Project No. 101045956
Biomarker and AI-supported FX06 therapy to prevent progression from mild and moderate to severe stages of COVID-19

Deliverable 1.7

Progress report on the collaborative actions between the projects working on COVID-19 therapeutics funded under the Horizon Europe call "HORIZONHLTH-2021-CORONA-01"

WP1 – Project management and collaboration with other initiatives

Lead Participant	GUF
Contributors	Elina Nürenberg-Goloub, Catalina Jaramillo Giraldo, Johanna Keim, Lea Grebe (GUF), Anastasiia Aksonova, Andreia Cruz (accelCH)
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Contents

Partner short names

GUF	Johann Wolfgang Goethe Universität Frankfurt am Main
accelCH	accelopment Schweiz AG
ESAIC	European Society of Anaesthesiology and Intensive Care
Fraunhofer	Fraunhofer Institute for Translational Medicine and Pharmacology ITMP
F4	F4 Pharma GmbH
TAU	Tampereen Korkeakoulusaatio SR
UCD	University College Dublin
UMCG	Universitair Medisch Centrum Groningen
MiDA	Medical Intelligent Data Analytics GmbH
UHW	University Hospital Würzburg
UNIPG	Universita degli Studi di Perugia
KC	Lietuvos Sveikatos Mokslu Universiteto Ligonine Kauno Klinikos
ICS-HUB	Hospital Universitari de Bellvitge
UMFCD	Universitatea de Medicina si Farmacie Carol Davila din Bucuresti
CHUC	Centro Hospitalar e Universitario de Coimbra E.P.E.
APHP	Assistance Publique – Hôpitaux de Paris
MUMC	Maastricht University Medical Center+

Abbreviations

AI	Artificial Intelligence
APS	Patient Safety Action Alliance (in German: Aktionsbündnis Patientensicherheit)
ARDS	Acute Respiratory Distress Syndrome
D	Deliverable
EC	European Commission
ECMO	Extra Corporeal Membrane Oxygenation
EMA	European Medicines Agency
EU	European Union
GDPR	General Data Protection and Privacy Regulations
HERA	Health Emergency Preparedness and Response Authority
VOC	Variants o Concern
WP	Work Package

Executive Summary

COVend is a three-year project aimed at delivering a new effective AI-supported FX06 therapy to prevent the progression from mild and moderate to severe stages of COVID-19 therapy. As a project of high societal relevance and exploitation potential COVend has a clear strategy and plan for its dissemination and communication activities and a structured synergistic approach to implementing all communication and dissemination measures.

This document represents Deliverable D1.7 from Work Package (WP) 1 –Project management and collaboration with other initiatives and provides an update on COVend's collaborative activities with other initiatives working on COVID-19 therapies and response tools that were conducted in the first 18 months of the project. It describes connections made through joint events, exchanges of knowledge, shared resources, and future strategic partnerships. The report aims to highlight the key undertaken actions and assessment of future collaborative opportunities, shedding light on the effectiveness of cross-project cooperation in combatting the COVID-19 pandemic within the European Union.

COVend team participated in the virtual meeting for COVID-19 Clinical Trial Network meeting organised by the European Commission to facilitate exchanges between consortia funded under the same Horizon Europe call. The engagement of the project consortium in the Clinical Trial Network is presented in Sections 2 and 3 of this report. The assessment for future opportunities for cross-project collaboration is presented in section 4, specifying those opportunities according to the clinical trial processes, innovative therapies, integration of epidemiological data, sharing of research infrastructure and the navigation of regulatory processes. The strategic participation in the events "Highway to Health" from January and July 2023 is presented in sections 5, 6 and 7, where the COVend partners successfully leveraged the benefits of well-designed in-person events to build up productive connections that inspire collaborative projects and accelerate research and implementation progress. These summaries demonstrate that the project consortium is committed to maximising its contribution through collaboration.

The report highlights how fostering synergies across projects can accelerate learning, strengthen trial operations, and maximise COVend's impact. Overall, cross-consortium collaboration underscores the importance of collective action in addressing global challenges like the COVID-19 pandemic. The lessons learned from this experience will undoubtedly inform future emergency response strategies and foster a more resilient European Union.

Related deliverables:

- D8.4 European trial networks workshops
- D8.5 Interim impact report

1 Introduction

The COVID-19 pandemic has underlined the urgent need for coordinated and multifaceted research efforts to find meaningful solutions. While individual projects make important contributions, collaboration between different initiatives has an exponential impact. By fostering synergies, consortia can accelerate results, strengthen trial implementation and maximise the translation of innovations into improved patient outcomes. The European Commission recognised the importance of a networked response when it designed the Horizon Europe work programme for much-needed health research on the SARS-CoV-2 pandemic. Projects are expected not only to advance their own goals, but also to share knowledge, pool resources and form strategic partnerships between consortia wherever there is mutual benefit. COVend aims to maintain this spirit of collaboration to advance its goal of evaluating drug candidate FX06 for the treatment of mild to moderate COVID-19. Linking with complementary projects can strengthen COVend's study design, broaden the evidence base, bring results to market faster and enhance COVend's role in strengthening pandemic preparedness. This report provides an update on the collaboration's activities and future goals.

