

HEALTHCARE-ASSOCIATED
INFECTIONS AND ANTIMICROBIAL
RESISTANCE

**SCIENTIFIC SEMINAR ON NATIONAL
SURVEILLANCE OF INFECTIONS IN
HEALTHCARE SETTINGS**

Brussels, 06 November 2025

Sciensano
Epidemiology and public health
Healthcare-associated infections and antimicrobial resistance
Rue Juliette Wytsmanstraat 14 | 1050 Brussels | Belgium

Scientific seminar on National surveillance of infections in healthcare settings |
06 November 2025|
Royal Library, Brussels, Belgium

TABLE OF CONTENTS

Partners.5

Programme.7

Sponsors8

Healthcare-associated infections and antimicrobial resistance9

Abstracts of the presentations13

 Katrien Latour & Aline Vilain
 Antimicrobial resistance surveillance (AMR and EARS-BE
 projects).14

 Daniel Huang
 Carbapenem-resistant *Enterobacterales* – Update on the Belgian
 situation16

 Moira Kelly
 One Health report on antimicrobial use and resistance in
 Belgium (BELMAP). 17

 Thomas Janssens
 Update on the National action plan against antimicrobial
 resistance (NAP-AMR) 2026-2029.18

 Thalea Tamminga
 Surveillance of Surgical Site Infections in Belgium: where we are
 at and where we are heading.20

 Nathalie Shodu
 Hospital-Associated Bloodstream Infections Surveillance (HABSI)
 in Belgium22

 Hilde Janssens
 Diagnosis of catheter-related bloodstream infections24

 Milena Callies & Ahalieyah Anantarajah
 A decade of *C. difficile*: insights of a hospital surveillance.25

 Lucy Catteau & Elena Damian
 Antimicrobial consumption surveillance in Belgium : current
 status and future directions27

 Matijs Houben & Kat Matthys
 Update from the IPC team: CHIPS and other treats29

 Jerôme Tack
 Data in practice - Implementation of a Clinical Decision
 Support System at the Réseau Hospitalier Charleroi Métropole:
 Installation, Use, and Perspectives31

Acknowledgements.....33

PARTNERS



PROGRAMME

08:30 Registration with breakfast + sponsor visit

SESSION 1 Antimicrobial resistance (AMR) Dr. Karin De Ridder

- 09:15 Introduction – Prof. Dr. Boudewijn Catry (Sciensano)
Antimicrobial resistance surveillance (AMR and EARS-BE) – Dr. Katrien Latour & Ms. Aline Vilain (Sciensano)
Carbapenem-resistant *Enterobacterales* – Update on the Belgian situation – Prof. Daniel Huang (CHU-UCL Namur)
One Health report on antimicrobial use and resistance in Belgium (BELMAP) - Dr. Moira Kelly (Sciensano)
Update on the National action plan against antimicrobial resistance (NAP-AMR) 2026-2029 - Dr. Thomas Janssens (FPS Public Health)

10:50 Coffee break + sponsor visit

SESSION 2 Healthcare-associated infections (HAI) Dr. Lucy Catteau

- 11:20 Surveillance of Surgical Site Infections in Belgium: where we are at and where we are heading. – Ms. Thalea Tamminga (Sciensano)
Hospital-Associated Bloodstream Infections Surveillance (HABSI) in Belgium – Ms. Nathalie Shodu (Sciensano)
Diagnosis of catheter-related bloodstream infections – Prof. Dr. Hilde Janssens (UZ Antwerp and HGR)
A decade of *C. difficile*: insights of a hospital surveillance – Ms Milena Callies (Sciensano) and Dr. Ahalieyah Anantarahajah (UCL St Luc)

13:00 Lunch + sponsor visit

SESSION 3 Antimicrobial stewardship (AMS)/ Infection prevention & control (IPC) Prof. Dr. Boudewijn Catry

- 14:15 Antimicrobial consumption surveillance in Belgium : current status and future directions – Dr. Lucy Catteau, Dr Elena Damian (Sciensano)
Update from the IPC team : CHIPS and other treat – Mr. Matijs Houben and Dr. Kat Matthys (Sciensano)
Data in practice - Implementation of a Clinical Decision Support System at the Réseau Hospitalier Charleroi Métropole: Installation, Use, and Perspectives - Dr. Jérôme Tack (Grand hospital de Charleroi)
- 16:00 End discussion and future perspectives - Prof. Dr. Boudewijn Catry (Sciensano)

SPONSORS



HEALTHCARE-ASSOCIATED INFECTIONS AND ANTIMICROBIAL RESISTANCE

Najat Aïch

AMR - HALT, LTCF.

Najat.Aich@sciensano.be

Laura Bonacini

AMS - ESAC-NET, BeH-SAC.

Laura.bonacini@sciensano.be

Milena Callies

HAI - CDIF, ILI-NH.

Milena.Callies@sciensano.be

Lucy Catteau

AMS - ESAC-NET, BeH-SAC, AMDIA, BELMAP,

JAMRAI, ECDC PPS, AMC-PRIM.

Lucy.Catteau@sciensano.be

Boudewijn Catry

Head of services Healthcare-associated infections and antimicrobial resistance

Boudewijn.Catry@sciensano.be

Elena Damian

AMS - AMC-PRIM.

Elena.Damian@sciensano.be

Julie Domen

AMS - AMDIA.

