

New AI Agent to Capture and Analyze Patient Experiences for Healthcare Delivery and Health Systems

An international consortium led by researchers at the Heidelberg Faculty of Medicine at Heidelberg University will develop an AI-powered interactive assistant for the analysis of patient experiences over the next four years. The goal is to identify individual burdens and challenges early and comprehensively and make this information actionable for patients, care teams, and health systems. The European Union is funding the collaborative project, “ResPECT. Generative AI Assistant – A Paradigm Shift in Burden Assessment for Cancer and Mental Health Care”, through the Horizon Europe programme with approximately €15.8 million.

Patients with serious illnesses face a wide range of burdens: pain following surgery, treatment-related side effects, concerns about the future course of their disease, as well as worries about whether family members are receiving adequate support or whether they will be able to continue working. Yet many of these experiences are not fully captured in routine clinical care or only reach treatment teams at a late stage. ResPECT aims to address this gap. In the future, patients will be able to describe their experiences and well-being at any time and from any location, using free-form narratives in their native language, either in writing or through voice input. To achieve this, researchers from eleven European countries are jointly developing an artificial intelligence (AI)-based tool that records patient experiences, analyzes them in real time, and identifies burdens and unmet needs. By integrating patient narratives with individual clinical data, such as diagnoses, treatment histories, medications, and clinical guidelines, the AI assistant will provide patients with immediate feedback in accessible language, including clear recommendations for action. At the same time, a structured summary will be transmitted to the patient record, presenting relevant burdens, risks, and care needs in a format that is easy for healthcare professionals to review.

“Our goal is to capture patient experiences in a structured way and make them immediately actionable,” explains Dr. André Pfob, who coordinates the research project. “For example, if a patient describes side effects, exhaustion, or social concerns, this should result in structured information that can trigger appropriate care, whether medical, nursing, psycho-oncological, or social support.” Dr. Pfob conducts research as Head of the Senology Study Center at the Heidelberg Faculty of Medicine at Heidelberg University, at the new Institute for Medical AI at Heidelberg University Hospital (UKHD), and at the Breast Center within the Heidelberg Oncology Center, which is based at Heidelberg University Hospital and St. Elisabeth Hospital Heidelberg. “At the same time, the structured data generated through this approach will provide health systems with timely and comprehensive information on the most significant health burdens affecting the population,” Dr. Pfob adds.

Enabling Health Systems to Learn from Individual Experiences

In addition to supporting the care of individual patients, ResPECT also targets improvements at the health-system level. Through the structured analysis of patient experiences, the project aims to generate insights into which burdens are particularly common within specific patient groups, where gaps in care exist, and what types of support are actually needed. In this way, ResPECT could help make healthcare delivery not only more responsive, but also more anticipatory, patient-centered, and evidence-based. “Patients provide highly detailed insights into what illness and treatment mean in their daily lives. However, the digital infrastructure needed to systematically use this experiential knowledge for improving care and strengthening health systems is often lacking,” says Dr. Pfob. “ResPECT is designed to help transform individual experiences into a learning healthcare system.”

Researchers will initially develop and evaluate the virtual assistant in studies involving two patient populations: women with breast cancer and patients with depression. Both conditions are supported by extensive medical knowledge and well-established clinical guidelines, providing a strong foundation for the reliable development and validation of the AI tool. The findings will later be transferred to other disease areas. Questionnaires assessing health-related quality of life are already used in patient care today. “These questionnaires typically focus on individual symptoms or postoperative recovery and therefore capture the complexity of individual illness experiences only to a limited extent,” says Dr. André Pfob. Compared with existing instruments, the planned AI tool is intended to be more flexible, comprehensive, and user-oriented. It will also be capable of asking follow-up questions and prompting patients for additional information, particularly in highly urgent situations such as suicidal ideation or fever during chemotherapy.

European Open-Source Language Model as the Foundation

The digital assistant will be based on an existing European open-source language model that will be further trained and adapted for this specific application. Because the AI agent will collect and analyze sensitive personal data, the system must meet the highest standards of security and reliability. In addition to coordinating the consortium, researchers from the Heidelberg Faculty of Medicine and physicians at Heidelberg University Hospital are involved in developing the virtual assistant's user interface and comparing its performance with existing methods for capturing patient experiences.

Additional consortium partners from Heidelberg include St. Elisabeth Hospital Heidelberg, which will conduct a clinical study of the ResPECT assistant, and the patient advocacy organization Gemeinsam gegen Brustkrebs e. V. ("Together Against Breast Cancer"), which will contribute to the development of the AI agent's system architecture. ResPECT is part of the European Commission's GenAI4Health Cluster, which brings together European initiatives dedicated to the responsible use of generative AI in medicine and healthcare. The cluster aims to strengthen the links between technological innovation, clinical implementation, patient-centered care, and regulatory requirements.

Consortium Launches with Major Horizon Europe Funding

The European Union is supporting the ResPECT consortium through the Horizon Europe programme with total funding of approximately €15.8 million over four years. Nearly one-third of the funding will remain with the Heidelberg-based project partners. The consortium also includes partners from Germany (Munich and Berlin), the United Kingdom, Portugal, Lithuania, Slovenia, Cyprus, Belgium, Greece, Poland, Spain, the Netherlands, and Switzerland. The project officially begins on 1 October 2026.

ResPECT builds on the analyses and recommendations of two international expert panels. In recent years, both the Lancet Commission on Cancer and Health Systems and the Lancet Commission on the Mental Health Effects of the COVID-19 Pandemic identified a need for improved approaches to capturing patient-reported experiences and burdens within healthcare systems

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Further information

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