The purpose of collaborative actions between the projects working on COVID-19 therapeutics funded under the Horizon Europe call "HORIZONHLTH-2021-CORONA-01" is to foster coordinated and synergistic efforts in developing effective therapeutics to combat the COVID-19 pandemic. Collaborative actions are important for accelerating therapeutic development, allowing researchers and organisations to pool their resources and share knowledge in a more efficient and potentially fast way and, avoiding duplication in efforts through the communication of lessons learned, barriers and facilitators, and cooperation among different projects. Collaborative actions contribute to leveraging diverse expertise with an interdisciplinary approach and finally to enhance knowledge transfer and data sharing according to open science principles.

COVend has faced major challenges related to the unforeseen development of COVID-19 pandemic and the decreased number of moderate cases of COVID-19[1]. These reductions in cases could be attributed to several intended and unintended factors like public health measures, vaccination campaigns, natural immunity, behavioural changes, herd immunity, seasonal factors and variations in virus strains. IXION, the clinical trial of COVend, has suffered disruptions due to enrolment challenges and the lack of eligible patients for the proposed therapeutic intervention. Therefore, more collaborative actions for knowledge and preliminary results sharing were put on hold.

The project has demonstrated commitment to build on cross-consortium cooperation, experiences and knowledge sharing through open discussions and networks. For example, the strategic participation in the event "Highway to Health", presented in sections 4, 5 and 6 carried out in July 2023, including the involvement of other projects funded under the same initiative, included a round table where lessons learned and next steps were discussed. The commitment of all consortium partners is unquestionable, which has generated an interest in a cascade of actions to adapt scientific and research strategies to other horizons framed in COVend. This report includes some of the possible

[1] https://ourworldindata.org/grapher/current-covid-patients-hospital

future collaborations that would have an impact on pandemic preparedness and effective therapeutic interventions for diseases clinically related or similar to COVID-19.

2 Virtual Meeting with COVID-19 Clinical Trial Network

In April 2022, COVend participated in a virtual meeting organised by the European Commission. This meeting, entitled "Therapeutic Clinical Trials United Against COVID-19" (Figure 1), brought together projects funded under the same Horizon Europe call as COVend to enable networking and knowledge sharing. Representatives from five consortia developing promising COVID-19 therapies presented overviews of their projects and lessons learned. These included ExeVir's XVR011 llama nanobody treatment (the XVR011-Phase-2 project), HIPRA's recombinant protein vaccine, Fabentech's polyclonal antibody therapy (the EPIC-CROWN-2 project) and MetrioPharm's immunomodulator (the iMPact project). Each project highlighted the technical challenges that had to be overcome, the lessons learned and the goals for the future. The presentations offered valuable insights into different therapeutic approaches and revealed potential synergies between the projects. ExeVir's experience with clinical trial design and regulatory processes could benefit COVend in its upcoming studies. Data integration with MetrioPharm could provide insights into the treatment of COVID-19 comorbidities affected by both therapies.

In general, the projects agreed on the importance of accelerating clinical trials, enabling real-world data sharing and fostering connections between researchers and clinicians studying COVID-19 treatments. Aligning standards and processes would enable a more flexible, coordinated response to future outbreaks and new threats. COVend's consortium recognises that a cross-consortium partnership would strengthen its contributions in these areas. Overall, the virtual meeting highlighted meaningful opportunities for collaboration and exchange of ideas between COVend and other projects that could be explored further. With complementary expertise and goals, joining forces could accelerate results and strengthen unified preparedness. COVend remains committed to building on these open discussions and networks.

3 Engaging with the European COVID-19 Clinical Trial Network

COVend has developed a strategy and plans for conducting joint workshops between COVend and the European Clinical Trials Network COVID-19. The preparation, implementation and follow-up of the planned workshops are comprehensively described in the Deliverable 8.4 – European trial networks workshops report submitted in March 2023. The main objectives are to facilitate knowledge transfer, share best practice insights and identify challenges and solutions for optimising trial design and operations. At least two workshops are planned to allow in-depth discussion on several relevant topics. The proposed format will consist of presentations, interactive exchange and open dialogue between workshop participants. Coordinators and members of the European network of COVID-19 studies and related EU-funded initiatives will be invited. The workshops will be promoted via tailored social media campaigns, email invitations and announcements on the project's websites. Dedicated facilitators will lead the sessions and ensure productive exchanges. Outcomes include strengthening links between studies, deepening knowledge about how studies are conducted and fostering collaborations to accelerate research. Feedback surveys will help assess success and shape future engagements.