Julie.Domen@sciensano.be

Matijs Houben

IPC - HH., QI (CHIPS).

Matijs.Houben@sciensano.be

Moiria Kelly

AMS - BELMAP, JAMRAI, AMC-PRIM.

Moiria.Kelly@sciensano.be

Katrien Latour

AMR - EARS-BE, ECDC PPS, MDRO NH, HALT.

Katrien.Latour@sciensano.be

Kat Matthys

IPC - HH, QI (CHIPS), OST.

Katelijne.Matthys@sciensano.be

Karl Mertens

HAI - NEOKISS, BSI, CDIF, SSI, ECDC PPS, ILI-NH, E-SURE, ICU.

Karl.Mertens@sciensano.be

Morgan Pearcy

AMR - ECDC PPS, EARS-BE.

Morgan.Pearcy@sciensano.be

Nathalie Shodu

HAI - BSI, E-SURE.

Nathalie.shodu@sciensano.be

Thalea Tamminga

HAI - SSI.

Thalea.Tamminga@sciensano.be

Delphine Thibo

HAI - ICU

Delphine.thibo@sciensano.be

Leila Van Imschoot

HAI - NISH Deno, Datamanager.

Leila.VanImschoot@sciensano.be

Isabelle Uwera Mpalirwa

IPC - QI (CHIPS), OST.

Isabelle.UWERAMPALIRWA@sciensano.be

Nathalie Verhocht

SECR / PMA

Sciensano

Nathalie.verhocht@sciensano.be

Aline Vilain

AMR - MDRO NH, EARS-BE.

Aline.Vilain@sciensano.be



Prévention des infections powered by WORKFLOWER

Automatisez le processus de travail pour la prévention des maladies infectieuses, de l'attribution des tâches d'isolement aux dépistages de suivi, et allégez la charge de travail de votre équipe.



Infectiepreventie

powered by WORKFLOWER

Automatiseer het werkproces voor de preventie van infectieziekten, van het toekennen van isolatietaken tot het uitvoeren van opvolgingsscreenings, en verlicht zo de werkdruk voor je team.

ABSTRACTS OF THE PRESENTATIONS



KATRIEN LATOUR & ALINE VILAIN

SCIENSANO

BIOGRAPHY

Katrien Latour obtained a Master's degree in Nursing and Midwifery from KU Leuven in 2009 and completed a PhD in Biomedical Sciences at the same university in 2023.

Since 2009, she has been working at Sciensano, Belgium's national institute for health, within the service *Healthcare-Associated Infections and Antimicrobial Resistance*. She currently leads the '*Antimicrobial Stewardship - Antimicrobial Resistance (AMR)*' unit, where she is responsible for the national AMR surveillance in acute care hospitals and related AMR activities.

Katrien also has a particular research interest in infections in long-term care settings. She has participated in several studies on carriage of multidrug-resistant organism in Belgian nursing homes and coordinated the European Centre for Disease Prevention and Control (ECDC) point prevalence surveys of healthcare-associated infections and antimicrobial use in long-term care facilities (HALT surveys) at both national and European level.

Aline graduated from the Veterinary University of Liège. After practising for three years, she completed a master's degree in Public Health, Epidemiology and Biostatistics in Brussels.

She started at Sciensano in 2018 in the Veterinary Epidemiology department, and has been working in the '*Antimicrobial Stewardship - Antimicrobial Resistance*' team of the '*Healthcare-associated Infections and Antimicrobial Resistance*' department since 2023. She is responsible for the EARS-BE surveillance, the Belgian component of the European Antimicrobial Resistance Surveillance Network (EARS-Net).

ANTIMICROBIAL RESISTANCE SURVEILLANCE (AMR AND EARS-BE PROJECTS).

Sciensano, Belgium's national public health institute, coordinates several surveillance programmes to monitor antimicrobial resistance (AMR) and healthcare-associated infections. Within its Service of '*Healthcare-Associated Infections and Antimicrobial Resistance*', two main AMR systems play a key role: the **national AMR surveillance (NSIH-AMR)** and the **Belgian branch of the European Antimicrobial Resistance Surveillance Network (EARS-BE)**.

NSIH-AMR was launched in 1994 and focuses on resistant bacteria in Belgian hospitals. It collects and analyses aggregated data on methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin- or linezolid-resistant enterococci (VRE), and multi-resistant Gram-negative bacteria such as *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa* and *Acinetobacter baumannii*. These organisms are selected for their clinical relevance and potential to cause outbreaks. The focus of the surveillance is on all clinical samples. Participation in the MRSA and MRGN surveillance is mandatory for hospitals, ensuring comprehensive national coverage.

EARS-BE is the Belgian component of the European Antimicrobial Resistance Surveillance Network (EARS-Net), coordinated by the European Centre for Disease Prevention and Control (ECDC). While EARS-Net focuses on AMR in invasive bacterial isolates (blood and cerebrospinal fluid), Belgium extends this scope to include urine samples, offering.

A broader view of AMR. Participating clinical laboratories submit on a voluntary basis standardized antimicrobial susceptibility data for key pathogens such as *S. aureus*, *S. pneumoniae*, *E. coli*, *K. pneumoniae*, *P. aeruginosa*, *A. baumannii*, and *enterococci*. The Belgian data are integrated into EARS-Net and also contribute to the World Health Organization's Global Antimicrobial Resistance Surveillance System (GLASS).

