

Appel à manifestation d'intérêt

Pour participer à la définition et la construction d'un projet collaboratif européen sur la thématique: "Personalised prevention of non-communicable diseases"

Coordonné par l'Institut Thématique Inserm Physiopathologie, Métabolisme et Nutrition (PMN) et en collaboration avec le Département des Partenariats et des Relations Extérieures (DPRE) de l'Inserm

1. Contexte

La Commission européenne (CE), à travers le programme de financement de la recherche Horizon Europe et plus particulièrement du *Cluster Health*, finance des projets de recherche qui doivent contribuer aux six impacts suivants :

1. Rester en bonne santé dans une société qui change rapidement
2. Vivre et travailler dans un environnement qui promeut la santé
3. Combattre les maladies et réduire leurs fardeaux
4. Assurer un accès à des soins innovants, durable et de haute qualité
5. Libérer le potentiel des nouveaux outils, technologies et solutions numériques pour une société en bonne santé
6. Maintenir une industrie de la santé innovante, durable et compétitive

Actuellement, le programme de travail pour les années 2023 et 2024 est en cours de préparation par la CE. La version définitive et officielle des appels à projets est prévue pour fin novembre 2022.

Dans le cadre de l'impact 1, un appel à projet est prévu pour développer des stratégies personnalisées de prévention contre les maladies non transmissibles en utilisation des approches informatiques (algorithmes, machine learning, IA) ([document provisoire](#), page 25, adopté par le comité de programme de la Commission européenne le 25 octobre dernier).

2. Objectifs et modalités de l'appel à manifestation d'intérêt

La participation des équipes de l'Inserm aux projets financés dans le cadre du programme Horizon Europe est une priorité. L'objet du présent Appel à Manifestation d'Intérêt (AMI) est d'identifier les équipes Inserm intéressées dont l'expertise correspond aux attentes de l'appel à projet européen.

Une réunion de travail avec l'ensemble des chercheurs inscrits permettra de définir un ou plusieurs projets européens potentiels coordonnés par l'Inserm. L'ensemble des projets à coordination Inserm, sous réserve de la validation de l'adéquation avec les attentes de l'appel à projet et les règles d'éligibilité, pourront bénéficier du soutien et de l'accompagnement de l'Inserm dans les activités de montage.

La réunion de travail se tiendra à Paris le **24 janvier 2023** de 9h30h à 13h et sera suivie d'un déjeuner. La salle sera mise à disposition jusqu'à 16h pour permettre la poursuite des discussions avec les collaborations possibles identifiées dans la matinée.

Les équipes Inserm, ou chercheurs membres d'une équipe Inserm souhaitant participer à ou coordonner un projet collaboratif européen sur cette thématique et assister à la réunion de travail doivent s'inscrire avant le **12 décembre 2022** sur ce lien : <https://sondage.inserm.fr/index.php/594365/lang-fr>

Pour tout renseignement supplémentaire, vous pouvez contacter Sophie Decamps (sophie.decamps@inserm.fr)

HORIZON-HLTH-2024-STAYHLTH-01-05-two-stage: Personalised prevention of non-communicable diseases - addressing areas of unmet needs using multiple data sources

Dates limites de soumission

Etape 1 : 19 septembre 2023

Etape 2 : 11 avril 2024

Budget par projet : 8 à 12 M€

Expected Outcome: This topic aims at supporting activities that are enabling or contributing to one or several impacts of destination 1 “Staying healthy in a rapidly changing society”. To that end, proposals under this topic should aim at delivering results that are directed at, tailored towards and contributing to several of the following expected outcomes:

- Citizens have access to and use effective personalised prevention schemes and health counselling (including through digital means) that take into account their individual characteristics and situation. Individuals can be assigned to particular groups based on their characteristics, and receive advice adequate to that group. Stratification of a population into groups showing similar traits allows for effective personalised disease prevention.
- Health professionals use effective, tried and tested tools to facilitate their work when advising both patients and healthy individuals. Public health programme owners gain insight into the specificities and characteristics of disease clusters within the population through stratification. This can then be used to facilitate the identification of population groups with elevated risk of developing certain diseases and improve the programmes, update them and design effective strategies for optimal solutions and interventions.
- National and regional programmes make better use of funds, data infrastructure and personnel in health promotion and disease prevention, primary and secondary healthcare. They can consider the use of new or improved ambitious policy and intervention options, with expected high population-wide impact, for effective health promotion and disease prevention.
- Companies generate opportunities for new product and service developments to cater to the needs of the healthcare service and individuals.

Scope: Non-communicable diseases (NCDs) are responsible for the majority of the disease burden in Europe and are the leading cause of avoidable premature death. The human and financial cost of NCDs is high and expected to grow. Reducing the burden of NCDs requires a holistic approach and tackling health inequalities across the board. Preventing NCDs from developing in the first place will be at the core of successful public health programmes in the future.

Personalised approaches and the development of targeted interventions have led to an impressive progress in several fields of medicine and have been included in many

treatments. However, the use of stratification and individualisation in guiding prevention strategies is still not widely in use even though examples of its potential are accumulating. Identifying people at risk of developing a particular disease before the disease starts to manifest itself with symptoms greatly improves treatment options. It is estimated that about two thirds of all NCDs are preventable, many affecting people who are unaware of their disease risks or do not have access to information pertaining to the management of the condition.

Personalised prevention is the assessment of health risks for individuals based on their specific background traits¹ to recommend tailored prevention². This can include any evidence-based method³. Personalised prevention strategies complement general public health prevention programmes without replacing them, optimising the benefit of both approaches. Personalised prevention is ideally suited to the use of large data sets, computational and omics approaches, with design and use of algorithms, integrating in-depth biological and medical information, machine learning, artificial intelligence (AI) and 'virtual twin' technology, taking into account explainable and transparent AI⁴.