By bringing together key stakeholders across projects, the workshops can serve as a catalyst for learning experiences and innovation to improve the coordinated EU response to accelerating the delivery of COVID-19 solutions.

Figure 1. Key components of the COVend communication strategy for the implementation of the European trial network workshops

4 Opportunities for Collaboration with Horizon Europe Projects

The COVend project aims to develop a precision therapy for the drug candidate FX06 to prevent COVID-19 progression from mild and moderate to severe disease states. As part of the consortium's commitment to maximise impact through coordination and knowledge sharing, potential collaborations with other relevant Horizon Europe projects are constantly being explored. Collaboration could improve study design for future clinical trials, broaden the evidence base and accelerate the time to market of the FX06 therapy. However, the implementation of joint activities is dependent on the COVend project resuming patient recruitment for the IXION clinical trial, which is challenging due to the dynamic evolution of the COVID-19 pandemic.

4.1 Coordinating Clinical Trial Operations, Patient Cohorts, and Research Protocols

While the COVend project remains committed to exploring synergies with complementary Horizon Europe initiatives, collaboration in coordinating clinical trials, patient cohorts and research protocols may be more useful in the future. Joint efforts to pool patients and integrate protocols are potential synergies that could be important in later phases as the consortium prepares for wider adoption and implementation of FX06 therapy (Figure 2).

Coordination with the VERDI project, which focuses on the evaluation of COVID-19 vaccines specifically in pregnant women and children, could provide an opportunity for the COVend consortium to optimise the method of administration, dosing and treatment regimen of FX06 for different populations such as pregnant patients and children. The experience of the VERDI consortium in recruiting and studying these specific groups could inform efforts to adapt FX06 therapy for safe and effective use in key subgroups that may respond differently to standard dosing. Access to the extensive COVID-19 cohort studies being generated by the EuCARE project could prove invaluable for conducting larger late-stage clinical trials, post-marketing studies and ongoing safety monitoring should FX06 receive regulatory approval in the future. Leveraging the existing EuCARE cohorts and research sites with thousands of enrolled participants in multiple countries could help to efficiently scale up clinical trials and collect real-world data on the effect of FX06 in broad patient populations. In addition, learning from and collaborating with experienced, established clinical trial networks such as ECRAID could assist the COVend project in effectively scaling up its multi-site deployment and generating robust, real-world evidence on FX06 as it moves into later phases. Harnessing the expertise of such networks in implementing harmonised, adaptable protocols across hundreds of international study sites could help to rapidly advance FX06 through larger pragmatic studies and commercial deployment.

PROJECT OUTLINE	RELEVANCE	COLLABORATION OPPORTUNITIES	POTENTIAL BENEFIT
VERDI Evaluating COVID-19 vaccines in pregnant women and children	Experience with specific demographics relevant to FX06 implementation	• Coordinate recruitment and protocols for pregnant women & children • Share insights on efficacy and safety in key subgroups	Optimize FX06 delivery and dosing for different populations Generate evidence to support use in pregnant women and children
EUCARE Establishing large-scale COVID-19 cohorts in schools and population	Extensive cohorts and research infrastructure across Europe	• Utilise cohort for late stage FX06 trials and post-marketing studies • Coordinate safety surveillance and pharmacovigilance activities • Expand real-world evidence collection across multiple countries	Efficiently conduct larger late stage and post-approval FX06 studies Robust safety and efficacy data across broad patient populations
ecraid Adaptive platform trial for COVID-19 treatments in outpatients	Expertise in decentralised, harmonised trial protocols	• Incorporate FX06 into adaptive platform to expand evidence • Learn trial implementation best practices • Leverage network for multi-site FX06 deployment	Efficiently scale up FX06 trials to generate real-world data Optimise commercial rollout across international sites

Figure 2 . Collaboration opportunities to coordinate clinical trial operations, patient cohorts, and research protocols

While collaboration on clinical trials, patient cohorts and research protocols is challenging given the delays in the COVend project, exploring these synergies in the future could accelerate broad access to therapies and maximise patient impact as FX06 progresses in development. The consortium remains open to re-evaluating collaboration opportunities as the situation evolves.

4.2 Sharing Knowledge on Innovative Therapies, Biomarkers, and Study Design

Whilst collaborations around sharing knowledge may not be feasible currently given the clinical trial delays of COVend, exploring synergies in this area with other Horizon Europe initiatives could become highly relevant in the future stages of FX06 development and rollout (Figure 3).