These long-established and standardized surveillance programmes with strong participation generate reliable and comparable AMR data to support national antibiotic policies and infection prevention and control (IPC) programmes; provide hospitals and laboratories with feedback for internal quality improvement and contribute to European and global surveillance. Yet some challenges persist, including data delays, voluntary participation affecting representativeness (for EARS-BE), and the need for stronger links between surveillance and concrete interventions, as well as broader One Health integration.

Overall, Sciensano's EARS-BE and NSIH-AMR programmes form the backbone of Belgium's AMR surveillance infrastructure. By collecting, analysing, and sharing resistance data nationally and internationally, they provide the evidence base needed to guide antibiotic stewardship, IPC, and public-health action against AMR.

DANIEL HUANG

CHU-UCL NAMUR

BIOGRAPHY

Prof. Dr. Te-Din Daniel Huang is Medical Doctor with specialization in medical microbiology (2007). He achieved in 2016 his PhD in Medical Sciences on the topic of carbapenemase-producing *Enterobacterales* (CPE) under the supervision of Prof. Youri Glupczynski. He serves currently as chief of laboratory in clinical microbiology at CHU UCL Namur (Mont-Godinne) and is the current Head of the Belgian National Reference Centers (NRC) for Antibiotic-Resistant Gram-Negative Bacilli (ARGNB) and for *Helicobacter pylori*. He is appointed as Clinical Professor in Medical Microbiology at UCLouvain and is the fellowship supervisor for medical doctors in training for medical microbiology. He is the current Chair coordinator of the Belgian National Antibiogram Committee and an active member of federal technical cell of MDRO. His domain of expertise relies in diagnostic and epidemiology of antibiotic resistance in Gram-negative bacilli and participates in several national and international research projects in the scope of antimicrobial resistance. He is highly involved in the design of national plan in surveillance for the clinical resistance in human sectors.

CARBAPENEM-RESISTANT *ENTEROBACTERALES* – UPDATE ON THE BELGIAN SITUATION

Carbapenem-resistant *Enterobacterales* (CRE) and carbapenemase-producing *Enterobacterales* (CPE) lead to therapeutic dead-ends and epidemiological outbreaks. These superbugs pose major clinical threats for both individual and collective healthcare management and represent one of the top public health concerns worldwide. Current national surveillance data on CPE in Belgium, coordinated by the National Reference Center (NRC) for antibiotic-resistant Gram-negative bacilli at CHU UCL Namur, are based on the voluntary referral of resistant isolates. Recent data (2023–2025) show a sharp and steady increase in CPE isolates, especially after the COVID-19 pandemic (644 isolates in 2024; 61% confirmed CPE in early 2025). *Klebsiella pneumoniae* and OXA-48-like enzymes remain predominant, but NDM variants are spreading rapidly. The surveillance highlights a growing diversification of species and carbapenemase enzymes, with increasing *Escherichia coli* CPE (particularly OXA-244 variant carriers in the community) and co-occurrence of multiple carbapenemases, mainly NDM + OXA-48-like. High-risk clones such as *K. pneumoniae* ST147 have caused inter-hospital outbreaks, some displaying a pan-drug-resistant phenotype. The continuous spread and diversification of resistance traits confirm the worsening epidemiological situation (in both hospital and community settings) following the COVID-19 pandemic and should alert public health authorities to the urgent need for reinforced epidemiological and microbiological monitoring, including genomic surveillance, as recommended by international health organizations (ECDC, WHO).

MOIRA KELLY

SCIENSANO

BIOGRAPHY

Moira Kelly is a veterinarian (University of Cambridge), with a PhD in genomics and epidemiology (Ghent University, Broad Institute of MIT and Harvard). Moira joined Sciensano in 2022 as a senior data scientist and epidemiologist. She coordinates the Belgian One Health surveillance of antimicrobial consumption and resistance (BELMAP) network and, through the EU JAMRAI project, is supporting the development of integrated One Health surveillance of antimicrobial resistance in 18 participating countries across Europe.

ONE HEALTH REPORT ON ANTIMICROBIAL USE AND RESISTANCE IN BELGIUM (BELMAP)

The BELMAP report provides a One Health overview of antimicrobial consumption (AMC) and resistance (AMR) in Belgium. Data is synthesized from diverse national surveillance programs and research projects across human, animal, and environmental sectors to inform strategies and foster collaboration. AMC data includes reimbursement data (human community and hospitals) and sales/use data (veterinary). Human AMR data from national and European surveillance programs is supplemented by National Reference Centres (NRCs) for specific pathogens. Veterinary AMR data covers indicator, zoonotic bacteria, and diseased animal pathogens. Environmental data includes residue monitoring, agricultural pesticide and biocide use, and pilot projects for resistant organisms. Report compilation involves over 50 data providers, ensuring data contextualisation and avoiding common secondary data pitfalls like overconfidence.