The funded projects will work towards reducing the burden of NCDs in line with the 'Healthier Together' – EU Non-Communicable Diseases Initiative⁵. This does not limit the scope of projects under this topic to particular diseases as any disease area of interest, co-morbidities and health determinants⁶ can be addressed.

Accordingly, the proposed research is expected to deliver on all of the following points:

- Enable the understanding of areas of unmet need in NCDs prevention, possibly also addressing disease mechanism, management of disease progression and relapse. Providing new approaches for prevention, focussing on the digitally supported personalised dimension, that can be adopted and scaled up.
- Devise new or improved ambitious policy and intervention options, with expected high population-wide impact on the target groups in question. To be proposed and made available for effective health promotion and disease prevention including targeted communication strategies to successfully reach out to the risk groups.
- Design an integrated, holistic approach that includes several of the following aspects: genetic predisposition to NCDs, meta-genomics, epigenomics, the

¹ (Epi-)genetic, biological, environmental, lifestyle, social, behavioural, etc.

² Possibly along with digitally supported disease management schemes.

³ For example: medication, diet programmes, early diagnostics, monitoring, lifestyle advice and modification, specific training/exercise, psychosocial interventions, meditation, etc.

⁴ See: European strategic research agenda in artificial intelligence: <https://www.elise-ai.eu/work/agenda-and-programs>

⁵ https://ec.europa.eu/health/non-communicable-diseases/overview_en

⁶ Social and economic environment; physical environment; individual characteristics; behaviour.

microbiome, metabolomics, sleep disorders, large cohorts, molecular profiling in longitudinal health screening, impact of lack of physical activity, novel predictive biomarker candidates, diets and nutrition, eating habits for designing customised dietary patterns (geographical variation), and the influence of choice environment on personal choices.

- Study the ethical, legal and social aspects as well as health economics of the personalised prevention tools and programmes being developed. Consider optimal health counselling and communication to the patients/citizens. Address legal aspects of balancing the right not to know and the obligation of helping people in danger.

Furthermore, the proposed research is expected to deliver on several of the following points:

- Develop and validate effective strategies to prevent NCDs and optimise health and well-being of citizens (including the most vulnerable). Propose the strategies to policymakers along with mechanisms to monitor their progress. The strategies need to be aligned with relevant national and European health laws and policies.
- Provide scientific evidence on interactions between the genetic predisposition to multifactorial diseases and environmental factors or environmental triggers. Propose scientifically supported personalised prevention strategies that ensure how to modify the environmental drivers of behavioural risk factors.
- Develop new computational tools combining and analysing comprehensive data with different dimensions⁷ to identify risk factors and modifiers. Creating procedures and algorithms to combine information from different sources (with standardised common data models) to generate risk scores for several diseases and provide health promotion recommendations for the individual as advised by healthcare professionals. Furthermore, develop advanced computational modelling techniques⁸ for predicting disease risk and predisposition (addressed together in an integrative approach) and identifying the optimal solution/intervention for different target groups and individuals.
- Develop tools and techniques to increase the efficiency and cost- effectiveness of on the one hand interventions, adjusting their scope, characteristics and resources, and on the other hand healthcare infrastructure and how it promotes

⁷ For example, genomic, biomarkers, metagenomics, diet, synthetic data, lifestyle, wearables (physical activity), mental health, gender, age, physical and social environment.

⁸ Computational techniques, e.g., virtual twin; deep, fair and/or federated machine learning; AI and symbolic AI.

and delivers health promotion, disease prevention, and care effectively to the different population groups.

- Design tools to collect various data to advance health promotion and disease prevention and strategies for providing omics essays for the general patient with a focus on cost-effectiveness and flexibility.
- Determine how to optimise the benefits of physical activity, smart monitoring of physical activity and sedentary behaviour with measurable data, addressing barriers to uptake and implementation of healthy lifestyles in daily life, understanding what promotion methods work and why, behavioural science to understand healthier choice environments. Balancing the ecosystem associated with the economic, social, and health consequences of NCDs. Affordability related consideration should be taken into account to ensure accessibility of new tools and techniques.
- Conduct data mining of real-world data and develop quantifiable and distinguishable indicators from wearables data, taking into account 'light-weight' AI means to ensure patient privacy and short reaction times.
- Demonstrate with a practical prototype on a given health challenge: from multimodal data collection to identification of an effective prevention strategy to be tested and validated for one or several NCDs.

Where relevant, the projects should contribute to and create synergies with ongoing national, European and international initiatives such as the European Partnership for Personalised Medicine, the 'Healthier Together' - EU Non-Communicable Diseases Initiative⁹, Europe's Beating Cancer Plan and the Mission on Cancer, WHO's 9 targets for NCDs, the EMA 'Darwin' network¹⁰ etc.

This topic requires the effective contribution of social sciences and humanities (SSH) disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.

Where relevant, activities should build on and expand results of past and ongoing research projects. Selected projects under this topic are expected to participate in joint activities as appropriate, possibly including also related projects from other call topics. This can take the form of project clustering, workshops, joint dissemination activities etc. Applicants should plan a necessary budget to cover this collaboration.

⁹ https://ec.europa.eu/health/non-communicable-diseases_en

¹⁰ <https://www.ema.europa.eu/en/about-us/how-we-work/big-data/data-analysis-real-world-interrogation-network-darwin-eu>

Applicants invited to the second stage and envisaging to include clinical studies should provide details of their clinical studies in the dedicated annex using the template provided in the submission system. See definition of clinical studies in the introduction to this work programme part.