PROJECT OUTLINE	RELEVANCE	COLLABORATION OPPORTUNITIES	POTENTIAL BENEFIT
RBDCOV Project COVID-19 recombinant protein vaccine development	Research on biomarkers of immunogenicity and immune response	• Exchange insights on immune signatures triggered by COVID-19 • Integrate biomarker work to identify FX06 response correlates • Develop aligned monitoring approaches for treatment response	Inform mechanistic work in WP5 on immunologic dynamics Identify subgroups most likely to respond to and benefit from FX06
ExeVir Clinical trial of novel COVID-19 nanobody therapy	Experience with innovative delivery methods and formulations	• Share techniques for next-generation FX06 formulations • Compare trial data on combining monoclonal antibodies with FX06 • Discuss strategies for transitioning intravenous therapeutics	Inform development of more convenient FX06 administration Increase understanding of using multi-therapy approaches with FX06
2 Clinical trial of equine polyclonal antibody therapy for COVID-19	Focus on treatment of later stage COVID-19 disease	• Exchange clinical data on treating different disease severities • Discuss aligning therapies into a clinical care pathway • Cooperate on treatment guidelines and regulatory submissions	Build evidence for FX06's use within multi-therapy protocols Strengthen position in clinical guidelines and formularies
iMPact a better therapy for Covid patients Clinical trial of oral immunomodulator for COVID-19	Experience with oral delivery methods and target groups	• Exchange techniques on transitioning intravenous therapeutics • Integrate datasets to reveal subgroups for oral vs. intravenous (IV) therapy • Discuss evolving to oral administration for FX06	Inform efforts to develop oral dosage forms for convenience Identify which patients gain the most from IV FX06 delivery

Figure 3 Collaboration opportunities for sharing knowledge on innovative therapies, biomarkers, and study design

In particular, the COVend project could benefit from sharing knowledge with initiatives such as RBDCOV, ExeVir (XVR011 Phase 2 clinical trial), EPIC-CROWN-2 and iMPact. While their therapeutic approaches differ from those of the FX06 therapy candidate, their experience in developing innovative solutions for COVID-19 could inform future efforts to optimise and expand the use of FX06 therapy. The focus of RBDCOV on generating evidence on a recombinant COVID-19 protein vaccine could provide valuable perspectives for evaluating efficacy in different populations (see also VERDI project,

chapter 4.1), which could support real-world implementation of FX06 therapy. Insights from RBDCOV research on biomarkers of immunogenicity and immune response could help identify correlates of protection and response to treatment that would complement mechanistic analysis in COVend WP5. Sharing knowledge about immune system dynamics and signatures triggered by COVID-19 infection and different therapies could support COVend efforts to elucidate the mechanism of action of FX06. Incorporating findings from the RBDCOV biomedical analysis (RBDCOV WP5 - Immune monitoring and clinical data analysis) could help develop tailored monitoring approaches to determine which patient subgroups are most likely to benefit from treatment with FX06. Meanwhile, the XVR011 Phase 2 clinical trial work (ExeVir) on novel nanobody therapies could provide innovative techniques for next-generation FX06 formulations and delivery methods. Comparison of clinical trial data could provide insights into combining monoclonal antibodies with FX06 to improve treatment outcomes. In addition, the development of polyclonal antibody therapies through EPIC-CROWN-2 may provide an outside perspective on the treatment of later-stage COVID-19 disease, building on mild to moderate focus of COVend. Knowledge sharing could strengthen the overall evidence base for the use of FX06 as part of a multi-therapy clinical pathway. Finally, the experience of iMPact with oral immunomodulators could help identify opportunities for switching FX06 from intravenous administration to more convenient routes of administration in the future. Comparative assessments could identify target groups most likely to benefit from FX06's unique therapeutic focus.

4.3 Integrating epidemiological datasets for patient recruitment, efficacy monitoring

COVend project is currently focused on restarting its clinical trial. Exploring future opportunities to integrate epidemiological datasets from initiatives like CoVICIS and BY-COVID could provide significant advantages for patient recruitment and evaluating FX06's real-world impact. For example, leveraging the surveillance capabilities of the CoVICIS project in Europe and Africa could assist in identifying geographic regions and time periods with higher COVID-19 case numbers to inform clinical trial site selection and boost enrollment. Accessing CoVICIS' genomic and phenotypic data could also help reveal target populations and disease subtypes that may be more likely to respond to FX06 treatment. Meanwhile, integrating and sanalysing the extensive COVID-19 datasets being compiled by the BY-COVID project could help develop highly specific inclusion criteria to enrol patients with disease profiles and biomarkers indicating potential heightened FX06 response. Applying advanced analytics to BY-COVID's aggregated information sources could support innovative patient stratification and recruitment approaches (Figure 4).

In the long term, connecting with these epidemiological data platforms could significantly strengthen COVend's ability to monitor real-world treatment outcomes and post-approval efficacy. For instance, linking FX06 usage data to large-scale COVID-19 databases could enable sophisticated pharmacovigilance and observational studies on factors impacting response. Epidemiological data integration could provide ongoing, powerful insights on soptimising the use of FX06 as part of precision medicine strategies.