Results in 2024 show veterinary AMC has declined 57.0% since 2012 (measured in mg/kg), while consumption in the human sector decreased 18.6% when considering the same period and metric. The latter is due to reductions in human community AMC (-23.1% in mg/kg since 2012), while the proportional consumption within hospitals has increased (20% of human AMC in 2024). AMR data from NRCs and veterinary pathogens highlight less-reported yet concerning trends. Some of the highest human resistance rates are observed in bacterial sexually transmitted diseases. *Neisseria gonorrhoeae* incidence nearly doubled since 2019, with significant resistance increases (ciprofloxacin 67.5% in 2024; azithromycin 0.2% in 2013 to 24.4% in 2024). In 2024, 45% of *Shigella sonnei* strains received by the NRC *Shigella* were multidrug resistant. Increased resistance was also observed in *Mycoplasma genitalium*, with 56% resistant to macrolides and 28.9% resistant to both first and second-line treatments in 2024. In sick animals, 10 of 13 host-pathogen combinations show high (50-70%) resistance to at least one first-line treatment. This contrasts positive trends in indicator *Escherichia coli* in healthy animals, with reductions in multidrug resistance, and increases in pan-susceptibility, for 3 out of 4 production systems. In conclusion, One Health surveillance increases awareness, collaboration, and knowledge-sharing, supporting a “Big-Picture” approach to AMR.

THOMAS JANSSENS

FPS PUBLIC HEALTH

BIOGRAPHY

Thomas Janssens is a Clinical Psychologist with a PhD in Health Psychology (Leuven, 2011). With a research background in symptom perception, health beliefs and illness behavior and a professional background in implementation and policy support in the domain of evidence-based practice, Thomas joined the Federal Public Service on Health Food Chain Safety and Environment (FPS HFCSE) as a policy advisor in 2023, where he currently serves as an advisor to the Chair and coordinator of the One Health National Action Plan against antimicrobial resistance (NAP-AMR).

UPDATE ON THE NATIONAL ACTION PLAN AGAINST ANTIMICROBIAL RESISTANCE (NAP-AMR) 2026-2029

Over the past 25 years, Belgium has pursued a coordinated strategy to curb antimicrobial consumption and slow the development and spread of antimicrobial resistance (AMR). The National One Health Action Plan against Antimicrobial Resistance (NAP-AMR 2020-2024) has brought together initiatives across human health, animal health, and the environment, reflecting a One Health approach. With a new NAP AMR nearing political validation, this presentation will review the outcomes and challenges of the previous plan, and highlight how internal and external evaluations—as well as novel guidance from international organizations—have shaped the design of the upcoming strategy.

The proposed NAP AMR 2026–2030 continues to embrace the One Health perspective, setting sector-specific, measurable targets for 2030. In human health, Belgium aims to reduce antibiotic use by 18%, ensure that 65% of prescriptions are “access” antibiotics, and achieve significant reductions in resistant bloodstream infections. In the animal sector, previous targets are further tightened, with a 70% reduction in total antibiotic sales and a 90% reduction in critical antibiotics compared to 2011, alongside expanded data collection and benchmarking. Environmental actions focus on minimizing the release and spread of antimicrobials and resistant organisms, with intensified surveillance and integration of new EU directives.

To achieve these goals, the NAP AMR is structured around three pillars:

- Key activities focused on behavior change, including evidence-based antimicrobial stewardship (AMS) and infection prevention and control (IPC) interventions, prescription restrictions, audits, feedback, and targeted training.
- Support and infrastructure activities, such as strengthening surveillance systems, harmonizing data collection, providing financial incentives, and fostering public-private partnerships—especially in the veterinary sector.
- Evidence-generating activities that emphasize policy evaluation and research, continuous monitoring, and the integration of behavioral and social insights to refine AMR and healthcare-associated infection (HAI) policies within and across sectors.

Transparency and accountability are central to the new plan. Public reporting of antibiotic use and resistance rates by hospital, primary care practice, and veterinary sector will be expanded. Enhanced surveillance systems and harmonized indicators will enable timely feedback and benchmarking, supporting both local and national decision-making. Governance reforms introduce multisectoral coordination and interfederal agreements, ensuring that responsibilities are clearly defined and progress is monitored. These measures aim to foster trust, drive continuous improvement, and ensure that all stakeholders are held accountable for achieving One Health objectives.

THALEA TAMMINGA

SCIENSANO

BIOGRAPHY

Thalea Tamminga is a public health professional and researcher with 10 years of experience in infectious disease epidemiology and international public health. She currently serves as a Scientific Collaborator at Sciensano in Brussels, where she coordinates Belgium's national surveillance for surgical site infections (SSIs). Her previous roles include coordinating the COVIDOM study within Germany's National Pandemic Cohort Network (NAPKON) and serving as a liaison officer for the Robert Koch Institute in Rwanda, supporting infection prevention and control and public health capacity building during the Covid-19 pandemic. Earlier, she managed antimicrobial resistance surveillance in gonorrhea (GORENET) at RKI in Germany, Berlin, and supported the establishment of a national program on Hepatitis B and C in Rwanda at the Clinton Health Access Initiative. Thalea holds an MSc in Clinical Research from the University of Liverpool and a BSc in Public Health from Maastricht University. She has co-authored multiple peer-reviewed publications and combines expertise in epidemiology, project coordination, and international collaboration.

SURVEILLANCE OF SURGICAL SITE INFECTIONS IN BELGIUM: WHERE WE ARE AT AND WHERE WE ARE HEADING.

