MIST annual consortium meeting - progress in airborne infection research

February 2026

The MIST consortium recently held its fourth in-person annual consortium meeting since the start of the project in 2023. Hosted by the University Medical Center Groningen (UMCG), the meeting brought together researchers, PhD candidates, and consortium partners to share progress and discuss the next steps in understanding airborne transmission of respiratory viruses.

Across the project's five work packages, researchers presented new findings on respiratory protection, cough dynamics, ventilation strategies, and the physical properties of mucus. The meeting highlighted the importance of interdisciplinary collaboration in addressing the complex challenge of infection prevention in indoor environments.

A common language for airborne transmission

The meeting opened with welcoming remarks from Dr. Mariëtte Lokate (UMCG), followed by a brief introduction from Lisette Heijmans-Wijkhuijs, who recently joined the project as an NWO representative. She informed participants about the upcoming Technology event in June 2026, which will showcase technology demonstrations developed in collaboration with industry partners.

Prof. Joost Hopman, Head of the Department of Medical Microbiology and Infection Prevention (MMBI) at UMCG, delivered the keynote introduction. He highlighted the importance of consistent terminology when discussing airborne respiratory particles across disciplines and referred to international efforts to harmonize terminology in this field. Prof. Hopman also emphasized the importance of adopting a risk-based approach to preventing infection. While transmission risks cannot be fully eliminated, they can be significantly reduced through improved understanding, collaboration, and effective mitigation strategies.

Collaboration across work packages

The remainder of the day was dedicated to presentations and discussions led by PhD researchers and supervisors across the project's five work packages. These sessions provided an opportunity for the consortium members to exchange ideas, reflect on methodological approaches, and identify opportunities for collaboration between the different research areas.

Monitoring viruses in the air. Research presented in Work Package 1 focused on respiratory protection and airborne virus detection. Kirsten Lassing (Radboud University) presented findings from a scoping review of more than 11,000 studies on FFP2 respirators and surgical masks. To better simulate virus-containing aerosols, experiments are underway to evaluate inward and outward leakage through different types of masks.

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Nils Horstink (UMCG) presented results from air sampling conducted in 109 hospital rooms where patients had tested positive for respiratory viruses. A pilot study conducted in a childcare facility also demonstrated the potential of air sampling as an early detection method for respiratory virus outbreaks.

Simulating coughs and improving ventilation. In Work Package 2, researchers at the University of Twente are developing the Twente Cough Machine, a device designed to simulate droplet generation during human coughing. The team studied how droplets form and disperse during coughing events. Computational simulations complement these experiments by modelling the mechanisms responsible for droplet formation from mucus and saliva. Additional research in this work package examines air cleaning concepts for indoor environments, particularly schools.

Designing safer indoor environments. Research in Work Package 3 focuses on ventilation strategies that reduce airborne transmission risks. At TU Eindhoven, researchers are investigating localized ventilation approaches such as targeted air supply and exhaust configurations. Experimental setups using breathing manikins are used to simulate realistic indoor conditions, while computational fluid dynamics (CFD) models allow researchers to evaluate different ventilation scenarios.

Understanding mucus and droplet formation. In Work Package 4, Jared Popowski (University of Amsterdam) presented research on the rheological properties of mucus. These studies aim to develop realistic mucus models that can improve experimental simulations of coughing and droplet formation. Future research will examine how viral infections influence mucus properties and how these changes affect droplet formation and airborne transmission.

Connecting research with practice. Work Package 5 focuses on translating research findings into practical guidance for stakeholders. Dr. Elham Maghsoudi Nia (TU Delft) presented ongoing work on developing recommendation guidelines for infection mitigation measures. Dissemination activities within the project include webinars, public events, and regular updates through LinkedIn, YouTube, and the MIST website. New introductory videos from the project's PhD researchers have recently been published on the MIST YouTube channel to make the research more accessible to broader audiences.

Looking ahead

The meeting concluded with a discussion of upcoming research activities across the consortium. These include further experiments on mask performance and virus emissions, testing cough simulations under controlled conditions, advancing ventilation modelling, and strengthening collaboration between experimental and computational research teams. By combining expertise from medicine, engineering, and the built environment, the MIST consortium continues to develop knowledge that supports improved strategies to reduce airborne infection risks in indoor environments.

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WP5 - MIST project team

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