PROJECT OUTLINE	RELEVANCE	COLLABORATION OPPORTUNITIES	POTENTIAL BENEFIT
Coupling powerful state-of-the-art virologic and immunologic platforms	Characterization of virologic and immunologic properties of Variants of Concern (VOC)	• Boosting enrollment for clinical trial through surveillance of VOC • Individualization of interventions per population cohorts and genomic virological surveillance	Optimize clinical trial enrollment, individualisation of dosage delivery for different populations groups
Comprehensive and interoperable open data on SARS-CoV-2 and other infectious diseases	Extensive cohorts and research infrastructure across Europe	• Data sharing for surveillance of new VOCs for stratification and recruitment. • Integrate information to enroll patients with disease profiles and biomarkers indicating potential heightened FX06 response.	Strengthen COVend's ability to monitor real-world treatment outcomes and post-approval efficacy for pharmacovigilance.

Figure 4 . Collaboration opportunities for integrating epidemiological datasets for patient recruitment, efficacy monitoring

COVend project srecognises the potentially immense value of exploring these synergies as FX06 progresses through late-stage development toward commercialisation.

4.4 Utilising research infrastructure for rapid preclinical studies

COVend current exciting stage of re-designing its clinical trial and expanding horizons beyond COVID-19 can leverage from integrated services for scientific research like ISIDORe.This platform can complement specific research services, tools or resources to advance in research related to infectious diseases, for example in pathogens target the human respiratory tract, resulting in a broad spectrum of clinical manifestations including life-threatening acute respiratory distress syndrome (ARDS). Exchanging information, challenges, barriers and good research practices with other projects related to therapeutic development in preclinical stages, could certainly enlarge the potential application of FX06 treatment response, efficacy, and safety.

As for the research infrastructure, a collaboration with ISODORe projects could aim for data sminimisation principles across all projects, collecting only the data necessary for the clinical trial's objectives, avoiding unnecessary data collection to reduce privacy risks and ensuring more efficiency in data interoperability and usage.

Increased knowledge about the efficacy of FX06 will also be useful by improving endothelial dysfunction and capillary leak syndrome in other diseases. Due to its innovative mode of action, FX06 might become a useful treatment option for many other respiratory pathogens from ISIDORe supported initiatives (Figure 5).

PROJECT OUTLINE	RELEVANCE	COLLABORATION OPPORTUNITIES	POTENTIAL BENEFIT
ISIDORe Ingreasing EU and global capacity to prevent and respond to infectious threats	The ISIDORe consortium supports scientists with an interest in respiratory pathogens including SARS-COV2 and others resulting in ARDS	• Cooperate in the scientific design and aggregated data sharing of platform trials for new therapeutics (COVID-19) • Integrate clinical trials of respiratory pathogens resulting in acute respiratory distress syndrome (ARDS)	Robust data of priority preparedness pathogens Increased scientific support for regulatory advice in the clinical trial of COVend Knowledge and good practices sharing wth similar research projects

Figure 5. Collaboration opportunities for utilising research infrastructure for rapid preclinical studies

Although the exchange of insights with the initiatives funded by ISIDORe is not currently feasible given that no patients have been recruited for the COVend clinical trial, exploring future synergies through ISIDORe as FX06 progresses could significantly advance its impact and contribution to improved pandemic preparedness and management of critical clinical needs.

4.5 Navigating regulatory processes for new therapies

Cross-project collaboration and coordination, combined with a proactive approach to regulatory compliance and legal considerations, are essential for the success of EU-funded clinical research projects. Engaging with regulatory authorities and seeking legal counsel when needed can help navigate the complex landscape of clinical research regulations within the EU. As mentioned before, knowledge exchange with all listed projects, specifically for clinical trials and therapeutic development research can assist as well in the interaction with regulatory agencies like the European Medicines Agency (EMA).

Clinical research regulations and legal considerations will be a focal point of strategic collaboration for COVend, proposing the possibility of engaging regulatory experts from all mentioned projects, since seeking external expertise can provide complementary perspectives and experiences on regulatory compliance, submission processes, protocols, documentation and timelines. Interchanging information on data collection methods can streamline compliance efforts across multiple sites and countries, for example, when staying up-to-date about changes in EU clinical research regulations from EMA and other national authorities. Specifically for the projects that have been affected in the recruitment of COVID-19 patients due to the pandemic development, like the clinical trial of COVend, integrating ethical review boards for new clinical research strategies could mean more efficient applications for approvals in conformity with relevant national-specific regulations.

Data Protection and Privacy in compliance with EU data protection and privacy regulations (such as GDPR) is essential to ensure the responsible and lawful processing of personal data when doing scientific research. Effective collaboration strategies could involve establishing a GDPR compliance working group including legal experts from key consortium partners, data protection offices and team members with expertise in clinical trial data management. This team should conduct data protection impact assessment (DPIA) to assess and mitigate the risks to individuals' data privacy rights, share

findings and recommendations across projects and adapt processes accordingly and timely. This cooperation could also facilitate informed consent approaches and specific context adaptations, sharing templates and best practices for informed consent forms.

