate care
Rapid Start

Emerging evidence and European clinical and public health bodies increasingly support integrated opt-out BBV testing in EDs, particularly in high-prevalence settings[1-5]



Abbreviations
BBV – blood-borne virus; EACS – European AIDS Clinical Society; ECDC – European Centre for Disease Prevention and Control; ED – emergency department; OOT – opt-out testing; WHO – World Health Organisation.

References
[1]ECDC, 2018; [2]UKHSA report, 2025; [3]EuroTEST, 2026 (draft guidance); [4]Parczewski et al, 2025; [5]Simmons et al, 2022

Study purpose

Together, these objectives explore the potential public health and economic value of ED BBV OOT in Belgium, Greece, and Poland.

1 Generate evidence

Generate theoretical health economic evidence for combined ED BBV OOT in Belgium, Greece, and Poland.

2 Inform dialogue and future evaluation

Support national stakeholder dialogue and use future local pilots to assess feasibility, testing uptake, pathway integration, and linkage to care before wider policy adoption.

3 Understand what drives value

Explore key drivers of effectiveness and cost-effectiveness to guide future data generation and policy adoption.

Abbreviations: BBV – blood-borne virus; ED – emergency department; OOT – opt-out testing.

Real-world best-practice ED testing pathway[1]

We modelled a real-world published best-practice ED testing clinical pathway (outlined below):

1

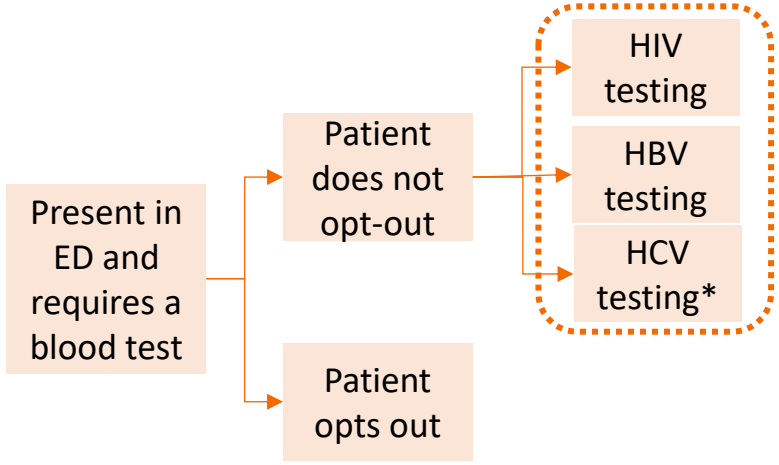
Change to BBV testing policy: Opt-out consent

"We now routinely test everyone for HIV, HBV and HCV who has a blood test in ED – is that okay?"



2

Electronic systems: ED EPR modification and diagnostic pathway optimisation



*Model assumes same sample HCV reflex testing as per the 2020 EASL guideline recommendation[2]

3

Positive cases: Enhanced linkage to care

Negative cases:

- *"No news is good news"*

Positive cases:

- Follow-up directly by specialist clinical teams

Workload:

- Minimal additional work for ED staff

Abbreviations

BBV – blood-borne virus; EASL – European Association for the Study of the Liver; ED – emergency department; EPR – electronic patient record; HBV – hepatitis B virus; HCV – hepatitis C virus; HIV – human immunodeficiency virus; NHS – National Health Service; OOT – opt-out testing;

Reference

[1]NHS England, 2024; [2]EASL, 2020

Methodology

Model design and inputs

Theoretical model adapted to country-specific settings

Country-specific published data + expert input

Country-specific health system, **lifetime horizon**

Comparator: no systematic ED testing (current SoC)

The model simulated urban ED settings where BBV prevalence was expected to be high, reflecting opportunities for increased case finding.[1] Sensitivity analyses varied prevalence rates and other key parameters.

Model framework and outcomes

Decision tree: acute phase

ED presentation

Testing pathway

Treatment assignment

Short-term outcomes: new diagnoses, linkage/re-linkage to care rates

Markov model: lifetime outcomes

Captures disease progression and outcomes

Long-term outcomes: lifetime costs, QALYs, ICERs

Abbreviations: ED – emergency department; HBV – hepatitis B virus; HCV – hepatitis C virus; HIV – human immunodeficiency virus; ICER – incremental cost-effectiveness ratio; LTC – linkage to care; QALY – quality-adjusted life year; SoC – standard of care.

Reference: [1] ECDC, 2018

Short-term results

Combined ED BBV OOT was projected to identify substantial numbers of new diagnoses and support linkage and re-linkage to care across all three countries.

For 10,000 individuals having ED blood tests, compared to SoC:

Belgium

115
new BBV diagnoses
- HIV: 26
- HBV: 55
- HCV: 34

79
Linked/re-linked to care
- HIV: 19
- HBV: 44
- HCV: 16

Greece

272
new BBV diagnoses
- HIV: 32
- HBV: 203
- HCV: 37

242
Linked/re-linked to care
- HIV: 36
- HBV: 180
- HCV: 26

Poland

128
new BBV diagnoses
- HIV: 28
- HBV: 73
- HCV: 27

95
Linked/re-linked to care
- HIV: 19
- HBV: 66
- HCV: 10

Abbreviations: BBV – blood-borne virus; ED – emergency department; HBV – hepatitis B virus; HCV – hepatitis C virus; HIV – human immunodeficiency virus; OOT – opt-out testing; SoC – standard of care.