Infections can occur whenever the skin was broken during a surgical intervention. In medicine these infections are called surgical site infections (SSIs), because they occur on the part of the body where the surgery took place (1). According to the 2023 European survey on the point prevalence survey (ECDC-PPS) of healthcare-associated infections (HAI) and antimicrobial use, the prevalence of patients contracting at least one HAI in Belgium was 9.2%, which is a 2% increase since the last report from 2017. Accounting for 14% of reported HAI infections, SSI were reported to be the 3rd most common type after urinary tract infections and pneumonia, accounting for 19% and 22%, respectively (2). SSIs pose a major threat to patients health due to increased mortality, morbidity, extended postoperative hospital stays and more frequent readmissions to hospitals in patients undergoing surgical procedures. This increases the cost of surgeries excessively by 300-400% (3). The surveillance of surgical site infections is therefore a fundamental tool to describe the burden and epidemiology of SSIs, to monitor trends, and to support hospitals in prevention efforts. This presentation provides an overview of the national SSI surveillance in Belgium, including the last updates to the surveillance protocol from 2023, preliminary results from the 2023–2024 data submissions, and a preview of future directions. Beyond reporting on the current implementation and numbers, the presentation aims to spark discussion on how to enhance SSI surveillance, improve data submission and closer collaboration between hospitals and Sciensano.

REFERENCES

1. Johns Hopkins Medicine. *Surgical site infections* [Internet]. Baltimore (MD): Johns Hopkins Medicine; [cited 2025 Sep 10]. Available from: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/surgical-site-infections>.
2. European Centre for Disease Prevention and Control. *Healthcare-associated infections: surgical site infections*. In: ECDC. *Annual epidemiological report for 2018–2020*. Stockholm: ECDC; 2023 [cited 2025 Jan 2]. Available from: <https://www.ecdc.europa.eu/en/publications-data/healthcare-associated-infections-surgical-site-annual-2018-2020>.
3. World Health Organization. *Surveillance of health-care associated infections at national and facility levels: practical handbook* [Internet]. Geneva: World Health Organization; 2024 [cited 2024 Oct 16]. Available from: <https://www.who.int/publications/i/item/9789240101456>.

NATHALIE SHODU

SCIENSANO

BIOGRAPHY

Nathalie Shodu holds a Master's degree in Public Health, obtained in 2015 from the Catholic University of Louvain (UCL). She began her career at the regional health authority in Wallonia - AViQ, where she worked for four years as an inspector within the Infectious Diseases Unit.

In 2019, she joined Sciensano as a scientific collaborator, responsible for the hand hygiene project and contributing to the Outbreak Support Team (OST).

Since the end of 2023, she has been part of Sciensano's Healthcare-Associated Infections (HAI) team, where she works as a scientific collaborator in charge of the national surveillance of bloodstream infection.

HOSPITAL-ASSOCIATED BLOODSTREAM INFECTIONS SURVEILLANCE (HABSI) IN BELGIUM

Healthcare-associated bloodstream infections (HABSI) remain a major public health challenge, particularly those related to invasive medical devices, although many are preventable through effective infection control and prevention measures.

Belgium has maintained a national surveillance system for HABSI since 1992, which was revised in 2013 to place greater emphasis on prevention. Since 2014, participation in this surveillance has been legally required for all acute care hospitals, with data centralized on the Healthdata/Healthstat platform since 2017.

Since 2023, Belgium's national surveillance of bloodstream infections (BSI) has been part of a European project led by the European Centre for Disease Prevention and Control (ECDC). The project aims to design and implement multinational surveillance systems using routinely collected electronic health records across EU/EEA countries (EHR-BSI).

The main objectives of Belgium national surveillance are to monitor HABSI/CLABSI trends, identify pathogens and their antimicrobial resistance profiles, and provide hospitals with standardized tools for infection management and analysis.

The upcoming 2025 report—based on data collected up to the end of 2024—presents the results of this surveillance, highlighting trends in HABSI /CLABSI incidence, antimicrobial resistance patterns, and the impact of implemented prevention measures.

An updated national protocol, developed by the NSIH-BSI expert group, was published in March 2025. The key objectives of this revision include:

1. Updating the definition and classification of healthcare-associated bloodstream infections;
2. Monitoring and follow-up of non-healthcare-associated bloodstream infections (non-HABSI);
3. Adapting data collection and documentation procedures;
4. Harmonizing with the Superior Health Council (SHC) recommendations on catheter infection prevention, and reviewing the collected denominator data.

This protocol update reflects Belgium's continued commitment to improving the surveillance, standardization, and prevention of healthcare-associated infections.

HILDE JANSENS

UZ ANTWERP AND HGR

BIOGRAPHY

Hilde Jansens studeerde aan de Universiteit van Antwerpen waar ze zich specialiseerde in medische microbiologie en Ziekenhuishygiëne, en is sinds 1993 werkzaam in het Universitair ziekenhuis van Antwerpen in beide diensten. Ze is sinds 2021 project verantwoordelijke arts voor het HOST team binnen het Helix netwerk.

Sinds een aantal jaren is ze lid van het bestuur van BICS (voorheen GOSPIZ). Ze is voorzitter van het regionaal platform ziekenhuishygiëne Antwerpen en lid van het federaal platform ziekenhuishygiëne. Ze is mede voorzitter van de werkgroep microbiologie, infectiepreventie- en beheersing binnen de HGR samen met Anne Simon sinds 2022.