5 Connecting EU-funded projects with key stakeholders

In January 2023, COVend partners participated in the final "Highway to Health" event organised by the ENVISION consortium at the Hessian State representation in Brussels. This hybrid conference brought together ENVISION researchers with policymakers, clinicians, patient representatives and other COVID-19 projects to discuss the use of digital tools and artificial intelligence for pandemic preparedness. A total of about 60 attendees participated in the event. The feedback and interest of the scientific community were positive and strong. Thus, the COVend consortium was the co-host of the Highway to Health Cluster & Policy Event on the 4th of July 2023 at the Hessian State representation in Brussels.

While remote communication enables some interactions, face-to-face meetings offer unique advantages for establishing connections. In-person events provide valuable opportunities to foster collaboration between research projects and partners in science and clinical research, allow for more organic, spontaneous networking during sessions, breaks, meals, and social activities. Attendees can identify and approach potential collaborators in a more natural way compared to digital interactions. The COVend partners successfully leveraged the benefits of well-designed in-person events to build up productive connections that inspire collaborative projects and accelerate research and implementation progress.

6 COVend at the Highway to Health: the final event of the ENVISION project

One of the central themes of the event revolved around enhancing patient safety and addressing future healthcare challenges through the application of Artificial Intelligence (AI). Dagmar Lüttel, who serves as the Scientific Associate at Aktionsbündnis Patientensicherheit e.V. (APS), provided an insightful overview of the Active Alliance for Patient Safety and its role in providing guidance to healthcare professionals regarding digital health and COVID-19 patient information.

Figure 6: Photo collage of Highway to Health – ENVISION final event 2023

Representatives from COVend shared their research findings related to the evaluation of the endothelial stabilizer FX06 as a potential treatment to mitigate the progression of severe COVID-19 disease (Figure 6).

Another crucial topic that gained prominence during the event was the importance of standardizing healthcare data and advancing digital healthcare practices. Dr. Oliver Old, a Data Scientist and Statistician affiliated with the University Clinics in Frankfurt, delivered a presentation on the implications of the FAIR principle in the context of digital healthcare. Theresa Barry, an expert in Clinical Terminology Architecture and the Chair of the Member Forum for SNOMED International, shared valuable insights into SNOMED CT and how it plays a pivotal role in facilitating the development of comprehensive and high-quality clinical content within electronic health records. Dr. Samira Maghool, an Assistant Professor (RTD-A) at Università degli Studi di Milano, hosted a presentation highlighting the EU-funded project SMART BEAR. This project encompasses a robust big data platform designed to provide evidence-based personalized support for individuals seeking to maintain healthy and independent living within their homes. Furthermore, engagement with other EU-funded initiatives, such as SMART BEAR, uncovered exciting prospects for cooperation. For instance, the integration of SMART BEAR's personalized remote monitoring platforms with COVend's endpoint data could offer a means to track patient recovery and assess the ongoing impact of FX06 following their discharge from the hospital.

Attendees demonstrated a strong interest about COVend's efforts to explore the pathophysiological mechanisms responsible for the effects of SARS-CoV-2. The discussions yielded innovative ideas for collaborative investigations into how FX06 might enhance outcomes for critically ill patients, particularly those grappling with challenges like systemic capillary leak syndrome while receiving life support through ECMO.

Overall, COVend's participation in the Highway to Health event has expanded COVend's visibility and network in the broader COVID-19 research ecosystem. Linking the project's innovative therapeutic approach with complementary digital health projects can accelerate solutions that neither can achieve independently. The project will continue to participate in such open science platforms to learn from peers and share ideas that improve outcomes for patients.

6.1 Fostering Dialogue: Insights from the Highway to Health roundtables

The Highway to Health event included two-panel discussions focused on using AI to improve patient safety and data standardisation for digital healthcare. The interactive sessions sparked thoughtful debates among clinicians, researchers, patient advocates and policy experts. Key points raised help synthesise priorities for advancing these topics.

The first roundtable highlighted that while AI holds promise for revolutionising patient care, key challenges remain. Participants emphasised that AI systems are only as good as the data behind them. However, collecting representative, high-quality data faces hurdles like interoperability, infrastructure, and stakeholder buy-in across siloed systems. Privacy and building clinician and patient trust around data are also crucial. Panellists stressed that progress requires collaboration between health authorities, technology partners, hospitals, and end users to co-design intelligent tools tailored for clinical needs. Pilot projects like ENVISION demonstrate feasibility but underscore implementation barriers. Changing workflows and realising AI's benefits takes continued engagement across teams. Participants agreed to sustain EU-level funding and networks could accelerate development.