Long-term results, base case

Combined ED BBV OOT was projected to be cost-effective across all three countries; virus-specific ICERs varied by pathogen and setting.

Figure: ICER (cost-per-QALY) for combined BBV testing

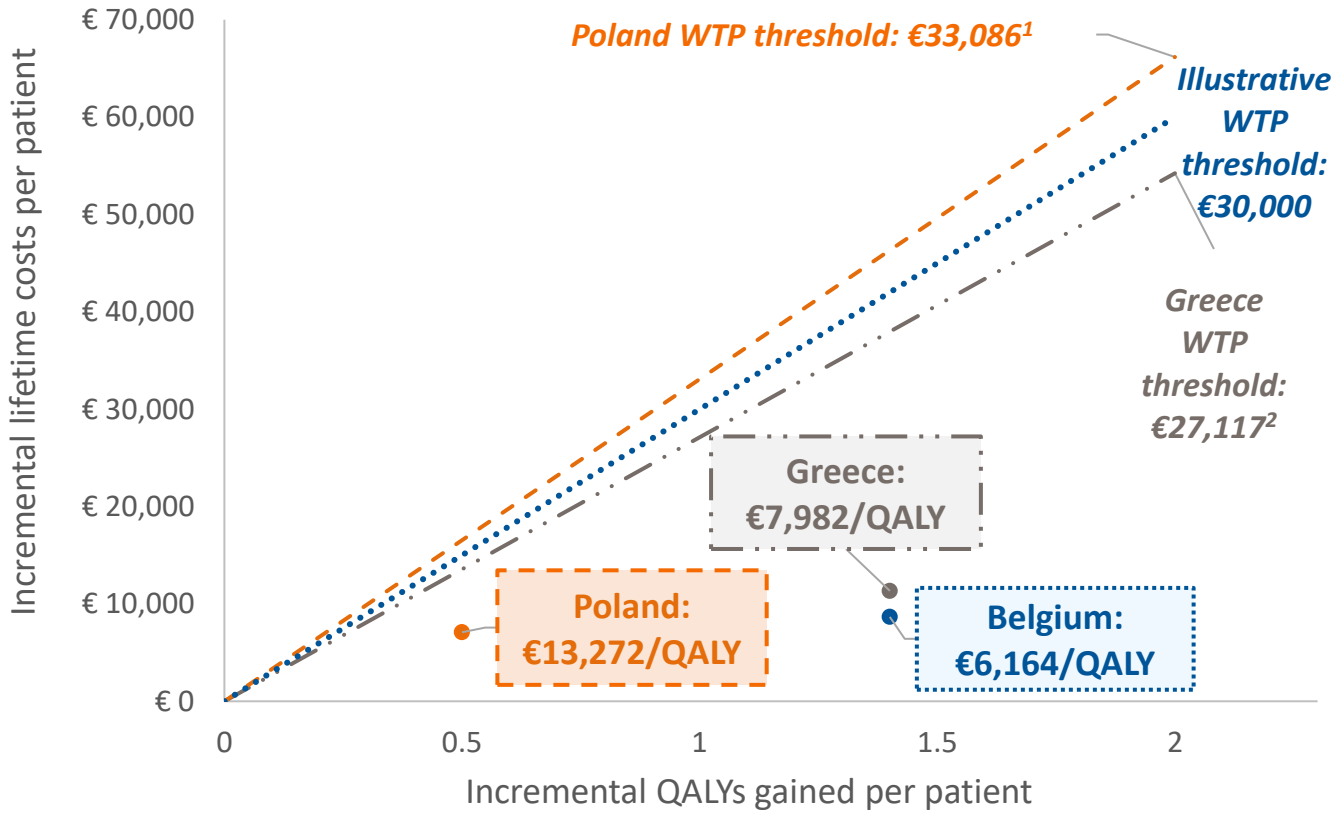


Table: ICERs (cost-per-QALY) for combined and virus-specific testing

	Belgium	Greece	Poland
Combined	✓	✓	✓
HIV only	✗	✗	✓
HBV only	✓	✓	✓
HCV only	✓	✓✓	✓

✓ cost-effective ✓✓ cost-saving ✗ not cost-effective

Abbreviations: BBV – blood-borne virus; ED – emergency department; HBV – hepatitis B virus; HCV – hepatitis C virus; HIV – human immunodeficiency virus; ICER – incremental cost-effectiveness ratio; OOT – opt-out testing; QALY – quality-adjusted life year; WTP – willingness-to-pay.

References: [1] Tesar et al, 2019; [2] Athanasakis et al, 2024.

Conclusions

Combined ED BBV OOT could deliver meaningful clinical and economic value across all three countries, while supporting more integrated testing and care.



Clinical value



Broader value of combined testing



Economic value

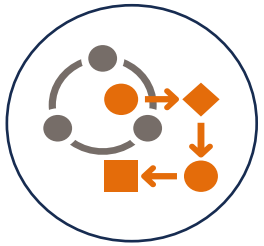
Abbreviations: BBV – blood-borne virus; ED – emergency department; HBV – hepatitis B virus; HCV – hepatitis C virus; HIV – human immunodeficiency virus; OOT – opt-out testing.

Next steps and future research

Our findings support national dialogue, targeted pilot evaluation, and further real-world evidence generation to inform future implementation.



National dialogue



Pilot evaluations



Future research priorities

Abbreviations: BBV – blood-borne virus; ED – emergency department; OOT – opt-out testing.

Thank you!

To find out more about this work, please speak to the presenting authors,

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