Defence-related Research Action - DEFRA

ACRONYM: SCREMM-BIO	
Title: Surge Capacity and REsilience for Military Medicine in BIO-warfare	
Duration of the project: 01/12/2025 - 01/03/2029	**Budget:** 2.780.000 € **of which RHID contribution:** 2.377.000 €
Key words: High-Level Isolation Unit, Bioterrorism, Civil-military collaboration, Highly mobile capability, Surge medical capacity, Scenario simulation	

PROJECT DESCRIPTION

High Consequence Infectious Diseases in the context of biological warfare could cause great challenges and might result in a high number of cases and unknown threats. Resilient military structures demand careful planning and preparedness to effectively address unforeseen scenarios. Currently, Belgium lacks scalable solutions for B-threat scenarios, particularly in a military context.

The **SCREMM-BIO** project aims to **strengthen Belgium's military resilience by enhancing the country's capacity to respond to biological threats against military personnel through a strong civil-military medical cooperation**. The overall goal is to investigate, design, construct, and evaluate scaling-up medical surge capacity and capability models in response to biological threat affecting military personnel in Belgium. The project will explore the use and deployment of **two medical surge capacity models**: (1) Model 1. Surge capacity at adapted existing BSL3 infrastructure (i.e. Vaccinopolis/Antwerp University Hospital (UZA)), (2) Model 2. Highly mobile medical care capacity, adapted for biocontainment use. This is a purpose built, mobile containment capacity that can be integrated within existing military medical capabilities or can be explored for use in case of overflow of Model 1.

To meet its ambitious goals, the project is divided into **eight work packages (WP)**, each addressing a critical component required to deliver effective scenarios for surge capacity (see **Figure 1**). WP1 focuses on assessing overall needs and developing a methodology to scale up medical care in response to large-scale bio-attacks in military settings. WP2 involves the adaptation and testing of containment infrastructure, while WP3 concentrates on modelling and evaluating the economic aspects of infrastructure, staffing, and operational costs. WP4 is dedicated to developing and validating staff surge capacity models along with corresponding training packages. WP5 enhances outbreak research preparedness specific to biological attacks. WP6 ensures effective coordination, project management, and reporting. WP7 is responsible for data management, and WP8 handles the valorisation, dissemination, and exploitation of project results. The 36-month methodology integrates literature

review, feasibility studies, operational assessments, mathematical modelling and scenario simulations to produce actionable implementation scenarios. All components will be synthesized in a **final, exhaustive full-scale exercise**, resulting in **two thoroughly evaluated models** and **corresponding operational scripts**.

The **impact for Belgian Defence** is twofold: first, it delivers an evidence-based model for medical care of military personnel affected by biological attacks using UAntwerp and UZA expertise (Model 1); second, it develops an extension prototype for the Role 2 Medical Treatment Facility to enable safe deployment in biologically impacted conflict zones (Model 2). Virtual outbreak simulations will evaluate timelines of detection, response, and containment of B-incident, while financial analysis will assess the feasibility of expanding HLIU capacity. This combined approach strengthens response efficiency, supports sustainable surge capacity, and informs strategic civilian-military decision-making for biothreat preparedness. Broader scientific insights will guide future innovative countermeasure development, and can be shared with other NATO partners through a final script, adaptable into a generic model for broader use. The project lays the foundation for long-term collaboration and enhanced national and international preparedness.

The **ambition of SCREMM-BIO** is to generate novel insights and know-how based on original scientific research. Our dissemination strategy includes the publication of at least four peer-reviewed papers in high-impact scientific journals, alongside the development of guidelines/recommendations, training modules, scripts, and cost estimations. Results will be presented at (inter)national conferences.

The **project's valorisation** will centre on several key outcomes:

- **Surge capacity models** in Belgium for military medical care during large-scale biological incidents. These models have clear dual-use potential, and additional funding will be sought to ensure long-term sustainability.
- **Knowledge and service provision to NATO partners**, initially targeting France and the Netherlands, where similar infrastructures are being developed (e.g., INFECT-NL in Leiden, related initiatives in Paris). Experience and expertise from SCREMM-BIO can support the development of comparable B-threat preparedness plans and enhance Role 2 capabilities across NATO through structured knowledge transfer.
- **Data modelling on the surge capacity and costing analyses** that may lead to long-term valorisation, including potential IP. The models could be applied to future epidemic or pandemic scenarios, enabling further research and contract work for governments and agencies.
- The **training modules** and **scripts** may be reused within broader emergency response training programs, with evidence-based recommendations serving as guidance for other member states. The **rapid outbreak investigation systems** and **generic research preparedness models** also offer value for research in global outbreak preparedness.
- A **realistic plan for staff surge capacity** (much needed for preparedness for a broad range of public health emergencies).

CONTACT INFORMATION

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LINK(S)

Under development.

(Figure 1 Overview of the work packages)