The second discussion explored data standardisation needs. Speakers highlighted that fragmented systems using different terminologies and formats limit data exchange and reuse. Adopting common standards like SNOMED CT, a clinical terminology architecture, is essential but challenging to implement nationally. Stricter mandates could drive change, but stakeholders noted the importance of flexibility during transition periods. Projects could help demonstrate tangible benefits, like improved analytics, to motivate adoption.

Overall, the roundtables highlighted that advancing AI and digital health across the EU demands both high-level strategy and ground-level collaboration. Progress requires multifaceted efforts - technological, regulatory, educational, financial – with stakeholders working jointly to nurture solutions tailored to the complex clinical context. COVend gained valuable perspectives on fostering innovation to enhance COVID-19 preparedness through partnerships.

7 Highway to Health Cluster & Policy Event

On July 4, 2023, the COVend and ENVISION project consortia jointly organized the "Highway to Health Cluster & Policy Event" at the Representation of the State of Hesse to the EU in Brussels, Belgium. This event brought together over 50 stakeholders, including policymakers, health authorities, clinicians, and researchers, with the objective of reviewing COVID-19 interventions, enhancing preparedness for future pandemics, and improving health systems (Figure 7).

Figure 7: Photo collage from Highway to Health – Policy and Cluster Event 2023 Copyright for images: © Landesvertretung Hessen in Brüssel / Bernal Revert.

The event began with an opening speech by Prof. Dr. Dr. Kai Zacharowski (COVend´s Coordinator), emphasizing the lessons learned from the COVID-19 pandemic. Axel Wintermeyer, Minister of the State of Hesse, highlighted the need for supply chain stability, access to health data, and crisis infrastructure. Representatives from the European Commission discussed EU initiatives and funding opportunities for healthcare research and pandemic preparedness. Four Horizon Europe-funded COVID-19 cluster projects, RBDCOV, MOOD, EPIC-CROWN-2, and ExeVir, presented their findings, along with other EU-funded projects like VASCOVID, ENDVOC, CoVICIS, and RECOVER. The event concluded with a panel discussion on improving healthcare infrastructure and connectivity in the EU.

Key takeaways from the event included the importance of EU initiatives for pandemic preparedness, collaboration between projects, and the need for secure and sustainable healthcare infrastructure. The event also highlighted the benefits of sharing knowledge and collaborating among EU-funded projects, which could accelerate the development of COVID-19 therapies and tools. During networking discussions, participants recommended improved coordination between EU institutions and national health authorities for a more effective response to health emergencies. The most relevant discussion and takeaway messages for COVend was related to knowledge and research infrastructure sharing, establishing protocols for data sharing, creating a common EU pandemic early warning system, and harmonizing clinical trial approvals.

The event's social media campaign on LinkedIn and Twitter reached a wide audience, including stakeholders from various industries. The campaign generated significant engagement and helped promote the event to the scientific community, healthcare providers, and policymakers.

The detailed meeting report includes the key messages of the panel discussion on EU initiatives for pandemic preparedness, panel discussion on secure and sustainable infrastructure for healthcare,

research and society, the benefits and key lessons from both panes, pitch talk session of selected projects according to their highest relevance for future collaboration, and the social media campaign and will be published on the COVend´s website.

In summary, the Highway to Health Cluster & Policy Event served as a platform for collaboration, knowledge sharing, and coordination among EU-funded COVID-19 projects, with a focus on enhancing pandemic preparedness and response.

7.1 Future collaboration opportunities for COVend

The COVend project focuses on evaluating the drug FX06 to treat mild to moderate COVID-19 disease and prevent progression of the disease to severe cases. Collaboration with other EU-funded projects looking at COVID-19 therapies and response tools could be of great benefit to COVend. It could accelerate learning, strengthen study operations and maximise the impact of project results.

The Highway to Health Cluster & Policy Event provided an opportunity to identify synergies with several complementary Horizon Europe projects. For example, networking with RBDCOV and its focus on recombinant protein vaccines could support COVend's efforts to determine optimal FX06 delivery mechanisms and evaluate efficacy in different populations. RBDCOV has valuable experience in conducting clinical trials in immunocompromised patients and in paediatrics. The collaboration could help COVend determine the optimal dosing and administration methods for FX06 in different demographic groups. RBDCOV's insights into the regulation and monitoring of next-generation vaccine technologies could also help COVend track the impact of FX06. Meanwhile, EPIC-CROWN-2 is working on polyclonal antibody therapies that could offer a perspective on treating more severe COVID-19 cases, complementing COVend's focus on mild to moderate cases. As both projects are conducting multicentre clinical trials, coordinating patient recruitment in overlapping regions could increase recruitment numbers and efficiency. Sharing phase 2 trial data could also help COVend plan future trials. MOOD's epidemiological dashboards and disease surveillance tools could help COVend identify patient populations for trials and monitor real-world trends relevant to FX06 use and efficacy. Integrating MOOD's standardised data platforms into COVend's research could improve insights into the impact of FX06 on COVID-19 infection rates and disease progression. Collaboration on data standards, APIs and sharing frameworks could yield new insights. ExeVir's expertise in developing novel nanobody antibody therapies could be valuable to COVend in the future. Sharing knowledge on regulatory approval processes and insights on clinical trial design could be mutually beneficial. Jointly exploring combinations of novel antibody therapies with FX06 could lead to improved patient outcomes.