DIAGNOSIS OF CATHETER-RELATED BLOODSTREAM INFECTIONS

Intravasculaire katheters maken het mogelijk om direct toegang te krijgen tot de bloedbaan of andere weefsels voor verschillende therapeutische en diagnostische doeleinden. Ze worden courant gebruikt om essentiële vloeistoffen, voeding, medicatie, bloed(derivaten) en andere noodzakelijke componenten efficiënt toe te dienen. Daarnaast spelen ze een cruciale rol bij de monitoring van hemodynamische parameters.

Echter, het doorbreken van de huidbarrière creëert een belangrijke toegangspoort voor micro-organismen naar de bloedbaan, wat kan resulteren in lokale en systemische infecties, waaronder bacteriëmie of zelfs sepsis. Vooral bij kwetsbare patiënten, zoals ouderen en personen met een verzwakt immuunsysteem, kunnen bloedbaaninfecties ernstige gevolgen hebben.

Katheter gerelateerde bloedbaaninfecties kunnen ontstaan via diverse routes, waaronder de insteekplaats, de connectieplaatsen op de katheter zelf en de infuusvloeistoffen. Daarnaast kunnen deze infecties het gevolg zijn van secundaire besmettingen, voortkomend uit andere infectiehaarden in het lichaam. De diagnose van katheter gerelateerde infecties vormt een cruciaal aspect van de klinische praktijk, waarbij zorgverleners moeten kunnen vertrouwen op een solide referentiekader.

De diagnose van infecties gerelateerd aan intravasculaire katheters is gebaseerd op de klinische context en microbiologische testen, zoals hemocultuur, cultuur van de katheter, monster, enz. Er dient opgemerkt te worden dat een systematische kweek van de katheter niet noodzakelijk is bij verwijdering (bijvoorbeeld bij het einde van de intraveneuze therapie), maar enkel indien er een vermoeden is van een katheter gerelateerde bloedbaaninfectie. Indien gekweekt, moeten er gelijktijdig een paar perifere hemoculturen worden afgenomen.

Hoewel momenteel weinig microbiologisch onderzoek plaatsvindt op intravasculaire perifere korte en lange katheters, die doorgaans onmiddellijk worden verwijderd bij een vermoedelijke infectie, is het toch aangewezen om ook deze katheters hier op te nemen. Enerzijds zijn er immers perifere katheters die langdurig aanwezig blijven en anderzijds worden infecties gerelateerd aan dit type katheter waarschijnlijk onderschat.

MILENA CALLIES & AHALIEYAH ANANTARAJAH

SCIENSANO - UCL ST LUC

BIOGRAPHY

Milena Callies obtained her Master's degree in Biomedical Sciences from Ghent University in 2020. Later that year, she joined the Service of Healthcare-Associated Infections and Antimicrobial Resistance to support the team during the COVID-19 pandemic. Milena started a Master in Public Health (orientation Health Systems and Disease Control) at the Institute of Tropical Medicine in Antwerp two years later, which she finished in July 2025. In 2022, she took over the coordination of the national surveillance of *Clostridioides difficile* infections in hospitals, collaborating closely with the National Reference Center for *C. difficile*.

Ahalieyah Anantharajah obtained her Master's degree in Pharmaceutical Sciences and her PhD in Pharmaceutical and Biomedical Sciences at UCLouvain in 2016. She specialized in Clinical Microbiology and currently works as a clinical microbiologist at the Cliniques universitaires Saint-Luc, where she is also a member of the Antibiotic Stewardship and Hospital Hygiene Committee. Since 2020, she has been head of the National Reference Center for *Clostridioides difficile*, coordinating national surveillance and reference activities in collaboration with Sciensano. Her research focuses on the emergence and molecular epidemiology of hypervirulent and resistant strains, and she has a particular interest in fecal microbiota transplantation for *C. difficile* infections and its broader therapeutic applications.

A DECADE OF *C. DIFFICILE*: INSIGHTS OF A HOSPITAL SURVEILLANCE

Forty years after its identification as the causative agent of pseudomembranous colitis, *Clostridioides difficile* remains the leading cause of infectious diarrhoea in healthcare settings and is classified as an urgent public health threat by the European Centre for Disease Prevention and Control (ECDC). In Europe, *Clostridioides difficile* infections (CDIs) account for 5.9% of all healthcare-associated infections, representing substantial clinical, social and economic burdens. Since the emergence of hypervirulent ribotypes such as RT027 in the early 2000s, CDI epidemiology has changed, leading the ECDC to encourage national surveillance. In Belgium, a hospital-based CDI surveillance system was initiated in 2005 and continues to provide key insights into trends in incidence, strain distribution and clinical outcomes.

We analysed national CDI surveillance data from 2015 to 2024, based on reports from acute care hospitals and microbiological analyses performed at the National Reference Centre (NRC) for *Clostridioides difficile*.

Over this 10-year period, hospital participation remained consistently high with a steep increase in 2024, although the number of submitted isolates declined. Patient demographics and recurrence rates were stable, but both hospital-associated and complicated infections decreased over time. Overall CDI incidence fluctuated throughout the study period but remained relatively low. More than 60 ribotypes were identified annually; fifteen accounted for 70% of isolates, with RT014, RT020, RT002 and RT078 representing one-third of all strains. Emerging ribotypes such as RT106 and RT154 were increasingly observed, while hypervirulent RT027 was no longer detected. Some less prevalent ribotypes were associated with severe outcomes. All isolates remained susceptible to CDI treatments available in Belgium.

