

Partner Search Form
Horizon Europe
Health



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Deadline 15.04.2027

CONTACT

Organisation	Uniwersytecki Szpital Kliniczny nr 1 w Lublinie (USK1) / University Clinical Hospital No. 1 in Lublin (USK1)	Department	Project Department
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City	Lublin	Website	www.usk1.pl
Country	Poland		

Organisation type

Research organisation type	☒ Research Organisation	Is your company a Small and Medium Sized Enterprise (SME*)? Number of employees:	☐ YES ☒ NO
	☐ University		
	☐ Company		
	☒ Other (public hospital)		

Your enterprise is an SME if:

- it is engaged in **economic activity**
- it has **less than 250 employees**
- it has either an **annual turnover not exceeding €50M**, or an **balance sheet total not exceeding €43M**
- it is **autonomous**

For the definition of SMEs, look at: http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_en

Short introduction of key areas of research:

The Department of Obstetrics and Pregnancy Pathology at the University Clinical Hospital No. 1 in Lublin is a tertiary (Level III) referral centre providing comprehensive perinatal care for high-risk pregnancies, fetuses, and newborns in Eastern Poland. The department includes Obstetrics, High-Risk Pregnancy, and Neonatal Units, as well as a Human Milk Bank and specialized prenatal, ultrasound, and molecular diagnostic services.

As the leading regional centre for prenatal diagnosis and fetal therapy, the department provides multidisciplinary care for complex maternal, fetal, and neonatal conditions. The Neonatal Unit delivers specialized care for preterm and critically ill newborns, including extremely preterm infants requiring intensive care and advanced physiological monitoring.

The unit has expertise in neonatal intensive care, neonatal cardiovascular assessment, electrocardiography, and echocardiography. Over recent years, the unit has collected a longitudinal database of heart rate variability (HRV) recordings in preterm and high-risk newborns. These data provide opportunities for research into autonomic nervous system maturation, physiological adaptation after birth, hemodynamic instability, and the early identification of neonatal complications.

The department is interested in collaborative international research projects focused on neonatal physiology, physiological signal analysis, digital biomarkers, artificial intelligence, machine learning, predictive modelling, and clinical decision support systems aimed at improving outcomes in vulnerable neonatal populations.

Former participation in an FP European project?

☐ YES ☒ NO

Project title / Acronym:

Activities performed:

Expertise / Commitment offered

Description of your expertise:

The Neonatal Unit of the University Clinical Hospital No. 1 in Lublin provides tertiary-level care for preterm and critically ill newborns, including extremely preterm infants requiring intensive care and advanced physiological monitoring.

The unit has established a longitudinal database of neonatal heart rate variability (HRV) recordings collected over several years in preterm and high-risk newborns. These data represent a valuable resource for studying autonomic nervous system maturation, physiological adaptation after birth, hemodynamic instability, and the early identification of neonatal complications.

Our primary research interest is the development of AI-supported and explainable machine learning models based on HRV analysis to assess autonomic and neurological maturation, predict adverse neonatal outcomes, evaluate physiological stability, and support personalized care

in neonatal intensive care units.

Additional clinical data, including echocardiography, electrocardiography, laboratory parameters, and routine neonatal monitoring, may serve as complementary reference data for model validation and interpretation.

The unit is interested in participating in multidisciplinary European projects focused on digital biomarkers, physiological signal analysis, artificial intelligence, machine learning, predictive modelling, and clinical decision support systems aimed at improving outcomes in vulnerable neonatal populations.

Keywords specifying
your expertise:

Heart Rate Variability (HRV), neonatal HRV, autonomic nervous system maturation, preterm infants, ELBW infants, neonatal intensive care, physiological signal analysis, ECG, machine learning, explainable AI (XAI), predictive modelling, digital biomarkers, neonatal monitoring, clinical decision support systems, neonatal outcomes, hemodynamic instability, digital twin, neonatal echocardiography.

Commitment offered:

- | | | |
|--|--|--|
| ☒ Research | ☐ Demonstration | ☒ Training |
| ☐ Technology | ☐ Dissemination | ☐ Other: |

Interested in
participation in
project types:

- | | | |
|--|---|---|
| ☒ Research & Innovation Action | ☒ Innovation Action | ☐ EIC Pathfinder |
|--|---|---|

Work Programme research areas: indicate your interest

Health

Call topic(s):

HORIZON-HLTH-2027-03-TOOL-04 VIRTUAL HUMAN TWINS (VHTs) FOR INTEGRATED CLINICAL DECISION SUPPORT IN PREVENTION AND DIAGNOSIS

Do you have other
partners for this
topic (which
partners/country)?

No, we do not have any partners yet.

Profile of partner sought

Role

☐ technology development	☒ research	☒ training
☐ dissemination	☐ demonstration	☐ other

Country /region

☒ Any

Expertise required

We are seeking clinical, academic, and technology partners interested in developing innovative AI-based tools for neonatal healthcare using heart rate variability (HRV) as a digital biomarker of autonomic nervous system maturation, physiological stability, and early clinical deterioration in preterm and critically ill newborns.

The project aims to develop and validate explainable machine learning models capable of assessing autonomic and neurological maturation, predicting hemodynamic instability and adverse neonatal outcomes, and identifying infants at increased risk of neurodevelopmental impairment using longitudinal HRV recordings combined with clinical data.

Clinical partners should have expertise in:

- neonatal intensive care (NICU)
- management of preterm, extremely preterm, and high-risk newborns
- physiological monitoring and ECG acquisition
- heart rate variability (HRV) data collection and interpretation
- neonatal follow-up and neurodevelopmental assessment
- collection and management of longitudinal clinical datasets
- neonatal outcome research
- neonatal cardiovascular assessment and echocardiography (desirable)

Technology and research partners should have expertise in:

- artificial intelligence and machine learning
- explainable artificial intelligence (XAI)
- biomedical signal processing
- digital signal processing
- heart rate variability (HRV) analysis
- physiological time-series modelling

- predictive modelling and risk stratification
- digital biomarkers
- digital twin technologies
- multimodal data integration
- federated learning and privacy-preserving analytics
- clinical decision support systems
- healthcare data science

Additional advantages:

- experience with neonatal physiological data
- experience in translational AI research
- experience with real-world healthcare datasets
- experience in multicentre validation studies
- expertise in neonatal, developmental, or perinatal health research
- previous participation in Horizon Europe or other international collaborative research projects