There are many opportunities to integrate complementary knowledge across projects to accelerate learning, optimise trial operations and strengthen COVend's contribution to better pandemic preparedness. However, realising these synergies requires continuous engagement between consortia, which is facilitated by the EU institutions providing collaboration platforms, incentives and support. Pooling expertise is key to addressing future health crises.

7.2 Results of the networking discussions

During the networking session at the Highway to Health Cluster & Policy Event, participants had fruitful discussions on how to improve coordination between EU institutions and national health authorities to respond more effectively to health emergencies such as pandemics (Figure 8). The COVend organising committee collected the main recommendations. The overarching theme was to improve integration between EU and national systems through joint planning, regulatory alignment and rapid, centralised decision-making structures to enable rapid joint action when pandemics and crises occur.

Figure 8: Photo of networking session © Landesvertretung Hessen in Brüssel / Bernal Revert.

Specifically, the EU institutions and national health authorities could better coordinate their efforts to respond quickly to public health emergencies

- by establishing clear protocols and channels for sharing public health information and intelligence between the European Centre for Disease Prevention and Control (ECDC), national health authorities and the World Health Organisation (WHO),
- creating a common EU pandemic early warning and surveillance system that integrates data sources from all Member States,
- setting up coordinated EU stockpiling of medical countermeasures and supplies, with deployment plans to affected areas,
- developing evidence-based EU clinical management guidelines for emerging infectious diseases that member states can adapt,
- increasing capacity for and interoperability of genomic sequencing across borders to swiftly detect emerging disease variants,
- harmonising procedures for clinical trial approvals across member states to accelerate development of vaccines and therapeutics,
- improving EU scientific advisory capacity to provide rapid, coordinated guidance to national policymakers during health crises,
- leveraging digital tools and platforms for real-time information sharing, monitoring, resource allocation, and crisis communications,
- creating a common EU pandemic preparedness and response fund to provide surge financing to national healthcare systems when needed.

8 Summary and outlook

The collaborations and progress towards partnerships described in this report demonstrate COVend's commitment to maximising impact by working with complementary initiatives. By breaking down silos and pooling expertise across projects, consortia can achieve more together than they can on their own. While COVID-19 continues to pose urgent health challenges, the window for meaningful solutions depends on a coordinated and multifaceted response from the research community. COVend recognises that collaboration across clinical trials, data platforms and geographic networks will produce faster results. Ongoing engagement through virtual meetings, conferences and joint workshops allows for the identification of mutually beneficial overlaps between COVend and other funded projects. Coordinating patient cohorts, integrating complex datasets and navigating the regulatory environment will become more robust through collaboration. Developing best practices for key pandemic response capabilities will strengthen collective preparedness. To build on the partnerships described in this report, COVend intends to continue to explore the landscape for opportunities for strategic alliances. With the support of the European Commission and Member State initiatives, the consortium aims to participate in more cross-network events that can spark new relationships. Exploring creative incentives and support for multilateral collaboration could dramatically accelerate outcomes.

The future collaboration opportunities for COVend were identified according to the coordination of clinical Trial Operations, Patient Cohorts, and Research Protocols; knowledge sharing on Innovative Therapies, Biomarkers, and Study Design; integration of epidemiological datasets for patient recruitment, efficacy monitoring; utilisation of research infrastructure for rapid preclinical studies; and finally, the navigation of navigating regulatory processes for new therapies.

Collaboration for data security, interoperability, high-quality and integration of data sets is crucial not only for legal compliance, building trust with clinical trial participants and stakeholders but for increasing the impact, specificity and applicability of the results for therapeutic development that can positively contribute to pandemic preparedness and response. Regular communication, sharing of resources, and alignment of data protection practices will help ensure that clinical data is handled responsibly and ethically across the EU research landscape. Additionally, staying informed about updates and guidance from European and national regulatory agencies is important for timely adaptation, re-structuring, and efficient use of resources for all projects.

Challenges such as coordination complexities and aligning different project timelines remain. To sustain and improve collaborative efforts, the EU should continue to foster a culture of cooperation, streamline communication channels, and incentivise joint initiatives.

Platforms for the exchange of ideas between consortia can identify innovative ways forward. The strengths of one can compensate for the weaknesses of the other. To overcome a crisis like COVID-19, it is necessary to work shoulder-to-shoulder as a community. COVend remains committed to enriching partnerships wherever synergies arise. By working together, the project can improve and expand its impact on patients and populations.