This surveillance highlights evolving CDI epidemiology in Belgium, with declining hospital-associated and severe cases, increasing overall incidence, and marked shifts in ribotype distribution, including the apparent eradication of RT027. Sustained national surveillance remains essential to monitor epidemiological trends, detect emerging strains, and guide prevention and control strategies.

LUCY CATTEAU & ELENA DAMIAN

SCIENSANO

BIOGRAPHY

Dr. Lucy Catteau is a Belgian pharmacist and scientist specializing in antimicrobial resistance and stewardship. She holds a PhD in Pharmaceutical Sciences from the Université Catholique de Louvain, during which she conducted part of her research at the University of California, San Diego. Her doctoral work focused on natural molecules as antimicrobials and resistance-modifying agents. She currently leads the Antimicrobial Stewardship Unit at Sciensano, within the Epidemiology and Public Health Directorate. Her research and public health activities focus on antimicrobial consumption surveillance and the evaluation of stewardship teams in Belgian hospitals. Dr. Catteau is Vice-Chair of the DNCC ESAC-Net and actively contributes to European initiatives on antimicrobial use and resistance. She also serves as Scientific Officer for the ESCMID Study Group for Antimicrobial Stewardship (ESGAP). In parallel, she lectures at the University of Mons (UMons), promoting evidence-based and responsible antimicrobial use through research, policy, and education.

Elena Damian is a public health researcher and data scientist with over a decade of experience in public health surveillance, survey methodology, advanced data analytics, and open science. She holds an M.Phil. in Behavioral Sciences and Statistics from Tilburg University (The Netherlands) and a Ph.D. in Economics and Social Sciences from the University of Cologne (Germany). In 2023, she joined the Healthcare-Associated Infections and Antimicrobial Resistance Service at Sciensano, where she works as a scientist focusing on antimicrobial consumption in the Belgian context.

ANTIMICROBIAL CONSUMPTION SURVEILLANCE IN BELGIUM : CURRENT STATUS AND FUTURE DIRECTIONS

Antimicrobial resistance represents a major public health threat by reducing treatment effectiveness and increasing morbidity, mortality, and healthcare costs. Scientific evidence demonstrates a strong association between antimicrobial consumption and resistance, with inappropriate use accelerating the spread of resistant pathogens. Monitoring antimicrobial consumption (AMC) is therefore essential to identify trends, detect misuse, and support stewardship interventions.

Sciensano's **Antimicrobial Consumption and Antimicrobial Stewardship (AMC/AMS) Unit** coordinates the national surveillance of AMC within the **Healthcare-Associated Infections and Antimicrobial Resistance service (NSIH)**. The ongoing surveillance systems monitor antimicrobial use across hospital and community sectors, providing essential evidence to inform national antimicrobial stewardship (AMS) policies.

Both the **Belgian Hospitals – Surveillance of Antimicrobial Consumption (BeH-SAC)** and the **European Surveillance of Antimicrobial Consumption Network (ESAC-Net)** rely on reimbursement data from the National Institute for Health and Disability Insurance (NIHDI). BeH-SAC focuses on antimicrobial use in acute care hospitals, expressed in defined daily doses (DDD) and adjusted by activity denominators such as patient-days and admissions, enabling national benchmarking. ESAC-Net, coordinated by the European Centre for Disease Prevention and Control (ECDC), covers both hospital and community sectors and expresses use in DDD per 1,000 inhabitants per day, allowing European comparison.

In the framework of Belgium’s National Action Plan against Antimicrobial Resistance (2020–2024), the **AMC-PRIM** project was launched to enhance community-level surveillance. Using NIHDI data and complementary sources, AMC-PRIM aimed to provide a more detailed picture of prescribing patterns across ambulatory care settings, including general practice, dentistry, and nursing homes, and to strengthen national feedback to prescribers.

Current challenges in Belgian AMC surveillance include delays in data availability (around 1.5 years), incomplete capture of non-reimbursed or imported antimicrobials, and the absence of indication-level information that limits assessment of prescribing appropriateness.

Future initiatives — **BeHAUM (Belgian Hospitals Antimicrobial Use Monitoring)** and **BeCAUM (Belgian Community Antimicrobial Use Monitoring)** — will address these limitations by improving data completeness, timeliness, and interoperability. These developments will enhance Belgium’s capacity for comprehensive and timely AMC surveillance, supporting evidence-based antimicrobial stewardship.

MATIJS HOUBEN & KAT MATTHYS

SCIENSANO

BIOGRAPHY

Kat Matthys studied medicine at Ghent University, after which she began her career as a family and school physician in East Flanders. A passion for science then led her to Rutgers State University in New Jersey, USA, and the University of Antwerp, where she completed a doctorate in medical sciences. She then held various medical positions at several innovative biotech and pharmaceutical companies, focusing primarily on the development and reimbursement of new medicines. Over the years, her interest in the overall state of healthcare in Belgium grew, leading her to Sciensano in October 2021, where science and public health converge. She is now leading the Infection Prevention and Control (IPC) unit in the Department of Healthcare Associated Infections and Antibiotic Resistance. She is a member of the Federal IPC Platform, and works closely together with the regional health authorities to prevent and contain outbreaks involving resistant pathogens in healthcare facilities ('Outbreak Support Team').

Matijs Houben completed a Master's degree in Biomedical Sciences in 2020, followed by a Master's in Bioinformatics in 2022, both at KU Leuven. Driven by his interest in public health and data analysis, he joined Sciensano in December 2022. There, he works within the Infection Prevention and Control (IPC) unit of the Department of Healthcare-Associated Infections and Antibiotic Resistance, with a primary focus on hand hygiene. In this role, he is an active member of the national hand hygiene working group.

UPDATE FROM THE IPC TEAM: CHIPS AND OTHER TREATS

Healthcare-associated infections (HAIs) cause additional suffering and increase healthcare costs. Sciensano's Infection Prevention and Control (IPC) unit supports healthcare institutions and policymakers in preventing these infections by focusing on three main areas.

1. Evaluation of infection prevention in hospitals – Hospitals use the national IPC quality indicators for annual self-assessment on how well they implement infection prevention measures. Participation is mandatory, and national reports are published. The collected data support hospitals in improving their practices through benchmarking, tailored reports, and actionable insights. A new set of indicators (CHIPS – Check Hospital Infection Prevention Status) and a new data platform are currently being developed, and will be rolled out as a national pilot in 2026.
2. Hand hygiene – Good hand hygiene (HH) is a key measure in preventing care infections, and hospitals can use the Sciensano tool for monitoring HH compliance. Sciensano analyses the data and publishes the findings in a national report. Participation is voluntary but widespread. A new web-based data collection tool has recently been launched, and a mobile application will be available in 2026

3. Outbreak support – When outbreaks of multidrug-resistant organisms (MDROs) occur, Sciensano, as part of the Outbreak Support Team (OST), provides expert guidance and tools (e.g. Checklist, EpiCurve) to help healthcare facilities manage the situation.

Sciensano collaborates closely with partners such as BAPCOC, regional health authorities and National Reference Centers, with the shared objective of reducing healthcare-associated infections and improving patient safety in Belgium.

JERÔME TACK

GRAND HOPITAL DE CHARLEROI

BIOGRAPHY

Tack Jérôme obtained his nursing degree at Haute École Condorcet in Mons in 2014. He then pursued a specialization in intensive and emergency care, as well as a Master's degree in Public Health Sciences at UCL, where his thesis focused on the evaluation of nursing workload in intensive care units.

In September 2025, he completed his PhD in Public Health Sciences at Université Libre de Bruxelles. His doctoral research explored the opportunity to create intermediate care units and their potential impact on care quality, hospital length of stay, and the optimization of critical care organization in Belgian hospitals.

In January, he will also present his CIU thesis in Antimicrobial Stewardship Management, focusing on the involvement of Belgian nurses in AMS.

In parallel, Jérôme joined the Grand Hôpital de Charleroi in 2022 as project coordinator for HOST RHCM. In this role, he serves as project leader of a large-scale program dedicated to the use, management, and analysis of AMS and IPC data within the Charleroi Métropole hospital network.

DATA IN PRACTICE - IMPLEMENTATION OF A CLINICAL DECISION SUPPORT SYSTEM AT THE RÉSEAU HOSPITALIER CHARLEROI MÉTROPOLIS: INSTALLATION, USE, AND PERSPECTIVES

Antimicrobial resistance is an increasing threat to global public health, making the development of effective strategies for Antimicrobial Stewardship (AMS) and Infection Prevention and Control (IPC) essential. However, their implementation remains complex, requiring multidisciplinary expertise and the rapid analysis of clinical and microbiological data.

In response to these challenges, Clinical Decision Support Systems (CDSS) have emerged as promising tools. They enable the integration of multiple data sources in real time, the generation of tailored alerts, and the support of clinicians in their diagnostic and therapeutic decisions. Several studies have demonstrated their potential to improve prescription appropriateness, reduce inappropriate antibiotic use, and strengthen IPC practices. Nevertheless, their adoption in hospitals remains limited, and their real impact depends largely on the implementation context, user engagement, and integration into existing care processes.

In this context, we report on the introduction of a CDSS dedicated to AMS and IPC across the Charleroi Metropolitan Hospital Network, describing the implementation steps, the main challenges encountered, and the initial lessons learned regarding its use.

ACKNOWLEDGEMENTS

We extend our sincere thanks to all speakers for their insightful presentations and to the chairpersons for skillfully leading the discussions.

Our special thanks go to our colleagues from the Healthcare-Associated Infections and Antimicrobial Resistance service at Sciensano for their sustained efforts in coordinating national surveillance and supporting hospitals in data collection and analysis.

We are deeply grateful to all professionals involved in the prevention and management of infections in healthcare settings — including microbiologists, infectious disease specialists, infection control practitioners, hospital hygienists, pharmacists, laboratory staff, epidemiologists, quality coordinators, and public health professionals — for their continuous collaboration and invaluable contributions to public health surveillance in Belgium.

We also thank our colleagues from the Finance and Communication departments for their support, and we extend special thanks to Lucy Catteau for coordinating this year's organization, and to Nathalie Verhocht for her enthusiasm and efficient administrative assistance.

For the first time, this seminar was financially supported by contributions from the private sector, whose engagement we greatly appreciate

